

# EUROPEAN COMMISSION EXECUTIVE AGENCY FOR SMALL AND MEDIUM-SIZED ENTERPRISES

# Country Reports on Technical Textiles ('TT') in Brazil, Japan, South Korea and USA

# **Final Report**

28<sup>th</sup> October 2016



# Contents of this report

		<u>Page</u>
Part A:	Contract Data and Context of the Report	3
Part B:	Study Abstract	6
Part C:	Executive Summary	10
Part D:	Main Report (including Appendix)	43

## **Start of Part A:**

Contract Data and Context of the Report

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#### A. CONTRACT DATA AND CONTEXT OF THE REPORT

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#### Project data

Service Contract No.:	EASME/COSME/2014/018
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Delivery Partner:	Gherzi van Delden GmbH, Krefeld (D)
Duration of the Project	16 months from the date of signature*

<sup>\*</sup> Prolongation granted on 2<sup>nd</sup> September 2016 'till 29<sup>th</sup> November 2016

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#### Context

Gherzi (www.gherzi.com) is the internationally leading textile consultancy and engineering firm for the textile value added chain.

With the contract signed in June 2015 between Gherzi and the EU Commission's EASME organization Gherzi has assumed the responsibility to carry out an Export Market oriented study in Technical Textiles ('TechTex') covering the four markets Brazil, Japan, South Korea and the USA.

#### General purpose of the mission

Technical Textiles are generally regarded as a higher value added growth industry, where Europe enjoys a strong market and know how position.

The Technical Textiles industry is, however, extremely fragmented with a large number of EU SMEs (Small and Medium-sized Enterprises) specializing in a certain product / market niche (e.g. ballistic protection) or in a certain technology (e.g. non-crimp fabric manufacturing).

For many of these TechTex SMEs exporting their product 'overseas' constitutes a major problem as

- a) Generally entry barriers in Technical Textiles are high (most products underlie strict standard and norms (such as for flame retardancy in case of contract hometextiles or life cycle abrasion resistance in case of car seat materials)
- b) Many overseas export markets have raised additional non-tariff barriers to protect the local industry (e.g. yarn forward rule in the US Nafta / Cafta regulations).

The purpose of the study presented in the following is – before this background – to improve the general knowledge in Europe about Technical Textile markets and about market opportunities presenting themselves outside of the EU 28 perimeter (on the example of the four markets mentioned before, namely Brazil, Japan, South Korea and the USA).

## **End of Part A:**

Contract Data and Context of the Report

**Start of Part B:** 

Study Abstract

#### **B. STUDY ABSTRACT**

To improve partnerships one must understand its associates' needs and situations. This is why Gherzi van Delden GmbH was contracted to carry out a study on Technical Textiles ('TT') in four faraway markets under the EU's Executive Agency for Small and Medium-sized Enterprises' ('EASME') contract. Analyses and interviews for the 'Country Reports on Technical Textiles' were carried out with a focus on the USA, Brazil, South Korea and Japan, four countries that each provide individual challenges. The study was a sixteen-month project commissioned by the EU's EASME organization to supply a quantified view on TT demand by regional market and product family. With this study Gherzi intends to trigger ideas for the European TT businesses on how to gain better access to foreign markets through an improvement of the knowledge about EU TT business opportunities in the USA, Brazil, South Korea and Japan as well as to present business strategy options to enhance the global footprint.

To analyse the TT markets in the USA, Brazil, South Korea and Japan Gherzi did not only look at the development of the TT market by numbers over the last couple of years but also applied a qualitative method. Several TT producers and TT customers as well as associations and trade organisations in the foreign markets were interviewed. Also the views on and experiences in the distant markets of EU TT producers and EU associations and trade organisations were collected. The study covered questions concerning the World market, the European market and the EU export performance in Technical Textiles in general. The focus of the study is on yarn type Technical Textiles (like sewing threads or medical sutures), fabric type Technical Textiles (like medical bandages or coated fabrics) and roll good nonwovens.

A new global TT consumption model established by Gherzi in the course of the mission comes to a 2014 global market size of 147 Bn USD or 28,375 kt of TT. Between 2010 and 2014 the TT world market grew by more than 6% per year. Through above average growth, nonwovens increased their share of the world market in the a.m. period.

In 2014 EU TT production came to 29.8 Bn USD representing a CAGR (annual growth) of 4.6% compared to 2010. Nonwoven production in the EU outgrew yarn type and fabric type TT production with 9% CAGR between 2010 and 2014. Without TT raw materials (like synthetic high tenacity filaments) and TT made-ups (like made up protective apparel), EU TT consumption was 27 Bn USD, of which 43% (11.5 Bn USD) was imported in 2014. In the same year 48% of EU TT production was exported. Yarn type TT production reached an export share of beyond 70% due chiefly to the historical worldwide success of medical sutures made in the EU.

Outside of the EU, the **USA** is the largest single TT market worldwide. With 2.3 Bn USD EU TT export volume towards the USA, it is also the largest single non-EU export market for European TT producers. The US market is attractive through its growth of 5-6% p.a. in the forecast 'till 2020, considering three Key Success Factors to profit from the market opportunities named in the study. First, a high barrier for European SMEs is the standard and norm issue, as there is an intransparent 'jungle of norms' in the USA. Overcoming this initial barrier is today often realized in close collaboration between an EU producer and his interested US customer. Second, shortening the time to market can be realized by establishing a local US logistical presence, be it 100% EU producer owned or through a tie-up with a local distributor. Third, focusing on the large number of above average growth segments, such as Buildtech, Filtration or Mobiltech markets is a major issue. Once the export volume to the USA becomes large enough, a local production might be a good answer to many of the challenges. Recommendations from the fieldwork in the USA and from complementary Gherzi analysis can be summarized as follows:

- a) Exploit US market opportunities in above average CAGR (annual growth) sophisticated nonwovens,
- b) respond to Mobiltech opportunities driven by the US government's 50-52.5 miles per gallon year 2025 target and
- c) generally exploit opportunities in above average growth applications in the USA.

It is important to be represented in the USA on at least the East and on the West Coast. A local US American logistical set up is also often very helpful to shorten the 'time to market'.

Compared to the size of the population **Brazil's** TechTex market is relatively small. With 223 Mn USD related EU TT export volume, Brazil is also a relatively small market for EU TT suppliers, because only 27% of all Technical Textiles consumed in Brazil are imported. In addition the Brazilian industry and governmental organisations highly protect the indigenous Brazilian TT production. Also, Brazil – if importing TT products – tends to source cheap commodities from Asia. Gherzi highlights opportunities for EU TT in Brazil as follows:

- a) Identifying TT products, which are not produced locally,
- b) Enrolling qualified personnel capable of educating the Brazilian market on the EU TT product advantages and thus of selling complex EU TT solutions against the prevailing low to mid end local products,
- c) prompting higher end solutions by EU producers where a local Brazilian production has not been set up and where application specific know-how serves as an entry barrier against local Brazilian producers and
- d) launching a government to government initiative to profit from the planned high growth in Brazilian agro production, for which the EU TT companies could demonstrate their know-how and expertise, such as in field or crop protection, irrigation or greenhouse farming.

In the recent past **South Korea's** textile industry has realized a shift from traditional textiles towards Technical Textiles and nonwovens. This has gone hand in hand with growth in local demand for Technical Textiles driven, e.g., by the success of the local vehicle industry and a striving medical sector. South Korea appears as a very open trade oriented partner with so far 13 % EU share of TT imports. Key Success Factors to profit from market opportunities are over all innovative products. Difficulties are seen in geographical and mental disadvantages compared to the competitor Japan (highly present in the South Korean market). EU access routes and delays are too long for an on par innovation level in TT with Japan. The recommendations for EU TT producers made by Gherzi referring to the study are to

- a) promote sophisticated nonwovens,
- b) exploit areas of EU producer products strength, e.g. coated fabrics or bandages,
- c) step into rather untouched opportunities, such as smart textiles or sun shading and
- d) invest into IP protection in order to build up possibilities for EU TT producers to engage in local tie-ups.

Japan is one of the early pioneers in Technical Textiles and has the second largest TT market of the countries analysed by Gherzi. Stemming from a strong upstream fibre industry with global players, Japan has developed a strong indigenous TT sector. Japanese TT producers have erected many production sites in China and other Asian countries. Local Japanese TT producers focus their Japanese production sites on R&D intensive high-end TT products only. Communicating essentially in Japanese language makes it difficult for foreign companies to penetrate the Japanese market. With 10% TT import share EU TT suppliers remain relatively weak on the Japanese market. This is due to the language barrier and to close knit value chain tie-ups in Japan combined with the strength of the TT industry in a

faraway market. However, Gherzi shares recommendations to improve the EU producers' position on the Japanese TT market:

- a) Collaboration between Japanese upstream fibre industries and EU downstream TT producers is suggested to profit from each other's strength by creating value added products to be produced in the EU;
- b) Also, the EU industry associations could foster B2B linkages between Japanese trading houses and EU TT producers;
- c) Thirdly, an enhanced collaboration between EU R&D institutes and their Japanese counterparts is recommended. Together they could develop environmentally sustainable technologies using advanced fibres and composites, smart textiles, advanced Medtech as well as advanced nonwoven solutions or next generation sutures.

In addition to the above described country specific views, Gherzi shares eleven recommendations, which can be initiated on a European level, including a.o. the suggestion to support the development of next generation sutures to stop the prevailing decline in EU export sales, to support energy saving initiatives in the EU Technical Textiles industry with the aim to identify pockets of cost savings enhancing competitiveness of the sector or to support industry in tackling with the 'jungle' of standards and norms in faraway non-EU markets.

## **End of Part B:**

Study Abstract

**Start of Part C:** 

**Executive Summary** 

## Table of Contents - Part C

C.	EXE	ECUTIVE SUMMARY	13 -
C.1.		Overview	13 -
C.1.1.		Objectives and expected results of the mission (Summary)	13 -
C.1.2.		Project scope (Summary)	13 -
C.2.	Ma	rket segmentation and consumption model	14 -
C.3.	EU	TechTex scenario	15 -
C.4.	EU	TT consumption and trade	16 -
C.5.	Ove	erview on the regulatory and custom related TT framework (Summary)	17 -
C.5.1.		Forex (Foreign Exchange rates)	17 -
C.5.2.		Free Trade Agreements ('FTAs')	17 -
C.5.3.		Import duty	17 -
C.5.4.		Norms and standards	18 -
C.6.	Cos	st analysis and segmentation	19 -
C.7.	TT	market scenario for the four countries of the mission	22 -
C.7.1.		USA	22 -
C.7.1	1.	Key data	22 -
C.7.1	.2.	Key trade and market related trends	23 -
C.7.1	3.	Key Success Factors ('KSF') to profit from market opportunities	24 -
C.7.2.		Brazil	26 -
C.7.2	2.1.	Key data	26 -
C.7.2	2.2.	Key trade and market related trends	27 -
C.7.2	2.3.	Key Success Factors ('KSF') to profit from market opportunities	27 -
C.7.3.		South Korea	28 -
C.7.3	3.1.	Key data	28 -
C.7.3	3.2.	Key trade and market related trends	29 -
C.7.3	3.3.	Key Success Factors ('KSF') to profit from market opportunities	30 -
C.7.4.		Japan	31 -
C.7.4	l.1.	Key data	31 -
C.7.4	1.2.	Key trade and market related trends	32 -
C.7.4	1.3.	Key Success Factors ('KSF') to profit from market opportunities	32 -
C.8.	Cor	nclusions and recommendations	34 -
C.8.1.		EU TechTex ('TT') producers in general	34 -
C.8.2.		Country-specific recommendations	34 -
C 9 2	1	LICA	_ 2/ _

#### Final Report October 2016

C.8.2.2.	Brazil	36 -
C.8.2.3.	South Korea	37 -
C.8.2.4.	Japan	39 -
C.8.3.	EU organisations' and associations' initiatives	41 -

#### C. EXECUTIVE SUMMARY

#### C.1. Overview

Gherzi van Delden GmbH ('Gherzi') has been carrying out a study of the Technical Textile ('TT' or 'TechTex') markets of Brazil, Japan, South Korea and USA under the Executive Agency for Small and Medium-sized Enterprises' ('EASME') contract, findings of which are summarized in the following.

The 'Country Reports on Technical Textiles ('TT') in Brazil, Japan, South Korea and USA' study was a sixteen-month project commissioned by EASME to supply a quantified view on TT demand by product family and sub-segment in the above mentioned 4 countries of the mission (as well as a comparison with the EU and the world market as a whole.

# C.1.1. Objectives and expected results of the mission (Summary)

- improve the knowledge of EU TechTex business opportunities in the 4 markets USA, Brazil, South Korea and Japan
- help European TechTex businesses to gain better access to foreign markets
- improve the business environment with partner economies and economic partners
- present business strategy options to enhance the global footprint (with a focus on the four countries of the EU TechTex project)

## C.1.2. Project scope (Summary)

The scope of the mission was defined as to analyse the Technical Textile markets in the 4 countries USA, Brazil, South Korea and Japan in relation to

- a) the World market
- b) the European market and
- c) the EU export performance in Technical Textiles in general.

Main product families covered by the study are:

- Yarn type Technical Textiles (like sewing threads or medical sutures)
- Fabric type Technical Textiles (like medical bandages or coated fabrics) as roll good
- Nonwovens as roll good (such as for medical gowns and drapes, wipes, geotextiles, filtration or auto acoustics)

As side products, TechTex raw materials are added under trade performance aspects, if clearly identifiable as destined towards Technical Textiles (like high tenacity synthetic filament). The same holds true for made up Technical Textiles (like made up tarpaulins, safety belts or nonwoven garments). Manufactured end products made by using Technical Textiles (like baby diapers, complete filtration systems or automotive car seats) are, however, not part of the study.

### C.2. Market segmentation and consumption model

#### Global TechTex consumption

A new global TechTex consumption model established by Gherzi in the course of the mission (for the three product families: i. nonwoven-roll goods, ii. yarn type Technical Textiles - like sewing thread, ropes or medical sutures - and iii. fabric type Technical Textiles on roll good level) comes to a 2014 global market size of 147 Bn USD or 28,375 kt of Technical Textiles.

Between 2010 and 2014 the TT world market has grown by more than 6.7% per year. Through above average growth, nonwovens have increased their share of the world market in the a.m. period.

#### Regional TechTex consumption

Gherzi has established the EU TechTex consumption, production and trade data on the base of nonwoven industry association data as well as Prodcom, Eurostat and Comtrade data (adding – for fabrics and yarn type Technical Textiles – an estimate for 'dual use': see more below on the topic of 'dual use'). Then – assuming a correlation between GDP/capita and TechTex consumption per capita – the 2014 TT consumption in the 4 countries of the mission (plus a sum for the remaining regions in the world) has been estimated as follows:

EU	27.0	Bn USD (53,3 USD/capita)	-	508	Mn inhabitants
USA	24.1	Bn USD (75,5 USD/capita)	-	319	Mn inhabitants
Japan	9.4	Bn USD (74,0 USD/capita)	-	127	Mn inhabitants
Brazil	4.2	Bn USD (20,8 USD/capita)	-	202	Mn inhabitants
South Korea	3.3	Bn USD (66,0 USD/capita)	-	50	Mn inhabitants
RoW	78.9	Bn USD (13,2 USD/capita)	-	6,001	Mn inhabitants
World TT total	147	Bn USD (20,4 USD/capita)	_	7,208	Mn inhabitants

Source: World Bank, Gherzi analysis and TT market model (verified by commercially available TechTex studies)

#### C.3. EU TechTex scenario

#### EU TechTex production and the 'Dual Use' issue

'Dual use' products are textile products (like cotton wovens) which can go into TT as well as into, e.g., fashion or traditional hometextile – like bedding – applications. They sometimes can thus not be identified in official statistics as clearly TT focused items. Gherzi estimates 'Dual Use' at 20% of total yarn type and fabric type TechTex production / import / export (that is 25% on top of corresponding values singled out as Technical Textiles in the Prodcom / Comtrade based nomenclature and codes), a factor which has been added to all corresponding market data.

Nonwovens are not corrected for 'dual use' as

- a) they are technical in nature (no dual use, e.g., in fashion)
- b) Gherzi has relied mainly on nonwoven industry association data for production.

A more far reaching trade code definition of 'nonwovens' (including, e.g., bleached cotton pads for hygiene) going beyond the definition of the nonwoven associations (EDANA, INDA, Anfa) has nevertheless been used in the Gherzi analysis, especially for Nonwoven trade related analysis.

Based on Prodcom (EU production statistics) data and incorporating an estimate for Dual Use ('DU'), 2014 EU TT production comes to 29.8 Bn USD representing a CAGR (annual growth) of 4.6% compared to 2010. Nonwoven production in the EU outgrows yarn type and fabric type TT production with 9% CAGR between 2010 and 2014.

#### C.4. EU TT consumption and trade

Without TT raw materials (like synthetic high tenacity filaments) and TT made-ups (like made up protective apparel), EU 2014 TT consumption was 27 Bn USD, of which 43% (11.5 Bn USD) was imported. In the same year 48% of EU TT production was exported. Yarn type TT production reached an export share of beyond 70% due chiefly to the historical worldwide success of medical sutures made in the EU.

Whereas in value (USD) the EU trade balance is positive (+ 2.7 Bn USD in 2014) it is negative in volume (kt) mainly due to large volumes of cheap greige fabric imports (e.g. Polyester greige from Asia) for further processing (such as coating) in the EU.

# C.5. Overview on the regulatory and custom related TT framework (Summary)

Four major aspects are impacting on trade of TT products have been analysed, namely Forex, FTAs, Import Duties as well as TT specific norms and standards.

#### C.5.1. Forex (Foreign Exchange rates)

European export performance of Technical Textiles is strongly linked with forex evolution where the past years scenario has not always been favourable. The observed 'yo-yoing' of the Euro compared with foreign currencies – or the absence of stability – makes life difficult for EU exporters who cannot easily predict currency fluctuation and adapt their selling prices on a daily basis. Long term export strategies – if consequently pursued – do, however, request a minimum level of Forex visibility in order to mitigate risks.

#### C.5.2. Free Trade Agreements ('FTAs')

2005 has been a turning point in international trade relationships with the emergence and proliferation of numerous Free Trade Agreements (FTAs) and Trade Preference Programs (TPAs). This has been the case for most of the four studied countries, except Brazil which has not been lately engaged in any active trade negotiations with partner countries and / or regions. Those FTAs have sometimes radically revamped the way supply chains are organised by allowing to specific countries a preferential access to large consuming zones under certain preconditions (such as the yarn forward rule in NAFTA / CAFTA agreements).

Nevertheless, the tangible effects of the coming into force of FTAs are sometimes quite modest in terms of trade. This has been observed for the four studied countries where non-FTA regulated imports remain the 'norm' in several TT product categories. As an example, the implementation of the EU-Korea FTA since 2011 has not significantly changed the trade situation in TT products between both partners. The same holds true for the absence of an EU-US FTA, which has not hindered EU TT producers to grow their sales to the US market by 8% p.a. between 2010 and 2014 to an EU TT export level of 2.3 Bn USD in 2014.

However, there are several FTAs being currently discussed which can – if ratified – ultimately have an impact (positive or negative) on European TT SMEs' export performance to the 4 countries:

- The Transatlantic Trade and Investment Partnership (T-TIP),
- The Trans-Pacific Partnership (TPP),
- The Regional Comprehensive Economic Partnership (RCEP),
- The EU-Japan FTA and
- The EU-Mercosur Association Agreement

#### C.5.3. Import duty

Whilst the EU benefits from a 0% duty regime with Korea since the coming into force of an FTA in 2011, the situation is very different with Brazil. In this country, import duties constitute a strong trade barrier with rates ranging from 18% to 35% for products which are produced

locally. Low import duties @ 2% are usually applicable to products such as containing, e.g., aramids and which are, therefore, difficult to source locally.

In Japan, the situation is contrasted depending on the product category. However, very few import duties are above 10% and a significant number of products already benefit from low import duties, i.e. 5% and below.

In the USA, several TT products in yarn type, fabric type and nonwovens, have already a 0% import duty rate. However, it is important to notice that the US HS codes list is sometimes much more detailed than that of other countries with a myriad of different import duties for the same category of products. This is for example the case for some fabric type products (e.g. HS 5903 – coated textile fabric), where 4 different import duty rates co-exist.

#### C.5.4. Norms and standards

Even if it is part of 'business as usual', understanding and complying with Technical Textile norms and standards being in force in foreign countries is often synonymous with complexity, costs and delays for European companies. In this respect, such norms and standards are viewed as an important non-tariff barrier impacting negatively on the export performance of European Technical Textile SMEs.

There are three major aspects which need to be taken into consideration concerning the export hurdles linked with norms and standards, i.e.

- (i) the lack of reliable sources of information and support
- (ii) the preference (over e.g. ISO norms) given to local norms and standards and
- (iii) the prohibitive costs of getting products tested and certified in foreign countries.

Over the last recent years, specific initiatives (such as by INDA/EDANA, EU/USA or Carbon Composites e.V., Germany) have been implemented, showcasing possible tangible improvements in the norming 'jungle', which remains one of the most difficult non-tariff barriers to overcome.

#### C.6. Cost analysis and segmentation

#### Factor cost analysis

Substantial factor cost (labour, energy) differences exist between the EU and the four countries analysed in the course of this mission as well as within the EU. At that respect, the EU does not benefit from any cost advantage vis-à-vis others, with European companies usually operating in a 'high cost' business environment; This before the background that the EU is not any more regarded as a source for more price sensitive commodities, which are often sourced from China. This needs to be considered when looking at the export competitiveness of the EU in the global TechTex market.

This situation leads to the following question:

How can European Technical Textiles producers compete in export markets taking into consideration their relative cost disadvantage compared to other regions?

Two cost parameters emerge as critical factors enabling the conceptual identification of socalled 'favourable' or 'unfavourable' TT products to be exported from Europe. Those parameters consist of

- (i) the sensitivity to transport costs namely the value of exported goods per container which is a fixed cost for, e.g., shipment to the USA and
- (ii) the level of labour intensity.

Using a cost analysis tool, the following conclusions have been identified:

- Low value per kg / labour intensive / or transport cost sensitive TechTex products are difficult to export outside of the European perimeter (e.g.: FIBC-Big bags or any other product considered as a commodity and easily sourced from Asia)
- Higher value per kg products / differentiated specialties / or products with a relatively low labour content have a good chance to be globalised in terms of sales (see success of EU PVC coaters like Ferrari (F), Sioen (B), Heytex (D) or Verseidag (D) on the world market)
- Product differentiation (e.g. sophisticated finished products like ballistic vests containing para-aramid or medical sutures) overrules cost aspects and allows for worldwide shipment of high end EU TechTex products (if not blocked or partially blocked – such as in the case of ballistic vests – by trade barriers like the Berry Amendment re. US security forces or the Buy American act re. all other public tenders in the USA).

#### Non cost success factors in exports

However, this theoretical reflection on costs being a decisive factor for limiting TT exports, is contradicted by the success of European nonwoven exporters, especially to the USA\* but not only. In theory, nonwovens – due to their transport cost sensitiveness and generally lower level of value added (compared to wovens, for example) – would be consumed where they are produced while in reality they constitute one of Europe's most successful TT overseas export categories. \*\*

<sup>\*</sup> However, EU Nonwoven exports to the USA have enjoyed 0% duties since the 1982 Uruguay round 
\*\* This conclusion is based on export data as of the UN source 'Comtrade'. EU Nonwoven industry internal and confidential export data come to a lower volume of exports in the EDANA industry association definition of the relevant Nonwoven categories. For reasons of consistency the entire Gherzi trade flow analysis in this report is based, however, on UN Comtrade data only.

Thus 6 <u>non-cost</u> success factors in exports of TT products have been identified by Gherzi, which are overruling cost related barriers to exports, if in place.

In practice, this signifies opportunities for EU TechTex producers to base their export success on other factors than just cost.

Those non-cost success factors are listed below:

 Product nomination (such as nomination of fabrics or nonwovens by automotive OEMs = vehicle producers)

Product nomination is a common practice in many industrial sectors aiming at pre-defining and imposing beforehand product specifications in terms of cost, availability, quality, performance and sustainability. The automotive industry has been a past master of developing product nomination among Tier 1, Tier 2 and Tier 3 suppliers and European TechTex producers benefit from their proximity to large European car manufacturers. This proximity allows them to co-develop specific products which are ultimately imposed to the entire supply chain. This product nomination process could explain the presence of European TechTex products in different export markets worldwide despite alternative sourcing options either local or offshore.

- II. Operational excellence and differentiation through technology
  - i. Operational performance and competitiveness through state-of-the-art manufacturing technology

Investments in state-of-the-art technologies and equipment have been the backbone of the European success in Technical Textiles. Excluded from most of the TechTex commodities' export markets to the benefits of Asian suppliers offering cost competitive prices, the lifeline for many European TechTex manufacturers has consisted in strengthening operational excellence and industrial performance through an aggressive investment-intensive strategy aiming at maintaining an innovative competitive edge over other countries and regions. In many markets, this capacity to remain a highly innovative reliable manufacturer with international reputation could largely offset the cost disadvantage associated with European producers. TechTex products users may thus prefer to opt for consistency in quality, innovation and timely delivery rather than lower prices.

ii. Fabric specifications (e.g. special width) only available with few suppliers

Many European TechTex manufacturers have become pure niche players in market segments where only very few companies still operate on a global scale. This situation mechanically restricts the sourcing options for certain customers. This is especially true when application specific know-how is of importance, like in Geotextiles, Filtration or Medical Textiles or where extra wide fabric or nonwoven widths (e.g. up to and beyond 5m) become important.

#### III. Product differentiation and R&D

i. Product differentiation by quality, fabric and design

The intricate relationships existing among European academia, research centres, textile machine OEMS and TechTex producers organised in several leading clusters offer a unique combination difficult to find elsewhere in the world. These powerful and innovative networks of expertise lead to the reinforcement of excellent manufacturers capable to develop innovative products and new solutions. This is part of the explanation regarding the high reputation of European TechTex products in export markets. Even in so-called difficult

countries like Korea and Japan, European TechTex manufacturers are usually viewed as 'new idea providers' for existing and new TechTex applications.

ii. R&D driven innovation not available from a local (US, Brazil, Korea, Japan) producer

Technical Textiles are a world of specialists. Some European TechTex manufacturers are able to maintain and protect their innovative edge through constant R&D efforts. These R&D investments are also possible thanks to the existence of specific incentive packages implemented by European countries or the EU Commission. At that respect each European country has its own policy aiming at supporting R&D among industrial SMEs either through specific schemes for collaborative R&D (e.g. through local R&D institutes) or via fiscal incentives.

IV. Non-availability of the functionality (product to fulfil a specific function) or of raw materials from a local (US, Brazil, Korea, Japan) producer

Following the example of driver III, some European TechTex manufacturers have been able to establish a unique and strong market position through the development of specific functionalities for a given product, e.g., in ETFE coated glass fabrics for long lasting (20 years plus) public buildings (like airports or stadiums). If no local supply is possible for those functionalities, it becomes an opportunity for the European manufacturer of such product.

#### C.7. TT market scenario for the four countries of the mission

The 4 countries covered by the Gherzi mission imported 3.1 Bn USD of Technical Textiles from the EU in 2014. 73% of this value went to the USA, which also showed the highest growth rates in EU TechTex imports. The highest import market share (= TT imports from the EU divided by total TT imports in any given country) is attained – with about 20% TT import share – by EU producers in the USA and in Brazil.

#### C.7.1. USA

#### C.7.1.1. Key data

Population	319 Mn
TT consumption / capita	76 USD / a
TechTex consumption (roll good and threads)	24.1 Bn USD
TechTex imports	12.2 Bn USD
% import share	51%
TechTex imports from EU	2.28 Bn USD
EU share of TechTex imports	19%

Source: Gherzi analysis

Outside of the EU (EUTechTex consumption 2014: 27.1 Bn USD) the USA (TechTex consumption 2014: 24.1 Bn USD) is the largest single TechTex market worldwide.

With 2.3 Bn USD EU TechTex export volume towards the USA, the USA is also the largest single non-EU export market for European TT producers.

On top would need to be considered EU shipments to the two other Nafta countries, namely Mexico and Canada, where the purchasing decision is often made in the USA (such as for TT products being used in the ~ 6 Mn motor vehicles produced in these two countries).

Casting a judgement on the 2.3 Bn USD 2014 EU TT exports to the USA, it also needs to be considered that in many instances EU TechTex producers have established manufacturing locations in the USA, replacing hitherto imported materials.

Apart from its sheer size, the US market is also attractive because of its growth of 5-6% p.a. in the forecast 'till 2020 (thereby adding 9 Bn USD additional demand for Technical Textiles between 2014 and 2020). This growth is fuelled especially by the growth of the Buildtech, Indutech and Mobiltech sector, a.o. through the impact of new legislation or government targets, e.g., in filtration or miles per gallon vehicle fuel efficiency.

It needs to be remembered, though, that the USA – partially in parallel or ahead of Europe – has been the inventor of many technologies used in Technical Textiles today starting from high tech fibres (such as Aramids or UHMW-PE), over nonwovens (like spunbond NW) to defence and aerospace related composites and composite reinforcement (such as aerospace prepregs or honeycomb) materials.

Furthermore, the USA 'excels' in erecting non-tariff trade barriers (Gherzi view) via standards and norms little coordinated or directed from a central US American body (except for security forces, where the 'Berry Amendment' and the 'Buy American Act' close out all foreign non-US suppliers and to a certain extent nonwovens, where the INDA industry organisation enjoys some success in harmonizing US-wide norms).

Despite these hurdles, EU producers so far have been doing well on the US American market outgrowing the market (+8% EU producer CAGR 2010-2014 vs. ~ 5% US TT market CAGR 2010-2014) and thus increasing their market share. However, the main source for EU producer success on the US American market was founded on nonwovens and fabric type TechTex exports, while growing EU twine / cord / cable component exports could not entirely compensate for the loss of export volumes in sutures in the 'yarn type' TechTex category.

In terms of US import competition – thus not considering competition from local US producers – the key players competing with EU producers in the higher end of the market (not considering China) come from the two other Nafta countries Canada and Mexico.

Thus, EU producers clearly outperform (in terms of TechTex sales to the USA) Japan as the other high end key competitor on global TechTex markets.

#### C.7.1.2. Key trade and market related trends

Gherzi has interviewed in the course of the EU TechTex mission 11 TT producers / TT customers and 3 associations / trade organisations in the USA itself and collected the views of 17 EU TT producers and 4 EU associations / trade organisations (other than the project steering committee members Euratex, EDANA and CIRFS) regarding the US TT market. All of the EU TT producer companies interviewed by Gherzi had experience in dealing with the US market, as this is generally the prio 1 non-EU export market for EU TT producers.

High entry barriers into the US market were mentioned by all interviewed parties in the EU, such as in the form of:

- A vast basket of standards and norms to be respected, often differing by state (the USA has 50 states) or even county (county or city fire marshals – to give an example – can set their own norms)
- High certification costs (up to 100 K USD per test) in a limited number of accredited, chiefly US based laboratories
- Rules and regulations enforcing local production (such as Berry Amendment for defence related products or Buy American Act for public tenders) spilling over into so far nonregulated areas (like industrial Protech)
- Duties and levies on TT imports from the EU (often beyond 10%)
- Ever shortening 'time to market' demands by US customers, requiring a local logistical infrastructure (or production) in the USA.

Despite these hurdles almost all interviewed EU TT producers see good market opportunities in the USA due to the recognized level of innovation and quality of EU made TT products meeting a large market and customer base open for new products and innovations.

From the side of the interviewed US TT companies, associations and organisations the strength of EU TT producers was seen in ...

- High level of quality and innovation
- Technology leaders in many TT products (as well as in machines required to produce the same).

However, in parallel, such strengths are associated with key EU producer weaknesses

- Unwillingness to supply commodities
- Long time to market (up to 10 weeks by ship), as most EU producers have no logistical structure (warehouse) or production in the USA
- Inflexibility in pricing
- Sometime little understanding of US standards and norms and
- Non-US origin for publically tendered products.

Nevertheless, the numbers show that if higher end TT products are imported – and thus not sourced from Nafta regions – the preferred source is Europe (well ahead of Japan or Korea).

Often EU producers are thus highly welcome in the USA, because they come with new product ideas or new technologies, a weakness which is associated by interviewed parties with local US American producers, who are often focusing on the US American or Nafta home market only.

Also, there are a number of TT product segments (like paper machine clothing) with a limited number of US producers, whereby US customer's welcome foreign suppliers.

The advantages of setting up a production in the USA were stressed again and again in the course of the Gherzi US field interviews.

Indeed, a number of EU TT companies have established US operations in the past (most recent examples include German nonwoven producers Polyvlies GmbH and Sandler GmbH).

Nevertheless, EU TT exports to the USA – a 2.3 Bn USD business in 2014 – have been growing at 8% CAGR between 2010 and 2014 and are expected to continue to grow in the future.

# C.7.1.3. Key Success Factors ('KSF') to profit from market opportunities

With 19% TT import share (2014), EU TT suppliers are already a major force to reckon with in the US TT market. The following KSF are important for US export success (see also SWOT analysis in the main report):

- a) Tackle with local norms and standards
  - A high barrier for European SMEs is the standard and norm issue, as there is an intransparent 'jungle of norms' in the USA with
    - national (US American) norms like ASTM, USDA or FDA certificates
    - state norms (e.g. SEAOC) or county (like fire marshal) norms (Industry
    - association norms (such as American Bakery Association)
    - private organisation norms, like from the insurance company Factory Mutual (FM) for, e.g., roofing membranes.

On top come government acts excluding non-US producers from certain tenders like the Berry Amendment for US security forces or the Buy American Act for public tenders. Also, even if ISO norms exist (where the USA has been supporting the norming process), they are often not accepted in the USA in favour of local norms (e.g. industrial PPE – Personal Protective Equipment – and fluorescent workwear).

The sheer number of norms to be respected in the USA together with the costs per test between 5 K USD and 100 K USD (example roofing membranes) and a limited number of accredited (chiefly US American) laboratories represents a high barrier not only but especially for EU SMEs.

Overcoming this initial barrier is thus the first KSF which is in practice today often realized in close collaboration between an EU producer and his interested US customer.

#### b) Shorten the time to market

- Shortening the time to market is another key success factor for the US market. This can be realized (for TT exports from Europe) by establishing a local US logistical presence, be it 100% EU producer owned or through a tie-up with a local distributor (like Composite One, a 900 Mn USD distributor in composite materials with 40 warehouses all over the USA). Often this logistical presence needs to be set up – due to the size of the market – at least on the east as well as on the west coast of the States.

#### c) Focus on high growth market segments

- Focusing on the large number of above average growth segments would be the next KSF in Gherzi's view in summary chiefly the ...
  - Buildtech
  - Filtration
  - Mobiltech
  - Geotech
  - Smart textiles for non-Protech (like Medtech or industrial Protech)

... markets.

This is excluding security forces related Protech (like for Defence Forces) blocked by import prohibiting trade barriers (e.g. Berry Amendment).

Once the export volume to the USA becomes large enough a local production might be a good answer to many of the challenges described before. However, before reaching this point, exports out of an EU TT production site is a feasible and successful route into the US market.

Important further background information regarding opportunities for EU producers in the USA is given in the SWOT (Strengths / Weaknesses – Opportunities / Threats) and Key opportunities parts of the main report (Part D - 7.1.8 and 7.1.9).

#### C.7.2. Brazil

#### C.7.2.1. Key data

Population	202 Mn	(63% of USA)
TT consumption / capita	20.8 USD / a	(28% of USA)
TechTex consumption (roll good and threads)	4.2 Bn USD	(17% of USA)
TechTex imports	1.15 Bn USD	(9% of USA)
% import share	27%	(51% in USA)
TechTex imports from EU	0.22 Bn USD	(2.28 Bn USD in USA)
EU share of TechTex imports	20%	(19% in USA)

Source: Gherzi analysis

Compared to the size of the population (200 Mn people) the Brazilian TechTex market is relatively small (per capita only 28% of USA), corresponding more or less to the difference in USA – Brazil per capita GDP (21 K USD / a in Brazil vs 76 K USD / a in the USA).

With 223 Mn USD related EU TT export volume, Brazil is also a relatively small market for EU TechTex suppliers chiefly due to the following facts:

- Only 27% of all Technical Textiles consumed in Brazil are imported (vs 51% in the USA)
- 2. Brazil tends to import cheap commodities from Asia (38% of Brazil TT imports 2014, not considering S. Korea) or from duty-free Mercosur partners (13% of Brazil TT imports 2014) rather than high end products from expensive EU suppliers.

Nevertheless, in the higher end of the market EU producers (19% TT import share in 2014) are coming close – in terms of TT exports to Brazil – to the combined USA / Mexico position (together 22% 2014 TT import share).

The Brazilian industry and governmental organisations are highly protectionist when it comes to protect indigenous Brazilian TT production.

EU exports of medical sutures to Brazil, to give an example, collapsed from 144 Mn USD in 2010 to 12 Mn USD in 2014 when local suture production was established in Brazil (company Covidien a.o.), subsequently to which the Brazilian government raised duties on suture imports to prohibitive levels.

Thus, today, the EU is supplying to Brazil chiefly products which are not produced locally.

In Brazil, the years 2015 / 2016 are marked by the drastic economic crisis in the country, so that very likely the above quantified 2014 EU TT export numbers to Brazil might have continued their decline into 2015.

#### C.7.2.2. Key trade and market related trends

Gherzi has interviewed in the course of the EU TechTex mission 15 TT producers / TT customers and 2 associations in Brazil itself and collected the views of 17 EU TT producers and 4 associations / trade organisations (other than the steering committee members Euratex, EDANA and CIRFS) regarding the Brazilian TT market.

Most of the EU producers interviewed by Gherzi had limited experience in Brazil as the market was judged difficult or partially impossible to access (if duty rates went above 20%); this also due to the current economic crisis in the Brazilian market.

Thus mentioned as limitations to future growth in EU exports to Brazil were:

- High duty barriers (often > 20%) which Brazil is erecting against imports of products which are produced locally
- Generic policy in Brazil of import replacement leading to the risk of IP being copied to set up a local Brazilian production
- Difficult to recruit personnel in Brazil qualified to sell highly engineered EU TechTex products (like geotextiles or filtration)
- Strong local competition specifically in nonwovens (companies Berry-Providencia, Fitesa, Ober, DuPont Cipatex, amongst others).

Given these hurdles and the collapse of the Brazilian TT market between 2013 and 2014 few EU producers have the 'standing' to continue prospecting the Brazilian market at the time of this report (exception: EU producers with local production sites in Brazil or companies – such as from the geotextile side – who have invested years to train and build up local commercial personnel in Brazil itself).

Total EU TT exports to Brazil have gone down sharply after the collapse of suture sales in 2013 (erection of duty barriers to protect new local producers) and have only gradually recovered in 2014 only to be very likely negatively impacted again by the economic crisis of 2015/2016.

# C.7.2.3. Key Success Factors ('KSF') to profit from market opportunities

The KSF for Brazil TT exports can be summarized as (see also SWOT analysis in the main report)

- 1. Identifying TT products which are not produced locally
- Identifying the right personnel which can educate the Brazilian market in respect to the EU TT product advantages and who can thus sell complex EU TT solutions against the prevailing low end (local) products.

Standards and norms are less of an issue in Brazil as these are often formulated along prevailing international examples.

Regarding further background information in repsect to opportunities for EU producers in Brazil Part D - 7.2.8 and 7.2.9 (SWOT and Key opportunities) might also be of importance.

#### C.7.3. South Korea

#### C.7.3.1. Key data

Population	50 Mn	(16% of USA)
TT consumption / capita	66 USD / a	(87% of USA)
TechTex consumption (roll good and threads)	3.26 Bn USD	(14% of USA)
TechTex imports	2.0 Bn USD	(16% of USA)
% import share	61%	(51% in USA)
TechTex imports from EU	0.23 Bn USD	(10% of USA)
EU share of TechTex imports	13%	(19% in USA)

Source: Gherzi analysis

Korea must be considered as a highly industrialized country with a GDP per capita above the 2014 EU average.

In the recent past South Korea's textile industry has realized a shift from traditional (like fashion oriented) textiles towards Technical Textiles and nonwovens. This has gone hand in hand with growth in demand for Technical Textiles driven, e.g., by the success of the local vehicle industry and a striving medical sector (including – for example – a boom in cosmetic surgery driving up demand for medical sutures).

In parallel to growing demand, though, South Korea has established ...

- a strong local man-made fibre industry (almost all fibres needed for Technical Textiles are produced locally)
- a significant local nonwoven production
- an import replacement industry in higher value added articles (like, e.g., medical sutures or airbags for cars).

TechTex imports in South Korea today come mainly from China (low end products) and Japan (high end products).

EU producers seem underrepresented in the S. Korean TechTex market:

- EU share of S. Korean TechTex import: 11% (vs. 19% in the USA)
- All companies in the sample of EU companies interviewed by Gherzi in the context of the EU TechTex mission confirmed that they do not have either significant sales or a good knowledge and formal marketing approach to the S. Korean TechTex market.

South Korea is a very open trade oriented country having signed FTAs with Europe, the USA, Japan and China amongst others.

In TechTex exports to S. Korea EU producers are chiefly competing with Japan and the USA as suppliers to the higher end of the market.

#### C.7.3.2. Key trade and market related trends

Gherzi has interviewed – in the course of the EU TechTex mission – 13 TT producers / TT customers and 4 associations / trade organisations in S. Korea itself and collected the views of 17 EU TT producers and 4 EU associations / trade organisations (other than those represented on the project steering committee, namely Euratex, EDANA and CIRFS) regarding their views of the S. Korean TT market.

The interviewed EU TT producers were mainly from the SME sector. Most of them had no or limited experience in Korea due to limited resources (concentrated instead on the potentially larger US TT market opportunity).

The strength of the local Korean TT competition was given – by EU TT producers – as another argument for the so far weak export presence on the Korean market.

From the side of Korean TT companies, associations and organisations, the strength of EU TT producers was seen in ...

- Innovation and creativity (e.g. in sun protection)
- Medtech in general
- Strong brands in consumer related products (e.g. Sporttech)
- Image of quality and of reliability (important for, e.g., Mobiltech or Hygiene)
- Experience in inherent FR fibres, fabrics and garments (for Protech).

However, it was often cited that the low end of TT products was generally imported from China (proximity, costs) and the high end – where not produced locally – from Japan (quality, proximity, well-functioning logistics).

As was mentioned earlier in this report, it needs to be noted also, that there is a dedicated effort by the Korean industry to build up local higher end TT production (including raw materials) to a sophistication level comparable with Japan and the EU.

In automotive airbags, to give an example, Korea has started by building up a certified PA (Polyamide) yarn production (Hyosung Group) and then moved forward to fabric production and airbag assembly a.o. through the acquisition of company Global Safety Textiles (GST) in Germany. The same strategy to build up a local production in high value added TT products has been observed, to give another example, in medical sutures (as has been mentioned before). The smart textile alliance between Korean fabric producers and local electronic giants (like Samsung or LG) is another example of the strategy to build up a high end S. Korean TechTex industry competing with Japan, the USA and the EU.

On the other hand, Korea is a comparably open market having signed FTAs with almost every major trading partner worldwide and is relatively open (especially compared to the USA) to accept proven international standards and norms.

# C.7.3.3. Key Success Factors ('KSF') to profit from market opportunities

The entry door into the Korean market for EU producers as seen by the interviewed parties is innovation (see also SWOT analysis in the main report) like

- New applications for TT solutions
- New functions or durable functions
- Catering to the Medtech and Hygiene boom in Korea
- Transferring EU creativity like in sun shading or artificial leather
- Providing application and customer specific solutions (like in filtration)
- Transferring brand values in products close to the consumer (Hygiene, Sporttech, ...).

What was often cited, though, is that – compared to Japan (who was seen as the major EU competitor in S. Korean TT imports) – the EU access routes and delays are too long for an on par innovation level in Technical Textiles with Japan.

"While Europe is competitive in TT yarns, nonwovens and fabrics, there still remains the geographical and mental disadvantage compared to Japan" was an often cited remark. Although trade barriers in form of Korea specific TT standards and norms exist (such as in Medtech), these were not mentioned, as S. Korean standards are often worked out close to European (EN) or international (ISO) formulations.

The currently ongoing work in Korea to formulate new Protech norms might even work in favour of EU producers, if actively influenced towards well proven European Protech standards and norms.

In many areas where proximity plays a decisive role (working against EU – and in favour or Japanese producers) tying up with a suitable partner in Korea in the form of a strategic licence manufacturing alliance or royalty / commission based distribution agreement might be the best answer to the key success factors when entering the South Korean market.

For this case, however, IP protection was cited by EU producers as the most critical limitation.

Regarding further background information in respect to opportunities for EU producers in South Korea Part D - 7.3.8 and 7.3.9 (SWOT and Key opportunities) might also be of importance.

#### C.7.4. Japan

#### C.7.4.1. Key data

Population	127 Mn	(40% of USA)
TT consumption / capita	74 USD / a	(98% of USA)
TechTex consumption (roll good and threads)	9.4 Bn USD	(39% of USA)
TechTex imports	3.75 Bn USD	(31% of USA)
% import share	40%	(51% in USA)
TechTex imports from EU	0.38 Bn USD	(17% of USA)
EU share of TechTex imports	10%	(19% in USA)

Source: Gherzi analysis

With 9.4 Bn USD TT consumption Japan is the second largest TT market (behind the USA) of the 4 analysed countries.

Japan is not only one of the highest industrialized countries in the world (GDP / capita more or less equivalent to the USA and above the EU28 average), but also one of the early pioneers in Technical Textiles.

Stemming from a strong upstream industry (Polymer to yarn or nonwoven), with global players like Teijin, Toray, Kuraray, Asahi or Toyobo, Japan has developed a strong Technical Textile sector.

Over the last couple of years Japanese TechTex producers have erected many production sites in China and other non-Japan – Asian countries with whom FTA agreements have been signed (Thailand, Philippines, Korea, Indonesia, etc.). This is including Vietnam in view of an eventual ratification of the TPP agreement. These Japanese owned offshore factories supply either the local market (like in China) or serve as TT commodity production sites for the Japanese market or for North America. The local Japanese TT producers thereby focus their Japanese production sites on R&D intensive high-end Technical Textile products only.

A special characteristic of the Japanese TT market is the very strong and long term funded linkage of all Japanese producers in a given TT value chain (from fibre over roll good and ready-made part to the OEM, industrial end user or consumer good distributor).

These closely inter-linked value chains – communicating essentially only in Japanese language – make it difficult for foreign companies to penetrate the Japanese market, if not present through a local production, JV or exclusive distribution tie-up with a Japanese partner.

This fact in essence explains the relatively weak EU TT export volume to Japan of 0.38 Bn USD in 2014.

Despite the general stagnating economic situation (Japan GDP growth 2016 expected around 0%) TechTex consumption in Japan is growing at a rate of 4-5% p.a. (both in the period 2010-2014 as well as in the expectation for 2014-2020) fuelled by changing life styles and an aging population, growing housing construction and major infrastructure projects, amongst others.

EU exports to Japan (0.38 Bn USD in 2014) are based on a relatively small product basket.

Medical sutures (74 Mn USD), Medical bandages (40 Mn USD) and (chiefly spunlace) carded NW (72 Mn USD) explain 50% of total EU TT exports to Japan.

This indicates towards the fact that there exists a more general issue of how to enter the Japanese market (especially given the SME structure of the EU TT industry) rather than a specific weakness of EU TT producers in view of the Japanese competition in one or another TechTex product domain or technology.

#### C.7.4.2. Key trade and market related trends

Gherzi has interviewed in the course of the EU TechTex mission 10 TT producers / TT customers and 4 institutions in Japan itself and collected the views of 17 EU TT producers and 4 associations / trade organisations (other than the project steering committee members Euratex, EDANA and CIRFS) regarding the Japanese TT market.

Few of the EU producers interviewed by Gherzi in the course of the study had experience with the Japanese market due to

- i. little knowledge of the market itself
- ii. preference of Japanese customers to buy from local suppliers, and
- iii. Japan (other than, e.g., the USA) not being considered a priority market.

As there was so little experience in selling to Japan, the know-how on the EU producers' side about entry barriers into the Japanese market was very small.

From the side of the parties interviewed in Japan, the main entry barrier was seen in the decade long collaboration of Tier 3 / Tier 2 / Tier 1 end-user value chain partners with written and non-written bilaterally agreed norms and standards on how to work together.

Often, effective standards are set by the industry itself (between sellers and users) and subsequently formulated into norms by the Japan Standard Association.

This strong web of inter-relationships of Japanese supply partners – where communication often takes place exclusively in Japanese – is the principle non-tariff barrier for EU TT producers selling on the Japanese market.

Undercutting Japanese TT producers in price does not help either, as many of them (the Japanese TT producers) operate factories in non-Japan low cost Asian locations.

# C.7.4.3. Key Success Factors ('KSF') to profit from market opportunities

With 10% TT import share EU TT suppliers remain relatively weak on the Japanese market (see also SWOT analysis in the main report):

- i. Language barriers (most commercial communication in Japan is in Japanese only) and
- ii. Close knit value chain tie-ups in Japan combined with the strength of the TT industry in a faraway market

... are the main reasons – given the chiefly SME structure of the EU Technical Textile industry.

The relative lack of innovative EU produced fibres and polymers (compared to Japanese benchmark companies like Toray, Teijin or Kuraray) is another success restricting factor mentioned by Japanese interview partners in the course of Gherzi interviews in Japan.

Given these barriers and the small average size of the EU TechTex producer, working through Japanese trading houses like Itochu, Marubeni-Intex, Sumitomo or Sojitz Corporation might be the most promising route to overcome the above mentioned hurdle rates to selling EU made TechTex products in Japan.

Regarding further background information in respect to opportunities for EU producers on the Japanese market Part D - 7.4.8 and 7.4.9 (SWOT and Key opportunities) might also be of importance.

#### C.8. Conclusions and recommendations

In this section, Gherzi has listed the TechTex industry and country-specific recommendations as well as actions and initiatives which could be launched by EU organisations and associations.

## C.8.1. EU TechTex ('TT') producers in general

In 2014 the EU reached a TT production of 29.8 Bn USD. Between 2010 and 2014 TT exports to non-EU countries grew by a CAGR of 5% to 14.2 Bn USD in 2014. Total EU TT export growth in this period (+ 2.66 Bn USD) was generated by:

Yarn type Technical Textiles: - 0.73 Bn USD (loss of world market shares in medical sutures)

• Fabric type Technical Textiles: + 0.72 Bn USD

• Nonwovens: + 2.67 Bn USD

Before this background, the general recommendations for EU TT production as a whole could be summarized as follows:

- i. Working on the improvement of the relative cost competitiveness in products being produced in larger volumes especially in terms of energy consumption.
- ii. As of Gherzi interviews, the key USP ('unique selling proposition') of the EU TT industry is its innovativeness. Maintaining high R&D levels on company level therefor plays an essential role for the future competitiveness of EU TT producers on the world market.
- iii. The TT industry in Europe is marked by its SME ('small and medium enterprise') structure. At the same time, TT products, because of their functional nature, require a good local (in the country of destination) sales structure explaining to customers and end-users the advantages of application specific ('tailored') TT solutions from the EU. EU companies with a complementary product portfolio should 'club together' to jointly attack far away markets like the 4 countries having been analysed in this study.

## C.8.2. Country-specific recommendations

Country-specific recommendations have been identified through an extensive desk analysis and field work carried out by the Gherzi team highlighting promising market opportunities and actions to improve the EU export performance in Technical Textiles in each of the 4 countries.

#### C.8.2.1. USA

Between 2010 and 2014 TT exports of EU producers to the US have been growing by a CAGR of 8% to 2.28 Bn USD. Total EU TT export growth in this period (+ 0.56 Bn USD) was generated by:

Yarn type Technical Textiles: - 0.03 Bn USD (loss of market shares in medical sutures)

Fabric type Technical Textiles: + 0.42 Bn USD

Nonwovens: + 0.20 Bn USD

The USA TT market is very large (No. 2 in the world behind the EU), growing (≥ 5% p.a. 'till 2020) and open to EU producer innovations, new product concepts and technologies.

EU producers already enjoy a strong import position, beating Japan to the No. 1 High End import supplier.

Recommendations from field work in the US and from complementary Gherzi analysis can be summarized as follows:

- i. Exploit market opportunities in above average CAGR (annual growth) sophisticated non wovens ('NW')
  - a. Mobiltech (growth of vehicle production, lighter cars)
  - Filtration (ever stricter legislation and increasing quality control of products by US industry users)
  - c. Geotech (wovens substitution by non wovens)
  - d. Medtech (wipes, gowns & drapes, etc.)
  - e. Digital print fabrics (replacing wovens)
  - f. New NW technologies (split fibres, bi-component 'Bico' fibres, NW/film laminates, etc.)
- ii. Respond to Mobiltech opportunities driven by the US government's 50-52.5 mpg (miles per gallon) year 2025 target
  - a. Low weight auto acoustics
  - b. FRP (fibre reinforced plastics) composite reinforcements and prepregs (preimpregnated fabrics)
  - c. Sophisticated CF (carbon fibre) reinforced composites (like propshafts or structural = load bearing auto components)
  - d. Etc.
- iii. Generally exploit opportunities in above average growth markets in the USA
  - a. Filtration
  - b. Buildtech (sun shading, architectural membranes, roofing, etc.)
  - c. Smart clothing and industrial Protech (protective apparel)
  - d. CF (carbon fibre) Composite reinforcements and prepregs

To overcome the two major entry barriers into the US TT market, namely ...

- Standards / Norms and corresponding resources required for certification
- Request for shorter time to market
- ... EU SME companies need to find ways to overcome the disadvantages of scale, such as e.g. through:

- Customer alliances (possibly coupled with exclusivity agreements) for certification
- US distributor agreements or
- Alternatively, joint (with complementary EU TT companies) local US commercial and logistical set-ups.

Last it is important to be represented in the USA on at least the east as well as on the west coast. A local US American logistical set up is also often very helpful to shorten the 'time to market' in general judged as too long (for the case of EU suppliers) by companies interviewed by Gherzi in the USA.

The local TechTex specific supplier scenario is highlighted by a sample of company profiles included in Appendix 9.8.1.

#### C.8.2.2. Brazil

Between 2010 and 2014 TT exports of EU producers to Brazil have decreased by a CAGR of 10% to 0.22 Bn USD. Change of EU TT export growth in this period (- 0.12 Bn USD) was generated by:

Yarn type Technical Textiles: - 0.15 Bn USD (loss of market shares in medical sutures)

• Fabric type Technical Textiles: + 0.02 Bn USD

• Nonwovens: + 0.01 Bn USD

The Brazil market is relatively small (correlating with low GDP / capita in the country) and more or less closed to imports of those TT products which are also produced locally.

The low growth perspectives 'till 2020, expressed by interviewed parties in Brazil, represent an additional difficulty for EU producers (on top of currency issues in disfavour of EU production).

Growth in demand for high end EU TT product solutions has to be created (e.g. through dedicated road shows or TT fairs in the country) and cannot be expected to materialize by itself as the general knowledge of Brazilian industry federations and end users about high end Technical Textiles outside of – to give an example – Agrotech, Packtech, Hygiene nonwovens and Mobiltech seems very weak.

Before this background the Gherzi recommendation regarding Brazil can be summarized as follows:

- i. As borders in Brazil (without ratification of a future Mercosur-EU Free Trade Agreement) are more or less closed to products which are available from local producers, higher end solutions need to promoted by EU producers (e.g. via application specific road shows) where a local Brazilian production has not been set up as of now and where application specific know-how serves as an entry barrier against local Brazilian producers. Such products could be found in growing markets (in the sophisticated end) for
  - a) Geotech
  - b) Medtech
  - c) Protech (incl. smart clothing)

- d) Filtration
- e) CF (carbon fibre) composites
- ii. A government to government initiative could be launched to profit from the planned high growth in Brazilian agro production for which the EU TT companies could demonstrate their know-how and expertise, such as in the field of crop protection, irrigation or greenhouse farming.

The local TechTex specific supplier scenario is highlighted by a sample of company profiles included in Appendix 9.8.2.

#### C.8.2.3. South Korea

Between 2010 and 2014 TT exports of EU producers to S. Korea have been growing by a CAGR (compound annual growth rate) of 3% to 0.23 Bn USD. Total EU TT export growth in this period (+ 0.03 Bn USD) was generated by:

Yarn type Technical Textiles: - 0.02 Bn USD (loss of market shares in medical sutures)

Fabric type Technical Textiles: + 0.01 Bn USD

Nonwovens: + 0.04 Bn USD

Even though small (compared to the US market), the South Korean TT market is established on a high level of sophistication and thus well suited to EU producer TechTex competences.

The South Korean TT industry is, though, building on a well established, strong local fibre industry and is striving to replace high end TT imports such as coming from Japan.

Despite an existing FTA ('Free Trade Agreement') between the EU and South Korea, the overall EU TT export volume to S. Korea remains small (below 250 Mn USD). Few EU companies have established a sizeable presence on this market as of today:

- The EU TT industry is marked by SMEs focusing regarding non EU export initiatives – primarily on the USA because of market size
- The strong competition from Japan on the South Korean TT market enjoying advantages of regional and cultural proximity

To overcome these issues, the EU industry might chose to...

- Concentrate efforts on the most attractive opportunities, where Europe is a highly respected producer (see S.Korea Opportunity Matrix under § 7.3.9)
- Seek means to overcome the disadvantages of small company size such as
  - Shared commercial structures.
  - Joint commission based distribution agreements with one or a small number of Korean partners
  - Strategic tie-ups like license manufacturing or the like
  - Marketing joint venture
  - o Etc.

Further recommendations for EU TT producers from Gherzi field work in South Korea and from complementary Gherzi analysis can be summarized as follows:

- i. Promote sophisticated nonwovens
  - a) Bi-component fibre or split fibre based NW
  - b) Isotropic (equal NW tissue strength in length and cross direction) spunlace (water-entangled) NW
  - c) Wetlaid (ex pulp fibre not unlike paper making process) NW
  - d) Specialty meltblown NW (produced ex extruded, e.g., PP chips) for, e.g. acoustic insulation
  - e) Flushable NW (like wipes)
  - f) Filtration Non wovens (e.g. liquid filtration, filtration of odours or pollen)
  - g) Etc.
- ii. Exploit areas of EU producer product strength
  - a) Cable components / cords / twines
  - b) Coated fabrics
  - c) Bandages
  - d) Filter fabrics (woven)
  - e) Sophisticated vehicle components (composites, light weight auto acoustics, filters, ...)
  - f) Etc.
- iii. Step into rather untouched (by EU producers) opportunities
  - a) Smart textiles
  - b) Protech solutions (yarns, fabrics, garments)
  - c) Sun shading
  - d) Consumer oriented TT products (artificial leather, hygiene, ...)
- iv. Invest into IP protection (e.g. patents) in order to build up possibilities (and prerequisites) for EU TT producers to engage in local (S. Korean) tie-ups having the aim to accelerate market access in S. Korea

The local TechTex specific supplier scenario is highlighted by a sample of company profiles included in Appendix 9.8.3.

## C.8.2.4. Japan

Between 2010 and 2014 TT exports of EU producers to Japan have stagnated on a level of 0.38 Bn USD. By TT product family the change of exports in this period was generated by:

Yarn type Technical Textiles: - 0.04 Bn USD (loss of market shares in medical sutures)

Fabric type Technical Textiles: ± 0

Nonwovens: + 0.04 Bn USD

Japan is an overall growing (in certain TT applications) but difficult to access (for EU producers) and far away market.

EU producers have a certain strength in sutures (although the position is eroding under the pressure from a.o. US American competition) and in specialty NW (like spunlace).

Three more general actions could be envisaged to improve the EU producer position on the Japanese TT market:

- Collaboration between Japanese upstream (fibres, polymer) industries and EU downstream (fabrics, NW, component) TT producers to profit from each other's strength by creating value added products to be produced in the EU
- ii. EU industry associations could foster B2B linkages between Japanese trading houses (like Marubeni, Itochu, Sumitomo, Sojitz Corp., Fiber Coordination Services, Asahi Kasei Advance Co. or Tsubakimoto) and EU TT producers to facilitate the market access in Japan
- iii. Enhanced collaboration between EU R&D institutes and their Japanese counterparts (such as ITCF or Mikawa Textile Research Center at the Aichi Industrial Science & Technology Comprehensive Center) for the development of environmentally sustainable technologies using advanced fibres and composites, smart textiles, advanced Medtech as well as advanced NW solutions or next generation sutures.

Further recommendations from fieldwork in Japan and from complementary Gherzi analysis can be summarized as follows:

- i. Exploit opportunities from above average growth segments in Japan
  - a) Medtech
  - b) Buildtech
  - c) Geotech
  - d) Smart textiles
  - e) Sophisticated nonwovens
  - f) CF composites or composite reinforcements
- ii. The European (without CIS) man-made fibre production per capita (around 4 kg/a) lags behind Japan (around 5 kg/a not considering fibre production in countries like S. Korea by Japanese owned production sites). The Japanese view is, that Japan as a country is strong in upstream raw materials for Technical Textiles (like polymers and functional fibres) and Europe is strong in downstream, close to the application Technical Textile

products and solutions. Interviewed Japanese corporations and associations therefor suggest Japanese / EU partnerships on company level (e.g. EU fabric producers seeking a collaboration with Japanese fibre producers) to combine the above described complementary TT strengths profile of the two regions.

The local TechTex specific supplier scenario is highlighted by a sample of company profiles included in Appendix 9.8.4.

## C.8.3. EU organisations' and associations' initiatives

The following recommendations summarize initiatives and programmes, which can be initiated at European level. They also highlight some of the most prominent issues faced by EU TT companies confronted to non-EU markets.

- 1. Support the development of next generation sutures (medical sewing threads) to stop the prevailing decline in EU export sales
- 2. Support new or ongoing R&D programs or initiatives for Technical Textile in priority fields like:
  - Medtech (on top of sutures)
  - Geotech
  - · Reduced vehicle weight
  - Filtration
  - · Scientific farming
- 3. Support through dedicated programmes the 'ramp up' of emerging new TechTex products such as:
  - Smart textiles
  - · New Nonwoven technologies
  - Next generation man made functional fibres
  - Next generation composites, composite reinforcements and prepregs
- 4. Specifically regarding Brazil a government to government dialogue could be opened on the use of EU Technical Textiles in scientific farming initiatives in Brazil
- 5. Specifically re Japan enhancement of the cooperation between EU and Japanese R&D centres to open up doors to the Japanese market
- 6. Support energy saving initiatives in the EU TT industry to identify pockets of cost savings enhancing competitiveness of the sector
- 7. On the model of existing initiatives (e.g. INDA/EDANA) ...
  - i. facilitate norms and standards information and
  - ii. harmonize standards and norms between the EU and foreign countries especially with the USA
- 8. Support the accreditation by foreign countries of additional European testing laboratories (for, e.g., ASTM certification carried out in EU labs)
- 9. Improve the transparency of the EU TT sector through:
  - Better statistics tailored to TT by introducing dedicated TT-related HS codes
  - Supplier overviews ("who is supplying what" database) enhancing and strengthening European-based supply chains

- Market overview fostering acquisition of in-depth market knowledge in specific export markets for European TT SMEs
- 10. Promote the adoption of a common Restricted Substance Lists (RSL) at international levels avoiding the proliferation of individual and regional RSL initiatives leading to the emergence of a new type of non-tariff barrier
- 11. Promote the use by EU TT SMEs of proven tools for IP (intellectual property) protection like patents or registered designs.

# **End of Part C:**

**Executive Summary** 

**Start of Part D:** 

Main Report (including Appendix)

# Table of Contents - Part D

D.	MAI	N REPOI	RT	65 -
D.1.		Introdu	ction	65 -
D.1.1.		Objectiv	ves of the mission	65 -
D.1.3	1.1.	Scope c	of the study and definitions	65 -
	D.1.3	1.1.1.	Study scope	65 -
	D.1.1	1.1.2.	Market definition Technical Textiles	65 -
	D.1.1	1.1.3.	Geographic scope	67 -
	D.1.3	1.1.4.	Years, currencies and units considered	67 -
	D.1.3	1.1.4.1.	Years considered	67 -
	D.1.3	1.1.4.2.	Currencies considered	67 -
	D.1.3	1.1.4.3.	Units considered	67 -
	D.1.3	1.1.5.	Stakeholders for this report	68 -
D.1.2	1.2.	Limitati	ons	68 -
D.2.		Researc	ch methodology and project design	70 -
D.3.		Global	and EU market scenario	73 -
D.3.1.		Overvie	w	73 -
D.3.2.		Global <sup>-</sup>	TechTex consumption	75 -
D.3.2	2.1.	Market	assessment	75 -
D.3.2	2.2.	EU Tech	nTex scenario	83 -
	D.3.2	2.2.1.	Quantified analysis	83 -
	D.3.2	2.2.2.	Conclusions	91 -
D.4.		Overvie	w on the regulatory and customs-related TT framework	93 -
D.4.1.		Exchan	ge rates	93 -
D.4.2.		Free Tra	ade Agreements ('FTA')	98 -
D.4.2	2.1.	Prolifer	ation of FTAs	98 -
D.4.2	2.2.	The imp	pact of FTAs in Technical Textiles trade	106 -
D.4.3.		Import	duties and taxes	114 -
D.4.3	3.1.	USA		114 -
D.4.3	3.2.	Brazil		116 -
D.4.3	3.3.	South K	orea	118 -
D.4.3	3.4.	Japan		121 -
D.4.3	3.5.	Summa	ry of import duties	123 -
D.4.4.		Norms	and standards	125 -
D 4 /	<b>1</b> 1	Introdu	ction	- 125 -

D.4.4	.2.	Lack o	f reliable sources of information and support	126 -		
D.4.4	.3.	Prefer	ence given to local norms and standards	126 -		
	D.4.	4.3.1.	USA	126 -		
	D.4.	4.3.2.	Brazil	127 -		
	D.4.	4.3.3.	South Korea	127 -		
	D.4.	4.3.4.	Japan	127 -		
D.4.5.		Indust	ry initiatives	129 -		
D.4.5	.1.	INDA 8	& EDANA initiatives	129 -		
D.4.5	.2.	Standa	ardization portal for composites	130 -		
D.4.5	.3.	Prohib	itive costs of getting products tested and certified in foreign countries	130 -		
D.5.		Cost a	nalysis and segmentation	132 -		
D.5.1.		Theore	etical model	132 -		
D.5.2.		Factor	costs	133 -		
D.5.3.		Segme	entation	135 -		
D.5.4.		Model	limitation	137 -		
D.5.5.		Other	factors	138 -		
D.6.		Markets and opportunities in the 4 countries 141 -				
D.6.1.		USA		141 -		
D.6.1	.1.	Key da	ita USA	141 -		
D.6.1	.2.	Introd	uction	141 -		
D.6.1	.3.	Fibre p	production	142 -		
D.6.1	.4.	TechTe	ex market USA	143 -		
D.6.1	.5.	Supply	scenario USA	145 -		
D.6.1	.6.	USA K	ey trends	154 -		
	D.6.	1.6.1.	Quantitative US export performance of the EU in shortlisted product	s 154 -		
	D.6.	1.6.2.	Conclusions from shortlisted product analysis	155 -		
D.6.1	.7.	Field v	vork insight USA	156 -		
	D.6.	1.7.1.	Key trade and market related trends	156 -		
	D.6.	1.7.2.	US market attractiveness	157 -		
	D.6.	1.7.3.	Key success factors to profit from market opportunities	159 -		
D.6.1	.8.	USA: S	WOT	160 -		
D.6.1	.9.	USA: S	ummary and key opportunities	161 -		
	D.6.	1.9.1.	Summary	161 -		
	D.6.	1.9.2.	Key opportunities	162 -		
D.6.1	.10.	USA: C	Conclusions	163 -		
D 6 2		Brazil		- 164 -		

	D.6.2.	1.	Key da	ita Brazil	164 -
	D.6.2.	2.	Introd	uction	164 -
	D.6.2.	3.	Fibre p	production	165 -
	D.6.2.	4.	TechTe	ex market Brazil	166 -
	D.6.2.	5.	Supply	scenario Brazil	168 -
	D.6.2.	6.	Brazil I	Key trends	176 -
		D.6.	2.6.1.	Quantitative Brazil export performance of the EU in shortlisted prod	lucts - 176
		D.6.	2.6.2.	Conclusions from shortlisted product analysis	177 -
	D.6.2.	7.	Field v	vork insight Brazil	178 -
		D.6.	2.7.1.	Key trade and market related trends	178 -
		D.6.	2.7.2.	Brazil market attractiveness	178 -
		D.6.	2.7.3.	Key success factors to profit from market opportunities	179 -
	D.6.2.	8.	Brazil:	SWOT	180 -
	D.6.2.	9.	Brazil:	Summary and key opportunities	181 -
		D.6.	2.9.1.	Summary	181 -
		D.6.	2.9.2.	Key opportunities	182 -
	D.6.2.	10.	Brazil:	Conclusions	183 -
D.	6.3.		South	Korea	184 -
	D.6.3.	1.	Key da	ita South Korea	184 -
	D.6.3.	2.	Introd	uction	184 -
	D.6.3.	3.	Fibre p	production	185 -
	D.6.3.	4.	TechTe	ex market South Korea	186 -
	D.6.3.	5.	Supply	scenario South Korea	188 -
	D.6.3.	6.	South	Korea Key trends	197 -
	D.6		3.6.1.	Quantitative South Krea export performance of the EU in shortlisted - 197 -	l products
		D.6.	3.6.2.	Conclusions from shortlisted product analysis	198 -
	D.6.3.	7.	Field v	vork insight South Korea	200 -
		D.6.	3.7.1.	Key trade and market related trends	200 -
		D.6.	3.7.2.	South Korea market attractiveness	201 -
		D.6.	3.7.3.	Key success factors to profit from market opportunities	202 -
	D.6.3.	8.	South	Korea: SWOT	204 -
	D.6.3.	9.	South	Korea: Summary and key opportunities	205 -
	D.6.		3.9.1.	Summary	205 -
				Key opportunities	

	D.6.3.10.	South	Korea: Conclusions 206 -	-
D.	6.4.	Japan	207 -	-
	D.6.4.1.	Key da	ata Japan 207 -	-
	D.6.4.2.	Introd	uction 207 -	-
	D.6.4.3.	Fibre p	oroduction 208 -	-
	D.6.4.4.	TechT	ex market Japan 209 -	-
	D.6.4.5.	Supply	y scenario Japan 211 -	-
	D.6.4.6.	Japan	Key trends 220 -	-
	D.6. -	4.6.1.	Quantitative Japan export performance of the EU in shortlisted products - 220	)
	D.6.	4.6.2.	Conclusions from shortlisted product analysis 221 -	-
	D.6.4.7.	Field v	vork insight Japan 222 -	-
	D.6.	4.7.1.	Key trade and market related trends 222 -	-
D.6.4		4.7.2.	Japan market attractiveness 223 -	-
	D.6.	4.7.3.	Key success factors to profit from market opportunities 224 -	-
	D.6.4.8.	Japan:	: SWOT 225 -	-
	D.6.4.9.	Japan:	: Summary and key opportunities 226 -	-
	D.6.	4.9.1.	Summary 226 -	-
	D.6.	4.9.2.	Key opportunities 226 -	-
	D.6.4.10.	Japan:	: Conclusions 227 -	-
D.	7.	Conclu	usions and recommendations from the study 229 -	-
D.	7.1.	EU Te	chTex producers in general 229 -	-
D.	7.2.	EU Te	chTex producers regarding the 4 countries 230 -	-
	D.7.2.1.	Regard	ding the USA 230 -	-
	D.7.2.2.	Regard	ding Brazil 231 -	-
	D.7.2.3.	Regard	ding South Korea 232 -	-
	D.7.2.4.	Regard	ding Japan 233 -	-
	D.7.2.5.	Regard	ding support by EU organisations and associations 234 -	-
D.8.		Apper	ndices 240 -	-

# **Start of Part D.0:**

List of Figures and Tables,
Abbreviations and Acronyms,
Sources and other Background Data on this Report

# List of Figures and Tables

Figure 1: 12 TechTex Product Families	66 -
Figure 2: Analysis - Step 1: Est. consumption & production in the 4 countries	70 -
Figure 3: Analysis - Step 2: EU export performance & import shares in the 4 coun	tries)
	71 -
Figure 4: Analysis - Step 3: Specific market conditions in the 4 countries	71 -
Figure 5: Share of EU28 and the 4 countries in the 2014 world TechTex market	73 -
Figure 6: 2014 TechTex world market (volume and value) on roll good price level.	76 -
Figure 7: Global TechTex consumption by segment and fibres (back-up)	77 -
Figure 8: Development 2010-2014 of global TT consumption	
Figure 9: TechTex world market split 2014 (MMT ≜ Mn t)	
Figure 10: World TechTex market growth	
Figure 11: 2014 World consumption by TT segment	
Figure 12: EU TechTex consumption shares by segment	
Figure 13: EU TechTex production 2010-2014	
Figure 14: EU yarn type production 2010-2014	
Figure 15: EU fabric type production 2010-2014	
Figure 16: EU Nonwoven production 2010-2014	
Figure 17: EU28 market and supply scenario 2014	
Figure 18: EU TechTex scenario in KT 2014	
Figure 19: EU TechTex scenario in Mn USD 2014	
Figure 20: EU TechTex scenario in Mn USD 2014	
Figure 21: Historical exchange rates: EUR vs US\$	
Figure 22: Historical exchange rates: EUR vs BRL	
Figure 23: Historical exchange rates: EUR vs KRW	
Figure 24: Historical exchange rates: EUR vs Yen	
Figure 25: Year of FTAs coming into force	
Figure 26: FTA USA	
Figure 27: FTA Brazil	
Figure 28: FTA Korea	
Figure 29: FTA Japan	
Figure 30: FTA country share in total TT imports – USA	
Figure 31: FTA country share in total TT imports – Brazil	
Figure 32: FTA country share in total TT imports – Korea	
Figure 33: FTA country share in total TT imports – Rorea	
Figure 34: Example: HS 300610 / Special requirements to the USA	
Figure 35: Example: HS 300610 to Brazil	
Figure 36: Example: HS 300610 to Korea	
Figure 37: Example: HS 300610 / Special requirements to Japan	
Figure 38: Import duties and taxes (examples)	
Figure 39: Electricity prices for medium size industries per country (2014)	
Figure 40: Indexes of hourly compensation costs in manufacturing	
Figure 41: 4 TechTex products	
Figure 42: Key Data USA (2014)	
Figure 43: USA Fibre Production 2014	
Figure 44: USA specialty TechTex fibres production	
Figure 45: US TechTex consumption 2014	
I INDIE 70. UU IEUIIIEA UUIISUIIIUIII ZUIY	- 143 -

Figure 46: US TechTex market growth	- 144 -
Figure 47: US TechTex market assumed development 2014-2020 by application	
Figure 48: US TechTex market and supply scenario 2014	
Figure 49: USA Textile imports (TechTex and traditional products)	
Figure 50: US TechTex market scenario 2014	
Figure 51: US Nonwoven imports 2014	- 148 -
Figure 52: US Fabric type TechTex imports 2014	- 149 -
Figure 53: US Yarn type TechTex imports 2014	
Figure 54: US Industrial yarn * imports 2014	- 151 -
Figure 55: US TechTex made-ups imports 2014	
Figure 56: USA: EU import position in Technical Textiles	- 153 -
Figure 57: The short list of products - USA	- 154 -
Figure 58: The short list of products – USA (con t'd)	- 155 -
Figure 59: USA SWOT for EU TT producers	- 160 -
Figure 60: EU import share 2014	- 161 -
Figure 61: Gherzi strategic priority matrix USA	- 163 -
Figure 62: Key Data Brazil (2014)	
Figure 63: Brazil import share 2014	- 165 -
Figure 64: Brazil Fibre Production 2014	- 165 -
Figure 65: Brazil TechTex consumption 2014	- 166 -
Figure 66: Brazil TechTex market growth	- 167 -
Figure 67: Brazil market and supply scenario 2014	- 168 -
Figure 68: Brazil Textile imports 2010 / 2014	- 169 -
Figure 69: Brazil TechTex market scenario 2014	- 169 -
Figure 70: Brazil Nonwoven imports 2014	
Figure 71: Brazil Fabric type TechTex imports 2014	- 171 -
Figure 72: Brazil Yarn type TechTex imports 2014	
Figure 73: Brazil Industrial yarn * type imports 2014	
Figure 74: Brazil TechTex made-ups imports 2014	
Figure 75: Brazil: EU import position in Technical Textiles	
Figure 76: The short list of products - Brazil (1/2)	- 176 -
Figure 77: The short list of products - Brazil (2/2)	
Figure 78: Growth applications Brazil	
Figure 79: Brazil - SWOT	
Figure 80: Brazil import share 2014	
Figure 81: Gherzi strategic priority matrix Brazil	
Figure 82: Key Data South Korea (2014)	
Figure 83: South Korea Fibre Production 2014	
Figure 84: South Korea specialty TechTex fibres production	
Figure 85: South Korea TechTex consumption 2014	
Figure 86: South Korea TechTex market growth	
Figure 87: South Korea TechTex market 2014-2020 by application	
Figure 88: South Korea market and supply scenario 2014	
Figure 89: South Korea Textile imports (TechTex and traditional products)	
Figure 90: South Korea TechTex market scenario 2014	
Figure 91: South Korea Nonwoven imports 2014	
Figure 92: South Korea Fabric type TechTex imports 2014	
Figure 93: South Korea Yarn type TechTex imports 2014	- 193 -

Figure 94: South Korea Industrial yarn type imports 2014	194 -
Figure 95: South Korea TechTex made-ups imports 2014	195 -
Figure 96: South Korea: EU import position in Technical Textiles	196 -
Figure 97: The short list of products - Korea (1/2)	
Figure 98: The short list of products - Korea (2/2)	198 -
Figure 99: South Korea – SWOT of EU producers	
Figure 100: Gherzi strategic priority matrix South Korea	
Figure 101: Key Data Japan (2014)	
Figure 102: Japan Fibre Production 2014	
Figure 103: Japan specialty TechTex fibres production 2014	
Figure 104: Japanese TechTex consumption 2014	
Figure 105: Japan TechTex market growth	
Figure 106: Japan TechTex market development 2014-2020 by application	
Figure 107: Japan 2014 market and supply scenario	
Figure 108: Japan Textile imports (TechTex and traditional products) 2014	
Figure 109: Japan TechTex market scenario 2014	
Figure 110: Japan Nonwoven imports 2014	
Figure 111: Japan Fabric type TechTex imports 2014	
Figure 112: Japan Yarn type TechTex imports 2014	
Figure 113: Japan Industrial yarn type imports 2014	
Figure 114: Japan TechTex made-ups imports 2014	
Figure 115: Japan: EU import position in Technical Textiles	
Figure 116: The short list of products - Japan (1/2)	
Figure 117: The short list of products - Japan (2/2)	
Figure 118: Japan – SWOT for EU TT producers	
Figure 119: Japan – Gherzi strategic priority matrix	
Figure 120: Market segment split 2014 by product i	
Figure 121: Market segment split 2014 by product ii	
Figure 122: Market segment split 2014 by product iii	
Figure 123: Market segment split 2014 by product iv	
Figure 124: Market segment split 2014 by product iFigure 125: Market segment split 2014 by product ii	
Figure 126: Market segment split 2014 by product ii	
Figure 127: Market segment split 2014 by product inFigure 127: Market segment split 2014 by product iv	
Figure 128: EU TechTex market: Fibre Break-up i	
Figure 129: EU TechTex market: Fibre Break-up ii	
Figure 130: EU Techtex market: Segment-wise	
Figure 131: EU Yarn type TechTex trade (key countries) – without DU products.	
Figure 132: EU Yarn trade 2000-2014 – without DU products	
Figure 133: EU Fabric type TechTex trade 2000-2014 – without DU products	
Figure 134: EU Key Fabric trade 2010-2014 – without DU products	
Figure 135: EU Key Fabric trade 2010-2014 – without DU products	
Figure 136: EU Nonwoven type TechTex trade (Key countries) 2010-2014	
Figure 137: EU Nonwoven trade 2010-2014	
Figure 138: EU Industrial yarn type TechTex trade 2010-2014	
Figure 139: EU Key products of Industrial yarn trade	
Figure 140: EU Made-ups type TechTex trade	
Figure 141: EU imports from World	

Figure 142: EU exports to World	- 265 -
Figure 143: US TechTex market: Segment-wise	
Figure 144: US TechTex market: Fibre breakup i	
Figure 145: US TechTex market: Fibre breakup ii	
Figure 146: USA Yarn type TechTex trade 2000-2014 – without DU products	
Figure 147: USA Yarn import details 2000-2014 – without DU products	
Figure 148: USA Nonwoven type TechTex trade 2000-2014	
Figure 149: USA Nonwoven import details 2000-2014	
Figure 150: USA Fabric type TechTex trade 2000-2014 – without DU products	
Figure 151: USA fabric import details 2014	
Figure 152: USA fabric import details 2014 (cont'd)	
Figure 153: USA fabric import details 2014 (cont'd)	
Figure 154: USA fabric import details 2014 (cont'd)	
Figure 155: USA Industrial yarn type TechTex trade 2000-2014	
Figure 156: USA Industrial Yarn import details 2014	
Figure 157: USA Made-up type TechTex trade 2000-2014	
Figure 158: USA Made-ups import details 2014	
Figure 159: Brazil Techtex market: Segment-wise	
Figure 160: Brazil Techtex market: Segment-wise (cont'd)	- 284 -
Figure 161: Brazil Techtex market: Fibre break-up i	- 285 -
Figure 162: Brazil Techtex market: Fibre break-up ii	- 286 -
Figure 163: Brazil yarn type TechTex trade 2000-2014 – without DU products	
Figure 164: Brazil yarn type TechTex trade 2000-2014 (cont'd)	- 287 -
Figure 165: Brazil key yarn type TT Imports 2014	- 288 -
Figure 166: Brazil Nonwoven type TechTex trade 2000-2014	- 289 -
Figure 167: Brazil Nonwoven type TechTex trade 2000-2014 (cont'd)	- 289 -
Figure 168: Brazil key Nonwoven type imports 2014	- 290 -
Figure 169: Brazil Fabric type TechTex trade 2000-2014 – without DU products	- 291 -
Figure 170: Brazil Fabric type TechTex trade 2000-2014 (cont'd)	- 291 -
Figure 171: Brazil key Fabric type TT imports 2014	- 292 -
Figure 172: Brazil key Fabric type TT imports 2014 (cont'd)	- 293 -
Figure 173: Brazil key Fabric type TT imports 2014 (cont'd)	- 294 -
Figure 174: Brazil key Fabric type TT imports 2014 (cont'd)	- 295 -
Figure 175: Brazil Industrial yarn type TechTex trade 2000-2014	- 296 -
Figure 176: Brazil Industrial yarn type TechTex trade 2000-2014 (cont'd)	- 296 -
Figure 177: Brazil Industrial yarn (TT raw material) imports 2014	- 297 -
Figure 178: Brazil TT Made-ups trade 2000-2014	
Figure 179: Brazil TT Made-ups trade 2000-2014 (cont'd)	- 298 -
Figure 180: Brazil TT Made-ups import 2014	
Figure 181: South Korea TechTex market: Segment-wise	
Figure 182: South Korea TechTex market: Segment-wise (cont'd)	
Figure 183: South Korea TechTex market: Fibre break-up i	
Figure 184: South Korea TechTex market: Fibre break-up ii	
Figure 185: South Korea Yarn type TechTex trade 2000-2014 – without DU produc	cts
304 -	
Figure 186: South Korea Yarn type TechTex trade 2000-2014 (cont'd)	
Figure 187: South Korea Yarn type import 2014	
Figure 188: South Korea Nonwoven type TechTex trade 2000-2014	- 306 -

Figure 189: South Korea Nonwoven type TechTex trade 2000-2014 (cont'd)	- 306 -
Figure 190: South Korea Nonwoven import 2014	- 307 -
Figure 191: South Korea Fabric type TechTex trade 2000-2014 – without DU produ	ıcts
308 -	
Figure 192: South Korea Fabric type TechTex trade 2000-2014 (cont'd)	- 308 -
Figure 193: South Korea Fabric type import 2014	- 309 -
Figure 194: South Korea TechTex Fabric import 2014 (cont'd)	- 310 -
Figure 195: South Korea TechTex Fabric import 2014 (cont'd)	- 311 -
Figure 196: South Korea TechTex Fabric import 2014 (cont'd)	- 312 -
Figure 197: South Korea Industrial yarn type TechTex trade 2000-2014	- 313 -
Figure 198: South Korea Industrial yarn type TechTex trade 2000-2014 (cont'd)	- 313 -
Figure 199: South Korea Industrial yarn import 2014	- 314 -
Figure 200: South Korea Made-up type TechTex trade 2000-2014	- 315 -
Figure 201: South Korea Made-up type TechTex trade 2000-2014 (cont'd)	- 315 -
Figure 202: South Korea Made-ups import 2014	- 316 -
Figure 203: Japan TechTex market: Segment-wise	
Figure 204: Japan TechTex market: Segment-wise (cont'd)	- 318 -
Figure 205: Japan TechTex market: Segment-wise i	- 319 -
Figure 206: Japan TechTex market: Fibre break-up ii	- 320 -
Figure 207: Japan Yarn type TechTex trade 2000-2014 – without DU products	- 321 -
Figure 208: Japan suture import 2010-2014	- 322 -
Figure 209: Japan Yarn type TT import 2010-2014 (cont'd)	- 323 -
Figure 210: Japan Nonwoven type TechTex trade 2000-2014	- 324 -
Figure 211: Japan Nonwoven type TechTex trade 2000-2014 (cont'd)	
Figure 212: Japan – Key Nonwovens product import 2014	- 325 -
Figure 213: Japan Fabric type TechTex trade 2000-2014 – without DU products	- 326 -
Figure 214: Japan Fabric type TechTex trade 2000-2014	
Figure 215: Japan – Key Fabric type import 2014	
Figure 216: Japan – Key Fabric type import 2014 (cont'd)	
Figure 217: Japan – Key Fabric type import 2014 (cont'd)	
Figure 218: Japan – Key Fabric type import 2014 (cont'd)	
Figure 219: Japan Industrial yarn type TechTex trade 2000-2014	
Figure 220: Japan Industrial yarn type TechTex trade 2000-2014 (cont'd)	
Figure 221: Japan Industrial yarn import 2014	
Figure 222: Japan Made-ups type TechTex trade 2000-2014	
Figure 223: Japan Made-ups type TechTex trade 2000-2014 (cont'd)	
Figure 224: Japan Made-ups import 2014	- 334 -

List of Abbreviations and Acronyms

AATCC Association of Textile, Apparel & materials Professionals

ABNT Associação Brasileira de Normas Técnicas (Brazilian National Standards

Organisation)

AIRLAID NW Technology (pneumatic web formation)

A.M. above mentioned

ANFA Asian Non Woven Association

A.O. amongst others

ASTM American Society of Testing and Materials

BICO Bi-component fibres such as e.g. PE (Polyethylene) / PET (Polyester)

BN Billion (000 Million) – also 'Bn'

CAFTA Central American Free Trade Agreement

CAGR Compound Annual Growth Rate (in % p.a.)

CCEV Carbon Composites e.V.

CF Carbon Fibre

CIRFS European Man-made Fibres Association

CM Centimetre

CN Combined Nomenclature

COMPOSITES also called FRP

COMTRADE Import / Export statistics source

CONT'D continued

DECITEX gram per 10,000 m (yarn count)

DIN Deutsche Industrie Norm (German standards organization)

DRYLAID NW technology based on carded staple fibres

DU Dual use (that is products such as cotton fabrics which can go into TT as

well as non-TT, e.g., fashion applications)

EASME Executive Agency for Small and Medium-sized Enterprises

EDANA European Non Woven Association

EN European Norm

EST. estimated

ETFE Ethylen-TetraFluorEthylen

EU Europe (EU 28 = twenty eight member states)

FDA Food and Drugs Administration (USA)

FIBC Flexible Intermediate Bulk Container

List of Abbreviations and Acronyms (continued)

FILAMENT Continuous strand of man-made fibres

4 COUNTRIES (Brazil, Japan, South Korea, USA)

FOREX Foreign Exchange rates

FR Flame retardant

FRP Fibre Reinforced Plastic (also called composites)

FTA Free Trade Agreement
FWC Foul Weather Clothing

GDP Gross Domestic Product

GREIGE Untreated (e.g. not coated) mainly woven raw fabric ('off the loom')

GSM Grams per Square Meter

GTO Gherzi Textil Organisation

HS Harmonized System

HT High Tenacity

INDA American Non Woven Association

IP Intellectual Property

ISO International Organization for Standardization

ISOTROPIC NW Strength of the NW roll good in machine and cross direction close to 1:1

JACA Japan Air Cleaning Association

JAMA Japan Auto Manufacturers Association

JIS Japan Industrial Standard

JV Joint Venture

K 000

KG Kilogram

KOREA Identical to South Korea or S. Korea

KSF Key Success Factors

KT 000 tons

LWCB Light Weight Conveyor Belts

M Million (also Mn)

M&A Mergers & Acquisitions

MMF Man-Made Fibres

MELTBLOWN Nonwoven technology (ex extruded, e.g., PP chips)

MMT Million Metric Tons (also Mn t)

MN Million (also M)

List of Abbreviations and Acronyms (continued)

MPG Miles per gallon (fuel efficiency)

MRG Mechanical rubber goods (rubberized fabrics for e.g. conveyor belts)

MRSL Manufactured Restricted Substance List (see also RSL)

Mn USD / M USD Million US Dollar

N.A. Not available

NAFTA North American Free Trade Agreement

NES Not Elsewhere Specified

NESOI Not Elsewhere Specified or Included

NFPA National Fire Protection Association (USA)

NO. Number

NW Nonwovens

OEM Original Equipment Manufacturer

ON PAR Equal to average

P.A. per annum
PA Polyamide

PAC also called PAN or acrylics

PAN Acrylic (also PAC)

PC Polyester / Cotton (blend)

PCB Printed circuit boards (being based on epoxy coated glass filament

wovens)

PE Polyethylene

PES Polyester (also 'PET')

PLA Poly Lactide

PP Polypropylene

PPE Personal protective equipment

PPS Polyphenylene Sulphite

PREPREG FRP reinforcement fabric pre-impregnated with plastic resin

PRODCOM EU production statistics source

PROTECH Protective Apparel (FR, ballistic, cut & slash, FWC, etc.)

PVC Polyvinylchloride
QC Quality Control

R&D Research & Development

REBAR Reinforcement bar (also reinforcing steel)

List of Abbreviations and Acronyms (continued)

ROVINGS Continuous glass yarns above about 3 k (3k = 3000 individual filaments

per end). Below 3 k glass yarn being called 'multifilament glass yarn'

ROW Rest Of World

RSL Restricted Substance List (see also MRSL)

SDO Standard Developing Organisation

SEAOC Structural Engineering Association of California (USA)

SME Small and Medium size Enterprise

SMS Multilayer (spunmelt / meltblown / spunmelt) nonwoven being produced

ex thermoplastic - e.g. PP - granulate)

SPUNLACE Hydro-entangled (nonwoven web bonding through felting with water jets) /

carded (web formation) non wovens (e.g. for wipes)

SPUNMELT Also called 'spunbond'. Non wovens produced by extruding thermoplastic

polymer (chips such as PP) through a set of spinnerets

SUTURE Medical device (needle plus thread) to stitch together tissue in open

wounds

SWOT Strengths and Weaknesses, Opportunities and Threats

TARP Tarpaulin

TECHTEX Technical Textiles

TEX Gram per km (yarn count)

TIER 1/2/3 Example – Automotive seating: OEM = car manufacturer,

Tier 1 = seat manufacturer, Tier 2 = seat fabric manufacturer, Tier 3 =

Polyester yarn producer

TOR Terms of Reference

TPA Trade Preference Programme

TPP Trans Pacific Partnership Agreement

TT Technical Textiles

UHMW-PE Ultra High Molecular Weight Polyethylene (Extra High Tenacity yarn,

branded 'Spectra' or 'Dynema')

USD or US\$ US Dollar (MUSD / Mn USD = Million USD)

USDA US Department of Agriculture

VS. versus

WET LAID NW Technology (hydraulic web formation – ex 'pulp')

WOVENS Woven fabric

ZDHC Zero Discharge of Hazardous Chemicals (in the textile supply chain)

## List of Sources (apart from Gherzi interviews)

- A) International Trade Administration (USA 2015):
   '2015 Top Markets Report Technical Textiles and Apparel (A market assessment tool for US exporters)' published report
- B) EDANA and INDA (B/USA 2015):'Worldwide Outlook for the Nonwovens Industry 2014 2020'
- C) OANDA (currency converter): https://www.oanda.com/lang/de/currency/converter/
- D) Eurostat (Comext/Prodcom)
- E) UN (Comtrade) also called UN Comtrade or Comtrade
- F) World Bank (GDP, population, etc.)
- G) WTO (World Trade Organisation)
- H) IRS.gov (internal revenue service USA) published data
- I) Anfa (Asian Nonwoven Fabric Association) published reports
- J) OICA (International Organisation of Motor Vehicle Manufacturers) for vehicle production data (Mobiltech) published data
- K) Gherzi market & association interviews in Europe, USA, Brazil, S. Korea and Japan
- L) Japan Chemical Fiber Association (JCFA) published reports
- M) ANNA (All Nippon Nonwoven Association) published data
- N) JAMA (Japan Auto Manufacturers Association) published data
- O) Ministério di Agricultura, Brazil (grain production plan Brazil 2025) published data
- P) Gherzi internal data bank on world fibre production and global Technical Textile production

## List of Gherzi Interviews carried out in the course of the study

## **EU Institutions and Organisations**

- European Safety Federation
   <a href="http://www.european-safety-federation.org">http://www.european-safety-federation.org</a>
   Industry organisation (B)
- IVGT <u>www.ivgt.de</u> Industry organisation (D)

- Techtera <u>www.techtera.org</u> Industry organisation (F)
- Texclubtec
   <u>http://www.texclubtec.it</u>

   Industry organisation (I)

## EU TechTex producers and customers

- Antex Anglès Textil S.A.
   www.antex.net
   TechTex fibre producer (E)
- Chomarat Group <u>www.chomarat.com</u>
   TechTex producer (F)
- Diatex <u>www.diatex.com</u> TechTex producer (F)
- Engtex AB
   <u>www.engtex.com</u>

   TechTex producer (S)
- Ernstmeier

   www.ernstmeier.de

   TechTex producer (D)
- Filix sas
   www.filix.fr

   TechTex yarn producer (F)
- Huesker
   <u>www.huesker.de</u>
   TechTex producer (D)
- Kermel
   <u>www.kermel.com</u>

   TechTex fibre producer (F)
- Lanex a.s. <u>www.lanex.cz</u> TechTex producer (CZ)

- MA.RE. S.p.a.
   www.marespa.it
   TechTex fibre producer (I)
- Massebeuf Textiles
   <u>www.massebeuf-ft.com</u>

   Technical yarn producer (F)
- Rex Industrie-Produkte

   www.rex-industrie-produkte.de

   TechTex producer (D)
- Shoutteten & Froidure
   www.schoutt.com
   Narrow fabric producer (F)
- Synteen & Lückenhaus GmbH <u>www.synteen.de</u>
   TechTex producer (D)
- Texinov <u>www.texinov.fr</u> TechTex producer (F)
- TRP-Charvet

   www.trp-charvet.com

   TechTex producer (F)
- Vetex nv <u>www.vetex.eu</u> Narrow fabric producer (NL)

List of Gherzi Interviews carried out in the course of the study (cont'd) USA Institutions, Organisations, TechTex producers and customers

#### A) Institutions

- IFAI-USIFI <u>www.ifai.com</u> Industry organisation
- INDA <u>www.inda.org</u> Industry organisation

 US Department of Commerce <u>www.trade.gov</u>
 Trade organisation

- Amatex <u>www.amatex.com</u> TechTex producer
- Anchor Industries, Inc. <u>www.anchorinc.com</u>
   TechTex customer
- Asten Johnson

   www.astenjohnson.com

   TechTex producer
- BAST Fibers, Ilc <u>www.bastfibersIlc.com</u> TechTex distributor
- Cooley Group, Inc. <u>www.cooleygroup.com</u> coated fabric producer
- Composites One <u>www.compositesone.com</u>
   TechTex customer (distributor)

- DuraFiber (Sun Capital)
   www.durafibertech.com

   Fibre and woven TechTex fabric producer
- Herculite, Inc. <u>www.herculite.com</u> TechTex producer
- Highland Industries

   www.highlandindustries.com

   TechTex producer
- Norfab <u>www.norfab.com</u>
   TechTex producer
- Patrick Yarns
   <u>www.patrickyarnmills.com</u>

   TechTex producer
- Pharr Yarns

   www.pharryarns.com

   TechTex yarn producer

List of Gherzi Interviews carried out in the course of the study (cont'd)
Brazil Institutions, Organisations, TechTex producers and customers

#### A) Institutions

- ABINT / ABIT
   <u>www.abint.org.br</u> / <u>www.abit.org.br</u>
   Industry organisation
- AFIPOL <u>www.afipol.org.br</u> Industry organisation

- Berry Group (Providencia) <u>www.providencia.com.br</u> NW producer
- Duci (Dupont Cipatex) <u>www.cipatex.com.br</u> NW producer
- Fitesa (Evora Group) <u>www.fitesa.com/pt-br</u> NW producer
- Ledervin
   <u>www.levervin.com.br</u>
   NW and TechTex producer
- Lord Plastics
   <u>www.lordbrasil.com</u>
   TechTex producer
- Macaferri do Brasil
   <u>www.maccaferri.com.br</u>

   TechTex producer
- M&G Fibras Brasil <u>www.mgifibrasbrasil.com.br</u> Fibre producer
- Nova Plast <u>www.novaplast.com.br</u> TechTex producer

- OBER
  www.ober.com.br
  NW producer
- Owens Corning <u>www.ownescorning.com</u>
   Fibre and TechTex producer
- Propex <u>www.propexglobal.com</u>
   TechTex producer
- Rhodia (Solvay Group) <u>www.emanafiber.com</u> Fibre producer
- Saertex <u>www.saertex.com</u> TechTex producer
- Scavone <u>www.fabrilscavone.combr</u> TechTex producer
- Tec Textil
   <u>www.tectextil.com.br</u>

   TechTex producer

List of Gherzi Interviews carried out in the course of the study (cont'd)

# South Korea Institutions, Organisations, TechTex producers and customers

#### A) Institutions

- European Chamber of Commerce in Korea <u>www.ecck.eu</u> Industry organisation
- KOFOTI <u>www.kofoti.or.kr</u> Industry organisation

- KTTA <u>www.ktta.or.kr</u> Industry organisation
- Korea Safety Equipment Association <u>www.bohogoo.or.kr</u> Industry association

- Baiksan Lintex
   <u>www.baiksanlintex.com</u>
   NW producer
- Bristex <u>www.bristex.com</u> Weaver
- Clean & Science <u>www.cands.co.kr</u>
   NW producer
- Duksung Inco <u>www.duksunginco.com</u>
   TechTex customer
- Gumho NT
   <u>www.gumho-nt.com</u>
   NW producer
- Kolon Fashion Materials <u>www.kolonfm.com</u> Fibre & fabric producer
- Kolon Global <u>www.kolonindustries.com</u> Trading group
- Kolon Industries

   www.kolonindustries.com

   TechTex weaver

- KTTA
   <u>www.ktta.or.kr</u>
   Industry organisation
- Nature International <u>www.natureincorp.com</u> Trading company
- Saenal Techtex <u>www.saenal.com</u> TechTex weaver
- Korea Safety Equipment Association <u>www.bohogoo.or.kr</u> Industry association
- Sambo Co. Ltd. <u>www.sambokorea.co.kr</u> NW producer
- Samil Spinning Co. Ltd. <u>www.samil-sp.co.kr</u> Yarn spinner
- Samyang Corp.
   www.samyangcorp.com
   filament and NW producer

List of Gherzi Interviews carried out in the course of the study (cont'd)

Japan Institutions, Organisations, TechTex producers and customers

#### A) Institutions

- ANNA All Nippon Nonwovens Association <u>www.anna-gr.jp</u> Industra association
- JCFA Japan Chemical Fibres Association <u>www.jcfa.gr.jp</u>
   Industry association
- Japan Standards Association <u>www.jsa.or.jp</u>
   Industrial standards organization
- ITCF
   <u>www.fklab.fukui.jp</u>
   R&D in Techical Textiles

- Almundo Associates <u>www.almundo.co.jp</u> TechTex customer
- Jakob Müller Nippon <u>www.mueller-frick.com</u> OEM for TechTex industry
- Japan Vilene Co. <u>www.vilene.co.jp</u>

   NW manufacturer
- KB Seiren Ltd. <u>www.kbseiren.com</u> Industrial yarn producer
- Marubeni Intex Co. <u>www.marubeni-intex.co.jp</u>.

   NW Trading company

- Teijin Group
   <u>www.teijin.co.jp</u>
   Advanced fibres and composites producer
- Toray Industries Inc. <u>www.toray.co.jp</u> Industrial yarn producer
- Toyota Boshoku

   www.toyota-boshoku.com

   Automotive customer
- Tsuchiya Tsco Co. Ltd.
   <u>www.tsuchiya-group.co.jp</u>
  Indutech producer
- Yonezawa Bussan Co.
   www.yonezawa-bussan.jp
   Hometech producer

## End of Part D.0:

List of Figures and Tables,
Abbreviations and Acronyms,
Sources and other Background Data on this Report

**Start of Part D.1 (Main Report):** 

Introduction

#### D. MAIN REPORT

#### D.1. Introduction

## D.1.1. Objectives of the mission

The main objectives of the mission are to

- improve the knowledge of EU Technical Textiles business opportunities in the 4 markets Brazil, Japan, South Korea and USA
- help European TechTex businesses to gain better access to foreign markets
- improve the business environment with partner economies and economic partners
- present business strategy options to enhance the global footprint (with a focus on the four countries of the EU TechTex project).

The analysis as proposed by Gherzi will not go into detail regarding all 148 original Messe Frankfurt TechTex sub-segments, but will identify – by region – those segments which are the most important and the most attractive for EU exports.

## D.1.1.1. Scope of the study and definitions

## D.1.1.1.1. Study scope

Before the above described background the scope of the study is defined by EASME as ...

- 1: analysing the Technical Textile markets of Brazil, Japan, South Korea and the USA
- 2: putting these markets into perspectives to the European and world TechTex market scenario and...
- 3: ...drawing conclusions and suggesting tools of how these markets can be penetrated (or existing penetration can be enhanced) by EU enterprises from the TechTex sector.

#### D.1.1.1.2. Market definition Technical Textiles

'Technical Textiles' regroup into ...

- Fibres (such as for plastic or cement reinforcement)
- Yarn type products (such as sewing thread or ropes)
- Nonwovens (ex staple fibre or ex chips, e.g. for hygiene)
- Non-spun products (such as waddings or cigarette filters)
- Fabrics (woven, knitted, braided, stitch bonded or other)
- and Composite Reinforcements (high performance fibre reinforced plastics)

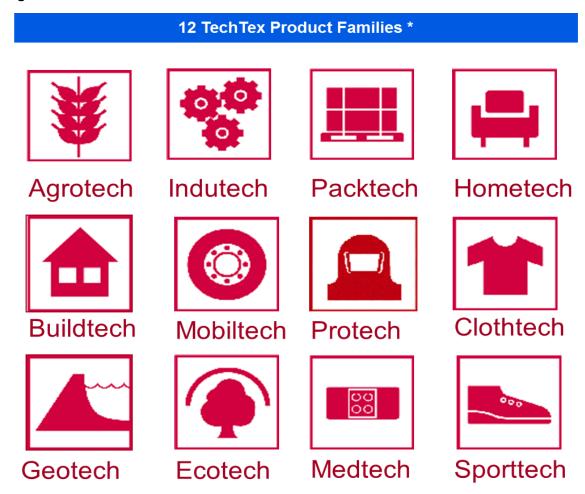
... where – in terms of purchasing criteria – function comes first and thus certification of products and plants to specific functionality standards and norms play an important role.

The 2014 world market for Technical Textiles – on roll good level – was ~ 147 Bn USD or 28.38 kt.

A global CAGR of 6.7% between 2010 and 2014 (in volume) with a projection of 5.1% between 2014 and 2020 underlines the attractiveness of this industry.

In terms of segmentation by product family reference is generally made to the TechTex market segmentation initially developed by Messe Frankfurt (D), which was in parts (and in a modified variant) also used in the Gherzi report.

Figure 1: 12 TechTex Product Families



- \* The logos and trademarks are intellectual property of 'Messe Frankfurt GmbH'
- \*\* In the Gherzi report grouped together with 'Geotech'
- \*\*\* In the Gherzi report split between 'Medtech' and 'Hygiene'

Apart from applications – and here especially for the quantitative analysis – the report groups the different TechTex products into three product family domains:

- i. yarn type Technical Textiles (like sewing threads or medical sutures)
- ii. fabric type Technical Textiles (like medical gauze or woven coated fabrics) as roll good
- iii. nonwovens as roll good (such as for medical bandages and drapes, wipes, geotextiles or auto acoustics)

As side products, TechTex raw materials are added under trade performance aspects, if clearly identifiable as destined towards Technical Textiles (like high tenacity synthetic filament). The same holds true for made-up Technical Textiles (like made up tarpaulins, safety belts or nonwoven garments). Manufactured end products made by using Technical Textiles (like baby diapers, complete filtration systems or automotive car seats) are, however, not part of the study.

## D.1.1.1.3. Geographic scope

The contemplated EASME mission – focusing on Technical Textiles – is expected to cover (in terms of market data):

- the World
- Europe
- the four selected countries
  - o Brazil
  - o Japan
  - o South Korea and
  - o USA.

## D.1.1.1.4. Years, currencies and units considered

#### D.1.1.1.4.1. Years considered

The data collected and analysed for this mission are basically from 2010 and 2014, as far as available for the four countries. The forecast is established for the year 2020.

## D.1.1.1.4.2. Currencies considered

Basically, the currency considered in this report is US Dollars. However, also € = Euros have been used.

The average annual currency conversion rate, taken from OANDA currency converter, has been used for the particular year to convert the values (e.g. 1.277 USD/€ for the year 2014).

#### D.1.1.1.4.3. Units considered

The unit used to denote the market size in terms of Technical Textiles products is either MMT = million metric tons or kt = '000 tons. In value terms Mn USD = million US Dollar or Bn USD = billion US Dollar have been used for this report.

## D.1.1.1.5. Stakeholders for this report

... are ...

- Technical Textile manufacturers
- Technical Textile importers and exporters
- Technical Textile traders, distributors and converters
- Raw material or technology providers for Technical Textiles
- Government and research organizations
- Associations and industry bodies
- Regulatory bodies
- End users.

#### D.1.1.2. Limitations

The study has been restricted to Technical Textile applications and product domains as described above (§ 1.2.2).

- The study does not include aesthetic or decorative fabrics which do not contain any special properties (like FR) and characteristics (like foul weather protection).
- Some neighbouring (to Technical Textiles) market segments <u>not</u> covered under the Technical Textile definition of this report include
  - o Cotton / PC / Polyester fabrics for plain workwear (without FR or similar treatment)
  - Glass or basalt insulation wool
  - Generally, fabrics made from chopped glass or other mineralic like basalt fibres for, e.g., heat insulation or as used in the form of chopped strand mats ('CSM') in the building industry
  - Glass yarns as used, e.g., in cylindrical windings for composites are also not considered.
- In case of composite (= fibre reinforced plastics) reinforcements (e.g. glass or carbon fibre fabrics for wind energy, Mobiltech or aeronautics) only the fabric itself is considered, not the plastic matrix (typically ~ 50% of the moulded part's weight).
- The consumption / production quantifications in this report contain for the four focus countries of the mission – an estimate for 'dual use' products used in Technical Textiles, that is products (like cotton fabric) that can go into TechTex (e.g. FR treated Protech fabrics) and non-TechTex (like bedding) markets.
- The company examples shown in the appendix to this report are limited to companies, which are Technical Textile manufacturers, suppliers or customers. Some companies in this market are privately owned and their revenues are not available in the public domain. Hence, revenues for those companies are not included in the report. Company profiles not reported in the public domain could not be included in this report.

# **End of Part D.1 (Main Report):**

Introduction

**Start of Part D.2 (Main Report):** 

Research Methodology and Project Design

## D.2. Research methodology and project design

The Methodology to assess the markets in the 4 countries basically moves in consecutive steps as follows:

- World TT market assessment
- EU TT market assessment
- Trade analysis EU with the 4 countries
- TT Consumption estimate in the 4 countries
- Production assessment in the 4 countries
- EU producer performance in the 4 countries
- Country specific market segmentation, opportunities and trends.

It needs to be noted that these steps are not only based on desk research, but also include field work and interviews (associations, companies) in the 4 countries plus the EU to come to a final view with conclusion of the mission.

This being said, Gherzi has employed a 3 Step approach to analyse the market situation in the 4 countries of the mission:

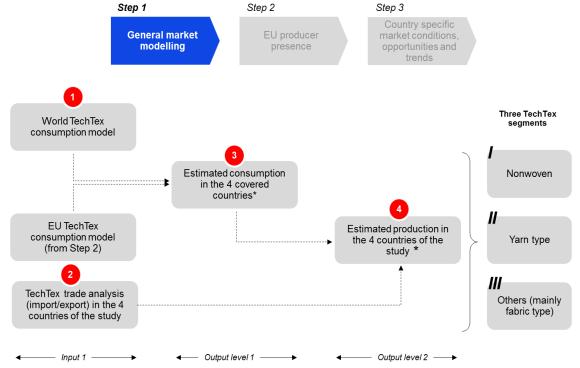


Figure 2: Analysis - Step 1: Est. consumption & production in the 4 countries

<sup>\*</sup>Strictly based on statistical analysis + Assumption: Non linear (logarithmic) correlation between GDP / capita and TechTex consumption / capita

Selected TechTex made-up

products

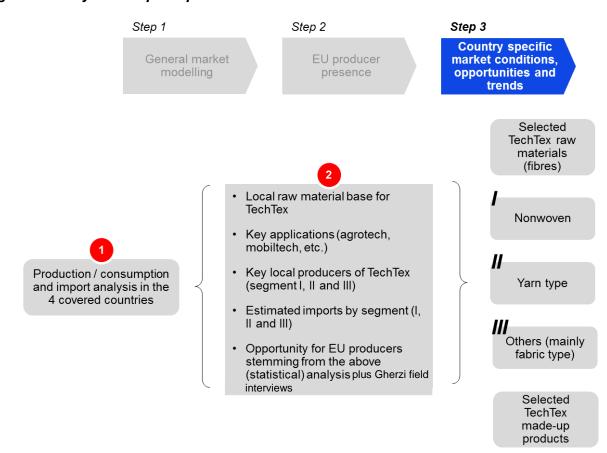
Output level 2 -

Step 1 Step 2 Step 3 Country specific market conditions, EU producer General market opportunities and modelling presence trends Selected TechTex raw materials (fibres) Total TechTex imports Nonwoven EU export performance towards the four covered countries TechTex EU production Yarn type EU import shares and trade scenario Others (mainly fabric type) Key product trends

Figure 3: Analysis - Step 2: EU export performance & import shares in the 4 countries)

Figure 4: Analysis - Step 3: Specific market conditions in the 4 countries

Output level 1 —



<sup>\*</sup>Strictly based on statistical analysis

Input 1 —

\*Strictly based on statistical analysis

# End of Part D.2 (Main Report):

Research Methodology and Project Design

**Start of Part D.3 (Main Report):** 

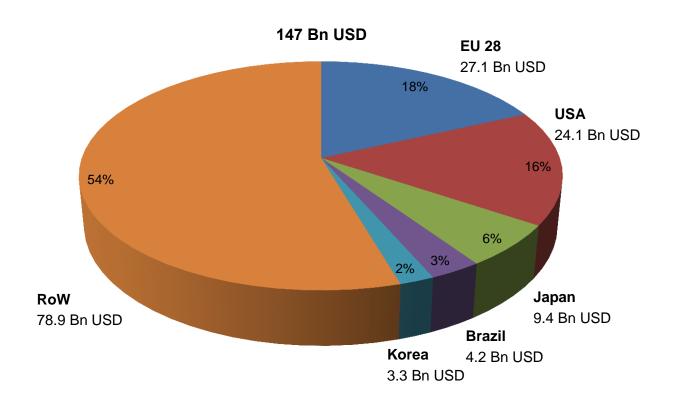
Global and EU Market Scenario

## D.3. Global and EU market scenario

## D.3.1. Overview

The EU plus the 4 selected countries of the study represent 46% of the world TechTex market in 2014:

Figure 5: Share of EU28 and the 4 countries in the 2014 world TechTex market



Source: Gherzi market model and research

### Initial Gherzi conclusions:

Technical Textiles represent a sizeable industry worldwide with 147 Bn USD demand on yarn type / roll good level, not counting ...

- The production of raw materials being consumed by this industry (28.4 MMT in 2014)
- The value added from downstream processing of Technical Textiles into made-ups (like protective apparel), systems (like process filter units) or components (like car seats)

The industry shows attractive growth rates ...

- 6% p.a. between 2010 and 2014
- 5% p.a. forecasted for 2014 to 2020 \*

... not only in Nonwovens but also in (more traditional) fabric type or yarn type products.

<sup>\*</sup> chiefly based on Gherzi internal analysis and estimates / EDANA – INDA reports and forecasts 'till 2020 plus input from Gherzi field interviews in Europe

The EU is likely the largest single consumer of Technical Textiles worldwide with an 18% global share in 2014 and thus a strong home base on which European producers can build.

The 4 countries of the mission together represent another 28% world market share and thus a market potential (on roll good / yarn type level) of 41 Bn USD in 2014.

Out of this, the USA is the biggest single market with a market size almost equivalent to the one of EU 28, followed by Japan (35% of EU 28 market size), Brazil (16% of EU 28 market size) and South Korea (12% of EU 28 market size).

## D.3.2. Global TechTex consumption

## D.3.2.1. Market assessment

The Gherzi Global TechTex market model can be considered as a bottom-up methodology as described below:

- Gherzi has started by analysing the global raw <u>material</u> consumption in Technical Textiles by
  - Nonwovens (spunmelt, carded, other)
  - Filament (mineralic, synthetic)
  - Staple fibre (mineralic, synthetic, natural)
  - Slit film
  - ... to come to a view on total global TechTex consumption
- A finer analysis by:
  - Disposable / durable segment in Nonwovens
  - Raw material in all other (glass, carbon, PA, PP, PET, Aramid, Cotton, Hemp / Kenaf / Jute, PP-slit film, etc.)
  - ... has then allowed Gherzi to position the different material tonnages by application segment

The 2014 world TechTex market on yarn type Technical Textiles and (nonwoven and fabric type) roll good level is estimated by Gherzi at 115 Bn € (for details, see appendix).

Figure 6: 2014 TechTex world market (volume and value) on roll good price level

	2014 kt	€/kg roll good price *	2014 M€	%	
- Slit film (mainly ex Polyolefin chips)	2,500	3.3	8,250	7%	
- Natural fibre (cotton, jute / hemp / kenaf,)	4,659	3.8	17,574	]	
- Other (non-synthetic) staple fibre (incl. glass)	556	5.4	2,997	53%	
- Synthetic staple fibre	2,105	4.9	10,340		
- Other man made filament	5,843	5.1	29,748		
- Mineralic + carbon filament / rovings	3,850	6.3	24,425	21%	
All other Nonwovens (airlaid + wet laid,)	1,131	2.5	2,828	]	
Carded (dry laid) Nonwovens	3,849	2.6	10,007	19%	
Spunmelt Nonwovens	3,881	2.3	8,926		
Total	28,374	100%	115,093	100%	
			≙147 Bn USD		

<sup>\*</sup> average of different roll good prices by material (glass, PA, PP, PET, ...)

Source: Gherzi market model and research

<u>Global</u> 2014 TechTex consumption represents a volume of 28,374 kt (equivalent to global 2014 production). By material, Polyester, Polyolefines (PP, PE) and Glass represent 72% of TechTex totals.

Figure 7: Global TechTex consumption by segment and fibres (back-up)

		Car- ded Nonwo ven	All other Nonwo ven		Technical Textiles other than Nonwovens based on					
	Spun melt Non wove ns <sup>1)</sup>	Drylaid	Airlaid / Wet- laid	Mine- ralic (glass, basalt) and carbon fila- ment <sup>4)</sup>	Man made Fila- ment other than glass, basalt and carbon	Syn- thetic staple fibre <sup>6)</sup>	Other (non syn- the- tic) man made staple fibre <sup>7)</sup>	Natu- ral fibres	film	Total KT 2014
TOTAL KT 2014 / Raw material	3,881	3,849	1,131	3,850	5,843	2,105	556	4,659	2,500	28,374
Polyester					2,400					2,400
HT fil. Nylon 6					522	62				584
Nylon 66					485	02				485
Sutures					8					8
PP Polymer	3,063								2,500	5,563
PP fibres		1,190	384		0	200				1,774
PP Mono					10					10
PP HT Fil.					450					450
PE Polymer	287									287
Viscose fibre		152					56			209
Viscose Fil.					65					65
PET Polymer	531									531
PET fibres		1,758				1,608				3,366
Polyester Regular					1,600					1,600
Nylon Regular					231					231
Acrylic / Modac		26			0	146				172
Aramid staple		9	31			33				73

		Car- ded Nonwo ven	All other Nonwo ven		Nonwo	nnical Te vens bas				
	Spun melt Non wove ns <sup>1)</sup>	Drylaid	Airlaid / Wet- laid	Mine- ralic (glass, basalt) and carbon fila- ment <sup>4)</sup>	tnan	Synth etic staple fibre <sup>6)</sup>	Other (non syn- the- tic) man made staple fibre <sup>7)</sup>	Natu- ral fibres	Slit film ('tape')	Total KT 2014
TOTAL KT 2014 / Raw material	3,881	3,849	1,131	3,850	5,843	2,105	556	4,659	2,500	28,374
Aramid filament					72					72
Other Organic		23				56	11			90
Glass		10	50				244			304
Metal							244			244
Cotton		265						789		1,054
Bast fibre (Jute, Coir, Hemp, Kenaf)		104						3870		3,974
Glass Fil.				3,810						3,810
Basalt Fil.				5						5
Carbon Fil.				35						35
BICO		183	37							219
Wood Pulp		128	629							757
TOTAL KT 2014	3,881	3,849	1,131	3,850	5,843	2,105	556	4,659	2,500	28,374

Source: Gherzi market model and research

The Gherzi TechTex market model: 6.0% CAGR between 2010 and 2014 with

- a) increasing share (in % of total) of Nonwovens and
- b) decreasing share of
  - i. slit film based Technical Textiles and
  - ii. generally staple fibre based Technical Textiles

Figure 8: Development 2010-2014 of global TT consumption

TT based on	2010 kt	2010 %	2014 kt	2014 %	CAGR 2014/2010	
- Slit film (mainly ex Polyolefin chips)	2,220	10%	2,500	9%	3.0 %	
- Natural fibre (cotton, jute / hemp / kenaf,)	4,040	4,659	10	4,659		3.6%
- Other (non-synthetic) staple fibre (incl. glass)	494	47%	47% 556	46%	3.0%	
- Synthetic staple fibre	1,833		2,105		3.5%	
- Other man made filament ***	4,278		5,843		8.1%	
Mineralic + carbon filament / rovings	3,059	14%	3,850	14%	5.9%	
Carded (dry laid) Nonwovens	2,935		3,849		7.0%	
Spunmelt Nonwovens	3,112	29%	3,881	31%	5.7%	
All other Nonwovens (airlaid + wet laid,)	536		1,131		21.5%	
Total kt ****	22,507 **	100%	28,375	100%	6.0%	

<sup>\*</sup> NW = Nonwovens

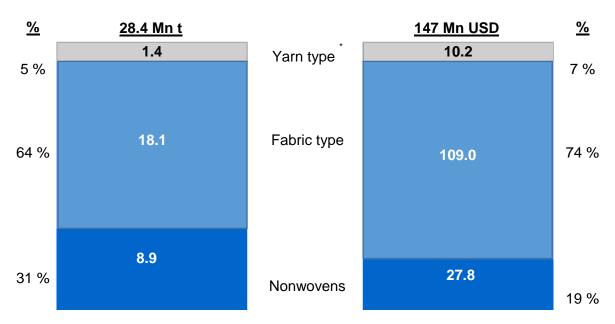
Source: Gherzi market model and research

<sup>\*\*</sup> Nota bene: 2010 consumption was calculated by Gherzi independently on the base of actual 2010 fibre production volumes, that is not by applying CAGR assumptions to 2014 volumes

<sup>\*\*\*</sup> mainly Polyester, Polypropylene, Polyamide and Viscose filament

<sup>\*\*\*\*</sup> N.b. re units used in this graph: 28,375 kt (2014) equals 28.4 Mn tons

For the three product domains of the study the world TechTex market can be split between yarn type / fabric type and Nonwoven Technical Textiles as follows:

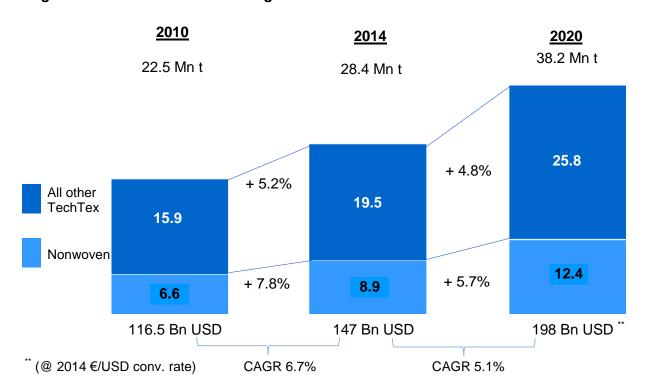


Includes (high value/kg) sutures

Source: Gherzi world TechTex model, EDANA

The world market for Technical Textiles – having reached 147 Bn USD in 2014 – is expected to grow by 5% annually to a level of 198 Bn USD by 2020:

Figure 10: World TechTex market growth



Source: Gherzi world TechTex model, EDANA Nonwoven study forecast

For the year 2014 level of 115 Bn € (147 Bn USD) global TT market size the segmentation by application comes to the following picture:

Figure 11: 2014 World consumption by TT segment

Application 1)	kt	%	M€	%	€/kg <b>\omega</b> roll good price	Mn USD 2)
Agrotech	2,250	8	7,777	7	3.45	9,930
Buildtech	3,060	10.5	12,954	11	4.2	16,540
Clothtech	1,090	4	4,237	4	3.9	5,431
Geotech (incl. Oekotech)	1,064	4	3,265	3	3.1	4,169
Hometech	3,292	11.5	11,702	10	3.6	14,941
Indutech	4,030	14	20,036	17.5	5.0	25,581
Medtech 3)	515	2	3,794	3	7.4	4,844
Hygiene 3)	2,771	10	6,677	6	2.4	8,525
Mobiltech	4,006	14	19,012	16.5	4.8	24,274
Packtech	4,210	15	13,806	12	3.3	17,627
Protech	657	2	5,438	4.5	8.2	6,943
Sporttech	1,429	5	6,377	5.5	4.45	8,142
Total	28,375	100%	115,093	100	4.0	146,949

<sup>1)</sup> Copyright Messe Frankfurt AG, Germany (regarding TechTex application definition)

Source: Gherzi market model and research

The largest application is Indutech (17.5% of total in USD), followed by Mobiltech (16.5% of total in USD), Packtech (12% of total in USD), Buildtech (11% of total in USD) and Hometech (10% of total in USD).

 $<sup>^{2)}</sup>$  1.277 USD /  $\in$  2014 conversion rate

Grouped together under 'Medtech' in the original Messe Frankfurt definition

#### World market – Initial Gherzi conclusions:

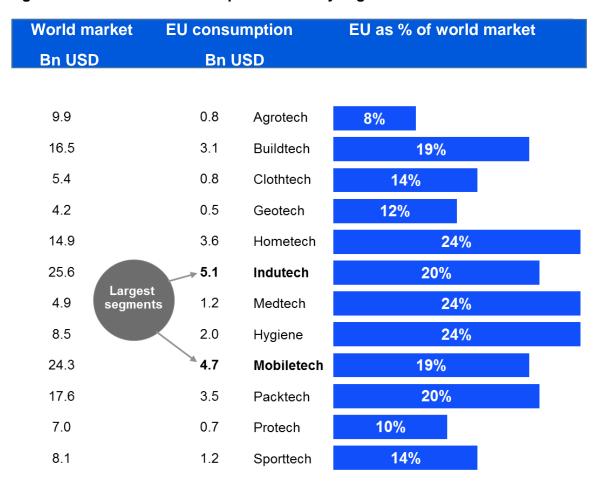
- Technical Textiles represent a sizeable industry worldwide with 147 Bn USD demand on yarn type / roll good level, not counting ...
  - ➤ The production of raw materials being consumed by this industry (28.4 MMT in 2014)
  - ➤ The value added from downstream processing of Technical Textiles into made-ups (like protective apparel), systems (like process filter units) or components (like car seats)
- The industry shows attractive growth rates ...
  - 6% p.a. between 2010 and 2014
  - > 5% p.a. forecasted for 2014 to 2020
  - ... not only in Nonwovens but also in (more traditional) fabric type or yarn type products
- Nonwovens are outgrowing yarn type and fabric type Technical Textiles and are thus gaining % TT production share
- Indutech, Mobiltech, Packtech, Buildtech and Hometech together represent 2/3 of the world market in value
- By raw material Polyester, Polyolefines (PE, PP) and Glass fibres represent close to 3/4 of feedstock used to produce Technical Textiles
- The EU is likely the largest single consumer of Technical Textiles worldwide with an 18% share in 2014 and thus a strong home base on which European producers can build
- The 4 countries of the mission together represent another 28% world market share and thus a market potential (on roll good / yarn type level) of 41 Bn USD in 2014

## D.3.2.2. EU TechTex scenario

## D.3.2.2.1. Quantified analysis

The EU TechTex market 2014 constituted a volume of 27.1 Bn USD. Indutech and Mobiltech are the largest segments in value:

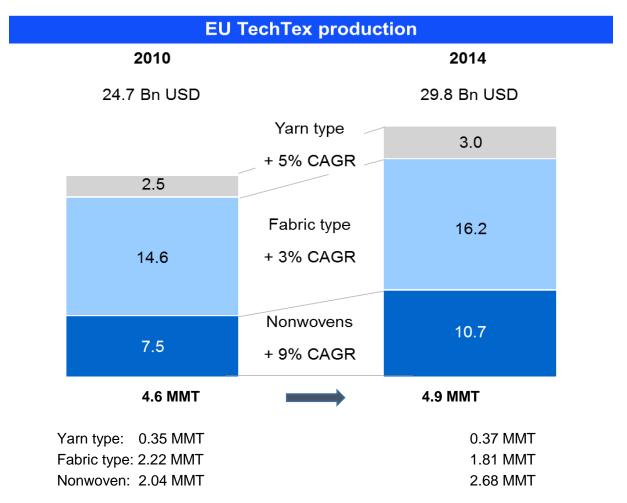
Figure 12: EU TechTex consumption shares by segment



147.0 Bn USD 27.1 Bn USD Total

Source: Gherzi application based world and regional model, Prodcom and UN Comtrade statistics Between 2010 and 2014 EU production of Technical Textiles has grown by 5 Bn USD ...

Figure 13: EU TechTex production 2010-2014



Source: Prodcom, Gherzi analysis, www.irs.gov

... with nonwovens increasing their share from 30% of EU (Euro value) production in 2010 to 36% of EU (Euro value) production in 2014.

Main yarn type EU production concerns medical sutures (included, but not separately identifiable in Prodcom statistics), sewing threads and cordage.

Figure 14: EU yarn type production 2010-2014

Segment	Production	Production in KT		Production in Value (Mn USD)		
	2010	2014	2010	2014	2010 / 2014	
Polyethylene or polypropylene binder or baler (agricultural) twines	91.2	99.1	188.5	230. 8	5 %	
Cordage, ropes or cables of poly-ethylene, polypropylene, nylon or other polyamides or of polyesters measuring > 50 000 decitex, of other synthetic fibres (excluding binder or baler twine)	64.5	85.0	329.4	377.8	3.5 %	
Twines of polyethylene or polypropylene, of nylon or other polyamides or polyesters measuring ≤ 50 000 decitex (5 g/m) (excluding binder or baler twine)	37.9	22.6	112.9	101.5	- 2.5 %	
Rubber thread and cord, textile covered; textile yarn and strip impregnated, coated, covered or sheathed with rubber or plastics	26.3	20.2	237.3	283.0	4.5 %	
Sewing thread of man-made filaments	13.4	18.7	252.8	315.6	6 %	
Others (including sutures)	41.7	52.5	891.7	1,050.8	4 %	
Total (without Dual use)	275	298	2,013	2,360	4 %	

2010 - Euro / USD = 0.785 / 2014 - Euro / USD = 0.784

Main products (sutures covered under 'others')

Source: Prodcom, www.irs.gov

Main fabric type EU production concern glass fibre fabrics (such as for composites) and non-coated high tenacity filament based fabrics (like for seat belts).

Figure 15: EU fabric type production 2010-2014

Segment	Product	ion in KT	Production (Mn	CAGR	
	2010	2014	2010	2014	2010 / 2014
Woven fabrics of glass fibre (incl. narrow fabrics, glass wool)	566.3	464.3	1,058.5	1,148. 1	2 %
Textile fabrics, impregnated, coated or covered n.e.c.	339.0	380.5	3,448.2	3,671.2	2 %
Woven fabrics of man- made filament yarns obtained from high tenacity yarn, strip or the like (including nylon, other polyamides, polyester, viscose rayon)	131.7	140.0	1,306.2	1,734.7	7.5 %
Tyre cord fabrics of high tenacity yarn, of nylon, other polyamides, polyesters or viscose rayon	68.6	89.9	428.7	546.3	6 %
Textile wicks, conveyor belts or belting (including reinforced with metal or other material)	29.0	80.0	764.3	765.3	0 %
Knotted netting of textile materials (excluding made-up fishing nets of man-made textiles, other made-up nets of nylon or other polyamides)	75.7	70.0	337.5	338.9	0 %
Sacks and bags, of polyethylene or polypropylene strip, used for packing goods (excluding knitted or crocheted)	66.9	59.7	304.6	324.7	2 %
Others	500.9	164.9	4,050.9	4,403.8	2 %
Total (without Dual use)	1,778	1,449	11,699	12,933	2.5 %

2010 - Euro / USD = 0.785 / 2014 - Euro / USD = 0.784

Main products (sutures covered under 'others')

Source: Prodcom, www.irs.gov

Three major Nonwoven technologies dominate EU production:

- Chiefly spunbond ex chips (≤ 25 gsm)
- Chiefly carded spunlace hydro-entangled (> 25 gsm, but ≤ 70 gsm)
- Chiefly carded needle felt (> 150 gsm)

Figure 16: EU Nonwoven production 2010-2014

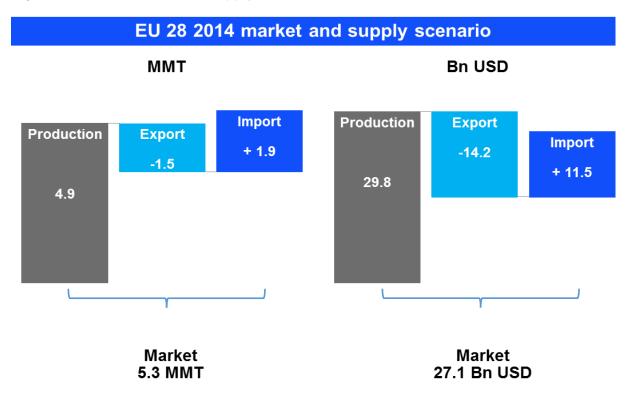
Segment	Productio	n in KT	Producti Value (Mn	CAGR	
	2010	2014	2010	2014	2010 / 2014
Nonwovens of a weight of > 150 g/m² (including articles made from Nonwovens) (excluding articles of apparel, coated or covered)	456.4	541.0	1,501.6	1,936.9	6.5 %
Nonwovens of a weight ≤ 25 g/m² (including articles made from Nonwovens) (excluding articles of apparel, coated or covered)	366.1	450.0	1,061.8	1,479.6	9 %
Nonwovens of a weight of > 25 g/m² but ≤ 70 g/m² (including articles made from Nonwovens) (excluding articles of apparel, coated or covered)	352.8	366.0	1,404.1	1,564.1	3 %
Other vegetable textile fibres, processed but not spun	274.9	268.0	309.4	459.2	10 %
Nonwovens, coated or covered (including articles made from Nonwovens) (excluding articles of apparel)	153.6	239.3	827.6	1,152.5	9 %
Others *	436.3	817.7	2,437.5	4,065.7	14 %
Total	2,040	2,682	7,542	10,658	9 %

<sup>\* (</sup>revised based on EDANA statistics 2010 - Euro / USD = 0.785 / 2014 - Euro / USD = 0.784 Main products (sutures covered under 'others')

Source: Prodcom, www.irs.gov

EU 28 production of Technical Textiles <sup>1)</sup> was ~ 30 Bn USD (23.3 Bn €) in 2014. The EU trade balance in Technical Textiles is positive in value by 2.7 Bn USD in 2014. Mainly higher value / kg items are exported, as the trade balance is negative in volume.

Figure 17: EU28 market and supply scenario 2014



<sup>1)</sup> Yarn type, fabric type and Nonwovens

Source: Prodcom, UN Comtrade, Gherzi analysis, research and estimates

EU Techtex scenario in KT (2014): 5,285 kt consumption (of which 36% is imported in 2014); Negative trade balance of 420 kt in 2014. Overall exports (in kt) represent 30% of production.

Figure 18: EU TechTex scenario in KT 2014

Segment	Consumption	Export	Import	Production	% Export share
Yarn type	369	113	110	373	30%
Fabric type	2,514	512	1,215	1,811	28%
Nonwoven type ***	2,402	848	568	2,682	32%
Total	5,285	1,473	1,893	4,866	30%
Industrial Yarn *		38	214		
Made-up products **		118	965		

Source: Prodcom, UN Comtrade, EDANA / INDA, Gherzi analysis, research and estimates

EU TechTex scenario in Mn USD (2014): 27 Bn USD EU consumption (of which 43% is imported) in 2014. Non EU exports (2014) exceed non EU imports (2014) by 2.7 Bn USD. Overall exports (in USD) represent 48% of production.

Figure 19: EU TechTex scenario in Mn USD 2014

Segment	Consumption	Export	Import	Production	% Export share
Yarn type	2,208	2,107	1,367	2,949	71 %
Fabric type	16,306	7,074	7,216	16,165	44 %
Nonwoven type ***	8,527	5,044	2,914	10,658	47 %
Total	27,044	14,225	11,497	29,772	48 %
Industrial Yarn *		323	671		
Made-up products **		1,548	4,165		

Source: Prodcom, UN Comtrade, EDANA / INDA, Gherzi analysis, research and estimates

<sup>\*</sup> Industrial yarn includes mainly High Tenacity filament (such as from Polyester) and Aramids

<sup>\*\*</sup> Made-ups – Reference: CIRFS – 4 HS codes: HS 6305 (sacks and bags of a kind used for the packing of goods), 6306 (tarpaulins, awnings and sun blinds, tents), 870871 (safety seat belts), 00206305 (other made-up articles)

<sup>\*\*\*</sup> The Nonwoven Trade data are based – in this report – on UN Comtrade statistics. Nonwoven industry internal and confidential export data come to a lower volume of exports in the EDANA industry association definition of the relevant Nonwoven categories. For reasons of consistency the entire Gherzi trade flow analysis in this report is, however, based on UN Comtrade data only.

Out of total EU TechTex exports 2014 of 14.2 Bn USD about 21% go into the 4 countries of the mission, mainly (3/4) to the USA.

Figure 20: EU TechTex scenario in Mn USD 2014

	EU	of which				
Segment	exports total	USA	Brazil	Korea	Japan	
Yarn type *	2,107	390	26	46	100	
ram type	100%	19%	1%	2%	5%	
Eabria tupo *	7,074	1,398	149	113	133	
Fabric type *	100%	20%	2%	2%	2%	
Nanuayan tuna	5,044	525	48	67	146	
Nonwoven type	100%	10%	1%	1%	3%	
Total TechTex exports (Mn USD)	14,225	2,313	223	226	379	
	100%	16%	2%	2%	3%	

<sup>\*</sup> Including 'Dual use', which stands for TechTex products, which – in the UN Comtrade nomenclature – cannot be clearly identified as Technical Textiles as such (e.g. cotton wovens serving home textile, fashion as well as Technical Textile markets)

Source: UN Comtrade, Gherzi analysis and estimates

For details regarding EU trade in Technical Textiles please see Appendix 3.

## D.3.2.2.2. Conclusions

 i. EU TechTex production (without raw materials = industrial yarns and made-ups): Initial conclusions

Between 2010 and 2014 EU TechTex production (in value, including 'dual use' TechTex products) has been growing at 4% p.a. from 24.7 Bn USD in 2010 to 29.8 Bn USD in 2014:

Yarn type: 4 % p.a.
Fabric type: 2.5 % p.a.
Nonwovens: 7 % p.a.

In terms of size (value) of 2014 EU TechTex production

- Cords / cables / ropes and sewing threads (together 693 Mn USD in 2014) are the most important product categories in yarn type Technical Textiles (2,949 Mn USD in total for 2014 including 'Dual use' products)
- ➤ Coated fabrics, glass fabrics and fabrics based on high tenacity filaments (together 6,554 Mn USD) are the most important product categories in fabric type Technical Textiles (16,165 Mn USD in total for 2014 including 'Dual use' products)
- ➤ Within Nonwovens (10.658 Mn USD in total for 2014) no product category really dominates, as production is well spread over ...
  - < 25 gsm (mainly spunmelt technology)</li>
  - 25 ≤ 70 gsm
  - > 70 gsm

... type products

Nota bene:

2010 - Euro / USD = 0.785 2014 - Euro / USD = 0.784

Source: Prodcom, www.irs.gov

#### ii. EU consumption / import / export: Initial conclusion

EU consumption 2014 of Technical Textiles (without raw materials = industrial yarns and made-ups) was 27 Bn USD, corresponding to a volume of 5,285 kt

- ➤ The EU trade balance was positive in value by 2.7 Bn USD and negative in volume by 420 kt: Mainly high value (USD / kg) TechTex products are exported while low value per kg products are imported

  - № EU import value 2014: 6.07 USD / kg
- ➤ 2014 EU TechTex exports as percent of production reach 48% in value (Mn USD) and 30% in volume (kt). High value yarn type products (such as medical sutures) are a typical product explaining the higher export share in value (USD) compared to the share in volume (kt)
- ➤ Whereas the industrial yarn (TT raw material) data are clearly Technical Textiles only, the made-up data (in the CIRFS study definition) might contain substantial amounts of non-Technical Textile products

Source: Prodcom, UN Comtrade, EDANA / INDA, Gherzi analysis, research and estimates

# End of Part D.3 (Main Report):

Global and EU Market Scenario

# **Start of Part D.4 (Main Report):**

Overview on the Regulatory and Customs-related TT Framework

## D.4. Overview on the regulatory and customs-related TT framework

## D.4.1. Exchange rates

European export performance of Technical Textiles is strongly linked with forex evolution and the past years scenario has not been always favourable. The observed yo-yoing of Euro compared with foreign currencies – or the absence of stability – makes life difficult for exporters who cannot easily predict currency fluctuation. Long term export strategies indeed request a minimum level of visibility in order to mitigate risks.

Figures 21, 22, 23 and 24 highlight the historical exchange rates from January 2011 to June 2016 between Euro and the respective currencies in the four studied countries, namely:

- US dollar USA
- Real Brazil
- Won South Korea
- Yen Japan

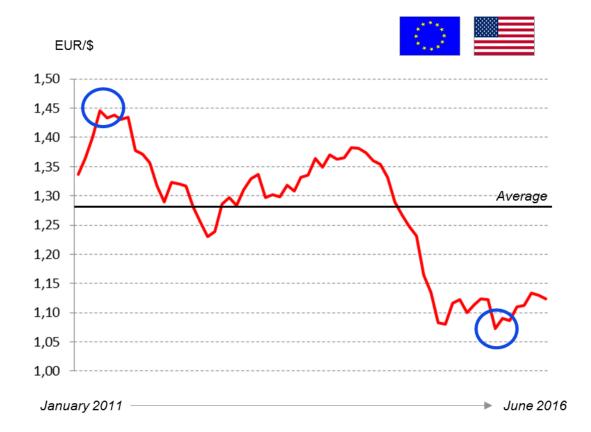
In terms of fluctuation, the highest difference occurred with the Brazilian Real which was nearly divided by two during the considered period (Refer to Figure 22). Even if the last months have registered a slight re-evaluation of the Brazilian currency vis-à-vis the Euro, European exports have lost competitiveness due to this forex situation. Apart from high tariff and non-tariff barriers identified in Brazil, the currency situation is also a very strong factor explaining the difficulty to penetrate this country for European Technical textiles SMEs.

On the contrary, the last 18 months have offered a good opportunity window for European exporters in the USA thanks to a relatively strong US dollar which was not the case before 2015. Since March 2014, the EUR decreased indeed by more than 20% compared with the US Dollar (Refer to Figure 21).

The exchange rate Euro vs S. Korean Won evolution was quite stable from 2011 to 2014 fluctuating in a range from 1,400 to 1,600 Won for 1 Euro. The situation changed during the first quarter 2014 when the Euro started to lose ground vis-à-vis the Won. The first half of 2016 has registered a relatively stable evolution between the two currencies around 1,300 Won for 1 Euro, a level below the average of the considered period, i.e. 1,400 (refer to Figure 23).

As illustrated in Figure 24, the exchange rate Euro vs. Japanese Yen fluctuated by more than 50% with a strong appreciation of the Euro at the expense of European exporters. However, the situation is better since the beginning of 2015 with a progressive depreciation of the Euro vs the Yen which is remaining around the period average (2011-June 2016), i.e. 120 Yen for 1 Euro.

Figure 21: Historical exchange rates: EUR vs US\$

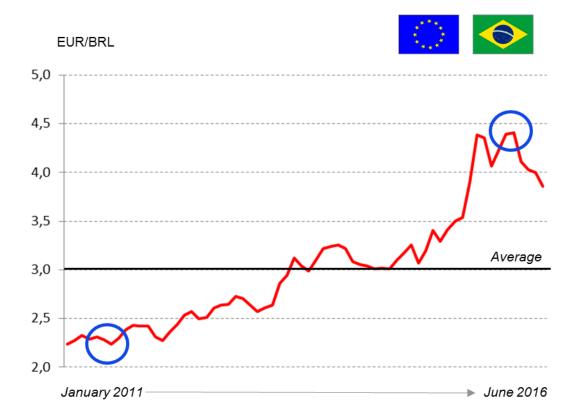


Lowest: 1.07 – November 2015
Highest: 1.45 – April 2011
Period average: 1.27

Period average: 1.27Lowest vs highest: 35%

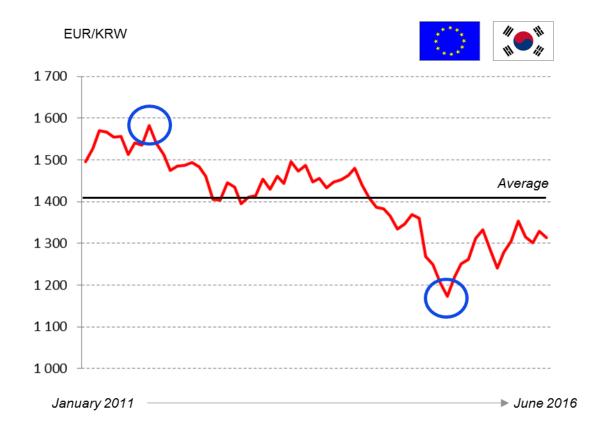
• Strong depreciation of EUR exchange rate since March 2014 (approx. 23%)

Figure 22: Historical exchange rates: EUR vs BRL



- Lowest: 2.23 July 2011
- Highest: 4.38 February 2016
- Period average: 2.95
- Lowest vs highest: 96%
- Strong appreciation of EUR exchange rate since September 2014 (approx. 46%)

Figure 23: Historical exchange rates: EUR vs KRW



Lowest: 1 171 – April 2015Highest: 1 579 – October 2011

Period average: 1 410Lowest vs highest: 35%

Appreciation of EUR exchange rate since April 2015 (approx. 11%)

Figure 24: Historical exchange rates: EUR vs Yen



Lowest: 97 – July 2012 Highest: 147 – December 2014 Period average: 124 Lowest vs highest: 52% Depreciation of EUR exchange rate since December 2014 (approx. 15%)

## D.4.2. Free Trade Agreements ('FTA')

## D.4.2.1. Proliferation of FTAs

2005 has been a turning point in international trade relationships with the emergence and proliferation of numerous free trade agreements (FTAs) and Trade Preference Programs (TPAs). This has been the case for most of the four studied countries except Brazil which has not been lately engaged in any active trade negotiations with partner countries and/or regions. Those FTAs have radically revamped the way supply chains are organised and selected by allowing to specific countries a preferential access to large consuming zones under certain conditions.

Figure 49 illustrates the year of implementation of FTAs and TPAs signed by the four studied countries:

Bahrain Costa Rica Dominican Republic El Salvador Guatemala Honduras Morocco Chile Canada Colombia Nicaragua AGOA Singapore Korea Panama 1985 1995 2005 2015 1990 2000 2010 Australia Oman Peru Source: Office of the United States Trade Representative Indonesia Malaysia India Australia 1985 1995 2005 2015 1990 2000 2010 Mexico Singapore Chile Thailand Peru Mongolia ASEAN Switzerland Philippines Vietnam Source: Ministry of Foreign Affairs of Japan Singapore EFTA ASEAN ΕU Peru 1985 1995 2005 2015 1990 2000 2010 Chile India USA China Source: Ministry of Foreign Affairs - Republic of Korea Argentina Mexico Surinam Israel Chile 1985 1995 2005 2015 00 Ó 1990 2000 2010 Uruguay MERCOSUR Guyana Colombia Ecuador Venezuela Morocco

Figure 25: Year of FTAs coming into force

Source: Organisation of American States

The implementation of FTAs responds to specific principles which are unique by nature. The example of the USA in the textile and clothing industry illustrates the complexity of those rules:

- Trade Preference Programs and Free Trade Agreements negotiated by the USA allow textile and apparel goods duty-free entry into the U.S. if the goods meet the rule of origin
- The textile and apparel rule of origin for these programs and agreements is commonly known as the 'yarn-forward' standard, which requires that the yarn production and all operations 'forward' (i.e., fabric production through apparel assembly) occur in either the United States and/or the partner country
- However, fibers, yarns, and fabrics determined not to be available in commercial quantities in a timely manner may be sourced from outside the countries for use in qualifying textile and apparel products
- For example, a fabric that is determined not to be commercially available may come from a third party, be cut-and-assembled into a garment in the partner country, and imported to the U.S. duty-free

There are several FTAs which can have an impact for European SMEs export performance among all the Transatlantic Trade and Investment Partnership (T-TIP), the Trans-Pacific Partnership (TPP), The Regional Comprehensive Economic Partnership (RCEP), the EU-Japan FTA and the EU-Mercosur Association Agreement. The EU-South Korea Free Trade Agreement came already into force back in 2011.

### The T-TIP

The Transatlantic Trade and Investment Partnership (T-TIP) is a trade agreement to be negotiated between the European Union and the United States aiming at creating growth and jobs on both sides of the Atlantic by removing trade barriers.

Since the first round of talks in June 2013, the negotiations have continued every few weeks.

There is a clear uncertainty on the time the negotiations and the ratification process may take but the T-TIP would represent a major step in the trade relationships between the USA and the EU with anticipated significant impact for EU TechTex SMEs by allowing a privileged access to the vast US TechTex market.

At that stage, it is difficult to envisage the way sensitive topics will be considered in the T-TIP like norms and standards, rules of origin, tariff barrier removal, etc.

#### The TPP

The TPP is a standard FTA providing duty-free access for its 12 members (Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, United States, Vietnam provided the double transformation rule is observed. It is important to notice that accumulation is allowed only among TPP members. For access into the US, the countries – and especially the US and the other members - have agreed to a long list of short supply fabric and yarns which if incorporated into the final garment/product can benefit from preferential entry under the TPP even if they originate in third countries.

The TPP covers all textile and apparel products although duties are phased in at different time schedules.

The expectation is that the agreement will enter into effect in 2017. The TPP provides for the agreement to enter into force 60 days after the date on which all original signatories have notified the Depositary in writing of the completion of their applicable legal procedures. If this does not occur within two years, the agreement shall enter into force 60 days after the expiry of this period if at least six of the original signatories, which together account for at least 85% of the combined gross domestic product of the original signatories in 2013 have notified.

The biggest question is whether US will ratify and if so when. Serious opposition has, however, so far only been detected in the United States (and Malaysia as well).

US duties on a large number of textile-related products meeting TPP origin requirements and imported into the US will be eliminated immediately upon entry of force of the agreement.

The major consequence of TPP could be in the future and go far beyond the market access provisions. Many believe it is only a matter of time before the Regional Comprehensive Economic Partnership (RCEP) and TPP are combined. This would allow some duty-free treatment into the US market for China and India. The actual impact on Vietnamese competitiveness will be dependent on the specific provisions covering textile and apparel trade.

#### The RCEP

The Regional Comprehensive Economic Partnership (RCEP) negotiations were launched by leaders from (Association of Southern Asian Nations) ASEAN and ASEAN's free trade agreement (FTA) partners in the margins of the East Asia Summit in Phnom Penh, Cambodia on 20 November 2012. The RCEP is an ASEAN-centred proposal for a regional free trade area, which would initially include the ten ASEAN member states and those countries which have existing FTAs with ASEAN – Australia, China, India, Japan, Republic of Korea and New Zealand. RCEP is usually viewed as an alternative to the TPP, which includes the USA but excludes China.

Reinforcing trade relationships within Asian and Oceanian may ultimately jeopardize the competitiveness of European TechTex companies.

#### The EU-Japan FTA

The EU-Japan Free Trade Agreement negotiations were officially launched on 25 March 2013. The negotiations aim at concluding an ambitious and mutually beneficial trade agreement which will lead to economic growth both in the EU and in Japan. During the negotiations a number of EU concerns will be addressed, including the non-tariff barriers which European companies encounter in Japan and the further opening of the Japanese public procurement market. There have been ten negotiating rounds so far (in April, June, and October 2013, in January, March/April and July, October and December 2014, and in February 2015 and April 2015).

#### The EU-Mercosur Association Agreement

A future EU-Mercosur Association Agreement – currently under negotiation – should provide a boost to regional trade integration among the countries of Mercosur and stimulate new opportunities for trade and investment with the EU by removing tariff and non-tariff barriers to trade and FDI. The potential economic impact is high, also taking into consideration Mercosur maintains a highly protected market. The EU-Mercosur Association Agreement will cover, among other issues, trade in goods and services, investments, intellectual property rights (IPR) aspects including protection of geographical indications, government procurement, technical barriers to trade and sanitary and phyto-sanitary aspects.

However there is no clarity yet on how and when the negotiation will enter into a more active period. Consequently, it is still impossible to predict when this agreement has a chance to be signed and ratified.

#### The EU-South Korea Free Trade Agreement

The EU-South Korea Free Trade Agreement (FTA) entered into force in July 2011 and it is the first of a new generation of FTAs. It goes indeed further than any previous agreements in lifting trade barriers and it is also the EU's first trade deal with an Asian country. The agreement eliminates duties for industrial and agricultural goods in a progressive, step-by-step approach. The majority of import duties were removed already when the FTA came into force on 1 July 2011. On 1 July 2016, import duties have been eliminated on all products except for a limited number of agricultural products.

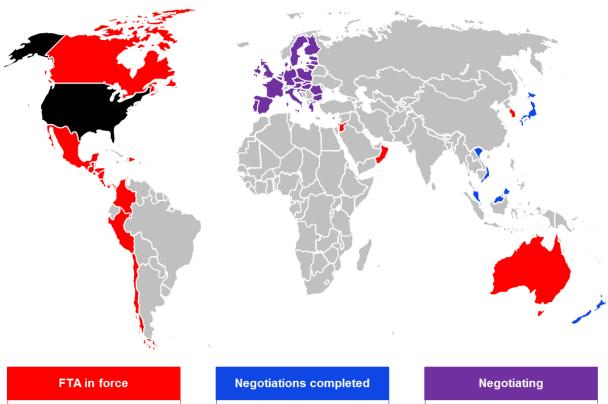
The impacts of the FTA between the EU and South Korea are both negative and positive for the partners. In 2007, Korea recorded a trade surplus with the EU of 19.1 Bn US\$. In 2014, it changed to a trade deficit of 10.7 Bn UU\$. EU exports of goods have increased by 55% in the first 4 years of the FTA at a much more important level than the Korean economic growth. The EU share of Korea's imports increased from 9% to 13%, while the USA remained steady und Japan lost 2%.

One negative aspect mentioned by interviewed companies in Korea concern the resourceand time-consuming work to prepare and deliver the necessary documentation related to "country of origin". This has been a direct consequence of the coming into force of the FTA; this administrative process did not exist prior to 2011. For large corporations operating with many foreign production units, the delivery of individual original certificate leads to delays of minimum 2 weeks.

Figures 26, 27, 28 and 29 highlight the FTAs which are either in force, completed or under negotiations in the four studied countries.

Figure 26: FTA USA





Australia (+TPP) Bahrain Canada (+TPP) Chile Colombia Costa Rica Dominican Republic El Salvador Guatemala Honduras Israel Jordan Korea Mexico (+TPP) Morocco Nicaragua Oman Panama Peru (+TPP) Singapore (+TPP)

+AGOA, HOPE

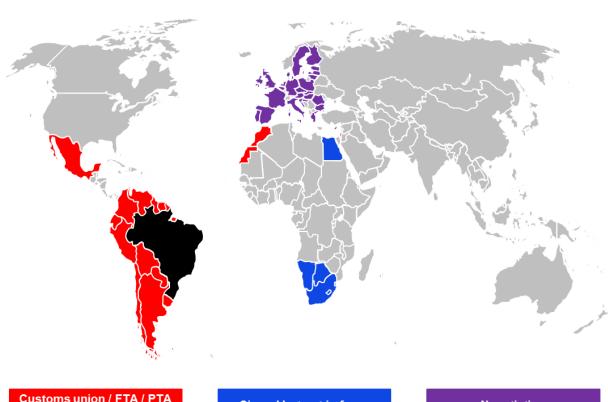
TPP (Japan, Malaysia, Vietnam, Brunei, Singapore, New Zealand) T-TIP

Key issues: Ratification of TPP + negotiation of T-TIP are the two main topics for the USA

Source: Office of the United States Trade Representative

Figure 27: FTA Brazil





# Customs union / FTA / PTA / Framework agreement

MERCOSUR Israel Peru Bolivia Chile Morocco Mexico Signed but not in force

Egypt SACU Negotiating

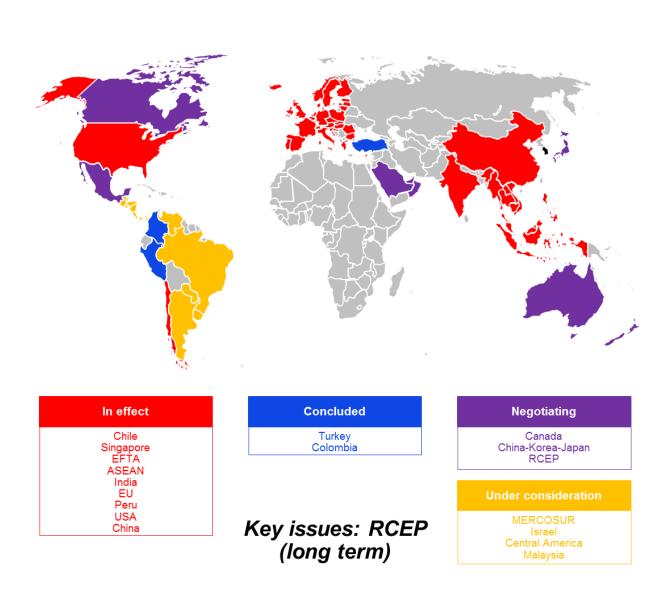
MERCOSUR - EU

Key issues: Negotiations with the EU seem on standby

Source: Organisation of American States

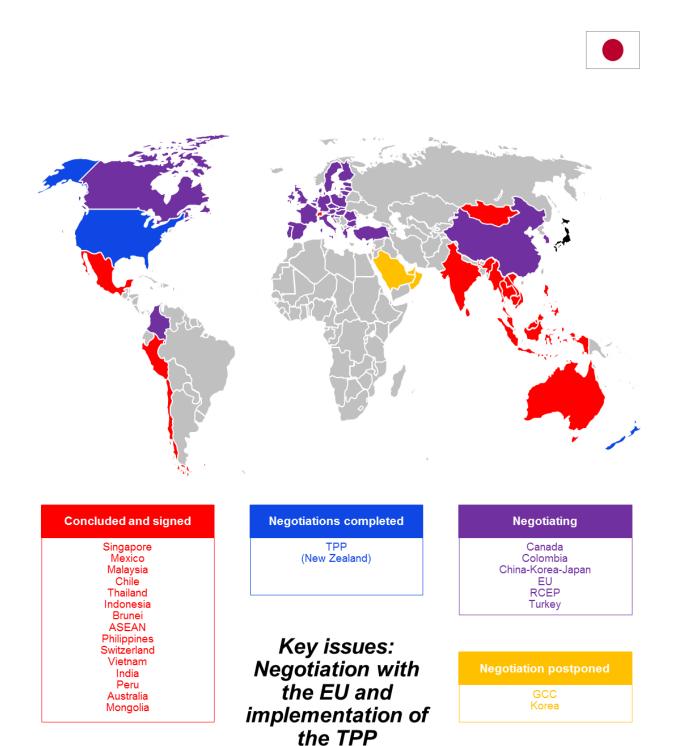
Figure 28: FTA Korea





Source: Ministry of Foreign Affairs - Republic of Korea

Figure 29: FTA Japan



Source: Ministry of Foreign Affairs of Japan

## D.4.2.2. The impact of FTAs in Technical Textiles trade

Figures 30, 31, 32 and 33 analyse the imports of Technical Textiles in the four studied countries for one specific product example in each category namely yarn type, fabric type, nonwoven, industrial yarn and made-ups. For each selected product (HS 300610, HS 5903, HS 5603, HS 540219, HS 621010) the imports are indicated for the year 2005, 2010 and 2014 in value terms. The figures also reflect the value and the % of imports per year originated from countries having signed an FTA.

In the **USA**, the share of sterile surgical catgut imports from countries having signed a FTA went from 5.1% in 2005 to nearly 12% in 2014. This stiff progression has not been observed neither for coated fabrics or nonwoven demonstrating the difficulty to clearly conclude on the real effect of FTAs in terms of trade in Technical Textiles. In nonwovens, the share of non-FTA related imports represent more than 75% and 64% for coated textile fabrics with a relative stability in terms of % for both categories whilst total imports significantly increased over that period, i.e. from 2005 to 2014. Thus the implementation of several important FTAs has not radically changed the import situation in the USA for certain categories of products.

Figure 30: FTA country share in total TT imports - USA



## In million US\$

		HS code	Import 2005	Import 2010	Import 2014
		Total imports	102.49	276.18	342.88
300610	Sterile Surgical	FTA*	5.24	7.50	40.89
300010	Catgut, etc.	%	5.1%	2.7%	11.9%
		Non-FTA	97.25%	268.69	301.99
		%	94.9%	97.3%	88.1%
		Total imports	484.13	581.18	908.47
	Coated textile Fabrics, etc.	FTA*	173.79	185.72	331.11
5903		%	35.9%	32.0%	36.4%
		Non-FTA	310.34	395.47	577.36
		%	64.1%	68.0%	63.6%
		Total iron outs	700.70	040.50	4/440.04
		Total imports	762.72	849.50	1'143.31
	Nonwovens	FTA*	224.11	227.84	271.99
5603	Nonwovens	%	29.4%	26.8%	23.8%
		Non-FTA	538.61	621.67	871.32
		%	70.6%	73.2%	76.2%
		Total imports	n.a.	171.54	228.73
	High-tenacity	FTA*	n.a.	133.56	194.51
540219	filament yarn of nylon, etc.	%		77.9%	85.0%
		Non-FTA	n.a.	1.04	0.03
		%		0.6%	0.0%
		Total imports	444.69	591.07	742.37
	Garments made	FTA*	150.79	193.09	222.30
621010	up of nonwovens	%	33,9%	32.7%	29.9%
		Non-FTA	293.90	397.98	520.07
		%	66.1%	67.3%	70.1%

<sup>\*</sup>Imports originating from a country/group of countries having signed an FTA under or not the FTA regime

FTA impact

In **Brazil**, the non-FTA related imports clearly dominate in yarns and fabrics as illustrated in Figure 31 with sterile surgical catgut (97.7% in 2014) and coated textile fabrics (98.2% in 2014); this same domination was also observed back in 2005. In nonwoven and at least for the selected product, i.e. HS 5603, non-FTA related imports represent 70.9% with a stable % over the last decade. The situation illustrates the fact that Brazil has remained quite isolated having signed FTAs mostly with South American countries without any strong Technical Textiles industry.

Figure 31: FTA country share in total TT imports – Brazil



# In million US\$

		HS code	Import 2005	Import 2010	Import 2014
		Total imports	8.37	15.59	32.60
300610	Sterile Surgical	FTA*	0.29	1.18	0.76
300010	Catgut, etc.	%	3.4%	7.5%	2.3%
		Non-FTA	8.09	14.42	31.84
		%	96.6%	92.5%	97.7%
		Total imports	35.90	89.86	97.81
	Coated textile	FTA*	2.54	3.98	1.76
5903	Fabrics, etc.	%	7.1%	4.4%	1.8%
		Non-FTA	33.36	85.88	96.05
		%	92.9%	95.6%	98.2%
		Total imports	53.24	122.21	153.44
	Nonwovens	FTA*	17.03	38.99	44.67
5603		%	32.0%	31.9%	29.1%
		Non-FTA	36.21	83.22	108.77
		%	68.0%	68.1%	70.9%
		Total imports	n.a.	31.62	65.78
	High-tenacity filament yarn of nylon, etc.	FTA*	n.a	17.48	45.05
540219		%		55.3%	68.5%
		Non-FTA	n.a.	14.15	20.73
		%		44.7%	31.5%
		Total imports	0.75	5.45	16.99
	Garments made up of nonwovens	FTA*	0.09	0.47	7.18
621010		%	12.4%	8.7%	42.3%
		Non-FTA	0.65	4.97	9.80
		%	87.6%	91.3%	57.7%

<sup>\*</sup>Imports originating from a country/group of countries having signed an FTA under or not the FTA regime

FTA impact

In **Korea**, FTAs have had significant impacts especially for sterile surgical catgut for the benefit of European companies. In 2014, FTA-related imports represented more than 82% of total imports whilst this % was below 1% before the implementation of the EU-Korea FTA.

For coated fabrics, the progression of FTA-related imports has been also quite significant representing 0% in 2005 and 21% ten years later whilst imports have doubled in the same period.

In nonwoven, and at least for HS 5603, FTA-related imports have achieved to represent nearly one third of Korean imports.

The whole situation Korea may also changed over the years to come with the implementation of the China-Korea FTA which anticipates a progressive phasing-out of import duties between both countries.

Figure 32: FTA country share in total TT imports – Korea



# In million US\$

		HS code	Import 2005	Import 2010	Import 2014
		Total imports	20.17	44.39	51.10
	Sterile Surgical	FTA*	0.00	0.31	42.06
300610	Catgut, etc.	%	0.0%	0.7%	82.3%
		Non-FTA	20.17	44.08	9.05
		%	100.0%	99.3%	17.7%
	l				
		Total imports	68.04	108.77	130.34
	Coated textile	FTA*	0.00	8.48	27.33
5903	Fabrics, etc.	%	0.0%	7.8%	21.0%
		Non-FTA	68.04	100.29	103.01
		%	100.0%	92.2%	79.0%
5603		Total imports	123.17	212.65	329.74
		FTA*	0.00	141.95	205.91
	Nonwovens	%	0.0%	33.1%	31.5%
		Non-FTA	241.42	286.31	448.47
		%	100.0%	66.9%	68.5%
		Total imports	n.a.	63.61	90.35
	High-tenacity	FTA*	n.a.	2.05	10.92
540219	filament yarn of nylon, etc.	%		3.2%	12.1%
	Trylon, etc.	Non-FTA	n.a.	61.56	79.92
		%		96.8%	87.9%
		Total imports	4.79	13.68	24.76
	Garments made	FTA*	0.0	1.59	6.89
621010	up of nonwovens	%	0.0%	11.6%	27.8%
		Non-FTA	4.79	1.59	6.89
		%	100.0%	88.4%	72.2%

<sup>\*</sup>Imports originating from a country/group of countries having signed an FTA under or not the FTA regime

FTA impact

In **Japan**, FTAs have had significant impacts especially for sterile surgical catgut. In 2014, FTA-related imports represented 24% of total imports whilst there were imported in that category in 2005 and 2010.

In fabric, non-FTA related imports clearly dominate representing more than 88% in 2014.

In nonwoven, FTA-related imports managed to achieve one third of the total Japanese imports in that category in a dynamic market registering stiff growth.

Figure 33: FTA country share in total TT imports – Japan



# In million US\$

		HS code	Import 2005	Import 2010	Import 2014
		Total imports	56.72	75.66	265.84
	Sterile Surgical	FTA*	0.00	0.02	64.05
300610	Catgut, etc.	%	0.0%	0.0%	24.1%
	_	Non-FTA	56.72	75.63	201.79
		%	100.0%	100.0%	75.9%
		Total imports	69.7	79.20	107.45
	0	FTA*	0.00	13.29	12.32
5903	Coated textile Fabrics, etc.	%	0.0%	16.8%	11.5%
		Non-FTA	69.67	65.91	95.12
		%	100.0%	83.2%	88.5%
		Total imports	241.42	428.26	654.37
	Nonwovens	FTA*	0.00	141.95	205.91
5603		%	0.0%	33.1%	31.5%
		Non-FTA	241.42	286.31	448.47
		%	100.0%	66.9%	68.5%
		Total imports	n.a.	9.62	20.10
	High-tenacity filament yarn of nylon, etc.	FTA*	n.a.	0.95	14.04
540219		%		9.8%	69.8%
		Non-FTA	n.a.	8.67	60.06
		%		90.2%	30.2%
		Total imports	41.45	81.22	86.19
	Garments made	Total imports			
		FTA*	0.00	19.52	38.23
621010	up of nonwovens	%	0.0%	24.0%	44.4%
	110111101110	Non-FTA	41.45	61.70	46.96
		%	100.0%	76.0%	55.6%

<sup>\*</sup>Imports originating from a country/group of countries having signed an FTA under or not the FTA regime

FTA impact

# D.4.3. Import duties and taxes

The following briefly describes the situation in each of the four studied countries regarding duty rate, sales tax and other taxes and custom fees.

#### D.4.3.1. USA

#### Overview

- Import duty and taxes are due when importing goods into the United States whether by a private individual or a commercial entity
- The valuation method is FOB (Free on Board), which means that the import duty and taxes payable are calculated exclusively on the value of the imported goods
- However, some duties are based part in value and part in quantity. In addition to duty, imports may be subject to a Merchandise Processing Fee, and in some cases to sales tax, and Federal Excise Tax

#### **Duty rate**

- Duty rates in Technical Textiles in the U.S. can be ad valorem (as a percentage of value) or specific (dollars/cents per unit)
- Duty rates vary from 0% to 27.9%, depending on the TT product

#### Sales tax

 Sales tax is not automatically charged on imported goods. However, Customs and Border Protection (CBP) declarations are made available to state tax representatives that may occasionally claim state taxes from the importer

#### Other taxes and custom fees

- CBP collects federal taxes and fees on behalf of other federal agencies, like the Internal Revenue Service, depending on the commodity being imported. User fees depend on the type of entry and mode of transportation
- Merchandise Processing Fee (MPF) on formal entries (for imports of goods valued over 2,500 USD) is set at 0.3464% of the value of the goods with a minimum charge of 25 USD and a maximum of 485 USD.

There are sometimes specific requirements imposed by the USA for special products. They usually consist of special documents and forms to be prepared and gathered for custom clearance. Figure 34 illustrates these specific requirements with the example of HS 3006 or sterile surgical catgut.

Figure 34: Example: HS 300610 / Special requirements to the USA

Specific applicability conditions for product under HS code 3006:	Requirements
Approval of New Animal Drugs	Only required if intended for veterinary purposes
Approval of New Drugs	
Registration of Medical Devices Establishment	
Registration of Drug Establishment	
Import Licence for Wildlife	Only required if containing products of endangered animals or plants
Import Permit for Protected Plants and Products Thereof	Only required if containing products of protected plants
Import Permit for Veterinary Biologics	Only required if veterinary biologics
Import Permit for Endangered Animals and Products Thereof	Only required if containing products of endangered animals
Medical Devices Listing	
Drug Product Listing	
Manufacturer Identification (MID) Code	Only required for 3006.10.01, 3006.20, 3006.30.10, 3006.30.50, 3006.40, 3006.50, 3006.60, 3006.70, 3006.91, 3006.92
Notification of Trans-frontier Movement of Waste	Only required for 3006.92
Premarket Approval for Medical Devices	Only required if class III device
Hazardous Waste Manifest	Only required for 3006.92
Agent Letter	
Accompanying Document for Trans-frontier Movement of Waste	Only required for 3006.92
Premarket Notification for Medical Devices	
Notice of FDA Action	Only required for 3006.10.01, 3006.20, 3006.30.10, 3006.30.50, 3006.40, 3006.50, 3006.60, 3006.70, 3006.91, 3006.92

Requirements for 300610 highlighted in bold

#### D.4.3.2. Brazil

#### Overview

- Import duty and taxes are due when importing goods into Brazil whether by a private individual or a commercial entity
- The valuation method is CIF (Cost, Insurance and Freight), which means that the import duty and taxes payable are assessed on the sum of the value of the imported goods, the cost of freight, and the cost of insurance
- In addition to duty, imports are subject to a state sales tax (ICMS), a type of federal tax (PIS PASEP and COFINS), excise tax (IPI) on certain good

#### **Duty rates**

Duty rates in Brazil vary from 0% to 35%, depending on the TT product

#### Sales tax

CMS is a state sales tax, and therefore tax rates in Brazil vary by state. There are three different rates that apply as follows: 19% - Rio de Janeiro, 18% - Sao Paulo, Minas Gerais and Parana, 17% - All other states. ICMS is calculated on the sum of the CIF value, duty, and any excise and federal taxes if applicable

#### Other taxes and custom fees

- IPI is a Federal Excise Tax. It ranges between 0% and 300% and is calculated on the CIF value of an import
- PIS, PASEP and COFINS, are Federal Taxes and are calculated on the sum of the CIF value, plus duty, plus any IPI applicable
- Storage fee: 1% of the sum of CIF value and duty
- Air Handling fee: BRL 0.015 per kg
- Airport fee: 50% of the sum of the storage fee and the air handling fee
- Declaration fee: a flat fee of BRL 30 per shipment

There are sometimes specific requirements imposed by Brazil for special products. They usually consist of special documents and forms to be prepared and gathered for custom clearance. Figure 35 illustrates these specific requirements with the example of HS 3006 or sterile surgical catgut.

Figure 35: Example: HS 300610 to Brazil



Specific applicability conditions for product under HS code 3006:	Requirements
Licence to Import Medical Products for Human Use and Related Products	Only required if intended for human use
Registration of Importers of Agricultural Products	Only required if intended for veterinary purposes
Registration of Medical Products	
Non-Automatic Import Licence	Only required for 3006.10.10, 3006.10.90, 3006.60, 3006.70, 3006.92
Permit to Import Endangered Species Subject to the Washington Convention (CITES)	Only required if subject to CITES
Permit to Import Veterinary Products and Supplies	Only required if intended for veterinary purposes
Inspection of Agricultural Products	Only required if intended for veterinary purposes
Certificate of Good Manufacturing Practice for Higher Risk Medical Products	Only required for high risk medical products
Certificate of Analysis	Only required if intended for veterinary purposes
Free Sale Certificate	
Movement Document for Transboundary Movements of Hazardous Waste	Only required for 3006.92
Notification of Transboundary Movements of Hazardous Waste	Only required for 3006.92

Requirements for 300610 highlighted in bold

#### D.4.3.3. South Korea

#### **Overview**

- Import duty and taxes are due when importing goods into South Korea whether by a private individual or a commercial entity
- The valuation method is CIF (Cost, Insurance and Freight), which means that the import duty and taxes payable are calculated on the complete shipping value, which includes the cost of the imported goods, the cost of freight, and the cost of insurance
- In addition to duty, imports are subject to sales tax, education tax, STRD tax, transportation tax, and special consumption tax

#### Duty rates

 Since the ratification of the Free Trade Agreement between the EU and South Korea, there is no import duty for TT products exported from the EU to South Korea

#### Sales tax

 VAT is levied on imports at a standard rate of 10% on the sum of the CIF value, duty and other taxes if applicable

#### Other taxes and custom fees

- Special consumption tax is charged on certain products as ad valorem at rates between 5% and 20% of the sum of the CIF value and duty
- It can also be specific, i.e. charged per unit of measure. STRD (Special Tax for Rural Development) is charged on certain products at 10% of the Special Consumption tax
- Transportation tax is charged on some products based on quantity
- Education tax is charged at rates between 10% and 30% based on Special Consumption tax, or Liquor tax, or Transportation tax, whichever is applicable

There are sometimes specific requirements imposed by Korea for special products. They usually consist of special documents and forms to be prepared and gathered for custom clearance. Figure 36 illustrates these specific requirements with the example of HS 3006 or sterile surgical catgut.

Figure 36: Example: HS 300610 to Korea



Specific applicability conditions for product under HS code 3006:  Registration of Foodstuffs and their Manufacturers  Registration of Importers and Dealers of Cosmetics  Licence to Deal in Foodstuffs  Licence to Deal in Medical Equipment  Requirements  Only required for 3006.10.50.10, 3006.70 if consignments subject to the Food Sanitation Act  Only required for 3006.92.10.90, 3006.92.20.90 if subject to the Cosmetics Act  Only required for 3006.10.50.10, 3006.70 if consignments subject to the Food Sanitation Act  Only required for 3006.10.10.10, 3006.10.10.20, 3006.10.20, 3006.10.30, 3006.10.40, 3006.10.50.90, 3006.10.20, 3006.30.20, 3006.30.20, 3006.40.10, 3006.40.20, 3006.40.30,	
Manufacturers Registration of Importers and Dealers of Cosmetics Cosmetics Cosmetics Conly required for 3006.92.10.90, 3006.92.20.90 if subject to the Cosmetics Act Conly required for 3006.10.50.10, 3006.70 if consignments subject to the Food Sanitation Act Conly required for 3006.10.10.10, 3006.10.10.20, 3006.10.20, 3006.10.30, 3006.10.40, 3006.10.50.90, 3006.10.20, 3006.30.20, 3006.40.10, 3006.40.20, 3006.40.30, 3006.40.	
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3006.92.40, 3006.92.50 if products subject to the Medical Devices Act	
Conly required for 3006.10.10, 3006.10.10.20, 3006.10.20, 3006.10.20, 3006.10.30, 3006.10.40, 3006.10.50.90, 3006.20, 3006.30.10, 3006.30.20, 3006.60, 3006.70, 3006.92.10.10, 3006.92.10.90, 3006.92.20.10, 3006.92.20.31, 3006.92.20.32, 3006.92.20.90, 3006.92.30, 3006.92.40, 3006.92.50 if pharmaceuticals or narcotics	
Examination of Functional Cosmetics Only required for 3006.92.10.90, 3006.92.20.90 if functional cosmetics subject to the Cosmetics Act	nal
Only required for 3006.10.10, 3006.10.10.20, 3006.10.20, 3006.10.20, 3006.10.30, 3006.10.40, 3006.10.50.10, 3006.10.50.90, 3006.20, 3006.30.10, 3006.30.20, 3006.60, 3006.70, 3006.91, 3006.92.10.10, 3006.92.10.90, 3006.92.20.10, 3006.92.20.20, 3006.92.20.31, 3006.92.20.32, 3006.92.20.90, 3006.92.30, 3006.92.40, 3006.92.50 if the packing materials thereof are outlined in the Act on the Promotion of Saving and Recycling of Resources	d
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3006.92.10.10, 3006.92.10.90, 3006.92.20.10, 3006.92.20.20, 3006.92.20.31, 3006.92.20.32, 3006.92.20.90, 3006.92.30, 3006.92.40, 3006.92.50 if raw materials for pharmaceuticals in accordance with the Pharmaceutical Affairs Act
Only required for 3006.92.10.10, 3006.92.10.90, 3006.92.20.20, 3006.92.20.90 if products subject to the Act on the Prevention of Contagious Animal Diseases
Only required for 3006.91 if highly likely to bear a risk according to the Quality Control and Safety Management of Industrial Products Act
Only required for 3006.91 if likely to bear a risk according to the Quality Control and Safety Management of Industrial Products Act
Only required for 3006.92.20.90 if consignments subject to the Plant Protection Act
Only required for 3006.92.10.90, 3006.92.20.90 if subject to the Cosmetics Act
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Only required for 3006.92.20.90 if consignments subject to the Plant Protection Act
Only required for 3006.10.50.10, 3006.70 if consignments subject to the Food Sanitation Act
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Only prohibited for 3006.92.30 if ginseng product of single-ingredient

# D.4.3.4. Japan

#### Overview

- Import duty and taxes are due when importing goods into Japan whether by a private individual or a commercial entity
- The valuation method is CIF (Cost, Insurance and Freight), which means that the import duty and taxes payable are calculated on the complete shipping value, which includes the cost of the imported goods, the cost of freight, and the cost of insurance
- Some duties are based on quality. In addition to duty, imports are also subject to Consumption Tax, Excise, and other taxes on fuel products

## **Duty rates**

- Duty rates in Japan vary from 0% to 12.8%, depending on the TT product
- Some duties are based on quantity in addition to CIF

#### Sales tax

 Consumption tax is levied on imports at a standard rate of 8% calculated on the sum of the CIF value and duty

#### Other taxes and custom fees

Nothing to report

There are sometimes specific requirements imposed by Korea for special products. They usually consist of special documents and forms to be prepared and gathered for custom clearance. Figure 37 illustrates these specific requirements with the example of HS 3006 or sterile surgical catgut.

Figure 37: Example: HS 300610 / Special requirements to Japan



Specific applicability conditions for product under HS code 3006:	Requirements
Licence to Manufacture/Market Products Subject to the Pharmaceutical Affairs Law	
Accreditation as Overseas Manufacturer	
Marketing Approval for Pharmaceuticals	
Marketing Approval for Specially Controlled Medical Devices	Only required for specially controlled medical devices
Approval Certificate for Controlled Medical Devices	Only required for controlled medical devices
Notification of Transboundary Movements of Hazardous Waste	Only required for 3006.92 if hazardous waste
Free Sale Certificate	
Certificate of Good Manufacturing Practice	
Declaration of Conformity	
Movement Document for Transboundary Movements of Hazardous Waste	Only required for 3006.92 if hazardous waste

Requirements for 300610 highlighted in bold

# D.4.3.5. Summary of import duties

Figure 38 highlights the different import duties existing in the four studies countries for EU products and each category namely yarn type, fabric, nonwoven, industrial yarns and made ups.

The selected products in each category are analysed later in this report.

Whilst EU benefits from a 0% duty regime with Korea since the coming into force of a FTA in 2011, the situation is very different with Brazil. In this country, import duties are very high and usually range from 18% to 35%. Low import duties @ 2% are usually applicable to products containing aramids and therefore difficult to source locally.

In Japan, the situation is contrasted depending on the product category; however very few import duties are above 10% and a significant number of products already benefits from low import duties, i.e. 5% and below.

In the USA, several products in yarn type, fabric and nonwoven, have already a 0% import duty rate. However it is important to notice that the US HS codes list is sometimes much more detailed that other countries with a myriad of different import duties for the same category of products. This is for example the case for some fabric type products (e.g. HS 5903 – coated textile fabric) where 4 different import duty rates co-exist.

Figure 38: Import duties and taxes (examples)

	HS code	USA	Japan •	Korea	Brazil
Yarn Type	300610	0%	0% or 3.1% to 9.8%	0%	2% / 18%
7 \	5607 5609	0%	0% / 2.5% / 3.3% / 4% / 5.3%	0%	2% / 18%
	3005	0%	0%	0%	2% / 12%
	5903	2.7% / 7.5% / 8%/ 14.1%	3.5%	0%	2% / 18%
Fabric	5911 540720	0% / 2.9% / 3.3%/ 3.8% / 8%	2.8% to 8.2% (various rates)	0%	16% / 26%
Fal	630392	11.3%	5.3%	0%	35%
	5806	0% to 8.8% (various rates)	4% / 5.3% / 6.4% / 7.4%	0%	26%
	5902	0% / 5.8%	3.5% / 5.8% / 6.6%	0%	14% / 16%
<u>.</u>	560311&91	0%	0% / 4.3%	0%	2% / 26%
	560312&13 560392&93	0%	0% / 4.3%	0%	2% / 26%
Nonwoven	560314&94	0%	0% / 4.3%	0%	2% / 26%
Non	961900	0% to 14.9% (various rates)	3.9% to 10.8%	0%	16%
	630222& 32&53&93	14.9%	5.3%	0%	35%
ia (	540211	8.8%	2.7%	0%	2%
Industrial yarns	540219	8.8%	2.7%	0%	2%
<u> </u>	540220	7.5% / 8.8%	4% / 5% / 6.6%	0%	18%
	621010	0% / 2.8% / 8.5% /16%	9.1% / 10%	0%	35%
Made-ups	620332 (33,42,43) 621132 (33,42,43)	0% to 27.9% (various rates)	9.1% / 10% / 12.8%	0%	35%
	6306	0% to 8.8% (various rates)	4% / 5.6%	0%	35%

## D.4.4. Norms and standards

## D.4.4.1. Introduction

In many cases, meeting norms and standards are considered routine activities in the Technical Textiles sector and part of doing business taking into consideration the technology content of the manufactured products. It is usually perceived as an accepted requirement and practice to secure sales in another territory.

Three different situations usually co-exist regarding norms and standards:

- 1. Bilateral agreements or standards between value chain partners, e.g. automotive seating fabric shipped from a Tier-2 to a Tier-1 supplier
- 2. Formal norms being defined by national or international norming bodies (ISO, CEN, ASTM, etc.) like for protective apparel or filtration
- 3. In certain cases, norms have also been established by private organizations like insurance companies, e.g. Factory Mutual (FM) for roofing membranes in the USA

Where required, these standards and norms are incorporated in procurement contracts as per customer requirements in industrial applications. This is the usual case in the four studied countries, i.e. the USA, Brazil, South Korea and Japan.

Government regulations and consequently norms and standards are driving the use of more sophisticated Technical Textiles products in the vast majority of segments like Protech, Buildtech, Mobiltech, etc. On the one hand, the introduction and/or reinforcement of norms and standards in developed and developing economies tend to create a normative 'jungle' which is difficult to understand for exporting European SMEs. On the other hand, norms and standards illustrate the specificities of the Technical Textiles sector, an industry of specialists focused on product performance and functionalization rather than haptic and design.

At the same time, many European Technical Textiles producers claim not to be too much concerned by norms and standards due to them being positioned in the value chain as Tier-2 or even Tier-3 suppliers. In such cases, certification procedures remain under the responsibility of their customers. This is of course true when European producers are not involved in the delivery of a final product but suppliers of an intermediary product.

Even if part of the "business as usual", understanding and complying with norms and standards being in force in foreign countries is often synonymous of complexity, costs and delays. At that respect, those norms and standards are viewed as an important non-tariff barrier impacting negatively on the export performance of European Technical Textile SMEs by limiting or excluding certain exports too difficult to penetrate markets.

There are three major aspects which need to be taken into consideration concerning the export hurdles linked with norms and standards, i.e.

- (i) the lack of reliable sources of information and support
- (ii) the preference (over e.g. ISO norms) given to local norms and standards and
- (iii) the prohibitive costs of getting products tested and certified in foreign countries.

# D.4.4.2. Lack of reliable sources of information and support

The difficulty in decoding the normative environment linked with Technical Textiles products is illustrated by the absence of international keys for understanding, rules and internationally harmonized norms and standards.

Moreover, Technical Textiles consist of numerous sub-segments and applications for which particular norms and standards prevail. Thus what is true for one given Technical Textiles applications (or products) may not be true for another one.

Similarly, each country has its own system for norms and standards which is – in some cases – not a nationwide nomenclature. In the USA, for example, each state and some counties have their own norms for pond liners, geotextiles and single-ply membranes.

Companies – especially SMEs – are confronted with a very complex normative universe requesting the mobilization of internal resources to understand the way forward.

# D.4.4.3. Preference given to local norms and standards

In many developed economies, the trend has been to establish local specific norms and standards. Consequently ISO norms, even if recognized as a global initiative and reasonably close to local nomenclatures, are not predominant in the USA and Japan, for example.

The same trends apply in China, where national standards seem to become the norm.

The review per studied country highlights the complexity generated by the absence of an internationally accepted system of norms and standards.

## D.4.4.3.1. USA

In the United States, industry relies on standards developed by hundreds of national and international Standard Developing Organisations (SDOs). These SDOs are independent organizations that identify market needs and react accordingly, working directly with technical experts from around the globe to develop appropriate standards.

For Technical Textiles, the Association of Textile, Apparel & materials Professionals (AATCC) and the ASTM are two important SDOs. For specific applications, highly specialized organisations have also developed dedicated norms like The National Fire Protection Association (NFPA) for flame-resistant garments.

Some norms and standards developed by American SDOs are quite similar to European and international ones as well as testing procedures. However, this situation does not prevail in all segments of the Technical Textiles sector.

#### D.4.4.3.2. Brazil

The certification process is relatively easy since, EU and local standards are usually similar.

However and in case of non-existing norms in Brazil, the importer may request a norm or alternatively the exporter is forced to have a norm, e.g. ISO, DIN and any other norms accepted internationally and in Brazil.

Three organisations/bodies are involved in norms in Brazil, namely:

- 1. ABNT (Brazilian National Standards Organisation) whose responsibilities cover the following:
  - Issue of the norms
  - Administration of all existing and approved voluntary norms
  - Certification of the system and special technical courses
- 2. ABNT/CB-O17 (Brazilian committee for textile and clothing)
  - · More than 200 committees in activity
  - Prepares the norms in sub-committees with the leading sector's associations like ABIT, ABINT, etc.
  - Represents the proposed norms in a national Public Consultancy process
  - After the approval from the Public Consultancy process, approves the norms
  - Registration of the voluntary norms at ABNT, ISO, OMC, etc.
  - A lot of norms still have to be completed, such as filtration fabrics, Hygiene products (wipers), fabrics for automobile, etc.
- 3. INMETRO: Governmental agency to monitor the whole system of the norms Authority to apply penalties and/or special sanction, if necessary.

#### D.4.4.3.3. South Korea

The certification process in South Korea is relatively easy where European and international norms are either accepted or similar to local norms. However, specific local norms have been introduced especially in sensitive segments like, e.g., Protech.

Interviewed companies have not highlighted any specific issues related to norms and standards.

# D.4.4.3.4. Japan

Norms in Japan are generally laid down by industrial standards and tested under JIS (Japan Industrial Standard) through a network of accredited laboratories. Based on different interviewed Japanese companies, Japanese norms are usually considered as higher than those applicable in overseas markets.

In Buildtech, with the enactment of the Law for Maintenance of Sanitation in Buildings, filter performance levels have evolved as environmental standards for designated buildings and cleanliness level requirements in industrial space have become more stringent. Due to this air-conditioning equipment that provides good efficiency with demand for greater economic performance has become indispensable.

In Mobiltech, Teijin has obtained the ISO/TS 16949 accreditation for the Teijin Composites Innovation Centre. Notably, ISO/TS 16949 was designed by the International Automotive Task Force (IATF), a body comprising 9 European and American automakers and 5 automotive industrial organisations from the USA, Germany, France, Italy and UK. It defines quality management requirements for firms providing services for automotive products.

In filtration, tests should be passed by Japan Air Cleaning Association (JACA) - an organisation that lays down norms for air purification filter media.

For testing of textiles and other applications, KAKEN Test Centre is used. Kaken is a reputed third party testing organisation for procurement by government agencies and commercial transactions. It has affiliates in ASEAN and Asia with its own branches in Indonesia, China and Vietnam.

There is a hidden disadvantage faced by overseas suppliers. However, there is a scope for improvement by recognising common standards in testing of materials used by reputed overseas labs in Europe and in the USA. This can be achieved by collaboration between JSA and certified labs in other countries.

# D.4.5. Industry initiatives

## D.4.5.1. INDA & EDANA initiatives

#### I. Education about norms

The INDA and EDANA initiative called Nonwovens Standard Procedures represents a very interesting example of joint efforts by industry bodies to harmonize and educate companies about US and EU norms and standards.

The objectives of the publication include the following:

- Provide a support in technically defining nonwoven products with specifiers for properties, composition and specifications
- Detail 95 individual test procedures and guidance documents
- Offer harmonized industry language across the USA and Europe
- Empower the nonwovens industry to communicate within the global supply chain
- Ensure product properties can be consistently described, produced and tested

In particular, the guide overviews the following properties for nonwovens and related standard test methods linked with specific normative references:

- Absorption
- Abrasion resistance
- Bursting strength
- Electrostatic properties
- Optical properties
- Permeability
- Repellence
- Stiffness
- Tear strength
- Tensile
- Thickness
- Weight
- Binder / Appearance / Dry cleaning
- Linting
- Superabsorbent materials
- Bacterial
- Formaldehyde
- Absorbent hygiene products

#### II. Harmonized (US / EU) norms

Back in 2004, INDA and EDANA decided to join forces in order to commonly establish understanding keys regarding flushability of nonwovens, such as wipes. Dedicated task forces including technical experts from both organisations' members, academia, consultancy and wastewater industry were formed to jointly identify a flushability definition, technical assessment and test methods.

Outputs of those task forces consisted in a guidance document (several times updated since the initial 2008 edition) to help wipe manufacturers assess whether their products could be flushed into the wastewater stream.

The ultimate goal of this initiative is obviously to reduce the amount of non-flushable material in the wastewater stream. A specific Code of Practice and a label "Do Not Flush" have been introduced for companies to use on product packaging to educate consumers on the proper disposal route for products.

Adopting this approach for other products and segments in Technical Textiles could be very useful for the industry.

# D.4.5.2. Standardization portal for composites

Composites Germany is a trade association gathering the four strong organizations in the German fibre composite industry, namely AVK (Federation of Reinforced Plastics), Carbon Composites e.V., CFK Valley e.V. and VDMA Working Group Hybrid Lightweight Technologies. Composites Germany intervenes in the field of research, determines common positions and takes overlapping interests into account.

Standardization has also become a critical topic for Composites Germany. Thus the German standards organization DIN has been commissioned by Composites Germany to create a standardization portal (www.din.de) which provides information on national, European and international standards for fibre reinforced plastics that have been published or are under development.

This new and unique tool is a good example of an information-driven portal aiming at helping the industry to navigate into a complex and evolving international norming environment.

# D.4.5.3. Prohibitive costs of getting products tested and certified in foreign countries

European interviewed Technical Textiles companies have insisted on the prohibitive costs linked to testing and certifying procedures in foreign countries especially in the USA and in Japan. Costs usually range from 5 K USD to 100 K USD and sometimes higher.

Moreover, those procedures could be extremely long, i.e. more than 6 months without any guarantee of success.

The high costs to get products certified in foreign countries discourage many European Technical Textiles SMEs to engage in an aggressive export strategy.

# End of Part D.4 (Main Report):

Overview on the Regulatory and Customs-related TT Framework

**Start of Part D.5 (Main Report):** 

Cost Analysis and Segmentation

# D.5. Cost analysis and segmentation

# D.5.1. Theoretical model

Price is still a very important compass for textile-related product buying decisions. There is indeed a constant quest from buyers for cost competitive products and streamlined supply chains. Technical textiles are no exception to this golden rule even if other criteria are also part of the decision process.

This situation leads to the following question:

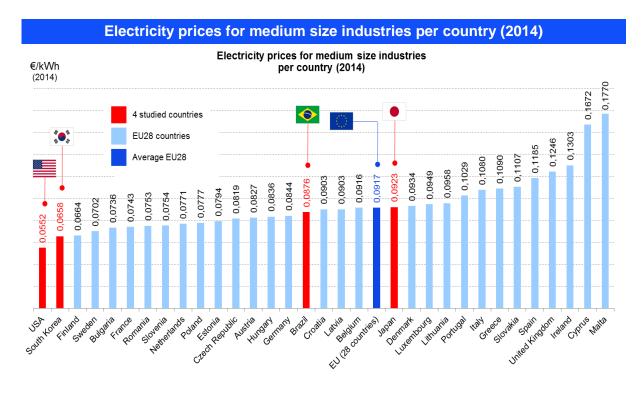
How can European Technical Textiles producers compete in export markets taking into consideration their relative cost disadvantage compared to other regions?

## D.5.2. Factor costs

Taking into consideration two important factor costs, i.e. electricity and wages, Europe does not enjoy any specific advantage vis-à-vis the four studied countries, i.e. the USA, Brazil, Korea and Japan.

Concerning electricity, Figure 63 illustrates the contrasting situation in Europe with an important delta existing among European countries with a relatively cost competitive electricity price versus high-price countries. The European average is significantly higher than the electricity price in the USA and Korea, moderately higher compared to Brazil and at par with Japan.

Figure 39: Electricity prices for medium size industries per country (2014)



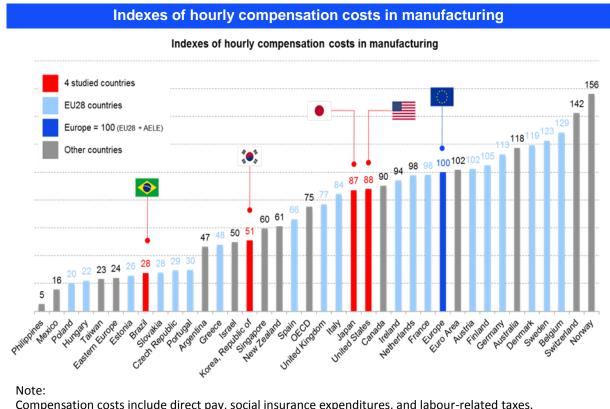
Source: Eurostat<sup>1)</sup>, US Energy Information Administration, Tsudakoma

Concerning labour costs and as illustrated in figure 66, the European situation is more or less equivalent to the one described for electricity concerning the average hourly compensation costs in manufacturing which is above the level of the four studied countries. However it is important to notice that several Eastern European countries (e.g. Poland, Hungary, Estonia, etc.) and Portugal or even Greece still operate with relatively competitive labour cost and significantly below the levels observed in Korea, Japan and the USA.

Hourly labour costs comparison offers a contrasting situation due to the important delta existing in Europe.

<sup>1)</sup> Eurostat definition: 'Average national price in € / kwh without taxes applicable for the first semester of each year for medium sized industrial consumers'

Figure 40: Indexes of hourly compensation costs in manufacturing



#### Note:

Compensation costs include direct pay, social insurance expenditures, and labour-related taxes. Except for Argentina, Japan, Philippines, Singapore and Taiwan, data relate to manufacturing as defined by the International Standard Industrial Classification of All Economic Activities (ISIC) Revision 4.

> Source: U.S. Bureau of Labor Statistics, International Labor Comparisons, August 2013

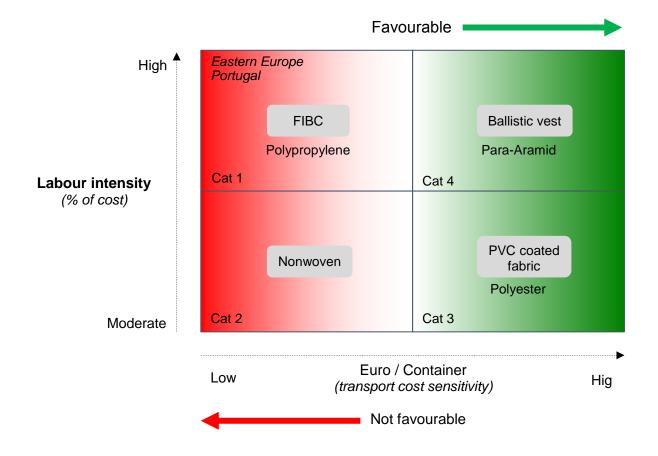
# D.5.3. Segmentation

The important diversity of Technical Textiles products does not allow establishing any common rules regarding the level of cost competitiveness. However two factor costs emerge as critical differentiation parameters to identify which categories of product have – theoretically – the best chance of success in overseas exports. Those parameters consist of (i) sensitivity to transport costs namely the value of exported goods per container which is a fixed cost and (ii) the level of labour intensity.

The following matrix exhibits in figure 65 segments Technical Textile products in four categories namely:

- Category 1: Products combining a high labour intensity and a relatively low transport cost sensitivity; typically, FIBCs belong to this category
- Category 2: Products combining a relatively low labour intensity with a low transport sensitivity, i.e. nonwovens
- Category 3: Products combining a high level of transport sensitivity and a low labour intensity, typically PVC coated fabrics as an example
- Category 4: Products combining both a high transport cost sensitivity and a high labour intensity like ballistic vests containing para-aramid fibers

Figure 41: 4 TechTex products



Theoretically, products belonging to categories #1 and #2 should not be favourable for European exporters compared with products belonging to the two other categories, i.e. #3 and #4. Categories #1 and #2 are indeed either highly sensitive to labour costs (thus Asian competition) or to transport costs.

## D.5.4. Model limitation

The model described in the previous section is a tentative to segment European Technical Textiles products to highlight which categories are theoretically better positioned in export markets.

European trade statistics seem to partially corroborate the validity of the described model especially for categories #1, #3 and #4 leading to the following conclusions listed below:

- Low value per kg / labour intensive / or transport cost sensitive TechTex products are difficult to export outside of the European perimeter (e.g.: FIBC-Big bags or any other product considered as a commodity and easily sourced from Asia)
- Higher value per kg products / differentiated specialties / or products with a relatively low labour content have a good chance to be globalised in terms of sales (see success of EU PVC coaters like Ferrari (F), Sioen (B), Heytex (D) or Verseidag (D) on the world market)
- Product differentiation (sophisticated and labour-intensive finished products like ballistic vests containing para-aramid) overrules cost aspects and allows for worldwide shipment of EU TechTex products

However, the model seems to contradict the success of European nonwoven exporters especially to the USA but not only.

Nonwovens are indeed a strong European success story in important export markets despite their position in the matrix. Thus other factors explain European export victories and those are specific to the Technical Textiles sector. The following section reviews rationales explaining why European Technical Textiles manufacturers are able to export despite sometimes unfavourable cost factors.

## D.5.5. Other factors

By nature, Technical Textiles products respond to specific performance and functional criteria imposed by clients either through the compliance of defined norms and standards and / or technical specifications.

Based on interviews and market knowledge, 6 <u>non-cost</u> related drivers have been identified by Gherzi to explain European existing and future success in TechTex products exports irrespective of costs, high tariff and non-tariff barriers.

These non-cost success factors are listed below:

Driver 1: Product nomination (such as nomination of fabrics or nonwovens by automotive OEMs = vehicle producers)

Product nomination is a common practice in many industrial sectors aiming at pre-defining and imposing beforehand product specifications in terms of cost, availability, quality, performance and sustainability. The automotive industry has been a past master at developing product nomination among Tier 1, Tier 2 and Tier 3 suppliers and European TechTex producers benefits from their proximity to large car manufacturers. This proximity allows them to co-develop specific products which are ultimately imposed to the entire supply chain. This product nomination process could explain the presence of European TechTex products in different export markets despite alternative sourcing options either local or offshore.

Driver 2: Operational excellence and differentiation through technology

I. Operational performance and competitiveness through state-of-the-art manufactu-ring technology

Investments in state-of-the-art technologies and equipment have been the backbone of the European success in Technical Textiles. Excluded from most of the TechTex commodities' export markets to the benefits of Asian suppliers offering cost competitive prices, the lifeline for many European TechTex manufacturers has consisted in strengthening operational excellence and industrial performance through an aggressive investment-intensive strategy aiming at maintaining an innovative competitive edge over other countries and regions. In many markets, this capacity to remain top-notch reliable manufacturers with international reputation could largely offset the cost disadvantage associated with European producers. TechTex products users may indeed prefer to opt for consistency in quality and timely delivery rather than lower prices.

II. Fabric specifications (e.g. special width) only available with few suppliers

Many European TechTex manufacturers have become pure niche players in market segments where only very few companies still operate on a global scale. This situation mechanically restricts the sourcing options for certain customers. An example could be seen in extra wide coated fabrics (up to 5m) on machines not available, e.g., in the USA.

Driver 3: Product differentiation and R&D

I. Product differentiation by quality and design

The intricate relationships existing among European academia, research centres, textile machine OEMS and TechTex producers organised in several leading clusters offering a unique combination difficult to find elsewhere in the world. These powerful and innovative networks of expertise lead to the reinforcement of excellent manufacturers capable to

develop innovative products and new solutions. This is part of the explanation regarding the high reputation of European TechTex products in export markets. Even in so-called difficult countries like Korea and Japan, European TechTex manufacturers are usually viewed as "new idea providers" for TechTex applications.

II. R&D driven innovation not available from a local (US, Brazil, Korea, Japan) producer

Technical textiles are a world of specialists. Some European TechTex manufacturers are able to maintain and protect their innovative edge through constant R&D efforts. These R&D investments are also possible thanks to the existence of specific incentive packages implemented by European countries. In that respect each European country has its own policy aiming at supporting R&D among industrial SMEs either through specific schemes or fiscal incentives.

Driver 4: Non-availability of the functionality (product to fulfil a specific function) or raw materials from a local (US, Brazil, Korea, Japan) producer

Following the example of driver 3, some European TechTex manufacturers have been able to establish a unique and strong market position through the development of specific functionalities for a given product. If no local supply is possible for those functionalities, it becomes an opportunity for the European manufacturer of such product.

ETFE coated glass fabrics for stadium roofs or airports could be cited as an example.

# End of Part D.5 (Main Report):

Cost Analysis and Segmentation

**Start of Part D.6 (Main Report):** 

Markets and Opportunities in the 4 Countries

# D.6. Markets and opportunities in the 4 countries

## D.6.1. USA

# D.6.1.1. Key data USA

Figure 42: Key Data USA (2014)

Population	319 Mn
TT consumption / capita	76 USD / a
TechTex consumption (roll good and threads)	24.1 Bn USD
TechTex imports	12.2 Bn USD
% import share	51%
TechTex imports from EU	2.28 Bn USD
EU share of TechTex imports	19%

Source: Gherzi analysis

## D.6.1.2. Introduction

Outside of the EU (TechTex consumption 2014: 27.1 Bn USD) the USA (TechTex consumption 2014: 24.1 Bn USD) is the largest single TechTex market worldwide.

With 2.3 Bn USD EU TechTex export volume the USA is also the largest single non EU export market for European TT producers.

On top would need to be considered shipments to the two other Nafta countries, namely Mexico and Canada, where the purchasing decision is often made in the USA (such as for TT products being used in the ~ 6 Mn vehicles produced in these two countries).

Casting a judgement on the 2.3 Bn USD 2014 EU TT exports to the USA, it also needs to be considered that in many instances EU TechTex producers have established manufacturing locations in the USA, replacing materials hitherto imported from the EU.

Apart from its sheer size, the US market is also attractive because of its growth of 5-6% p.a. in the forecast 'till 2020 (thereby adding 9 Bn USD additional demand for Technical Textiles between 2014 and 2020). This growth is fuelled especially by the growth of the Buildtech, Indutech and Mobiltech sector, a.o. through the impact of new legislation e.g. in filtration or miles per gallon vehicle fuel efficiency.

It needs to be remembered, though, that the USA – partially in parallel or ahead of Europe – has been the inventor of many technologies used in Technical Textiles today, starting from high tech fibres (such as Aramids or UHMW-PE), over nonwovens (like spunbond NW) to defence and aerospace related composites and composite reinforcement (such as aerospace prepregs or honeycomb) materials.

Furthermore, the USA 'excels' in erecting non-tariff trade barriers (Gherzi view) via standards and norms little coordinated or directed from a central US American body (except for security forces, where the 'Berry Amendment' and the 'Buy American Act' close out all foreign non-US suppliers and to a certain extent nonwovens, where the INDA industry organisation enjoys some success in harmonizing US-wide norms).

Despite these hurdles, EU producers so far have been doing well on the US American market outgrowing the market (+8% EU producer CAGR 2010-2014 vs. ~ 5% US TT market CAGR 2010-2014) and thus increasing their market share. However, the main source for EU producer success on the US American market was founded on nonwovens and fabric type TechTex exports, while growing EU twine / cord / cable component exports could not entirely compensate for the loss of export volumes in medical sutures in the 'yarn type' TechTex category.

In terms of US import competition – thus not considering competition from local US producers – the key players competing with EU producers in the higher end of the market (not considering China) come from the two other Nafta countries Canada and Mexico.

Thus, EU producers clearly outperform (in terms of TechTex sales to the USA) Japan as the other key high end competitor on global TechTex markets.

# D.6.1.3. Fibre production

The USA has a significant indigenous fibre production (except PAC and specialty viscose fibres) suitable as raw material for Technical Textiles.

Figure 43: USA Fibre Production 2014

Fibre Production 2014				
	World kt 2014	USA kt 2014	% share USA in world production	
PET filament	28,297	179	1%	
PET industrial yarn	1,908	101	5%	
PET staple fibre	43,269	936	2%	
PA filament	2,626	30	1%	
PA industrial yarn	1,085	75	7%	
PA staple fibre	155	33	21%	
PAC staple fibre	1,704			
Cellulosic staple fibre	5,127	311	6%	
Cotton	26,110	3,553	14%	

Source: Gherzi research and fibre market model

A strong US government funding of especially defence related textile R&D is also impacting on the local fibre innovation for Technical Textiles (e.g. low cost carbon fibre as composite reinforcement material as a current R&D target).

Figure 44: USA specialty TechTex fibres production

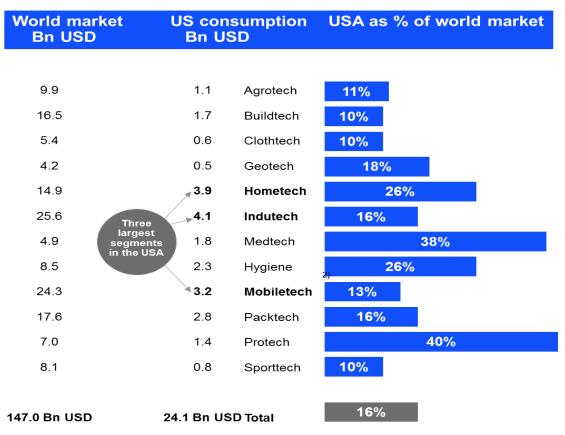
US specialty TechTex fibres production			
Meta Aramide	Yes		
Para Aramide	Yes		
Carbon fibre	Yes		
Glass filament / rovings	Yes		
PLA fibres	Yes		
PPS fibres	Yes		
Biodegradable polymers for sutures	Yes		

Source: Gherzi research

## D.6.1.4. TechTex market USA

In 2014 the US TechTex consumption was 24.1 Bn USD<sup>1)</sup>. Hometech, Indutech and Mobiltech are the largest segments, together representing 47% of the US TechTex market.

Figure 45: US TechTex consumption 2014



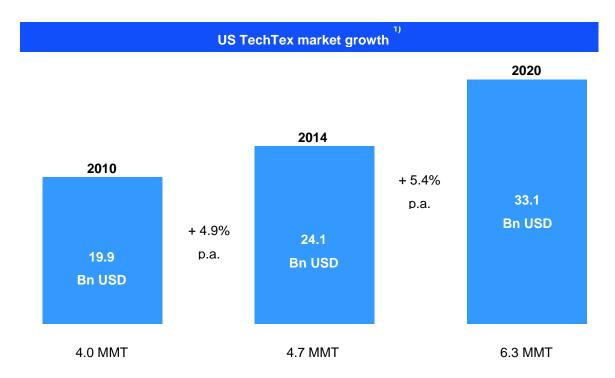
<sup>1)</sup> Yarn type, fabric type (roll good), Nonwovens (roll good)

Source: Gherzi market model

<sup>&</sup>lt;sup>2)</sup> The Mobiltech market estimate is based on a 2014 US vehicle production of 11.66 Mn units (*source: Oica*). Total Nafta production of vehicles, however, was 17.4 Mn units, for most of which the TT purchasing decisions are made in the USA (source: *Gherzi interview quotes*)

The US TechTex market is expected to continue to grow at a rate of about 5-6% p.a. Thus – between 2014 and 2020 – about 9 Bn USD demand is expected to come on top of 2014 US TechTex consumption.

Figure 46: US TechTex market growth



<sup>1)</sup> Yarn type, fabric type, Nonwovens

Source: Gherzi analysis, EDANA growth forecast, Gherzi regional demand model, Gherzi field interviews and estimates

By application the highest growth (2014-2020) in Bn USD is expected in:

Indutech: + 3.2 Bn USD
 Mobiltech: + 2.4 Bn USD
 Hometech: + 0.8 Bn USD

Source: Gherzi field interviews

Figure 47: US TechTex market assumed development 2014-2020 by application

	Bn USD 2014	CAGR 2014/20	Bn USD 2020	Bn USD add. demand 2020 vs 2014
Agrotech	1.07	3%	1.27	0.20
Buildtech	1.65	10%	2.92	1.27
Clothtech	0.56	0%	0.56	0.00
Geotech	0.48	5%	0.64	0.16
Hometech	3.94	3%	4.70	0.76
Indutech	4.11	10%	7.28	3.17
Medtech	1.83	3%	2.18	0.35
Hygiene	2.25	0%	2.25	0.00
Mobiltech	3.16	10%	5.60	2.44
Packtech	2.84	0%	2.84	0.00
Protech	1.36	5%	1.82	0.46
Sporttech	0.84	3%	1.00	0.16
Total Bn USD	24.1	5%	33.1	9.0

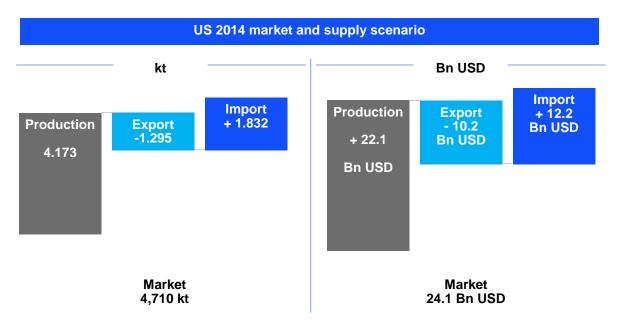
Source: Gherzi USA market model, CAGR 2014/2020 based on USA market interviews

It needs to be noted in this context that interviewed US parties saw 8% 2014/20 CAGR in NW and 3-4% in 'non-NW' Technical Textiles.

## D.6.1.5. Supply scenario USA

Out of the total 2014 US TechTex market of 24.1 Bn USD about 50% is imported.

Figure 48: US TechTex market and supply scenario 2014



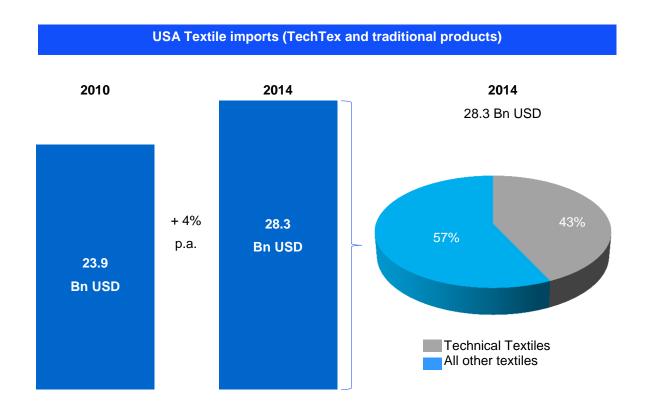
Source: Gherzi market model, UN Comtrade, Gherzi analysis, research and estimates

The relatively small export share in US TechTex production (42% compared to, e.g., South Korea with 65% TT export share) is probably 'usual' for producers in a large home market like the USA, which is large enough to reach a minimum economical scale without venturing abroad.

Total US textile imports (for TechTex and for traditional textiles) have been growing at a rate of 4% p.a. 'till 2014.

43% of all textiles imported into the USA in 2014 were TechTex products.

Figure 49: USA Textile imports (TechTex and traditional products)



As mentioned before, about 50% of US TechTex demand is imported. The import share is above 60% in yarn type and fabric type Technical Textiles and below 40% in (transport cost sensitive) nonwovens.

**US TechTex market scenario 2014** 2014 **US Market size** Of which Bn USD 24.1 Local production **Imports** Bn USD imports Bn USD 61% 39% Yarn 64% 36% 1.21 1.98 **Fabric** 7.49 11.76 34% 66% Nonwoven 10.34 3.50 **Bn USD total** 24.1 12.2

Figure 50: US TechTex market scenario 2014

Nota bene: 2014 Scenario in kt	

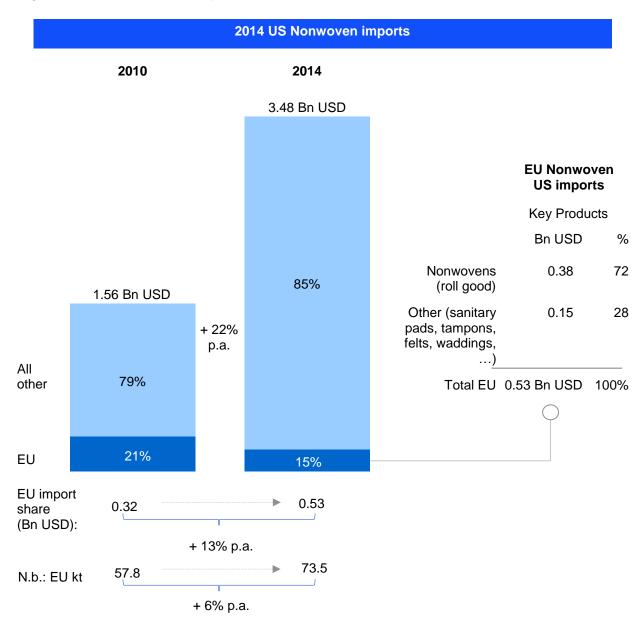
	kt US market	kt import
Yarn type	450	160
Fabric type	2400	1040
Nonwoven	1870	620
TechTex Total	4710	1830

<sup>1)</sup> Include 20% 'dual use' import products

Source: Gherzi world and regional market model, UN Comtrade, Gherzi estimates

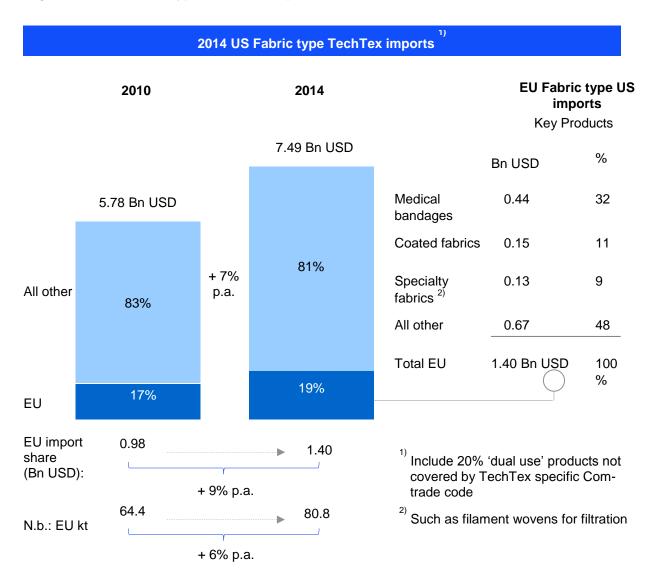
Nonwoven imports into the USA have more than doubled in value between 2010 and 2014. European producers have shown strong growth, but – nevertheless – lost % import share (going down from 21% in 2010 to 15% in 2014). The main EU import product is Nonwoven roll good.

Figure 51: US Nonwoven imports 2014



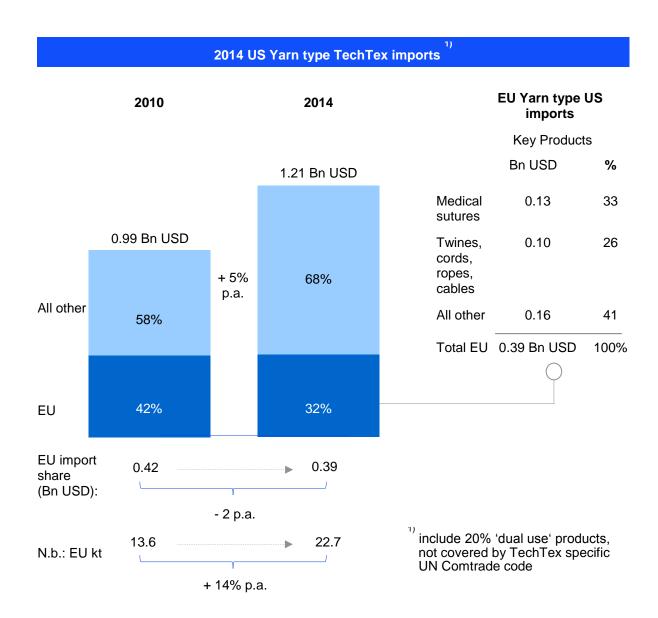
Fabric type TechTex imports into the USA have grown by 30% between 2010 and 2014. European producers have shown strong growth and gained % import share (from 17% in 2010 to 19% in 2014). Main EU import products are medical bandages, coated fabrics and specialty fabrics such as for filtration.

Figure 52: US Fabric type TechTex imports 2014



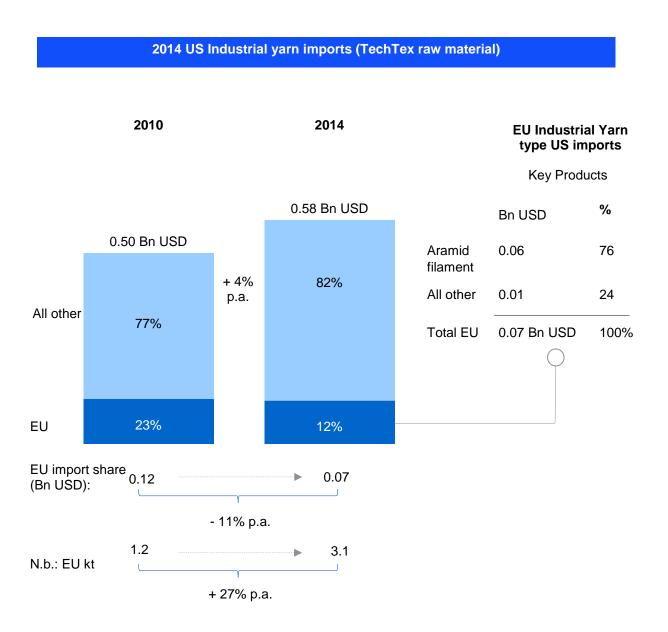
Yarn type TechTex imports into the USA have grown by 22% between 2010 and 2014. European producer exports have stagnated thus losing % import share. Main EU import products are medical sutures and twines & ropes.

Figure 53: US Yarn type TechTex imports 2014



Industrial yarn imports (raw material for Technical Textiles) into the USA have grown by 16% between 2010 and 2014. European producer exports of industrial yarns have gone down in value, thus losing % import share. Main EU import product is Para Aramid filament (which is also produced in the USA by DuPont) coming very likely from the EU production site of Japanese producer 'Teijin'.

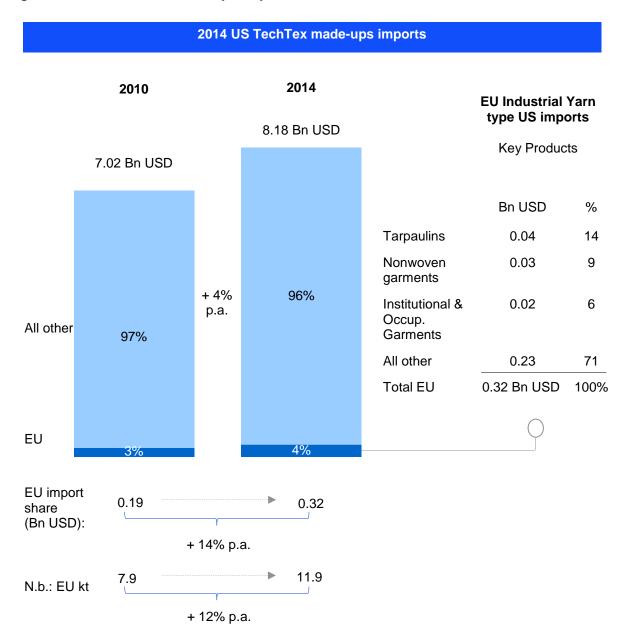
Figure 54: US Industrial yarn \* imports 2014



<sup>\*</sup> essentially High Tenacity filaments (such as Polyester) and Aramids

EU exports of made-ups to the USA have increased by 70% between 2010 and 2014, thus gaining import share. The product range in exports by EU producers is fragmented.

Figure 55: US TechTex made-ups imports 2014



Conclusions from the USA TT market and trade analysis (see also Appendix (§ 4):

The USA constitutes a very large import market with a strong import market share of EU suppliers (19%) and strongly growing import volumes from the EU in two of the three TT categories, namely ...

- Fabric type Technical Textiles (9% CAGR 2010/2014)
- Nonwovens (13% CAGR 2010/2014).

Due to decreasing suture sales on the US market, the EU yarn type export growth has shown negative performance (-2% CAGR 2010/2014)

Figure 56: USA: EU import position in Technical Textiles

USA: EU IMPORT POSITION IN TECHNICAL TEXTILES 2014							
(in Mn USD)	CON- SUMPTION	IMPORTS Total	% import over con- sumption	IMPORTS FROM EU	% EU import share	Impo	R (EU orts) vs. 2010
Yarn Type	1,984	1,210	61%	390	32%	+ 29%	- 2%
Fabric Type	11,763	7,494	64%	1,398	19%	+ 8%	+ 9%
Nonwoven	10,344	3,500	34%	525	15%	+ 18%	+ 13%
Total	24,091	12,204	51%	2,313	19%	+ 15%	+ 8%

Source: Gherzi analysis

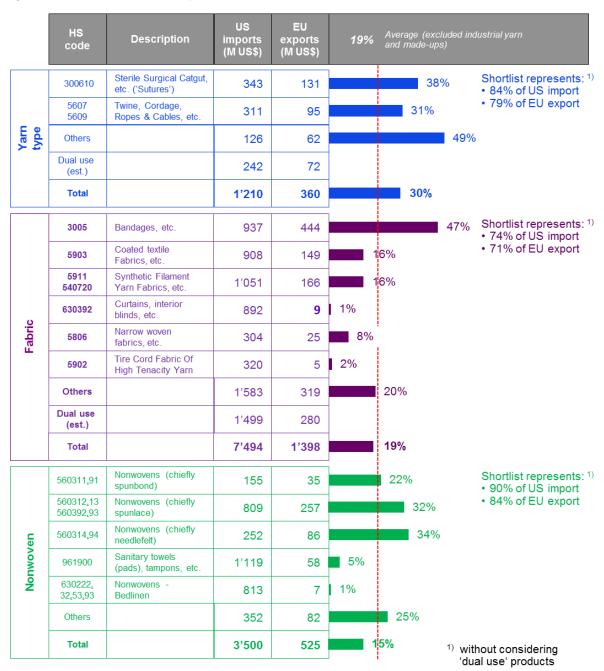
Looking only at 2013/2014 EU TT sales growth into the USA though:

- Yarn type TT exports to the USA have shown positive growth and thus gained ground
- Fabric type growth has continued more or less on the level of historic 8-9% CAGR levels
- Nonwoven growth rates have again increased to 18% CAGR levels

## D.6.1.6. USA Key trends

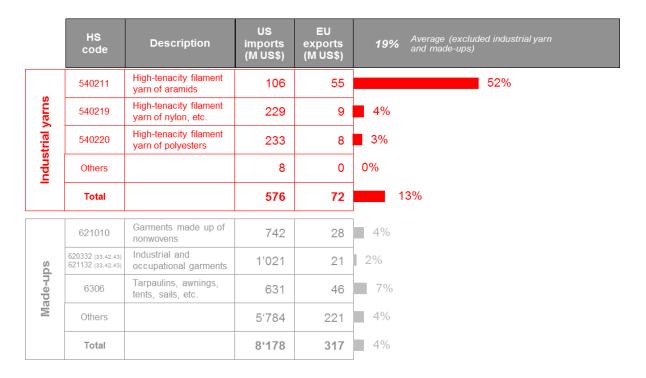
# D.6.1.6.1. Quantitative US export performance of the EU in shortlisted products

Figure 57: The short list of products - USA



The short list of products – USA (cont'd)

Figure 58: The short list of products – USA (con t'd)



## D.6.1.6.2. Conclusions from shortlisted product analysis

(A) Yarn type Technical Textiles (for details see Appendix 4)
Historically, yarn type TT exports to the USA were one of the strengths of the EU industry – mainly driven by the success of EU produced medical sutures. While overall US yarn TT imports (from EU and non-EU countries) continued to grow, EU suture exports to the USA stabilized – in 2014 – on a much lower level (131 Mn USD) compared to 2010 (225 Mn USD).

Nevertheless, in terms of % share in US imports, EU made medical sutures are still one of the top performers in the EU's TT basket. It needs to be noted in this context that the USA is not only home to the world market leader in medical sutures (Ethicon Inc. with an estimated world market share beyond 50%) but also has a larger number of smaller suture producers like Medtronic Inc., Demetech Corp., Conmed Corp., W.L. Gore & Associates, Boston Scientific, etc.).

Another EU yarn type product with strong export performance to the USA is twines, ropes and cable components showing good historic US export growth (from 27 Mn USD in 2010 to 84 Mn USD in 2014) and an above average share of US yarn type TT imports in 2014 (31% of all twines, ropes and cable components imported into the USA come from Europe).

(B) Fabric type Technical Textiles (for details see Appendix 4)
Overall, the EU export performance in fabric type products for the US market was strong with 9% CAGR between 2010 and 2014.

Two main products with above average performance have contributed to this positive trend:

- Medical bandages (10% CAGR (2010/2014)
- Coated fabrics (16% CAGR 2010/2014).
- → Together for these two products EU exports to the USA have increased by 200 Mn USD (from 390 Mn USD in 2010 to 590 Mn USD in 2014).

However, coated fabrics remain – in terms of EU % share of corresponding US imports – still below average (similar to synthetic filament based fabrics), thus further growth is required to 'catch up' with the Top EU performers on the US market

(C) Nonwovens (for details see Appendix 4) EU nonwoven exports to the USA can be considered a success with 13% CAGR 2010/2014 and spunlace and needlefelt shares in corresponding US imports of 30%. Chiefly due to huge US imports of Hygiene NW products (women's hygiene, mainly), in which the EU participates only to 5%, the overall EU share in US NW imports (15% in 2014) remains below the share achieved in fabric type TT products (19% in 2014) and yarn type TT products (30% in 2014).

## D.6.1.7. Field work insight USA

#### D.6.1.7.1. Key trade and market related trends

Gherzi has interviewed in the course of the EU TechTex mission 11 TT producers / customers and 3 associations / trade organisations in the USA itself and collected the views of 17 EU TT producers and 4 EU associations / trade organisations (other than the project steering committee members Euratex, EDANA and CIRFS) on the US TT market. All of the EU TT producer companies interviewed by Gherzi had experience in dealing with the US market, as this is generally the prio 1 non-EU export market for EU TT producers.

High entry barriers into the US market were mentioned by all interviewed parties in the EU, such as in the form of ...

- A vast basket of standards and norms to be respected, often differing by state (the USA has 50 states) or even county (county or city fire marshals – to give an example – can set their own norms)
- High certification costs (up to 100 K USD per test) in a limited number of accredited, chiefly US based laboratories
- Rules and regulations enforcing local production (Berry Amendment for defence or Buy American Act for other public tenders) spilling over into so far non-regulated areas (like industrial Protech)
- Duties and levies on TT imports from the EU (often beyond 10%)
- Ever shortening 'time to market' demands by US customers, requiring a local logistical infrastructure (or production) in the USA.

Despite these hurdles almost all interviewed EU TT producers see good market opportunities in the USA due to the recognized level of innovation and quality of EU made TT products meeting a large market and customer base open for new products and innovations.

From the side of the interviewed US TT companies, associations and organisations the strength of EU TT producers was seen in ...

- High level of quality and innovation
- Technology leaders in many TT products (as well as in machines required to produce the same).

However, in parallel, such strengths are associated with key weaknesses ...

- Unwillingness to supply commodities
- Long time to market (up to 10 weeks by ship), as most EU producers have no logistical structure (warehouse) or production in the USA
- Inflexibility in pricing
- Sometime little understanding of US standards and norms and
- Non-US origin for publically tendered products.

Nevertheless, the numbers show that – if higher end TT products are imported – and thus not sourced from Nafta regions – the preferred source is Europe (well ahead of Japan or Korea).

Often EU producers are thus highly welcome in the USA, because they come with new product ideas or new technologies, a weakness which is associated by inter-viewed parties with local US American producers, who are often focusing on the US American or Nafta home market only.

Also, there are a number of TT product segments (like paper machines clothing) with a limited number of US producers, whereby US customers welcome foreign suppliers.

The advantages of setting up a production in the USA were stressed again and again in the course of the Gherzi US field interviews.

Indeed, a number of EU TT companies have established US operations in the past (most recent examples include German nonwoven producers Polyvlies GmbH and Sandler GmbH).

Nevertheless, EU TT exports to the USA – a 2.3 Bn USD business in 2014 – have been growing at 8% CAGR between 2010 and 2014 and are expected to continue to grow in the future.

#### D.6.1.7.2. US market attractiveness

In general there was a positive appreciation by interviewed parties about US market growth perspectives 'till 2020.

Most parties could underwrite the Gherzi 5% 2014/20 CAGR estimate which translates into 1.5 Bn USD US TT demand being added <u>every year</u> ('till 2020) – Quote: "The US economy is good and people are spending."

There were also a large number of segments which were expected to show above average growth in demand:

- i. Nonwovens in general with 8% 2014-2020 CAGR estimate (+ 1 Bn USD demand p.a. 'till 2020)
  - Mobiltech (growth of vehicle production, lighter cars)
  - Filtration (legislation and increasing quality control of products)
  - Geotech (wovens substitution)
  - Medtech (wipes, gowns & drapes)

- Digital print fabrics (replacing wovens)
- Impact of new NW technologies like split fibre spunmelt (Freudenberg split-fibre-NW 'Evolon' example was cited) or spunmelt production with film lamination in one step (Reifenhäuser technology was cited)
- ii. Mobiltech opportunities driven by the government's 50-52.5 mpg (~ 5.5l / 100km) year 2025 target
  - The program launched by the Obama administration in 2012 is now well into the implementation phase as the final deadline has been set for 2025
  - 1<sup>st</sup> phase 2012 2016: light duty cars
  - 2<sup>nd</sup> phase 2017 2025: all vehicles
  - special opportunities deriving from this initiative were seen by interviewed parties in TT components and materials allowing to reduce vehicle weight, e.g.:
    - lower weight automotive acoustics (e.g. replacing plastics)
    - FRP reinforcements, prepregs or moulded composite parts (including reinforced by CF
- iii. Filtration (Indutech)
  - New legislation and increasing QC requirements at user level driving growth
  - Favouring wovens (such as for liquid filtration) as well as nonwovens (e.g. dust, odour and air filtration)
- iv. Buildtech
  - Housing boom favours growth of, e.g.:
    - sun shading and awnings
    - architectural structures
    - roofing membranes
  - Temporary buildings and tents (meeting new 'strong winds proof' standards and norms)
- v. Protech and functional clothing
  - Expected high penetration of smart clothing due not only but also to US government funding of corresponding (military oriented) R&D and in the Medtech sector
- vi. High growth in composite demand (and corresponding reinforcements) not only in the Mobiltech segment, but also in
  - wind energy
  - marine
  - aerospace
  - carbon fibre consumer products (crossbows, skies, snowboards, hockey sticks)
  - composite rebars (replacing steel) for bridges and highways
- vii. Digital print fabrics (woven, warp knit and nonwoven)
- viii. Geotech in general (woven, nonwoven, grids)

# D.6.1.7.3. Key success factors to profit from market opportunities

With 19% import share (2014), EU TT suppliers are already a major force to reckon with in the US TT market

- A high barrier for European SMEs is the standard and norm issue, as there is an intransparent 'jungle of norms' in the USA with
  - national (US American) norms like ASTM, USDA or FDA certificates
  - state norms (e.g. SEAOC) or county (like fire marshal) norms (e.g. Indus Association norms (such as American Bakery Association)
  - private organisation norms, like from the insurance company Factory Mutual (FM) for, e.g., roofing membranes

On top come government acts excluding non-US producers from certain tenders like the Berry Amendment for US security forces or the Buy American Act for public tenders. Also, even if ISO norms exist (where the USA has been supporting the norming process), they are often not accepted in the USA in favour of local norms (e.g. industrial PPE and workwear).

The sheer number of standards and norms to be respected in the USA together with the costs per test between 5 K USD and 100 K USD (example roofing membranes) and a limited number of accredited (chiefly US American) laboratories represents a high barrier not only but especially for EU SMEs.

Overcoming this initial barrier is thus the first KSF ('Key Success Factor') which is today often realized in close collaboration between an EU producer and his interested US customer.

- Shortening the time to market is another key success factor for the US market. This can be realized (for TT exports from Europe) by establishing a local US logistical presence, be it 100% EU producer owned or through a tie-up with a local distributor (like Composite One, a 900 Mn USD distributor in composite materials with 40 warehouses all over the USA). Often this logistical presence needs to be set up due to the size of the market at least on the east as well as on the west coast of the States.
- Catering to the large number of above average growth segments mentioned before would be the next KSF in Gherzi's view in summary chiefly to the ...
  - Buildtech
  - Filtration
  - Mobiltech
  - Geotech
  - Smart textiles for non-Protech (like Medtech)
  - ... markets.

This is excluding Protech blocked by import prohibiting trade barriers.

Once the export volume to the USA becomes large enough a local production might be a good answer to many of the challenges described before. However, before reaching this point, exports out of an EU TT production site is a feasible and successful route into the US market.

#### D.6.1.8. USA: SWOT

Figure 59: USA SWOT for EU TT producers

#### STRENGTHS

- Above average 2014 EU % import share in yarn type (30%) and Technical Textiles
- Above average 2014 EU import share by product:
  - Medical sutures (38%)
  - Twines, cords and ropes (31%)
  - Medical bandages (47%)
  - Spunbond / Spunlace / Needlefelt nonwovens (31%)
- Well recognized TT import supplier (No. 1 in high end products ahead of Japan)
- Quality and innovator image, well recognized source for new product ideas and technologies

#### WEAKNESSES

- On par 2014 EU % import share in fabric type Technical Textiles (19%) and below average import share in industrial yarns (13%) and TechTex made-ups (4%)
- On par or below average 2014 EU import share by product:
  - Coated fabrics (16%)
  - Specialty filament fabrics (16%)
  - Curtains & blinds (1%)
  - ➤ Narrow wovens (8%)
  - > Tire cord (2%)
  - Sanitary towels a. napkins (5%)
- Time to market too long, if not shortened by local logistical infrastructure in the USA
- Often unwillingness of EU producers to supply TT commodities

#### **OPPORTUNITIES**

- Large TechTex market of 24 Bn USD (2014) growing to 33 Bn USD by 2020
- TechTex imports (12 Bn USD in 2014) represent 50% of the market with above market CAGR (10% vs 4% between 2010 and 2014)
- Large volumes of TechTex madeup imports (8 Bn USD – not included in the above given TechTex figure) in 2014
- Euro depreciation against the USD
- Highly regulated market access (norms, litigation risk, ...) could be a threat as well as an opportunity, as it favours professional operators at the expense of ,garage shop' type price aggressive competitors
- Significant number of above average growth segments or technologies (like NW)
- General legislative trends (e.g. filtration or fuel efficiency in cars) in favour of EU producer strengths

### THREATS

- Most US TechTex segments carry import duty when supplied by EU producers
- S. Korea and (in the future)
   Japan (TPP) have FTA with
   the US (both are strong Tech Tex competitors of the EU)
- Strong indigenous Nonwoven industry commanding 66% of the US market
- The world's No. 1 producer of medical sutures is based in the US (cie. Ethicon)
- Nafta / Cafta / Berry Amendment / Buy American Act (Protech specific) work against EU exports into the US by favouring local production ('yarn or fibre forward rule')
- High norming barrier difficult to overcome by EU SMEs
- If TPP (Trans Pacific Partnership Agreement) is ratified, Japan will enjoy duty-free access to the US market

### D.6.1.9. USA: Summary and key opportunities

### D.6.1.9.1. Summary

The USA is the second largest TechTex market worldwide behind the EU.

The US TechTex market is expected to grow at 5% p.a., thus adding about 9 Bn USD TechTex demand between 2014 and 2020, of which 6 Bn USD in non-NW TT products).

Roughly 50% of US TechTex demand is imported, corresponding to 12.2 Bn USD TechTex import value in 2014.

EU producer performance on the US market is different by product family:

- Nonwovens: Despite 13% annual growth of EU exports to the USA between 2010 and 2014 (to 0.5 Bn USD in 2014) loss of % import share
- Fabric Type Technical Textiles: 9% annual growth of EU exports to the USA between 2010 and 2014 (to 1.4 Bn USD in 2014) and increase in % import share
- Yarn Type Technical Textiles: Slight decline of EU exports to the USA (on 0.4 Bn USD 2014 level) and drop in % import share

The highest % import share of EU producers regarding the USA is, however, still in yarn type Technical Textiles:

Figure 60: EU import share 2014

	% 2014 EU import share
Yarn type	32%
Fabric type	19%
Nonwovens	15%

(19% on average for all EU supplied TT products)

Source: Gherzi analysis

EU exports of industrial yarns (TT raw materials) and TechTex made-ups to the USA remain relatively small in 2014

Industrial yarn: 72 Mn USD

Made-ups: 317 Mn USD

Industrial yarns meet a strong local fibre industry (e.g. in Para-Aramids) on top of the import competition from China and Korea in High Tenacity PA or High Tenacity Polyester filament.

Made-up exports are also restricted by US governmental trade barriers like the Berry Amendment or the Buy American Act discussed earlier in this report.

## D.6.1.9.2. Key opportunities

- I. Expand in areas of strength
  - Mobiltech
    - In general (profiting from US vehicle industry growth
    - weight saving products and TT based technologies (e.g. nonwovens replacing plastics or composites (FRP) for structural car components) responding to the 50-52.5 mpg year 2025 government's target
  - Medtech
    - Nonwovens
    - Next generation sutures
    - Medical bandages
  - Filtration (nonwoven)
  - Geotech (not only, but especially nonwovens)
  - Buildtech
    - Temporary buildings
    - Architectural membranes
    - Digital print fabrics
    - etc.
  - Twines, cords and cable components
- II. Address areas of weakness
  - Coated fabrics (16% of import share)
  - Specialty synthetic filament fabrics (16% imort share) such as for filtration
  - Sun shading and awnings (<5% est. import share)

#### III. Recognize untouched opportunities

- Smart fabrics (non-Protech, such as for Medtech)
- Innovative new nonwoven technologies (split or bico fibres NW, isotropic spunlace NW, new web-film spunmelt laminates, etc.)
- Composites (fabrics, prepregs, parts)
  - Weight saving (auto, marine, ...)
  - Steel replacement (e.g. in infrastructure)
  - Carbon fibre based (sports equipment, high performance vehicles)

# D.6.1.10. USA: Conclusions

Opportunities and recommended actions (on EU producer level) for the US market can be summarized as follows:

Figure 61: Gherzi strategic priority matrix USA

•							
			USA Opportunity Matrix				
		Suggested EU Producers' Move					
		ESTABLISH	EXPAND	HOLD			
USA	High	Smart textiles (e.g. Medtech)     'New' nonwoven technologies     Composites and corresponding reinforcements	- Sophisticated nonwovens (all applications, new product concepts and technologies) - Filter fabrics (NW) - Medtech & Hygiene (NW, woven, braids) - Sophisticated vehicle components - Geotech (especially nonwovens)	J			
Market Attrac- tiveness	Medium		<ul> <li>Coated fabrics (incl. digital print substrates)</li> <li>Buildtech (temp. buildings, architectural membranes, sun shading, etc.)</li> <li>Specialty filament fabrics (e.g. for filtration)</li> </ul>	<ul> <li>Non-Filter / Non-sun- shading filament fabrics</li> <li>Commodity nonwovens</li> <li>Twines / ropes / cable components</li> </ul>			
	Low			- Industrial Protech (fabrics and garments)			
		Absent to weak	Medium to weak	Strong			
			Current EU Producer market position in USA				

#### D.6.2. Brazil

## D.6.2.1. Key data Brazil

Figure 62: Key Data Brazil (2014)

Population	202 Mn	(63% of USA)
TT consumption / capita	20.8 USD / a	(28% of USA)
TechTex consumption (roll good and threads)	4.2 Bn USD	(17% of USA)
TechTex imports	1.15 Bn USD	(9% of USA)
% import share	27%	(51% in USA)
TechTex imports from EU	0.22 Bn USD	(2.28 Bn USD in USA)
EU share of TechTex imports	19%	(19% in USA)

Source: Gherzi analysis

#### D.6.2.2. Introduction

Compared to the size of the population (200 Mn people) the Brazilian TechTex market is relatively small (per capita only 28% of USA), corresponding more or less to the difference USA – Brazil in per capita GDP (21 K USD / a in Brazil vs 76 K USD / a in the USA).

With 223 Mn USD related EU TT export volume, Brazil is also a relatively small market for EU TechTex suppliers chiefly due to:

- a) Only 27% of all Technical Textiles consumed in Brazil are imported (vs 51% in the USA)
- b) Brazil tends to import cheap commodities from Asia (38% of Brazil TT imports 2014, not considering S. Korea) or from duty-free Mercosur partners (13% of Brazil TT imports 2014) rather than high end products from expensive EU suppliers.

Nevertheless, in the higher end of the market EU producers (19% TT import share in 2014) are coming close – in terms of TT exports to Brazil – to the combined USA / Mexico position (together 22% 2014 TT import share into Brazil).

The Brazilian industry and governmental organisations are highly protectionist when it comes to protect indigenous Brazilian TT production.

EU exports of medical sutures to Brazil, to give an example, collapsed from 144 Mn USD in 2010 to 12 Mn USD in 2014 when local suture production was established (company Covidien a.o.), subsequently to which the Brazilian government raised duties on suture imports to prohibitive levels.

Thus, today, the EU is supplying to Brazil chiefly products which are not produced locally.

By 2014 EU TT exports to Brazil had not fully recovered from the above described collapse of suture sales:

Figure 63: Brazil import share 2014

	EU TT exports to Brazil				
	2010 Bn USD	2014 Bn USD			
Yarn type*	180	26			
Fabric type *	124	149			
Nonwovens	39	48			
Total Mn USD	343	223			

<sup>\* (</sup>including 20% dual use estimate)

Source: Comtrade

In Brazil, the years 2015 / 2016 are marked by the drastic economic crisis in the country, so that very likely the above quantified 2014 EU TT export numbers to Brazil might have continued their decline.

# D.6.2.3. Fibre production

Brazil has a substantial fibre production in most raw materials needed for Technical Textiles (although on a lower level of sophistication compared to Europe, the USA or Japan). Many specialty fibres used for Technical Textiles (e.g. Aramids) are, however, today also produced in the country.

Figure 64: Brazil Fibre Production 2014

Fibre Production 2014					
	World kt 2014	Brazil kt 2014	% share Brazil in world production		
PET filament	28,297	57	0.2%		
PET industrial yarn	1,908	8	0.4%		
PET staple fibre	43,269	136	0.3%		
PA filament	2,626	41	1.6%		
PA industrial yarn	1,085	18	1.7%		
PA staple fibre	155				
PAC staple fibre	1,704	1			
Cellulosic staple fibre	5,127	16	0.3%		
Cotton	26,110	1,533	5.9%		

Source: Gherzi research and fibre market model

Brazil specialty TechTex fibres production				
Meta Aramid	Yes			
Para Aramid	Yes			
Carbon fibre	Yes			
Glass filament / rovings	Yes			
PLA fibres	No			
PPS fibres	Yes			
Biodegradable polymers for sutures	n.a.			

Source: Gherzi research and fibre market model

## D.6.2.4. TechTex market Brazil

In 2014 the Brazil TechTex consumption was 4.2 Bn USD<sup>1)</sup>. Mobiltech, Indutech, Agrotech and Hometech are the largest segments representing 60% of total Brazil TT consumption.

Figure 65: Brazil TechTex consumption 2014

World market Bn USD	Bra Bn	Brazil consumption Bn USD			% of world market
9.9		0.54	Agrotech		6%
16.5	1	0.39	Buildtech	2%	
5.4		0.09	Clothtech	2%	
4.2		0.08	Geotech	2%	
14.9	/ *	0.51	Hometech	3%	
25.6	Four	0.64	Indutech	3%	
4.9	largest segments	0.15	Medtech	3%	
8.5	Segments	0.29	Hygiene	3%	
24.3	*	0.85	Mobiltech	4%	
17.6		0.44	Packtech	2%	
7.0		0.14	Protech	2%	
8.1		0.13	Sporttech	2%	
147.0 Bn USD	4.23	3 Bn USD	Total	3%	

<sup>1)</sup> Yarn type, fabric type (roll good), Nonwovens (roll good)

Source: Gherzi world and regional market model

The Brazil TechTex market (4.2 Bn USD in 2014) has taken a hit in 2015 due to the prevailing recession in the country. As of OICA Brazilian motor vehicle production went down from 3.7 Mn units in 2013 to 2.4 Mn units (- 34%) in 2015. At projected future growth rates of 2.5% p.a. (source: Gherzi field interviews in Brazil) the 2010 market size can be reached again as of 2020.



Figure 66: Brazil TechTex market growth

Source: EDANA projections, Gherzi analysis, 2015/16 – 2020: Gherzi interviews and estimates

Before this background it does not make sense to go too deep into the market scenario 2020 by application (as it will in most cases remain below 2014 recorded values).

The highest chance to reach again 2014 demand levels by 2020 was accredited – in Gherzi interviews – to ...

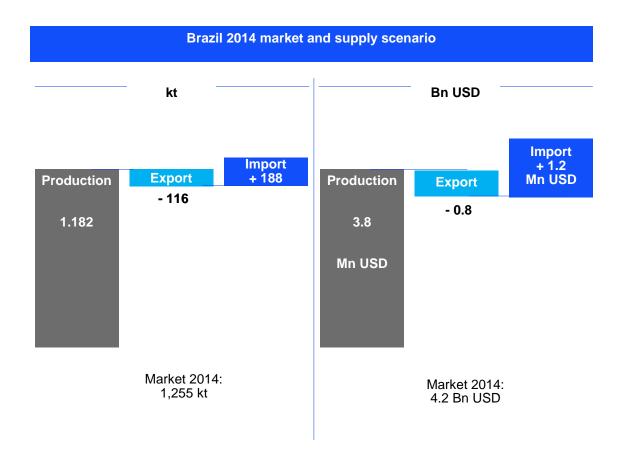
- Agrotech (Government plan to increase grain production in Brazil by 50% 'till 2025 source Ministerio da Agricultura):
   However, this segment is almost exclusively served by local producers in Brazil
- Packtech (driven by growth of Agrotech and substitution of paper bags by TT solutions)
- Buildtech & Geotech due to expected construction industry growth and expected public investments in infrastructure, energy and railways
- Filtration (large gap vs developed countries and thus need to 'catch up').

 $<sup>^*</sup>$  The interviewed parties expect an annual Brazilian GDP growth of only 1% as of 2018 (2017 GDP growth expected to stagnate on a  $\pm$  0 level)

# D.6.2.5. Supply scenario Brazil

Out of the total 2014 TechTex market in Brazil (4.2 Bn USD) only about 27% is imported (1.15 Bn USD).

Figure 67: Brazil market and supply scenario 2014

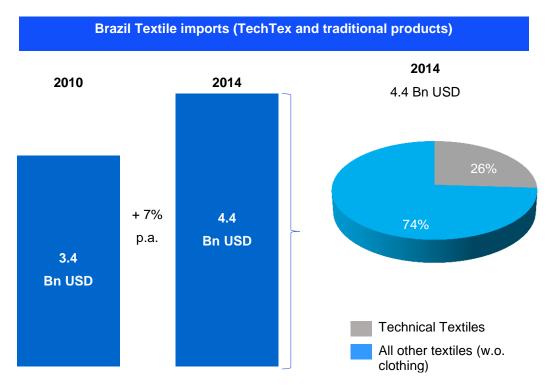


Source: Gherzi world and regional market model (adapted in Clothtech and Sporttech to specific Brazil indicators), UN Comtrade

Total Brazil textile imports (for TechTex and traditional applications) have been growing at a rate of 7% p.a. 'till 2014. However, only 26% of all textiles imported in 2014 were TechTex products (compare with 43% in the USA).

This fact indicates towards a certain unawareness about the advantages of Technical Textiles in Brazil, a fact confirmed by Gherzi interviews.

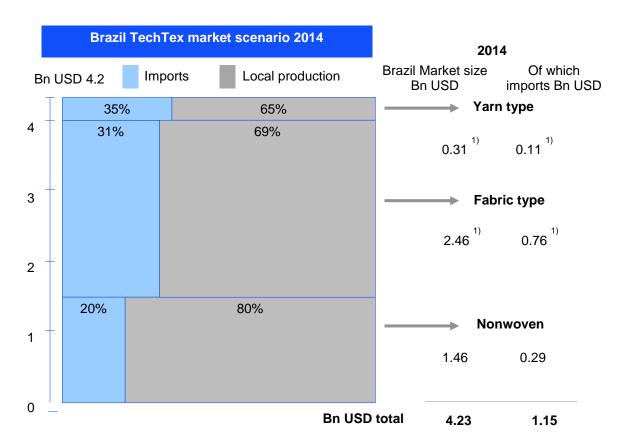
Figure 68: Brazil Textile imports 2010 / 2014



Source: WTO, UN Comtrade, Gherzi analysis

About 27% of Brazil TechTex demand is imported. The import share is highest in yarn type Technical Textiles (due to high imports of medical sutures).

Figure 69: Brazil TechTex market scenario 2014



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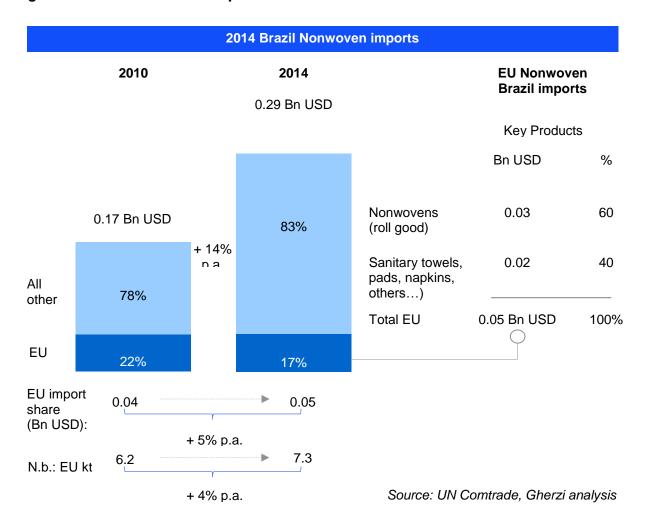
	kt Brazil market	kt import
Yarn type	120	10
Fabric type	800	110
Nonwoven	340	60
TechTex Total	1260	190

<sup>1)</sup> Include 20% 'dual use' import products (that is products – like cotton wovens – serving TechTex as well as traditional textile markets)

Source: Gherzi world and regional market model, UN Comtrade, Gherzi estimates

Nonwoven imports into Brazil have grown by 71% between 2010 and 2014. European producers have shown more modest growth and thus lost % import share. Nonwoven roll good is the principal EU import product.

Figure 70: Brazil Nonwoven imports 2014



Fabric type TechTex imports into Brazil have grown by 33% between 2010 and 2014. European producers have grown more or less with the market. Main EU import products are bandages (Medtech), coated fabrics and specialty fabrics such as for filtration.

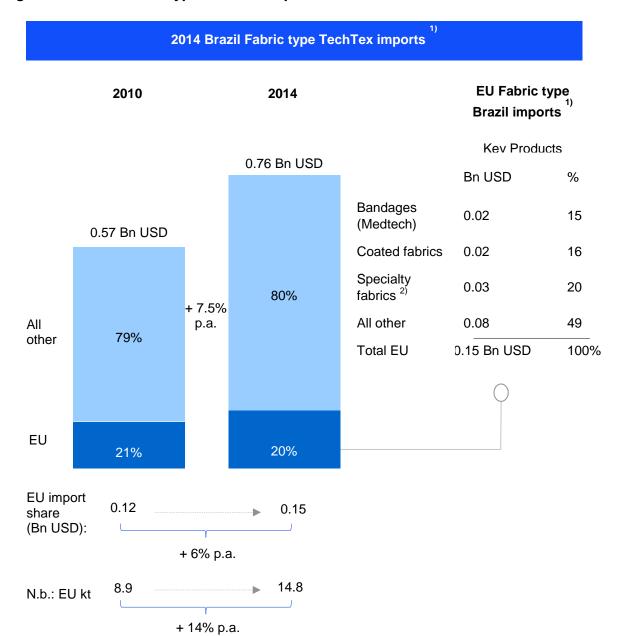


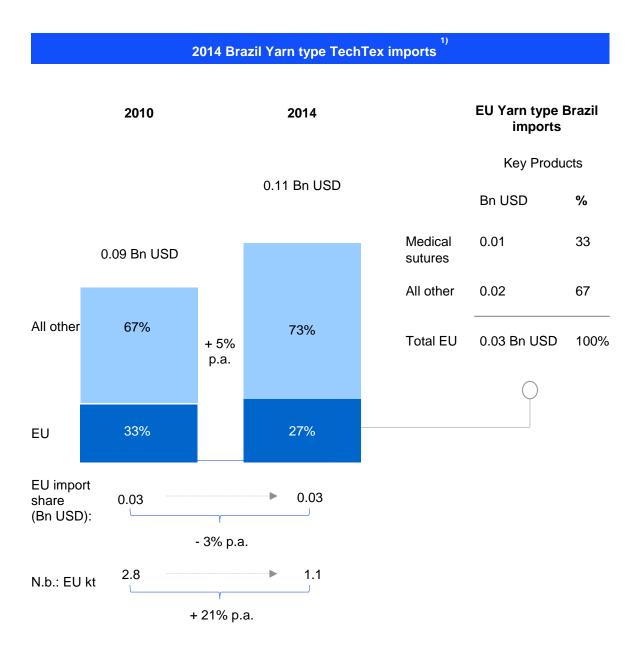
Figure 71: Brazil Fabric type TechTex imports 2014

Include 20% 'dual use' products not covered by TechTex specific Comtrade code

<sup>2)</sup> Such as filament wovens for filtration

EU Yarn type TechTex imports into Brazil have stagnated mainly due to loss of volumes in medical sutures (since local Brazilian production was expanded).

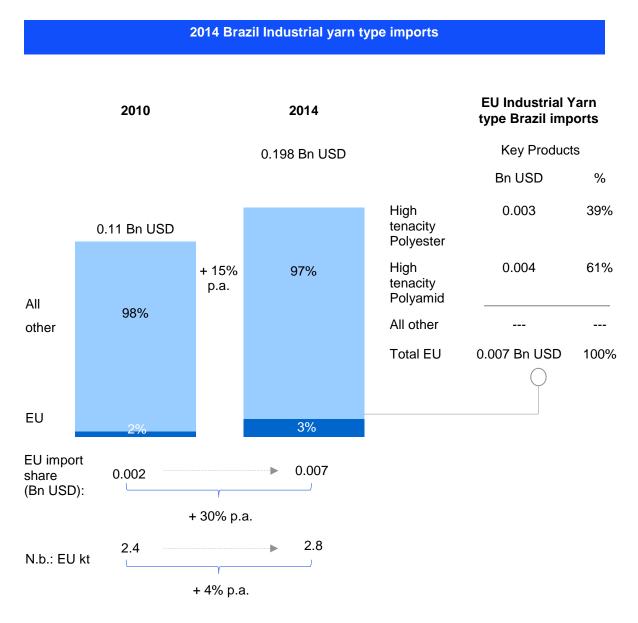
Figure 72: Brazil Yarn type TechTex imports 2014



<sup>&</sup>lt;sup>1)</sup> Include 20% 'dual use' products not covered by TechTex specific Comtrade code

EU industrial yarn imports (raw material for Technical Textiles) into Brazil remain relatively insignificant in 2014.

Figure 73: Brazil Industrial yarn \* type imports 2014

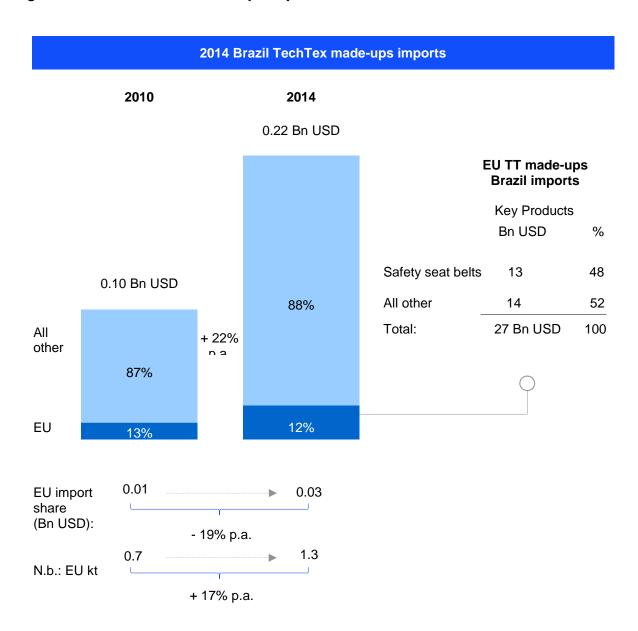


<sup>\*</sup> essentially High Tenacity filament and Aramids

Brazil imports of TechTex made-ups – though growing strongly between 2010 and 2014 – remain small in 2014 (0.2 Bn USD). The same holds true for 2014 EU TechTex made-up exports to Brazil (0.03 Bn USD).

The main product imported from the EU is seat belts.

Figure 74: Brazil TechTex made-ups imports 2014



Conclusions from the Brazil TT market and trade analysis (see also Appendix 5): Relatively closed import market Brazil, in which the EU enjoys a relatively strong position. Till 2014 Brazil imports in fabrics and Nonwovens from the EU were growing, imports of (yarn type) medical sutures from EU collapsed, however, likely due to new local production (cie. Covidien).

Figure 75: Brazil: EU import position in Technical Textiles

#### **BRAZIL: EU IMPORT POSITION IN TECHNICAL TEXTILES (2014)**

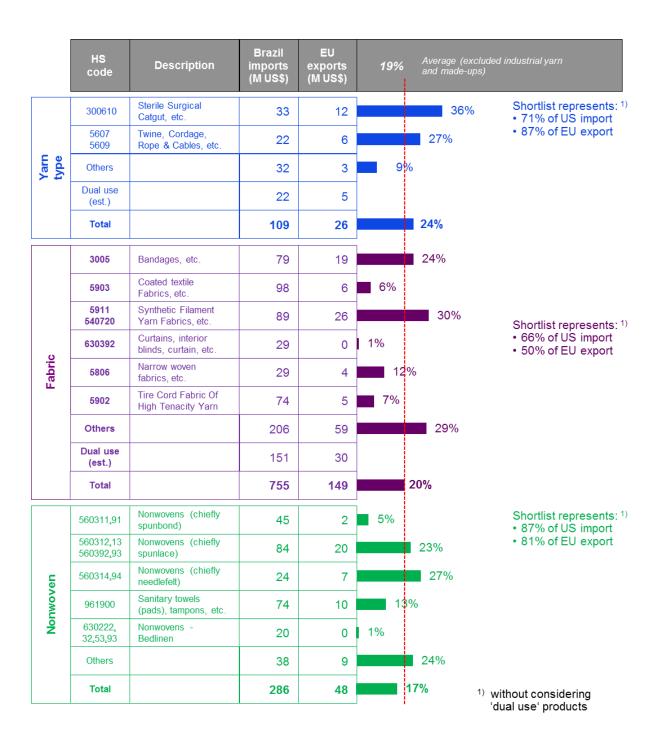
(in Mn USD)	CON- SUMPTION	IMPORTS Total	% import over con- sumption	IMPORTS FROM EU	% EU import share	CAGR (EU vs. 2013	J Imports) vs. 2010
Yarn Type	309	109	35%	26	24%	+ 11%	- 38%
Fabric Type	2,456	755	30%	149	20%	+ 6%	+ 5%
Nonwoven	1,462	286	20%	48	17%	+ 4%	+ 5%
Total	4,227	1,150	27%	223	19%	+ 6%	- 10%

Source: UN Comtrade

## D.6.2.6. Brazil Key trends

# D.6.2.6.1. Quantitative Brazil export performance of the EU in shortlisted products

Figure 76: The short list of products - Brazil (1/2)



Brazil ΕU Average (excluded industrial yarn and made-ups) Description 19% imports exports code (M US\$) (M US\$) High-tenacity filament 540211 0% varn of aramids Industrial yarns High-tenacity filament 540219 66 6% 4 yarn of nylon, etc High-tenacity filament 70 540220 3 yarn of polyesters 0 5% Others 0 3% Total 190 7 Garments made up of 621010 17 1 6% nonwovens 620332 (33,42,43) 621132 (33,42,43) Industrial and 397 2 Made-ups occupational garments Tarpaulins, awnings, 9% 6306 23 2 tents, sails, etc Others 149 22 15% Total 11% 968 26

Figure 77: The short list of products - Brazil (2/2)

# D.6.2.6.2. Conclusions from shortlisted product analysis

(A) Yarn type Technical Textiles (for details see Appendix 5)

Sutures (36% TT import share) and twines, cords and cable components (27% TT import share) are the two strongest EU yarn type products (similar to the USA). As Brazil 2014 import values in these two products remain small, though, (only about 55 Mn USD in 2014), this good performance did not generate corresponding high levels of EU producer export sales (18 Mn USD in 2014 for these two categories).

(B) Fabric type Technical Textiles (for details see Appendix 5)

Only coated fabrics and bandages (where the EU is strong also in the USA) reach above average TT import shares. Again, here the Brazil import volume remains medium to low (together for these two products ~ 170 Mn USD in 2014), so that the sales of EU producers remain modest (45 Mn USD for these two categories).

(C) Except spunbond (where there is strong Brazilian competition – e.g. companies Berry-Providencia and Fitesa) EU NW exports to Brazil have been steadily growing both in needle felt and in spunlace NW.

The limitation of reaching higher levels than the  $\sim 50$  Mn USD 2014 EU NW export into Brazil are to be seen in strong local competition from a number of Brazilian producers leading to the fact that the total NW import volume – all countries – remains limited (286 Mn USD in 2014). 80% of nonwovens consumed in Brazil are manufactured locally.

## D.6.2.7. Field work insight Brazil

## D.6.2.7.1. Key trade and market related trends

Gherzi has interviewed in the course of the EU TechTex mission 15 TT producers / customers and 2 associations in Brazil itself and collected the views of 17 EU TT producers and 4 associations / trade organisations (other than the steering committee members Euratex, EDANA and CIRFS) on the Brazilian TT market.

Most of the EU producers interviewed by Gherzi had limited experience in Brazil as the market was judged difficult or partially impossible to access (if duty rates went above 30%); This also due to the current economic crisis in the Brazilian market.

Thus mentioned as limitations to future growth in EU exports to Brazil were:

- High duty barriers (> 20%) which Brazil is erecting against imports of products which are produced locally
- Generic policy in Brazil of import replacement leading to the risk of IP being copied to set up a local Brazilian production
- Difficult to recruit personnel in Brazil qualified to sell highly engineered EU TechTex products (like geotextiles or filtration)
- Strong local competition specifically in nonwovens (companies Berry-Providencia, Fitesa, Ober, DuPont Cipatex, amongst others)

Given these hurdles and the collapse of the Brazilian TT market between 2013 and 2014 few EU producers have the 'standing' to continue prospecting the Brazilian market at the time of this report (exception: EU producers with local production sites in Brazil or companies – such as from the geotextile side – who have invested years to train and build up local commercial personnel in Brazil itself).

Total EU TT exports to Brazil have gone down sharply after the collapse of suture sales in 2013 (erection of duty barriers to protect new local producers) and have only gradually recovered in 2014 only to be negatively impacted again by the economic crisis of 2015/2016.

#### D.6.2.7.2. Brazil market attractiveness

The majority of future growth applications in Brazil is favouring local producers:

Figure 78: Growth applications Brazil

Growth Applications Brazil	Favouring chiefly			
Growth Applications Brazil	Local Producers	Foreign Producers		
Agrotech	X			
Buildtech	X			
Geotech	X	X		
Indutech (e.g. filtration)	X	X		
Packtech	X			

Source: Gherzi interviews and assessment

Areas of strength of the EU TT industry (especially Mobiltech and Medtech) are not taking off in the short term future due to the lack of funds on the consumer level.

On the other hand, the knowledge about the virtues of Technical Textiles in general and the attractiveness of EU high end solutions (in, e.g., Medtech, Protech, Filtration, Geotech, Composites, etc.) is very underdeveloped in Brazil both on producer and industry association side as well as on a customer level.

Enhancing this knowledge, e.g., through TT road shows (e.g. filtration or Geotech specific) or TT fairs could in the long run enhance the demand for more sophisticated TT solutions on the Brazilian market.

## D.6.2.7.3. Key success factors to profit from market opportunities

The KSF ('Key Success Factors') for Brazil TT exports can be summarized as

- i. Identifying products which are not produced locally
- ii. Identifying the right personnel which can educate the Brazilian market in respect to the EU TT product advantages and who can thus sell complex EU TT solutions against the prevailing low end (local) products.

Standards and norms are less of an issue in Brazil as these are often formulated along prevailing international examples.

D.6.2.8. Brazil: SWOT

Figure 79: Brazil - SWOT

#### **STRENGTHS**

- Above average 2014 EU % import share in yarn type (30%) and fabric type (20%) Technical Textiles
- Above average 2014 EU import share by product:
  - Medical sutures (36%)
  - Twines, cords and ropes (27%)
  - ➤ Medical bandages (24%)
  - Specialty filament fabrics (30%)
  - Špunlace nonwovens (23%)
  - Needlefelt nonwovens (27%)
- Well respected EU position for 'engineered' TT solutions
- Cultural closeness EU Brazil

#### **WEAKNESSES**

- Below average 2014 EU % import share in industrial yarn (3%) and TechTex made-ups (11%)
- Below average 2014 EU import share by product:
  - Coated fabrics (6%)
  - Narrow wovens (12%)
  - > Tire cord (7%)
  - Spunbond nonwovens (5%)
  - Sanitary towels a. Napkins (13%)
- Not many EU companies have a well-established sales organisation in Brazil
- EU cost levels sometimes prohibitive for a low GDP / capita country like Brazil

## **OPPORTUNITIES**

- Relatively large population (200 M) thus potential for growth in demand of ,number of inhabitants' related segments like Medtech or Hygiene
- Industrialisation of agriculture creates needs for high end Agroand Geotextiles
- Mobiltech is the largest application in Brazil creating long term opportunities for competitive EU automotive suppliers
- Despite protectionist measures, TechTex imports have outgrown the market between 2010 and 2014: Local producers possibly not present in the high tech / specialty / nominated end of the market
- Raising awareness for high end EU TT solutions in, e.g. ...
  - > Filtration
  - Medtech
  - Geotech
  - Composites
  - Protech
  - Etc.
  - ... could create new demand

## THREATS

- Market drop from 4.2 Bn USD (2014) to 3 Bn USD (2015) with full recovery not expected before 2020
- High import barriers resulting in a relatively low TechTex import share (19% in 2014)
- As soon as local production comes up, duties are raised to reduce imports
- Strong appreciation of the Euro against the RRL
- Prevailing economic stagnation creating liquidity problems on customer and B2B customer levels

## D.6.2.9. Brazil: Summary and key opportunities

## D.6.2.9.1. Summary

Brazil is a 4 Bn USD TechTex market (2014) driven by a relatively large population (~ 200 M inhabitants) and large agricultural and – partially (like in vehicle production) – industrial sector.

The 2015 recession is estimated to have cut TechTex market demand by close to 30%. At forecasted growth rates the 2014 level of TechTex demand will be materializing again as of 2020.

Brazil is a relatively closed economy (high import barriers for products produced in the country) explaining the low TechTex import share of 27% (compared to 50% in the USA).

EU TechTex imports into Brazil remain below 250 Mn USD for the year 2014 (20% average import share) with the highest EU % import share being achieved in yarn type Technical Textiles.

Figure 80: Brazil import share 2014

	% 2014 Brazil import share
Yarn type	27%
Fabric type	20%
Nonwovens	3%

EU exports to Brazil: Product view (initial conclusions)

Generally, Brazil must be regarded, however, as a relatively closed economy (only 27% of TechTex consumption is imported):

- As soon as local (Brazilian) production comes up, duties tend to go up
- The collapse of EU medical suture exports to Brazil (- 125 Mn USD between 2010 and 2013) can be partially explained by the start-up / expansion of local production in Brazil (e.g. cie. Covidien), headquartered in Ireland)

EU producers enjoy a strong position in TT imports into Brazil (19% overall share in 2014) with strong positions especially in yarn type and fabric type products (specialties and nominated products with limited local competition such as automotive TT supplies to international auto OEMs operating in the country)

EU Nonwoven exports reach a below average import share (17% of Brazil imports in 2014 vs. 20% in fabric type and 21% in yarn type) possibly due to

- a) strong local supply base in Nonwovens and
- b) strong Chinese import competition

#### D.6.2.9.2. Key opportunities

Excluding areas with strong local production, opportunities are seen in sophisticated EU TT products which are not produced locally, chiefly (as mentioned earlier) in ...

- Filtration
- Medtech
- Geotech
- Protech
- · Composites.

This concerns chiefly fabric type Technical Textiles (as here the local Brazilian industry is weak) and to a lesser extent nonwovens (where the risk of being copied by strong Brazilian nonwoven producers is higher).

On a government to government level it might be discussed, in how far EU 'scientific farming' experience might be of help (via EU produced TT solutions) to accelerate the achievement of Brazil's target 'Plus 50% grain production by 2025' (e.g. through improved irrigation and water management systems) or other agro-specific growth initiatives like greenhouse farming.

# D.6.2.10. Brazil: Conclusions

Opportunities and recommended actions (on EU producer level) for the Brazil market can be summarized as follows:

Figure 81: Gherzi strategic priority matrix Brazil

		Brazil Opportunity Matrix					
		Suggested EU Producers' Move					
		<b>ESTABLISH</b>	EXPAND	HOLD			
	High	<ul><li>Filtration</li><li>CF composites and reinforcements</li><li>Sophisticated Medtech</li><li>Protech</li></ul>	- Geotextiles	Medical sutures     Sophisticated (like spunlace) nonwovens			
Brazil Market Attrac- tiveness	Medium	- Scientific farming TT products					
	Low						
		Absent to weak	Medium to weak	Strong			
		Current EU Producer market position in Brazil					

#### D.6.3. South Korea

# D.6.3.1. Key data South Korea

Figure 82: Key Data South Korea (2014)

Population	50 Mn	(16% of USA)
TT consumption / capita	66 USD / a	(87% of USA)
TechTex consumption (roll good and threads)	3.26 Bn USD	(14% of USA)
TechTex imports	2.0 Bn USD	(16% of USA)
% import share	61%	(51% in USA)
TechTex imports from EU	0.23 Bn USD	(10% of USA)
EU share of TechTex imports	13%	(19% in USA)

Source: Gherzi analysis

#### D.6.3.2. Introduction

Korea must be considered as a highly industrialized country with a GDP per capita above the 2014 EU average.

In the recent past South Korea's textile industry has realized a shift from traditional (like fashion oriented) textiles towards Technical Textiles and nonwovens. This has gone hand in hand with growth in demand for Technical Textiles driven, e.g., by the success of the local vehicle industry and a striving medical sector (including – for example – a boom in cosmetic surgery driving up demand for medical sutures).

In parallel to growing demand, though, South Korea has established a strong local ...

- Man-made fibre industry (almost all fibres needed for Technical Textiles are produced locally)
- A significant local nonwoven production
- An import replacement industry in higher value added articles (like, e.g., medical sutures or airbags for cars).

TechTex imports in South Korea today come mainly from China (low end products) and Japan (high end products).

EU producers seem underrepresented in the S. Korean TechTex market:

- EU share of S. Korean TechTex import: 11% (vs. 19% in the USA)
- All companies in the sample of EU companies interviewed by Gherzi in the context of the EU TechTex mission confirmed that they do not have either significant sales or a good knowledge and formal marketing approach to the S. Korean TechTex market.

South Korea is a very open trade oriented country having signed FTAs with Europe, the USA, Japan and China amongst others.

In TechTex exports to S. Korea EU producers are chiefly competing with Japan and the USA as suppliers to the higher end of the market.

# D.6.3.3. Fibre production

Korea has a significant indigenous fibre production with strength especially in PA and PET industrial yarns and – on top – specialty fibres. With some exceptions (like Viscose FR) all fibres required for the production of Technical Textiles are available from a local production.

Figure 83: South Korea Fibre Production 2014

Fibre production 2014						
	World kt 2014	Korea kt 2014	% share Korea in world production			
PET filament	28,297	557	2%			
PET industrial yarn	1,908	158	8%			
PET staple fibre	43,269	562	1%			
PA filament	2,626	83	3%			
PA industrial yarn	1,085	53	5%			
PA staple fibre	155					
PAC staple fibre	1,704	49	3%			
Cellulosic staple fibre	5,127	25	0.5%			
Cotton	26,110					

Figure 84: South Korea specialty TechTex fibres production

Korea specialty TechTex fibres production					
Meta Aramid	Yes				
Para Aramid	Yes				
Carbon fibre	Yes				
Glass filament / rovings	Yes				
PLA fibres	Yes				
PPS fibres	Yes				
Biodegradable polymers for sutures	Yes				

Source: Gherzi research and fibre model

# D.6.3.4. TechTex market South Korea

In 2014 the Korean TechTex consumption was ~ 3.3 Bn USD<sup>1)</sup>. 55% of South Korean TechTex consumption went into the two largest segments, namely Mobiltech and Indutech.

Figure 85: South Korea TechTex consumption 2014

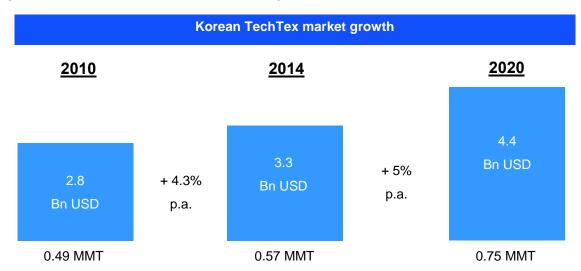
World market Bn USD		Korea cons Bn USD	sumption	Korea as % of world market
9.9		0.01	Agrotech	<b>~1%</b>
16.5		0.31	Buildtech	2%
5.4		0.06	Clothtech	1%
4.2		0.06	Geotech	2%
14.9		0.23	Hometech	2%
25.6		0.59	Indutech	2%
4.9		0.06	Medtech	1%
8.5		0.13	Hygiene	2%
24.3		<b>1.22</b>	Mobiltech	5%
17.6	Three largest	0.40	Packtech	2%
7.0	segments	0.10	Protech	2%
8.1		0.09	Sporttech	1%
			Total	2
147.0 Bn USD <sup>1)</sup>	3.	26 Bn USD	1)	

Source: Gherzi regional market model

<sup>1) &#</sup>x27;Yarn type, fabric type (roll good), Nonwovens (roll good)

The Korean TechTex market is expected to continue to grow at a rate of about 5% p.a. (after 4.3% p.a. between 2010 and 2014). Thus, between 2014 and 2020 about 1 Bn USD is expected to come on top of 2014 Korean TechTex consumption.

Figure 86: South Korea TechTex market growth



Source: EDANA growth forecast, Gherzi world and regional demand model, Gherzi field interviews and estimates

By application the highest growth (2014-2020) in Bn USD is expected in:

Indutech: + 0.46 Bn USD
 Mobiltech: + 0.23 Bn USD
 Hygiene & Medtech: + 0.15 Bn USD

Figure 87: South Korea TechTex market 2014-2020 by application

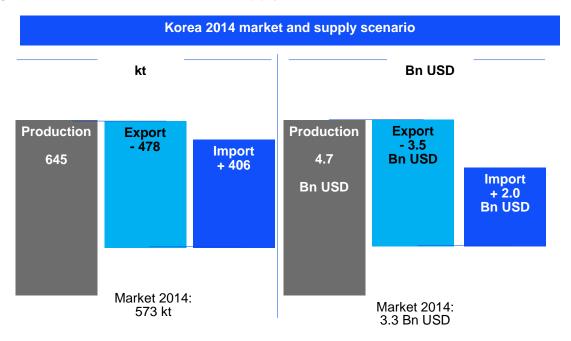
	Bn USD 2014	CAGR 2014/20	Bn USD 2020	Bn USD add. demand 2020 vs 2014
Agrotech	0.01	0%	0.01	0.00
Buildtech	0.31	3%	0.37	0.06
Clothtech	0.06	3%	0.07	0.01
Geotech	0.06	3%	0.07	0.01
Hometec	0.23	3%	0.27	0.04
Indutech	0.59	10%	1.05	0.46
Medtech	0.06	10%	0.11	0.05
Hygiene	0.13	10%	0.23	0.10
Mobiltech	1.20	3%	1.43	0.23
Packtech	0.40	3%	0.48	0.08
Protech	0.10	6%	0.14	0.04
Sporttech	0.09	3%	0.11	0.02
Total Bn USD	3.26	5%	4.39	1.12

Source: Gherzi market model, CAGR 2014/2020 based on S. Korea market interviews

# D.6.3.5. Supply scenario South Korea

Out of the total Korean 2014 TechTex market of 3.26 Bn USD about 60% is imported.

Figure 88: South Korea market and supply scenario 2014



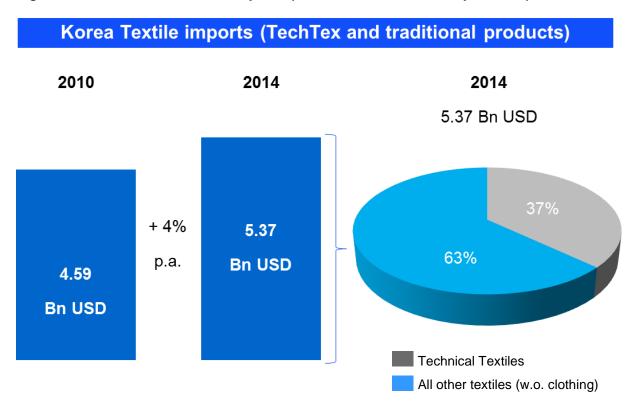
Source: Gherzi world and regional market model, UN Comtrade

The high export share in Korean TechTex production (3/4 of TechTex production in Bn USD is estimated to be exported) is based in Gherzi's view on

- a) the large number of FTAs signed by S. Korea with most of its trading partners worldwide and
- b) the delocalised but Korean owned foreign production sites, e.g., of the Korean vehicle industry, consuming South Korea made Technical Textiles (or finished imported material).

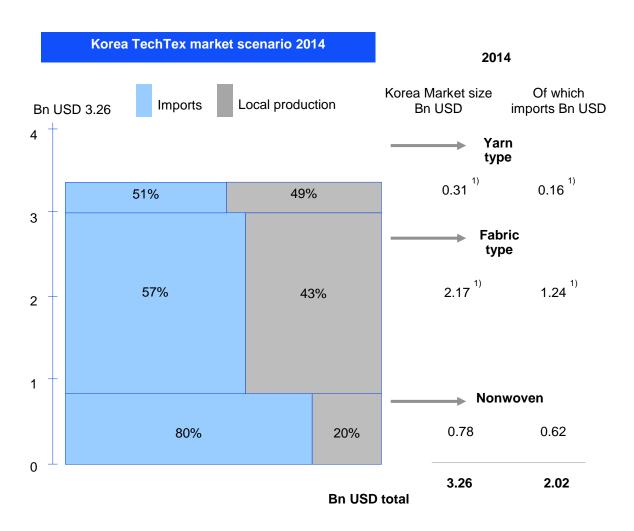
Total Korean textile imports (TechTex and traditional products) have been growing at a rate of 4% p.a. 'till 2014. 37% of all Korean textile imports in 2014 were TechTex products.

Figure 89: South Korea Textile imports (TechTex and traditional products)



More than 50% of Korean TechTex demand is imported. The highest import share is in fabric type Technical Textiles with close to 60%.

Figure 90: South Korea TechTex market scenario 2014



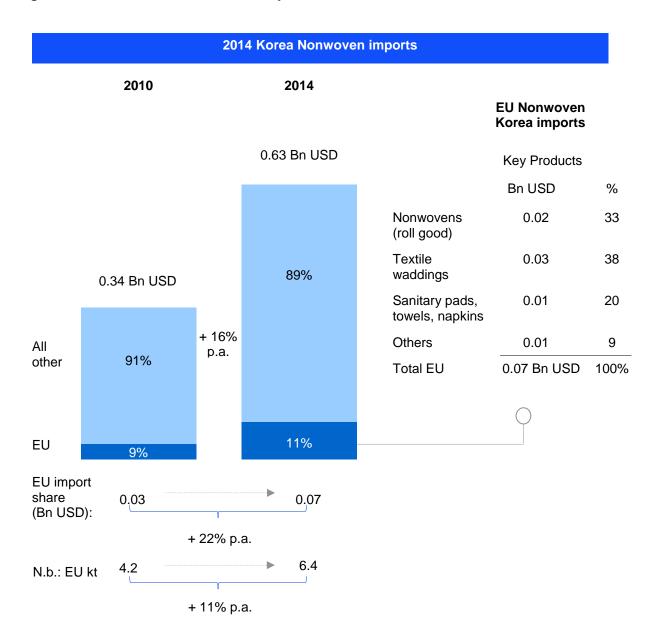
<sup>1)</sup> includes 20% 'dual use' import products

Nota bene: 2014 Scenario in kt						
kt Korea market kt import						
Yarn type	34	20				
Fabric type	315	253				
Nonwoven	224	133				
TechTex Total	573	406				

Source: Gherzi world and regional market model, UN Comtrade, Gherzi estimates

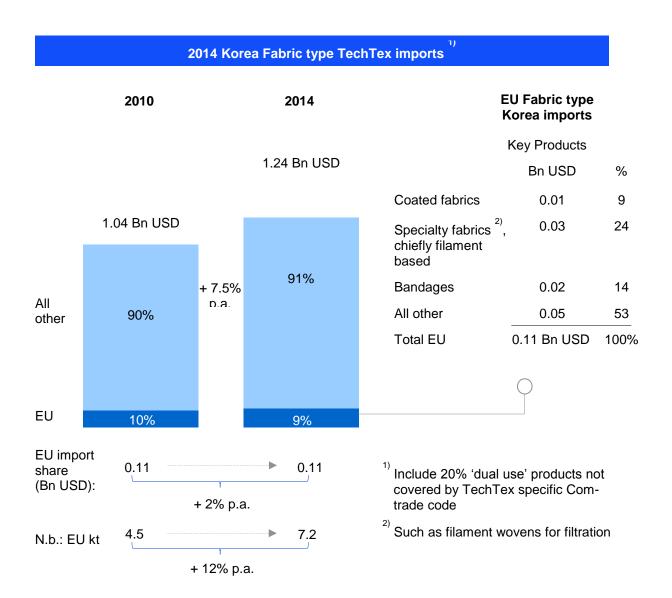
Nonwovens imported into Korea have about doubled in value between 2010 and 2014. European producers have shown strong growth and increased their % import share from 9% in 2010 to 11% in 2014. Key EU produced products for the Korean market – apart from Nonwoven roll goods – are textile waddings and sanitary pads, towels / napkins and the like.

Figure 91: South Korea Nonwoven imports 2014



Fabric type TechTex imports into Korea have grown by 19% between 2010 and 2014. European producer sales showed – however – only modest to no growth, so that the EU's % import share has been going down from 10% in 2010 to 9% in 2014. Key EU products are coated fabrics, specialty fabrics (mainly filament based) and medical bandages.

Figure 92: South Korea Fabric type TechTex imports 2014



Yarn type imports into Korea (EU and non-EU) have gone down by 3% p.a. between 2010 and 2014. EU Yarn type TechTex imports into Korea have gone down by 8%% between 2010 and 2014. EU producers have lost share and volume chiefly due to declining sales of medical sutures (increasing local Korean suture production).

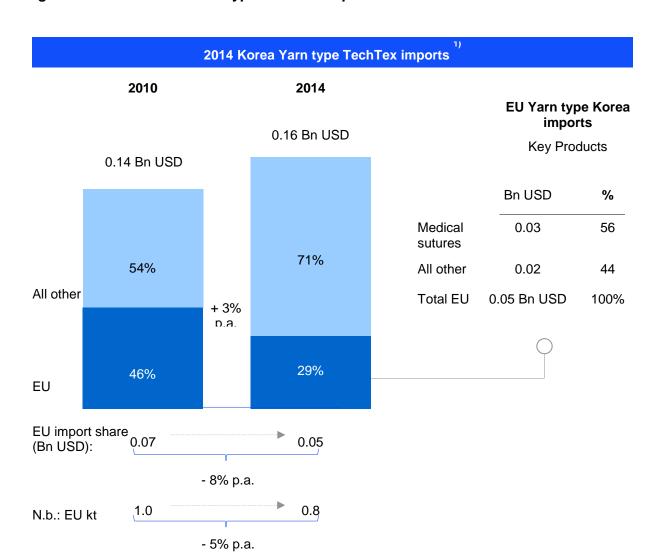
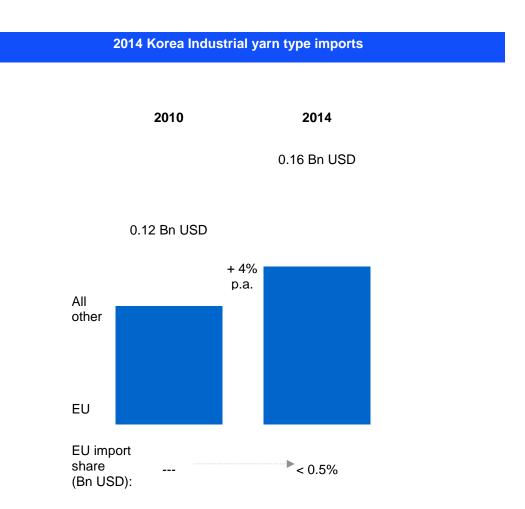


Figure 93: South Korea Yarn type TechTex imports 2014

<sup>&</sup>lt;sup>1)</sup> Include 20% 'dual use' products not covered by TechTex specific Comtrade code

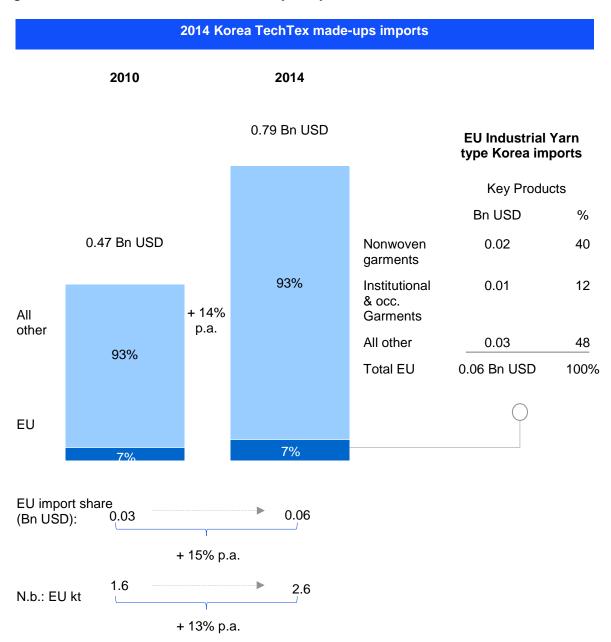
Korean industrial yarn imports (raw material for Technical Textiles) have grown by 7.5% between 2010 and 2014 (mainly from China). No significant presence of EU producers though as of 2014.

Figure 94: South Korea Industrial yarn type imports 2014



TechTex made-up imports into Korea (such as in protective clothing or temporary buildings) show a healthy growth rate of 14% p.a. between 2010 and 2014. EU exports of made-ups to S. Korea remain small, though, despite doubling in value between 2010 (0.03 Bn USD) and 2014 (0.06 Bn USD).

Figure 95: South Korea TechTex made-ups imports 2014



Conclusions from the S. Korea TechTex market and trade analysis (see also Appendix 6):

Open import market with, however, modest import market shares of EU TechTex producers especially in fabric type Technical Textiles and Nonwovens. EU yarn type import shares are strong due to medical sutures which are, however, decreasing in value (more and more local Korean suture production).

Historic (2010 to 2013) EU Nonwoven export growth to South Korea has not continued in 2014 (when compared to 2013).

South Korea: EU IMPORT POSITION IN TECHNICAL TEXTILES

Figure 96: South Korea: EU import position in Technical Textiles

(in Mn USD)	CON- SUMPTION	IMPORTS Total	% import over con- sumption	IMPORTS FROM EU	% EU import share	Impo	R (EU orts) vs. 2010
Yarn Type	308	159	52%	46	29%	+ 1%	- 8%
Fabric Type	2,173	1,240	57%	113	9%	+ 5%	+ 2%
Nonwoven	783	625	80% *	67	11%	- 1%	+ 22%
Total	3,264	2,024	62%	226	11%	+ 2%	+ 4%

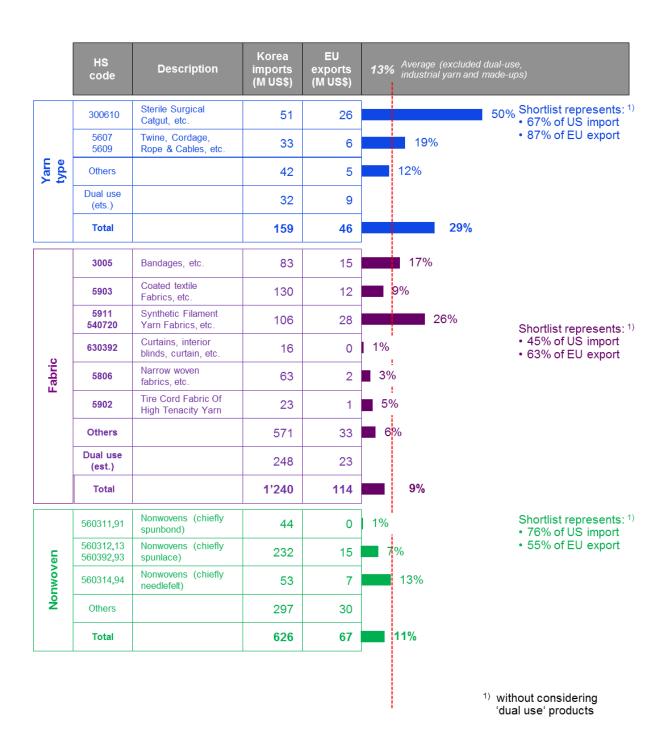
<sup>\*</sup> indicating towards a large amount of basic rollgood being imported for finishing / conversion in Korea and subsequent re-export.

Source: Gherzi analysis

# D.6.3.6. South Korea Key trends

# D.6.3.6.1. Quantitative South Krea export performance of the EU in shortlisted products

Figure 97: The short list of products - Korea (1/2)



13% Average (excluded dual-use, industrial yarn and made-ups) exports (M US\$) Description imports (M US\$) code High-tenacity filament 540211 0 0% 11 yarn of aramids ndustrial yarns High-tenacity filament 540219 90 0 0% varn of nylon etc High-tenacity filament 540220 0% 55 0 yarn of polyesters 0 0 0% Others 0% 1 Total 156 Garments made up of 90% 621010 25 22 nonwovens 620332 (33,42,43) 621132 (33,42,43) Industrial and 129 5% Made-ups occupational garments Tarpaulins, awnings, 3% 6306 118 4 tents, sails, etc. 5% Others 25 516 Total 787 57 7%

Figure 98: The short list of products - Korea (2/2)

(Source: Gherzi interviews and trade statistics analysis)

# D.6.3.6.2. Conclusions from shortlisted product analysis

(A) Yarn type Technical Textiles (for details see Appendix 6) Historically, yarn type TT exports to S. Korea were one of the strengths of the EU industry (46% of all yarn type TT imports of Korea came from the EU in 2010). This success was chiefly built on medical sutures. With the surge in cosmetic surgery in S. Korea suture demand increased and local producers appeared on the market (e.g. companies Samyang or Meta Biomed).

With local Korean suture production rising rapidly, EU suture exports to S. Korea went down (from 43 Mn USD in 2010 to 26 Mn USD in 2014).

The EU export growth in twines / cords / cables and cable components (from 3 Mn USD in 2010 to 6 Mn USD in 2014) could not compensate the decline in suture sales (especially also because S. Korea has a strong indigenous filament extrusion and ropes industry), so overall EU % import shares in yarn type products are going down (a trend which is expected to continue).

The Korean Medtech / Hygiene market is still regarded as highly attractive (as explained later in this report), but growth opportunities are given chiefly in non-yarn type products like special nonwovens or fabric type (such as wound dressing) products.

It is a well-known and uncontested fact that Europe's manufacturing base in many raw materials used for TT has eroded in favour of the Asian (such as Chinese or Korean)

competition. This concerns especially Polyester and Polyamide High Tenacity filament or staple fibres, a 'staple product' in the construction of many Technical Textiles.

This explains the absence of EU exports in 'industrial yarns' to South Korea.

As mentioned in the appendix (9.1.3), significant EU exports of specialty viscose fibres (like FR or for spunlace nonwovens) could, however, not be analysed due to absence of a specific HS code.

As there is no Korean producer of these fibres and Europe enjoys a strong market position, it can be assumed that the export performance in these fibres is strong and uncontested (even though – in viscose fibres for nonwovens – the emerging competition from China or India is there and increasing in strength).

#### (B) Fabric Type Technical Textiles (for details see Appendix 6)

Overall, the EU export performance in fabric type TT products for the S. Korean market is below average (only 9% of all 2014 S. Korean fabric imports came from the EU).

Reasons are to be seen in:

- i. the strong local S. Korean industry and
- ii. Intense competition from China (low end) and Japan (high end) with well-established and reasonably fast logistical access to Korea compared to faraway Europe.

Main EU product success concerns

- Medical bandages and
- Specialty synthetic filament fabrics (such as for filtration)

A traditional strength of the EU industry - namely coated fabrics – is underperforming in Korea (9% of all corresponding Korean imports) compared, e.g., to the USA (16% of all corresponding US imports).

The exports of EU producers to South Korea under TT made-ups concern chiefly PPE garments based on or nonwovens and to a lesser extent fabrics starting from a small base, though. EU TT made-up exports to South Korea have doubled (from 30 Mn USD in 2010 to 60 Mn USD in 2014) in an overall growing Korean import environment.

As good growth potential is seen in PPE demand in Korea in the future (source: Gherzi interviews), EU producers should be able to continue to grow their exports to this region not only in Nonwovens based PPE garments, but also and especially in (so far underrepresented) fabric based PPE garments (like for flame, cut & slash, ballistic or metal / chemical splash protection).

#### (C) Nonwovens

(for details see Appendix 6)

EU nonwoven exports to South Korea can be regarded as a success story – although on a low level – with growth of exports to S. Korea growing from 30 Mn USD in 2010 to 67 Mn USD in 2014. This basically concerns a wide range of NW products, whereby more commodity type products like waddings – having fallen victim to local producers – have successfully been replaced with more sophisticated NW products like for filtration or Medtech / Hygiene applications.

For the case that the above described substitution trends in EU commodity NW exports to S. Korea have now come to an end, a high growth potential should be given (in respect to EU NW exports to S. Korea) in those growth segments which are described later in this report.

## D.6.3.7. Field work insight South Korea

#### D.6.3.7.1. Key trade and market related trends

Gherzi has interviewed – in the course of the EU TechTex mission – 13 TT producers / customers and 4 associations / trade organisations in S. Korea itself and collected the views of 17 EU TT producers and 4 EU associations / trade organisations (other than those represented on the project steering committee, namely Euratex, EDANA and CIRFS) regarding their views of the S. Korean TT market.

The interviewed EU TT producers were mainly from the SME sector. Most of them had no or limited experience in Korea due to limited resources (concentrated instead on the potentially larger US TT market opportunity).

The strength of the local Korean TT competition was given – by EU TT producers – as another argument for the so far weak export presence on the Korean market.

From the side of Korean TT companies, associations and organisations, the strength of EU TT producers was seen in ...

- Innovation and creativity (e.g. in sun protection)
- Medtech in general
- Strong brands in consumer related products (e.g. Sporttech)
- Image of quality and of reliability (important for, e.g., Mobiltech or Hygiene)
- Experience in inherent FR fibres, fabrics and garments (Protech).

However, it was often cited that the low end of TT products was generally imported from China (proximity, costs) and the high end – where not produced locally – from Japan (quality, proximity, well-functioning logistics).

As was mentioned earlier in this report, it needs to be noted also, that there is a dedicated effort by the Korean industry to build up local TT production (including raw materials) to a sophistication level comparable with Japan and the EU.

In automotive airbags, to give an example, Korea has started by building up a certified PA yarn production (Hyosung Group) and then moved forward to fabric production and airbag assembly a.o. through the acquisition of company Global Safety Textiles (GST) in Germany. The same strategy to build up a local production in high value added TT products has been observed, to give another example, in medical sutures (as has been mentioned before). The smart textile alliance between Korean fabric producers and local electronic giants (like Samsung or LG) is another example of the strategy to build up a high end S. Korean TechTex industry competing with Japan, the USA and the EU.

On the other hand, Korea is a relatively open market having signed FTAs with almost every major trading partner worldwide and is relatively open (especially compared to the USA) to accept proven international standards and norms.

#### D.6.3.7.2. South Korea market attractiveness

A number of applications and technologies were cited by interviewed parties in Korea as showing high growth of demand potential (non-exhaustive list of examples):

- i. Medtech and Hygiene:
  - Apart from the impact of demographics (aging society) and high GDP/capita in Korea, demand is also positively fuelled by the surge in cosmetic surgery in S. Korea, Asia in general and Arabic countries
  - Despite strong expansion of local Koran Medtech / Hygiene related production (like in sutures) opportunities for EU producers are given a.o. in
    - Non-suture Medtech products (like tubes and nets, hear valves, regeneration textiles, smart textiles for diagnostics, etc.) or
    - Sophisticated nonwovens (like high end cosmetic wipes or wound dressings).
- ii. High end Mobiltech solutions (like filtration fabrics or nonwovens, carbon fibre composite reinforcements or in general weight saving textile solutions such as in automotive acoustics)
- iii. TT products (woven, nonwoven) profiting from the high growth of filtration demand in general not only but also under Indutech (air, odour, liquids like hydraulic oils, etc.)
- iv. Branded consumer oriented products in hygiene or sports (European brands enjoy a strong and positive recognition in Korea)
- v. Sophisticated coated fabric solutions like for artificial leather (incl. for close to the consumer markets like bags)
- vi. Overall functional (e.g. Protech) solutions (fibres, yarns, fabrics, garments)
  - South Korea is just now reformulating its PPE norms to integrate durability of functions (like FR)
  - Cheaply adding non-durable functions (like FR) through fabric finishing (like on Chinese cloth) is being ruled out in the future
  - A great interest exists in Europe's experience in adding durable (e.g. sustaining a large number of industrial wash cycles) functionality to fibres (e.g. inherent FR) and yarns, fabrics and nonwovens
- vii. Innovative sun shading (internal and external)
  - The sector is seen to be underserved by Korean producers and Europe's strength in these products was well recognized by the interviewed parties in Korea
- viii. Sophisticated nonwovens in general

- Future growth of NW demand in Korea was generally estimated at 6-7% p.a. and thus above the S. Korean overall TT market average of 5%
- Segments for which a good acceptance for EU nonwovens were cited, are:
  - Medtech / Hygiene
  - Indutech (filtration, to give an example)

Valued EU – IP could be application know how (like in filtration) or for high end NW technologies (like Bico-spunbond, wetlaid or isotropic spunlace nonwovens) or special fibre solutions (like micro modal or other specialty viscose solutions)

- ix. Smart yarns and fabrics / nonwovens / garments
  - A big surge is expected in Korea for smart textile solutions
  - The Korean textile industry is, however, already collaborating with Korean electronics giants like Samsung or LG to jointly come up with marketable solutions.

## D.6.3.7.3. Key success factors to profit from market opportunities

The entry door into the Korean market for EU producers as seen by the interviewed parties is innovation like

- New applications for TT solutions
- New functions or durable functions
- Catering to the Medtech and Hygiene boom in Korea
- Transferring EU creativity like in sun shading or artificial leather
- Providing application and customer specific solutions (like in filtration)
- Transferring brand values in products close to the consumer (Hygiene, Sporttech, ...).

What was often cited, though, is that – compared to Japan (who was seen as the major EU competitor in S. Korea TT imports) – the EU access routes and delays are too long for an on par innovation level in Technical Textiles with Japan.

"While Europe is competitive in TT yarns, nonwovens and fabrics, there still remains the geographical and mental disadvantage compared to Japan." was an often cited remark. Although trade barriers in form of Korea specific TT standards and norms exist (such as in Medtech), these were not mentioned, as standards are often worked out close to European (EN) or international (ISO) formulations.

The currently ongoing work in Korea to formulate new Protech norms might even work in favour of EU producers, if actively influenced towards well proven European Protech standards and norms.

In many areas where proximity plays a decisive role (working against EU – and in favour or Japanese producers) tying up with a suitable partner in Korea in the form of a strategic licence manufacturing alliance or royalty / commission based distribution agreement might be the best answer to the key success factors when entering the South Korean market.

For this case, however, IP protection was cited by EU producers as the most critical limitation.

#### D.6.3.8. South Korea: SWOT

Figure 99: South Korea – SWOT of EU producers

#### **STRENGTHS**

- Above average 2014 EU % import share in yarn type Technical Textiles (29%)
- Above average 2014 EU import share by product:
  - Medical sutures (50%)
  - Twines, cords and ropes (19%)
  - Medical bandages (17%)
  - Specialty filament fabrics (26%)
- Well perceived image of innovation, creativity, quality and IP in Technical Textiles
- Recognition of EU consumer brands in the Korean market

## WEAKNESSES

- Below average 2014 EU % import share in fabric type Technical Textiles (9%), industrial yarns (zero) and TechTex Made-Ups (7%)
- Below average 2014 EU import share by product:
  - Coated fabrics (9%)
  - Curtains & blinds (1%)
  - Narrow wovens (3%)
  - Tire cord (5%)
  - Spunbond nonwovens (1%)
  - Spunlace nonwovens (7%)
  - Needlefelt nonwovens (13%)
- Time to market compared to Japan
- Few EU producers (especially SMEs) present in Korea

## **OPPORTUNITIES**

- Techtex market of 3.3 Bn USD (2014) growing to 4.4 Bn USD by 2020
- 55% of the S. Korean TechTex demand is imported.
- FTA with the EU = zero duties for EU Techtex exports to S. Korea
- Mobiltech and Indutech (where EU producers are strong) represent 55% of the S. Korea TechTex market in 2014
- Surging demand in Medtech and Hygiene where Europe excels
- New Protech standards being formulated
- Strong interest in high end EU nonwoven solutions

## **THREATS**

- After strong historic depreciation, the Euro is appreciating against the KRW since April 2015
- An FTA is in place also with the US, who is a strong competitor of the EU especially in nonwovens and in sutures
- High number of permits required when exporting to S. Korea (to be verified)
- Increasing local production of medical sutures (where Europe is strong)
- Expansion of local Korean industry (such as in sutures)
- Certification costs (e.g. in Medtech) too high for EU SMEs

## D.6.3.9. South Korea: Summary and key opportunities

#### D.6.3.9.1. Summary

With ~ 3.3 Bn USD TechTex market size in 2014 Korea is the smallest TechTex market of the four analysed countries.

The Korean TechTex market is dominated by the Mobiltech and Indutech segments (together 55% of total TechTex demand in 2014):

- Relatively small population (~ 50 M inhabitants) impacting on demand in 'size of population' driven segments like Medtech or Hygiene
- Large vehicle production (4.5 M units compared to 11.7 M units in the USA) driving demand in Mobiltech segment.

Between 2014 and 2020 TechTex demand in Korea is expected to grow by 1 Bn USD (5% CAGR) – 85% of which is expected to come from the Indutech, Mobiltech and Medtech / Hygiene sectors.

More than 50% of TechTex consumption in Korea is imported (idem USA).

EU TechTex exports to Korea remain relatively limited (0.23 Bn USD in 2014 or 13% import share):

- Growing % share and volumes in Nonwovens (0.07 Bn USD or 18% import share in 2014)
- Stagnating volumes and slightly decreasing share in Fabric Type Technical Textiles (0.11 Bn USD or 9% import share in 2014)
- Decreasing volumes (increasing local Korean suture production) and decreasing % import share in Yarn Type Technical Textiles (0.05 Bn USD or 29% import share in 2014)

Insignificant EU export volumes to Korea in

- Industrial yarns (raw materials for Technical Textiles)
- TechTex made-ups

## D.6.3.9.2. Key opportunities

- I. Expand in areas of strength
  - Sophisticated nonwovens (Bico-spunbond, split fibre NW, isotropic spunlace, wetlaid, specialty meltblown, flushable NW, ...)
  - Growth markets in Korea meeting with a strong EU industry and IP base
    - Medtech / Hygiene (fabric type and nonwovens)
    - Filtration / Separation (fabric type and nonwovens)
    - Sophisticated vehicle components (light weight acoustics, carbon fibre composite reinforcement prepregs or parts)
    - Protech (functional fibres, fabrics, yarns and nonwovens)

- II. Address areas of weakness (where the EU is strong, e.g., in the USA):
  - Alliances in sutures?
  - Coated fabrics (via e.g. Medtech market growth, design intensive artificial leather, etc.)
  - Twines / Ropes / Cable components (e.g. via a PPE initiative or innovative EU raw materials like UHMW-PE filaments)
- III. Recognize untouched opportunities
  - Sun shading (internal and external)
  - Products profiting from recognition of European consumer brands (sports, outdoor, luxury bags, hygiene, etc.)
  - Smart textiles in every form (fibre, yarn, fabric, nonwoven, made-up)

#### D.6.3.10. South Korea: Conclusions

Opportunities and recommended actions (on EU producer level) for the South Korean market can be summarized as follows:

Figure 100: Gherzi strategic priority matrix South Korea

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		S. Korea Opportunity Matrix					
		S	uggested EU Producers' Move				
		<b>ESTABLISH</b>	EXPAND	HOLD			
	High	<ul> <li>Smart textiles</li> <li>Protech solutions (fibres, yarns, fabrics, nonwovens, garments)</li> </ul>	<ul> <li>Sophisticated nonwovens (all applications)</li> <li>Filter fabrics (NW and woven)</li> <li>Medtech &amp; Hygiene (NW, woven, braids)</li> <li>sophisticated vehicle components</li> </ul>	- Medical sutures			
South Korea Market Attrac- tiveness	Medium	<ul> <li>Sun shading (internal and external)</li> <li>products profiting from EU consumer brand recognition</li> </ul>	- coated fabrics - twines / ropes / cable components	Non Filter/ non sun shading filament fabrics     Commodity nonwovens			
	Low						
		Absent to weak	Medium to weak	Strong			
		Current EU Producer market position in S. Korea					

#### D.6.4. Japan

## D.6.4.1. Key data Japan (2014)

Figure 101: Key Data Japan (2014)

Population	127 Mn	(40% of USA)
TT consumption / capita	74 USD / a	(98% of USA)
TechTex consumption (roll good and threads)	9.4 Bn USD	(39% of USA)
TechTex imports	3.75 Bn USD	(31% of USA)
% import share	40%	(51% in USA)
TechTex imports from EU	0.38 Bn USD	(17% of USA)
EU share of TechTex imports	10%	(19% in USA)

Source: Gherzi analysis

#### D.6.4.2. Introduction

With 9.4 Bn USD TT consumption Japan is the second largest TT market (behind the USA) of the 4 analysed countries.

Japan is not only one of the highest industrialized countries in the world (GDP / capita more or less equivalent to the USA and above the EU28 average), but also one of the early pioneers in Technical Textiles.

Stemming from a strong upstream industry (Polymer to yarn or nonwoven), with global players like Teijin, Toray, Kuraray, Asahi or Toyobo, Japan has developed a strong Technical Textile sector.

Over the last couple of years Japanese TechTex producers have erected many production sites in China and other countries with whom FTA agreements have been signed (Thailand, Philippines, Korea, Indonesia, ...). This is including Vietnam and Myanmar in view of an eventual ratification of the TPP agreement. These Japanese owned offshore factories supply either the local market (like in China) or serve as TT commodity production sites for the Japanese market or for North America. The local Japanese TT producers thereby focus their Japanese production on R&D intensive high-end Technical Textile products only.

A special characteristic of the Japanese TT market is the very strong and long term funded linkage of all Japanese producers in a given TT value chain (from fibre over roll good and ready-made part to the OEM, industrial end user or consumer good distributor).

These closely inter-linked value chains – communicating essentially only in Japanese language – make it difficult for foreign companies to penetrate the Japanese market, if not present through a local production, JV or exclusive distribution tie-up with a Japanese partner.

This fact in essence explains the relatively weak EU TT export volume to Japan of 0.38 Bn USD in 2014.

Despite the general stagnating economic situation (Japan GDP growth 2016 expected around 0%) TechTex consumption in Japan is growing at a rate of 4-5% p.a. (both in the period 2010-2014 as well as in the expectation for 2014-2020) fuelled by changing life styles and an aging population, growing housing construction and major infrastructure projects, amongst others.

EU exports to Japan (0.38 Bn USD in 2014) are based on a relatively small product basket.

Medical sutures (74 Mn USD), Medical bandages (40 Mn USD) and (chiefly spunlace) carded NW (72 Mn USD) explain 50% of total EU TT exports to Japan.

This indicates towards the fact that there exists a more general issue of how to enter the Japanese market (especially given the SME structure of the EU TT industry) rather than a specific weakness of EU producers in view of the Japanese competition in one or another TechTex product domain or technology.

#### D.6.4.3. Fibre production

Japan has a very strong man-made fibre production (no cotton) including a broad range of specialty fibres for Technical Textiles.

In many high tech fibres used for TT production Japan holds a world leading or co-leading (often together with the USA) position. Aramid fibres (Meta- and Para-), carbon fibres and prepregs or specialty synthetics for functional apparel and smart textiles (like conductive fibres or cooling fibres) are just some examples.

Figure 102: Japan Fibre Production 2014

Fibre Production 2014						
	World kt 2014	Japan kt 2014	% share Japan in world production			
PET filament						
PET industrial yarn	1,908	49	2.5			
PET staple fibre	43,269	147	< 0.5			
PA filament	2,626	33	1.5			
PA industrial yarn	1,085	50	5.5			
PA staple fibre	155					
PAC staple fibre	1,704	141	8.5			
Cellulosic staple fibre	5,127	149	3			
Cotton	26,110					

Source: Gherzi research and fibre market model

Figure 103: Japan specialty TechTex fibres production 2014

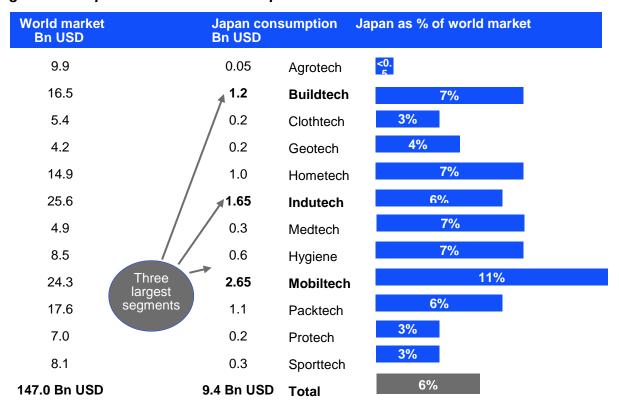
Japan specialty TechTex fibres production			
Meta Aramide	Yes		
Para Aramide	Yes		
Carbon fibre	Yes		
Glass filament / rovings	Yes		
PLA fibres	Yes		
PPS fibres	Yes		
Biodegradable polymers for sutures	Yes		

Source: Gherzi research and fibre market model

# D.6.4.4. TechTex market Japan

In 2014 the Japanese TechTex consumption was 9.4 Bn USD). Mobiltech. Indutech and Buildtech are the largest segments.

Figure 104: Japanese TechTex consumption 2014

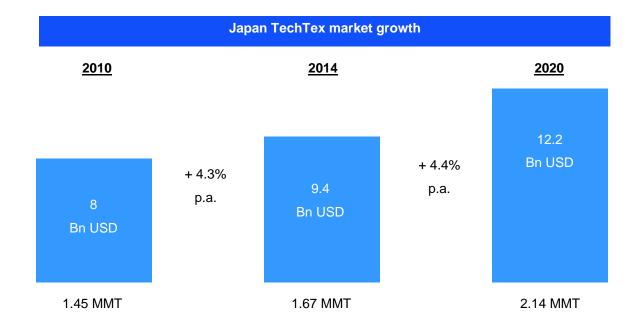


<sup>&</sup>lt;sup>1)</sup> 'Yarn type, fabric type (roll good), Nonwovens (roll good)

Source: Gherzi market model

The Japanese TechTex market is expected to grow at a rate of about 4-5% p.a. 'till 2020. Thus, about 3 Bn USD demand is expected to come on top of 2014 Japanese TechTex consumption.

Figure 105: Japan TechTex market growth



Source: 'Markets and Markets' / EDANA growth forecast, Gherzi world and regional demand model

By application the highest growth (2014-2020) in Bn USD is expected in:

Buildtech: + 0.80 Bn USD

• Indutech: + 0.70 Bn USD

Medtech / Hygiene: + 0.60 Bn USD

Figure 106: Japan TechTex market development 2014-2020 by application

	Bn USD 2014	CAGR 2014/20	Bn USD 2020	Bn USD add. demand 2020 vs 2014
Agrotech	0.05	0.0%	0.05	0.00
Buildtech	1.20	9.0%	2.00	0.80
Clothtech	0.20	0.0%	0.20	0.00
Geotech	0.20	6.0%	0.28	0.08
Hometech	1.00	6.0%	1.41	0.41
Indutech	1.65	6.0%	2.34	0.69
Medtech	0.30	9.0%	0.50	0.20
Hygiene	0.60	9.0%	1.00	0.40
Mobiltech	2.65	0.0%	2.65	0.00
Packtech	1.10	0.0%	1.10	0.00
Protech	0.20	6.0%	0.28	0.08
Sporttech	0.30	2.0%	0.34	0.04
Total Bn USD	9.4	5%	12.2	2.7

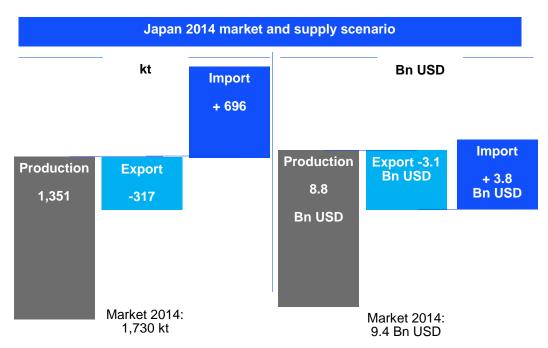
Source: Gherzi USA market model, CAGR 2014/2020 based on USA market interviews

It needs to be noted in this context that – similar to the USA - the interviewed Japanese parties saw a higher 2014/20 CAGR in NW (8-7% p.a.) compared to around 4% for 'non-NW' Technical Textiles.

# D.6.4.5. Supply scenario Japan

Out of the total Japanese TechTex market of 9.41 Bn USD about 35% is imported.

Figure 107: Japan 2014 market and supply scenario

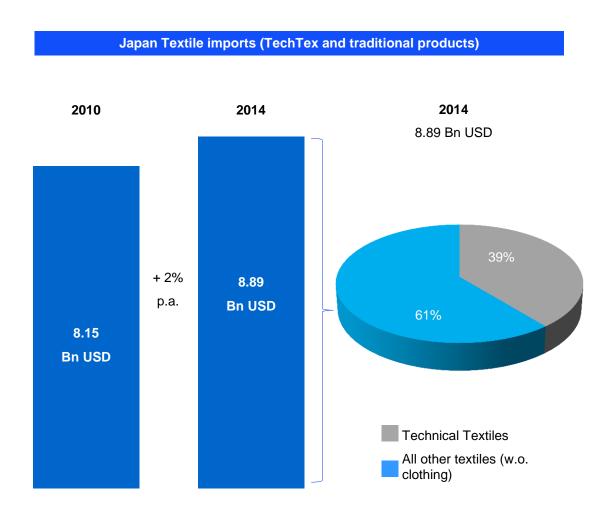


Source: Gherzi world and regional market model, UN Comtrade

Total Japanese textile imports (TechTex and traditional production) have shown modest growth (2% p.a.) between 2010 and 2014. 39% of all textiles imported into Japan in 2014 concerned Technical Textiles.

It needs to be noted in this context that a larger share (quantification not possible) of Japanese TT imports stems from delocalised, Japanese owned production sites in other Asian countries.

Figure 108: Japan Textile imports (TechTex and traditional products) 2014



About 40% of the Japanese TechTex demand is imported. The import share is close to 60% in yarn type Technical Textiles (chiefly sutures) and below 35% in fabric type Technical Texiles and nonwovens.

Japan TechTex market scenario 2014 2014 Local production **Imports** Bn USD 9.41 Japan Market size Of which Bn USD imports Bn USD 56% 44% Yarn 9 0.49 0.88 8 7 **Fabric** 6 34% 66% 2.16 6.44 5 4 3 Nonwoven 2 2.08 1.10 52% 48% 1

Figure 109: Japan TechTex market scenario 2014

0

Nota bene: 2014 Scenario in kt				
	kt Japan market	kt import		
Yarn type	86	32		
Fabric type	1,202	438		
Nonwoven	443	227		
TechTex Total	1,730	696		

<sup>1)</sup> include 'dual use' import products

Source: Gherzi world and regional market model, UN Comtrade, Gherzi estimates

**Bn USD total** 

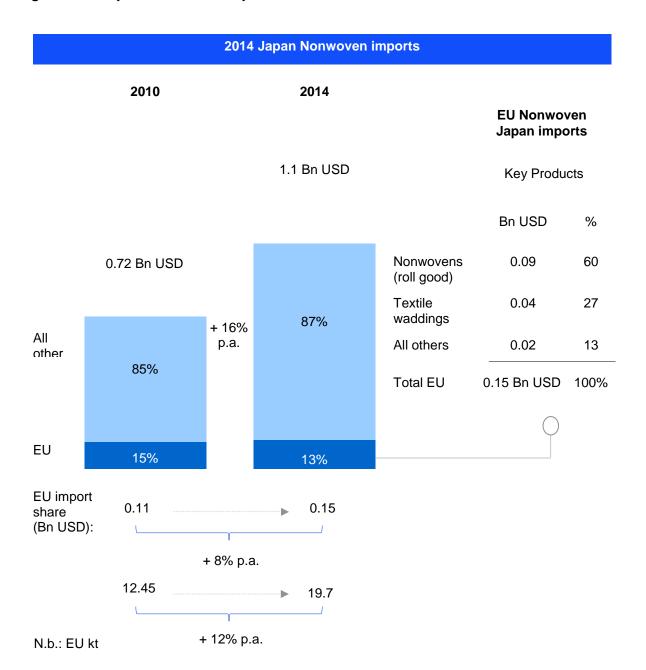
9.4

3.75

Nonwoven imports into Japan have grown more than 50% between 2010 and 2014. EU producers have also been able to substantially grow their sales to Japan although slightly losing import market share.

Overall, the EU producer presence in Japanese nonwoven imports remains, however, small.

Figure 110: Japan Nonwoven imports 2014



Fabric type TechTex imports into Japan have grown by more than 30% between 2010 and 2014. European producers are weak (import share < 10%) and have lost import share despite a slight growth in sales to Japan (+2% p.a.).

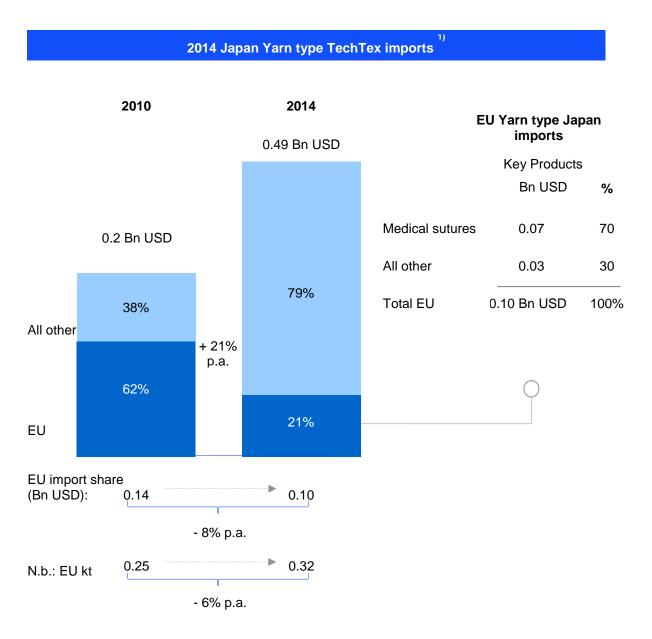
Figure 111: Japan Fabric type TechTex imports 2014



<sup>&</sup>lt;sup>1)</sup> Include 20% 'dual use' products not covered by TechTex specific Comtrade code

Yarn type TechTex imports into Japan have doubled between 2010 and 2014. European producers have lost volume and market share mainly due to decreasing exports of medical sutures to the Japanese market.

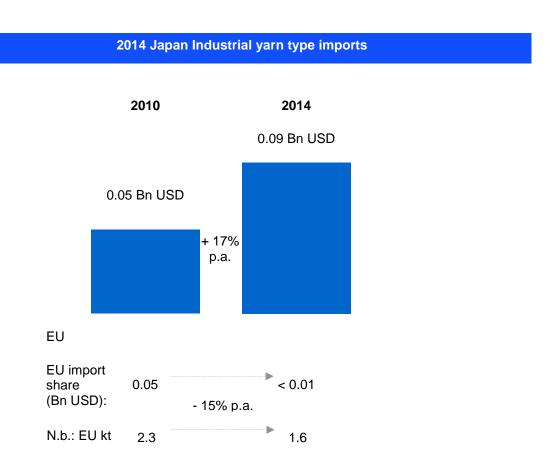
Figure 112: Japan Yarn type TechTex imports 2014



Include 20% 'dual use' products not covered by TechTex specific Comtrade code

Industrial yarn imports (raw material for Technical Textiles) into Japan have more or less doubled. European industrial yarn exports to Japan remained insignificant.

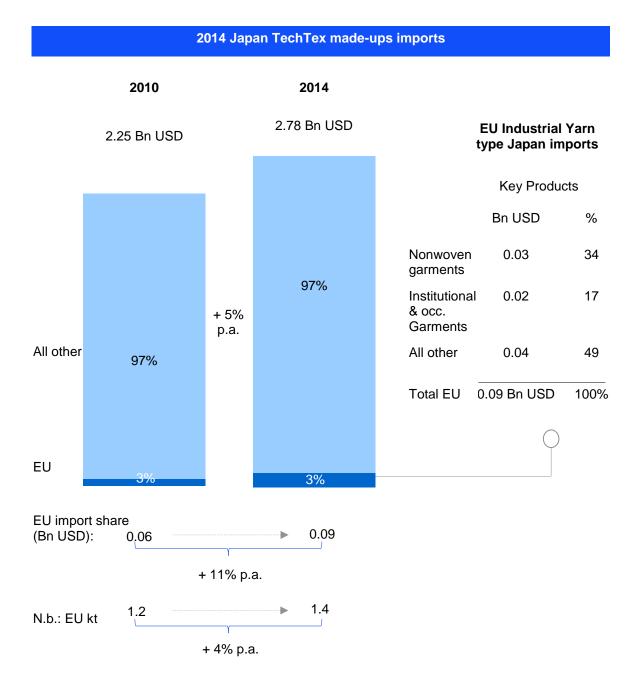
Figure 113: Japan Industrial yarn type imports 2014



Source: UN Comtrade, Gherzi analysis

Japan is a large importer of made-up Technical Textiles (> 2 Bn USD in 2014). The EU share remains small, though, at roughly 3% 2014 import share.

Figure 114: Japan TechTex made-ups imports 2014



Source: UN Comtrade, Gherzi analysis

Conclusions from the Japan TT market and trade analysis (see also Appendix 7): Japan constitutes a large import market with modest import market share of the EU (10%), driven by Nonwovens and yarn type Technical Textiles. Loss of sales volumes to Japan both in yarn type TechTex (e.g. medical sutures) and fabric type TechTex is compensated by growth in EU Nonwoven exports to Japan.

Figure 115: Japan: EU import position in Technical Textiles

#### **JAPAN: EU IMPORT POSITION IN TECHNICAL TEXTILES 2014**

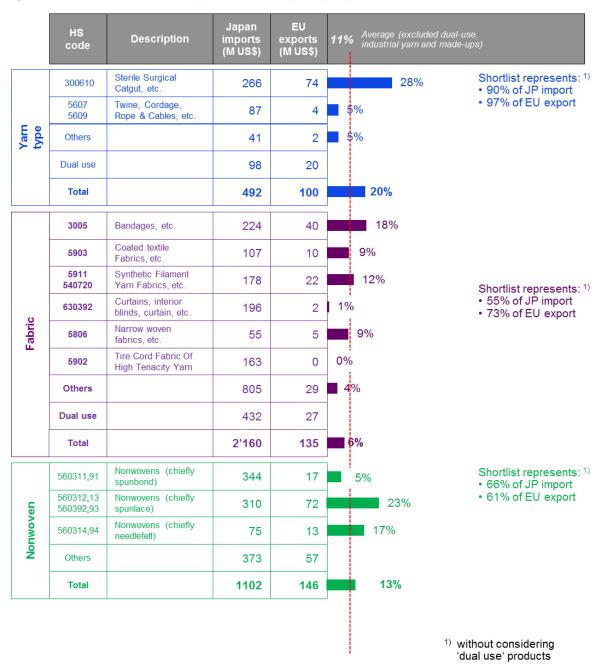
(in Mn USD)	CON- SUMPTION	IMPORTS Total	% import over con- sumption	IMPORTS FROM EU	% EU import share		J Imports) vs. 2010
Yarn Type	879	492	44%	100	20%	- 1%	- 8%
Fabric Type	6,444	2,160	34%	133	6%	- 2%	+ 1%
Nonwoven	2,082	1,102	52%	146	13%	+ 8%	+ 7.5%
Total	9,405	3,754	40%	379	10%	+ 2%	+ 0.8%

Source: Gherzi analysis

## D.6.4.6. Japan Key trends

## D.6.4.6.1. Quantitative Japan export performance of the EU in shortlisted products

Figure 116: The short list of products - Japan (1/2)



Source: UN Comtrade

Japan HS 11% Average (excluded dual-use, industrial yarn and made-ups) Description imports exports code (M US\$) (M US\$) High-tenacity filament 540211 6 5 varn of aramids ndustrial yarns High-tenacity filament 540219 20 0 0% varn of nylon, etc High-tenacity filament 0% 540220 42 0 yarn of polyesters 19 0 0% Others 5 6% Total 88 Garments made up of 621010 36% 86 31 nonwovens Industrial and 620332 (33,42,43 621132 (33,42,43 5% 302 15 Made-ups occupational garments Tarpaulins, awnings, 6306 3% 105 3 tents, sails, etc. Others 43 2% 2'288 Total 2'781 3% 92

Figure 117: The short list of products - Japan (2/2)

Source: UN Comtrade

## D.6.4.6.2. Conclusions from shortlisted product analysis

#### (A) Yarn type Technical Textiles (for details see Appendix 7)

EU yarn type TT exports to Japan (~ 0.1 Bn USD) are chiefly (> 90%) represented by medical sutures. As competition – especially from the US producers (having increased the suture exports to Japan from 31 Mn USD in 2010 to 159 Mn USD in 2014) – is increasing, EU (and especially German) suture producers have lost market share.

In other non-EU markets – like the USA – EU producers of twines, cordage, ropes and cable components have been able to partially compensate declining sales in sutures. Not so in Japan, where sales in this second strongest EU yarn type TT category remain insignificant (< 5 Mn USD/a).

#### (B) Fabric type Technical Textiles (for details see Appendix 7)

Overall, the performance of EU producers in fabric type Technical Textiles on the Japanese market is weak (6% of Japanese fabric type TT imports come from the EU).

In line with a relative strength of EU producers in Medtech products, medical bandages (EU sales 2014 in Japan 40 Mn USD) show the highest import share (18%). Compared to the USA, however, also bandages seen to be underperforming in Japan:

EU sales – bandages	<u>USA</u>	<u>Japan</u>	
Mn USD 2014	444	40	
% of imports	47%	18%	

All other EU fabric type Technical Textiles remain on very low sales levels also and including coated fabrics, where the EU in general is strong:

EU sales – coated fabrics	<u>USA</u>	<u>Japan</u>
Mn USD 2014	149	10
% of imports	16%	9%

#### (C) Nonwovens (for details please see Appendix 7)

EU nonwoven imports to Japan are growing (from 109 Mn USD in 2010 to 146 Mn USD in 2014) without enjoying, nevertheless, the same success as on the US market:

# EU sales – Nonwovens (total, all categories) USA Bn USD 2014 % of imports Japan 3,500 146 34% 13%

The strongest product in the EU Nonwoven basket is to be seen in spunlace (hydroentangled) NW reaching 50% of EU NW exports to Japan in 2014 (corresponding to 72 Mn USD) and an import share of 23% (vs. 257 Mn USD and 32% import share in the USA).

Again, it needs to be mentioned, though, that not product specific strengths and weaknesses explain the relatively weak (compared to the USA) Japan export performance of EU TT producers, but EU company size and distribution specific issues regarding penetration of the Japanese market.

## D.6.4.7. Field work insight Japan

## D.6.4.7.1. Key trade and market related trends

Gherzi has interviewed in the course of the EU TechTex mission 10 TT producers / customers and 4 institutions in Japan itself and collected the views of 17 EU TT producers and 4 associations / trade organisations (other than the project steering committee members Euratex, EDANA and CIRFS) on the Japanese TT market.

Few of the EU producers interviewed by Gherzi in the course of the study had experience with the Japanese market due to

- i. little knowledge of the market itself,
- ii. the preference of Japanese customers to buy from local suppliers and
- iii. Japan (other than, e.g., the USA) not being considered a priority market.

As there was so little experience in selling to Japan, the know-how on the EU producers' side about entry barriers into the Japanese market was very small.

From the side of the parties interviewed in Japan, the main entry barrier was seen in the decade long collaboration of Tier 3 / Tier 2 / Tier 1 and end user value chain partners with written and non-written bilaterally agreed norms and standards on how to work together.

Often effective standards are set by the industry itself (between sellers and users) and subsequently formulated into norms by the Japan Standard Association.

This strong web of inter-relationships of Japanese supply partners – where communication often takes place exclusively in Japanese – is the principle non-tariff barrier for EU TT producers selling on the Japanese market.

Undercutting Japanese TT producers in price does not help either, as many of them (the Japanese TT producers) operate factories in non-Japan low cost Asian locations.

## D.6.4.7.2. Japan market attractiveness

Overall, the Japanese economy is marked by saturation in demand and a stagnation of industrial production in the country. Motor vehicle production in Japan, to give an example, has declined from 9.9 Mn units in 2012 to 9.2 Mn units in 2015 (source: JAMA) and is expected – at best – to remain on this level. As a consequence

- i. Japanese industrial groups are establishing factories outside of Japan for non-Japanese markets and
- ii. Japanese factories are in part reoriented towards higher value added / different markets like train and aeroplane interiors for car seat giant Toyota Boshoku (27 Mn car seats p.a. production).

If Technical Textiles are outgrowing the economy as a whole, this is for very specific reasons in favour of TT use:

- The aging population in Japan favours
  - Medtech & Hygiene
  - New apartment constructions close to intercity railway connections
  - o Smart textiles for, e.g., supervision of critical health functions
- Growth of production of hybrid (HV) and electric vehicles
  - Use of Lithium ion batteries instead of nickel metal favours NW or coated fabrics / braids used as battery separators
  - Carbon fibre reinforced plastics to reduce the weight impact of batteries in HV or EV
- Smart clothing for Protech, fitness, sports and lifestyle is an emerging potentially 1 Bn USD market in Japan
- Modernisation of high speed train Shinkansen network (and partially impact of summer Olympics in 2020) nourishes Geotech and Buildtech growth

EU producers are respected in Japan although showing an only insignificant presence:

380 Mn USD EU producer 2014 TT sales to Japan represents 11% of Japan's total imports in Technical Textiles and 4% of the Japanese TT market as a whole.

The main strength of EU producers is seen in downstream (from fibre production) know-how and TT product portfolio with a weakness in upstream (fibres and polymers) innovation and industrial capacities.

## D.6.4.7.3. Key success factors to profit from market opportunities

With 10% TT import share EU TT suppliers remain relatively weak on the Japanese market:

- i. Language barriers (most commercial communication in Japan is in Japanese only) and
- ii. Close knit value chain tie-ups in Japan combined with the strength of the TT industry are the main reasons given the chiefly SME structure of the EU Technical Textile industry.

The relative lack of innovative EU produced fibres and polymers (compared to Japanese benchmark companies like Toray, Teijin or Kuraray) is another success restricting factor mentioned by Japanese interview partners in the course of Gherzi interviews in Japan.

Given these barriers and the small average size of the EU TechTex producer, working through Japanese trading houses like Itochu, Marubeni-Intex, Sumitomo or Sojitz Corporation might be the most promising route to overcome the above mentioned hurdle rates to selling EU made TechTex products in Japan.

D.6.4.8. Japan: SWOT

Figure 118: Japan – SWOT for EU TT producers

#### **STRENGTHS**

- Above average 2014 EU % import share in yarn type Technical Textiles (16%) and nonwovens (18%)
- Above average 2014 EU import share by product:
  - Medical sutures (28%)
  - Medical bandages (18%)
  - Specialty filament fabrics (12%)
  - Spunlace nonwovens (23%)
  - Needlefelt nonwovens (17%)
- Recognized (in Japan) know-how in TT end applications and specialty solutions
- Innovator reputation

#### WEAKNESSES

- Below average 2014 EU % import share in fabric type Technical Textiles (6%), industrial yarns (6%) and TechTex made-ups (3%)
- Below average 2014 EU import share by product:
  - Twines, cords and ropes (5%)
  - Coated fabrics (9%)
  - Curtains & blinds (1%)
  - Narrow wovens (9%)
  - Tire cord (zero)
  - Spunbond nonwovens (1%)
- Perceived (in Japan) weakness of the EU in innovative fibres
- Few examples of successful Japanese market penetration by EU producers

#### **OPPORTUNITIES**

- Large Techtex market of 9.4 Bn USD (2014) growing to 12.5 Bn USD by 2020
- 45% of the market is in Mobiltech and Indutech where Europe is strong
- Highly regulated market access (norms, certifications,...) could be a threat as well as an opportunity, as it favours professional operators at the expense of 'garage shop' type price aggressive competitors
- Above average growth segments
  - Medtech & Hygiene
  - Buildtech & Geotech
  - Smart textiles
  - Sophisticated nonwovens (e.g. battery separators or Medtech)
  - CF composites
- Network of Japanese trading houses through which market entry can be realized

#### THREATS

- Most Japanese TechTex segments carry import duty when supplied by EU producers
- Generally difficult to address market thus overall TechTex import share (37%) below the US or S. Korea (50%+)
- The Euro has remained strong against the Yen
- Strong indigenous nonwoven industry where Japan counts among the early innovators
- Many high end specialty fibres for Technical Textiles originate in Japan (in parallel to the US)
- Strength and innovation potential of the Japanese fibre industry (which is also often integrated forward into NW and TT fabrics manufacturing)

## D.6.4.9. Japan: Summary and key opportunities

## D.6.4.9.1. Summary

With a 2014 market size of 9.4 Bn USD Japan is the second largest of the four analysed TechTex markets behind the USA

At forecasted growth rates of around 4% TechTex demand will increase in Japan by 2.8 Bn USD between 2014 and 2020.

About 40% of Japanese TechTex demand is imported (compare to 51% in the USA), corresponding to a TechTex import volume of 3.75 Bn USD in 2014. However, a substantial share of these imports comes from offshore factories of indigenous Japanese TT producers.

With  $\sim$  0.38 Bn USD TechTex exports to Japan, the EU producer share remains small with  $\sim$  10% average import share in 2014.

The import share of EU producers in Japan differs significantly by product family though:

- Yarn type Technical Textiles (21% import share for 0.1 Bn USD EU exports to Japan in 2014)
- Fabric type Technical Textiles (7% import share for 0.14 Bn USD EU exports to Japan in 2014)
- Nonwoven (13% import share for 0.15 Bn USD EU exports to Japan in 2014).

Industrial yarn (raw material for Technical Textiles) and TechTex made-up exports to Japan remain insignificant.

## D.6.4.9.2. Key opportunities

Given the overall stagnation of the Japanese economy (including vehicle production in Japan itself) the best approach to improve Japanese market penetration would be to focus on the 6 key TT growth areas in Japan:

- Medtech & Hygiene
- Buildtech
- Geotech
- Smart textiles
- Sophisticated Nonwovens
- CF composites or composite reinforcements.

On top, investing in R&D, distribution and marketing efforts to 'bring up to speed' or to expand traditional EU 'light tower products':

- Sutures
- Twines, cords and cable components
- Bandages
- Coated fabrics
- Specialty (like spunlace) nonwovens
- ... would be important.

## D.6.4.10. Japan: Conclusions

Opportunities and recommendations (on EU producer level) for the Japanese market can be summarized as follows:

Figure 119: Japan – Gherzi strategic priority matrix

		Japan Opportunity Matrix							
	·	Suggested EU Producers' Move							
Japan Market Attrac- tiveness	High Medium	ESTABLISH  - Smart textiles - CF composites and reinforcements - Sophisticated Medtech  - Buildtech & Geotech textiles	EXPAND  - Bandages - Coated fabrics - Ever more NW innovations (battery separators, filtration,) - Sophisticated (like spunlace) nonwovens - Twines, cords & cable components	- Medical sutures					
	Low								
		Absent to weak	Medium to weak	Strong					
		Current EU Producer market position in Japan							

## End of Part D.6 (Main Report):

Markets and Opportunities in the 4 Countries

**Start of Part D.7 (Main Report):** 

Conclusions and Recommendations from the Study

## D.7. Conclusions and recommendations from the study

## D.7.1. EU TechTex producers in general

In 2014 the EU reached a TT production of 29.8 Bn USD. Between 2010 and 2014 TT exports to non-EU countries grew by a CAGR (Compound Annual Growth Rate) of 5% to 14.2 Bn USD. Total EU TT export growth in this period (+ 2.66 Bn USD) was generated by:

Yarn type Technical Textiles: - 0.73 Bn USD (loss of world market shares in medical sutures)

Fabric type Technical Textiles: + 0.72 Bn USD

Nonwovens: + 2.67 Bn USD

Before this background, the general recommendations for EU TT production as a whole could be summarized as follows:

- i. Working on the improvement of the relative cost competitiveness in products being produced in larger volumes especially in terms of energy consumption will remain important in the future. This due to the fact, that in Gherzi's apprehension vast differences in energy prices between individual EU countries and especially the US are expected to prevail.
- ii. As of Gherzi interviews, the key USP ('unique selling proposition') of the EU TT industry is its innovativeness. Maintaining high R&D (Research & Development) levels on company level, therefore, plays an essential role for the future competitiveness of EU TT producers on the world market.
- iii. The TT industry in Europe is marked by its SME ('small and medium enterprise') structure. At the same time, TT products, because of their functional nature, require a good local (in the country of destination) sales structure explaining to customers and end-users the advantages of application specific ('tailored') TT solutions from the EU. More EU companies with a complementary product portfolio than in the past should 'club together' to jointly attack far away markets like the 4 countries having been analysed in this study.

#### D.7.2. EU TechTex producers regarding the 4 countries

#### Regarding the USA D.7.2.1.

Between 2010 and 2014 TT exports of EU producers to the US have been growing by a CAGR of 8% to 2.28 Bn USD. Total EU TT export growth in this period (+ 0.56 Bn USD) was generated by:

Yarn type Technical Textiles: - 0.03 Bn USD (loss of market shares in medical sutures)

Fabric type Technical Textiles: + 0.42 Bn USD Nonwovens: + 0.20 Bn USD

The USA TT market is very large (No. 2 in the world behind the EU), growing (≥ 5% p.a. 'till 2020) and open to EU producer innovations, new product concepts and technologies.

EU producers already enjoy a strong import position, beating Japan to the No. 1 High End import supplier.

Recommendations from field work in the US and from complementary Gherzi analysis can be summarized as follows:

- Exploit market opportunities in above average CAGR (annual growth) sophisticated non wovens ('NW')
  - a. Mobiltech (growth of vehicle production, lighter cars)
  - b. Filtration (ever stricter legislation and increasing quality control of products by US industry users)
  - c. Geotech (wovens substitution by nonwovens)
  - d. Medtech (wipes, gowns & drapes, etc.)
  - e. Digital print fabrics (replacing wovens)
  - f. New NW technologies (split fibres, bi-component 'Bico' fibres, NW/film laminates, etc.)
- ii. Respond to Mobiltech opportunities driven by the US government's 50-52.5 mpg (miles per gallon) year 2025 target
  - a. Low weight auto acoustics
  - b. FRP (fibre reinforced plastics) composite reinforcements and prepregs (preimpregnated fabrics)
  - c. Sophisticated CF (carbon fibre) reinforced composites (like propshafts or structural = load bearing auto components)
  - d. Etc.
- iii. Generally exploit opportunities in above average growth markets in the USA
  - a. Filtration
  - b. Buildtech (sun shading, architectural membranes, roofing, etc.)
  - c. Smart clothing and industrial Protech (protective apparel)
  - d. CF (carbon fibre) Composite reinforcements and prepregs

To overcome the two major entry barriers into the US TT market, namely ...

- Standards / Norms and corresponding resources required for certification
- Request for shorter time to market
- ... EU SME companies need to find ways to overcome the disadvantages of scale, such as e.g. through:

- Customer alliances (possibly coupled with exclusivity agreements) for certification
- US distributor agreements or
- Alternatively, joint (with complementary EU TT companies) local US commercial and logistical set-ups.

Last it is important to be represented in the USA on at least the east as well as on the west coast. A local US American logistical set up is also often very helpful to shorten the 'time to market' in general judged as too long (for the case of EU suppliers) by companies interviewed by Gherzi in the USA.

## D.7.2.2. Regarding Brazil

Between 2010 and 2014 TT exports of EU producers to Brazil have decreased by a CAGR of 10% to 0.22 Bn USD. Change of EU TT export growth in this period (- 0.12 Bn USD) was generated by:

Yarn type Technical Textiles: - 0.15 Bn USD (loss of market shares in medical

sutures)

Fabric type Technical Textiles: + 0.02 Bn USD

• Nonwovens: + 0.01 Bn USD

The Brazil market is relatively small (correlating with low GDP / capita in the country) and more or less closed to imports of those TT products which are also produced locally.

The low growth perspectives 'till 2020, expressed by interviewed parties in Brazil, represent an additional difficulty for EU producers (on top of currency issues in disfavour of EU production).

Growth in demand for high end EU TT product solutions has to be created (e.g. through dedicated road shows or TT fairs in the country) and cannot be expected to materialize by itself as the general knowledge of Brazilian industry federations and end users about high end Technical Textiles outside of – to give an example – Agrotech, Packtech, Hygiene nonwovens and Mobiltech seems very weak.

Before this background the Gherzi recommendation regarding Brazil can be summarized as follows:

- i. As borders in Brazil (without ratification of a future Mercosur-EU Free Trade Agreement) are more or less closed to products which are available from local producers, higher end solutions need to promoted by EU producers (e.g. via application specific road shows) where a local Brazilian production has not been set up as of now and where application specific know-how serves as an entry barrier against local Brazilian producers. Such products could be found in growing markets for
  - a) Geotech
  - b) Medtech
  - c) Protech (incl. smart clothing)
  - d) Filtration
  - e) CF (carbon fibre) composites

ii. A government to government initiative could be launched to profit from the planned high growth in Brazilian agro production for which the EU TT companies could demonstrate their know-how and expertise, such as in the field of crop protection, irrigation or greenhouse farming.

## D.7.2.3. Regarding South Korea

Between 2010 and 2014 TT exports of EU producers to S. Korea have been growing by a CAGR (compound annual growth rate) of 3% to 0.23 Bn USD. Total EU TT export growth in this period (+ 0.03 Bn USD) was generated by:

Yarn type Technical Textiles: - 0.02 Bn USD (loss of market shares in medical

sutures)

Fabric type Technical Textiles: + 0.01 Bn USD

Nonwovens: + 0.04 Bn USD

Even though small (compared to the US market), the South Korean TT market is established on a high level of sophistication and thus well suited to EU producer TechTex competences.

The South Korean TT industry is, though, building on a well established, strong local fibre industry and is striving to replace high end TT imports such as coming from Japan.

Despite an existing FTA ('Free Trade Agreement') between the EU and South Korea, the overall EU TT export volume to S. Korea remains small (below 250 Mn USD). Few EU companies have established a sizeable presence on this market as of today:

- The EU TT industry is marked by SMEs focusing regarding non EU export initiatives primarily on the USA because of market size
- The strong competition from Japan on the South Korean TT market enjoying advantages of regional and cultural proximity

To overcome these issues, the EU industry might chose to...

- Concentrate efforts on the most attractive opportunities, where Europe is a highly respected producer (see S.Korea Opportunity Matrix under § 7.3.9)
- Seek means to overcome the disadvantages of small company size such as
  - Shared commercial structures
  - Joint commission based distribution agreements with one or a small number of Korean partners
  - Strategic tie-ups like license manufacturing or the like
  - Marketing joint venture
  - o Etc.

Further recommendations for EU TT producers from Gherzi field work in South Korea and from complementary Gherzi analysis can be summarized as follows:

i. Promote sophisticated nonwovens

- a) Bi-component fibre or split fibre based NW
- b) Isotropic (equal NW tissue strength in length and cross direction) spunlace (water-entangled) NW
- c) Wetlaid (ex pulp fibre not unlike paper making process) NW
- d) Specialty meltblown NW (produced ex extruded, e.g., PP chips) for, e.g. acoustic insulation
- e) Flushable NW (like wipes)
- f) Filtration Non wovens (e.g. liquid filtration, filtration of odours or pollen)
- g) Etc.
- ii. Exploit areas of EU producer product strength
  - a) Cable components / cords / twines
  - b) Coated fabrics
  - c) Bandages
  - d) Filter fabrics (woven)
  - e) Sophisticated vehicle components (composites, light weight auto acoustics, filters, ...)
  - f) Etc.
- iii. Step into rather untouched (by EU producers) opportunities
  - a) Smart textiles
  - b) Protech solutions (yarns, fabrics, garments)
  - c) Sun shading
  - d) Consumer oriented TT products (artificial leather, hygiene, ...)
- iv. Invest into IP protection (e.g. patents) in order to build up possibilities (and prerequisites) for EU TT producers to engage in local (S. Korean) tie-ups having the aim to accelerate market access in S. Korea

## D.7.2.4. Regarding Japan

Between 2010 and 2014 TT exports of EU producers to Japan have stagnated on a level of 0.38 Bn USD. By TT product family the change of exports in this period was generated by:

- Yarn type Technical Textiles: 0.04 Bn USD (loss of market shares in medical sutures)
- Fabric type Technical Textiles: ±0
- Nonwovens: + 0.04 Bn USD

Japan is an overall growing (in certain TT applications) but difficult to access (for EU producers) and far away market.

EU producers have a certain strength in sutures (although the position is eroding under the pressure from a.o. US American competition) and in specialty NW (like spunlace).

Three more general actions could be envisaged to improve the EU producer position on the Japanese TT market:

- Collaboration between Japanese upstream (fibres, polymer) industries and EU downstream (fabrics, NW, component) TT producers to profit from each other's strength by creating value added products to be produced in the EU
- ii. EU industry associations could foster B2B linkages between Japanese trading houses (like Marubeni, Itochu, Sumitomo, Sojitz Corp., Fiber Coordination Services, Asahi Kasei Advance Co. or Tsubakimoto) and EU TT producers to facilitate the market access in Japan
- iii. Enhanced collaboration between EU R&D institutes and their Japanese counterparts (such as ITCF or Mikawa Textile Research Center at the Aichi Industrial Science & Technology Comprehensive Center) for the development of environmentally sustainable technologies using advanced fibres and composites, smart textiles, advanced Medtech as well as advanced NW solutions or next generation sutures.

Further recommendations from fieldwork in Japan and from complementary Gherzi analysis can be summarized as follows:

- i. Exploit opportunities from above average growth segments in Japan
  - a) Medtech
  - b) Buildtech
  - c) Geotech
  - d) Smart textiles
  - e) Sophisticated nonwovens
  - f) CF composites or composite reinforcements
- ii. The European (without CIS) man-made fibre production per capita (around 4 kg/a) lags behind Japan (around 5 kg/a not considering fibre production in countries like S. Korea by Japanese owned production sites). The Japanese view is, that Japan as a country is strong in upstream raw materials for Technical Textiles (like polymers and functional fibres) and Europe is strong in downstream, close to the application Technical Textile products and solutions. Interviewed Japanese corporations and associations therefor suggest Japanese / EU partnerships on company level (e.g. EU fabric producers seeking a collaboration with Japanese fibre producers) to combine the above described complementary TT strengths profile of the two regions.

## D.7.2.5. Regarding support by EU organisations and associations

i. Support the development of next generation sutures (= medical sewing threads). EU Suture sales to the 4 countries covered by this report have gone down from 508 Mn USD in 2010 to 243 Mn USD in 2014 (-265 Mn USD or – 17% per annum). Reasons are new local competitors (S.Korea, Brazil) or loss of market share against especially the US American competition (such as world market leader - company 'Ethicon' – a.o.). A

focused EU driven R&D effort on 'next generation sutures' might stop or even reverse this trend.

- ii. As of Gherzi interviews in the 4 countries, EU TT producers excel in products requiring a high level of application specific know-how ('solution provider approach' instead of 'product supplier approach'). It should be discussed on EU level if ongoing support programs or initiatives for Technical Textile specific R&D cover the applications which give room for the above described 'solution provider approach'. Examples for such applications include amongst others:
  - a. Medtech (on top of sutures)
  - b. Geotech
  - c. Reduced vehicle weight (Mobiltech)
  - d. Filtration
  - e. Scientific farming (Agrotech)
  - f. Etc.
- iii. Several relatively young (in terms of life cycle positioning) TT areas have been mentioned during the Gherzi field work as having good future market prospects. There should be a support on EU level to 'ramp up' emerging new TechTex products and technologies such as:
  - a. Smart textiles (e.g. for Medical supervision, life style applications like 'health and fitness monitoring', defence or protective apparel related end uses, etc.)
  - b. New Nonwoven technologies (given the fact that also many market leading providers of nonwoven machinery are based in the EU)
  - c. Next generation man made functional fibres (Multifunctional fibres e.g. via bicomponent technology, nano-fibres, new raw materials like basalt or biodegradable synthetics, ceramic fibres, phase change e.g. cooling and heating fibres, pharmaceutic substance emitting fibres, special fibres for medical prosthesis, wound healing, or organ reinforcement, etc.)
  - d. Next Generation composites, composite reinforcements and prepregs (e.g. light weight glass fibre thermoplast prepregs able to compete with metals, advanced carbon fibre prepregs, basalt / glass / or carbon fibre based composites as steel replacement in structural Buildtech applications, etc.)
  - e. Etc.
- iv. Specifically regarding Brazil: The major growth area seen by interviewed parties was related to the Brazilian Government's plan to grow Brazilian agricultural output as, e.g., through the plan to increase grain production by 50% (compared to the 2015/16 harvest) till 2025. It might open opportunities to EU TT producers if a dialogue could be initiated between the EU and Brazil on how EU TT producer experience in scientific farming (could include a.o. crop protection, irrigation and greenhouse farming expertise) could support the Brazilian agro-growth initiative.
- v. Specifically regarding Japan: Enhancement of the cooperation between Japanese and EU R&D centres (e.g. for the development of environmentally sustainable technologies using advanced fibres and composites, smart textiles, advanced Medtech as well as advanced NW solutions or next generation sutures) to start opening up the traditionally difficult to enter Japanese market.

- vi. Supporting energy saving initiatives in the EU TT industry would be a mean to maintain global market positions when TT products advance on the life cycle curve and thus become more cost and price sensitive.
- vii. In general it is very difficult to establish the knowledge about which standards and norms are applicable for a given TT product in a non EU country. More initiatives similar to the Carbon Composites eV (standardization portal which provides information on national, European and international standards for fibre reinforced plastics) or INDA/EDANA (flushability project, Nonwovens Standard Procedures). To create an easy to access data base on relevant standards and norms in a given country would help EU TT SMEs to expand into so far unknown export territory. The INDA/EDANA initiative might be duplicated in other TT sectors like Geotech, Filtration, etc. through the creation of transnational industry task forces to come to norm harmonization.
- viii. In parallel to norm and standards harmonization and information, the possibility to organise testing procedures in more accredited <a href="European">European</a> laboratories for products sold in foreign countries (like the USA) will significantly reduce the time, complexity and ultimately costs for European TT companies. Many European companies interviewed during the Gherzi field work mentioned the prohibitive cost and time-consuming procedures related to those tests especially for certain product categories in the USA and in Japan, where only a small number of local labs is accredited by TT application.
- ix. Improve transparency of EU TT sector
  - Better statistics tailored to TT by introducing more dedicated TT-related HS codes
  - Supplier overviews ("who is supplying what" database) enhancing and strengthening European-based supply chains
  - Market overview fostering acquisition of in-depth market knowledge in specific export markets for European TT SMEs
- x. The increasing importance given to sustainability may lead to the future creation of an additional non-tariff trade barrier in the form of proliferation of specific and local Restricted Substance Lists (RSL). Efforts to agree on a common RSL especially between EU and the USA could significantly reduce the anticipated complexity generated if numerous RSL are enacted. Following the example of the INDA/EDANA joint efforts for norms harmonization, the ZDHC (Roadmap to Zero Discharge of Hazardous Chemicals) programme initiative gathering 22 leading brands in apparel and footwear might be a good example of the way forward.
- xi. Protection of intellectual property ('IP') is a major issue in Technical Textiles. Some companies like DuPont in the USA have been making extensive use of patents to achieve this aim.

Many EU TechTex producers, however, seem to avoid the patent route due to a fear of disclosing critical company specific know-how, product specifications or recipes. EU organisations and associations, therefore, need to continue to promote proven tools for IP protection like patents or registered designs among the EU TT producing industry.

END OF MAIN REPORT	

## End of Part D.7 (Main Report):

Main Report

Start of D.8 (Appendices):

**Appendices** 

## Table of Contents of Appendices

		<u>Page</u>
Appendix 1:	World market for Technical Textiles	239
Appendix 2:	EU market for Technical Textiles	249
Appendix 3:	EU trade in Technical Textiles	253
Appendix 4:	USA market and trade in Technical Textiles	266
Appendix 5:	Brazil market and trade in Technical Textiles	283
Appendix 6:	South Korea market and trade in Technical Textiles	300
Appendix 7:	Japan market and trade in Technical Textiles	317
Appendix 8:	TechTex company profiles by country	335
Appendix 9:	TechTex commercial codes	368
Appendix 10:	TechTex short list product definitions	380

## **Start of Appendix 1:**

World market for Technical Textiles

## D.8. Appendices

## Appendix 1: World market for Technical Textiles

By product – market segment the 2014 world TechTex market of 28,374 kt splits as follows:

Figure 120: Market segment split 2014 by product i

	(kt)	Spunmelt Nonwovens	Drylaid <sup>2)</sup>	Airlaid / Wetlaid <sup>3)</sup>	Mineralic (glass, basalt) and carbon filament	Man made Filament other than glass, basalt and carbon
AGROTECH	Ropes, Twines & Nets	0.0	0.0	0.0	0.0	594.8
	All other Agrotech 10)	73.9	19.4	0.0	0.0	181.9
	Total Agrotech	73.9	19.4	0.0	0.0	776.7
BUILDTECH	Composites	0.0	22.3	0.0	780.0	91.6
	Concrete / Cement reinforcement	0.0	0.0	0.0	0.0	0.0
	All other Buildtech	350.5	726.1	0.0	0.0	397.7
	Total Buildtech	350.5	748.4	0.0	780.0	489.3
CLOTHTECH	Interlining	2.8	142.8	0.0	0.0	57.3
	Sewing Thread	0.0	0.0	0.0	0.0	160.0
	All other Clothtech	6.5	41.8	0.0	0.0	97.3
	Total Clothtech	9.2	184.6	0.0	0.0	314.7
GEOTECH	Total Geotech <sup>27)</sup>	87.7	393.4	0.0	0.0	339.4
HOMETECH	Fibrefill and Waddings 13)	0.0	0.0	0.0	0.0	0.0
	Carpet Backing	83.1	87.4	0.0	0.0	3.2
	Ticking (Pillow, Mattress)	73.9	0.0	0.0	0.0	40.0
	All other Hometech 14)	352.5	690.2	156.3	182.0	127.4
	Total Hometech	509.5	777.6	156.3	182.0	170.6
INDUTECHT	Filters 15)	117.8	196.7	117.2	0.0	36.9
	Conveyor belts (LWCB)	0.0	0.0	0.0	0.0	120.0
	MRG <sup>16)</sup>	0.0	0.0	0.0	0.0	120.0
	Electrical components 17)	13.9	14.6	0.0	1120.0	103.1
	Abrasives	0.0	11.7	0.0	0.0	0.0
	All other Indutech	164.8	279.9	28.1	682.5	184.8
	Total Indutech	296.5	502.8	145.3	1,802.5	564.8
MEDTECH	Gowns and drapes (Medtech)	158.0	75.5	0.0	0.0	3.2
	Wound dressing and bandages	14.4	45.3	0.0	0.0	3.2
		i l		1	I	
	All other Medtech and Hygiene	18.9	36.8	0.0	0.0	8.0

By product – market segment the 2014 world TechTex market of 28,374 kt splits as follows: (continued)

Figure 121: Market segment split 2014 by product ii

	(kt)	Synthetic staple fibre	Other (non synthetic) staple fibre	Natural <sup>8)</sup> fibres	Slit film ('tape') <sup>9)</sup>	Total KT 2014
AGROTECH	Ropes, Twines & Nets	26.2	0.0	390.5	375.0	1,386.4
	All other Agrotech 10)	10.0	0.0	328.5	250.0	863.7
	Total Agrotech	36.2	0.0	719.0	625.0	2,250.1
BUILDTECH	Composites	0.0	0.0	116.1	0.0	1,010.0
	Concrete / Cement reinforcement	142.4	207.6	31.5	0.0	381.5
	All other Buildtech	67.3	62.5	39.5	25.0	1,668.5
	Total Buildtech	209.6	270.1	187.1	25.0	3,059.9
CLOTHTECH	Interlining	16.1	4.2	78.9	0.0	302.1
	Sewing Thread	128.6	0.0	78.9	0.0	367.5
	All other Clothtech 12)	232.4	2.8	39.5	0.0	420.3
	Total Clothtech	377.1	7.0	197.3	0.0	1,089.9
GEOTECH	Total Geotech 27)	0.0	0.0	193.5	50.0	1,064.0
HOMETECH	Fibrefill and Waddings 13)	536.8	0.0	255.5	0.0	792.2
	Carpet Backing	16.1	0.0	31.5	125.0	346.3
	Ticking (Pillow, Mattress)	83.5	4.2	39.5	0.0	241.0
	All other Hometech 14)	120.6	25.8	245.3	12.5	1,912.5
	Total Hometech	757.0	30.1	571.7	137.5	3,292.1
INDUTECHT	Filters 15)	92.5	25.8	31.6	0.0	618.4
	Conveyor belts (LWCB)	32.2	24.4	31.6	0.0	208.1
	MRG <sup>16)</sup>	32.2	24.4	15.8	0.0	192.4
	Electrical components	27.3	36.6	0.0	0.0	1,315.6
	Abrasives	40.2	0.0	63.1	0.0	115.0
	All other Indutech 18)	90.0	29.1	109.0	12.5	1,580.8
	Total Indutech	314.3	140.4	251.0	12.5	4,030.2
MEDTECH	Gowns and drapes (Medtech)	8.0	0.0	7.9	0.0	252.7
	Wound dressing and bandages	16.1	11.3	78.9	0.0	169.1
	All other Medtech and Hygiene	11.3	2.8	15.8	0.0	93.6
	Total Medtech	35.5	14.1	102.6	0.0	515.4
			So	urce: Gherzi	market model	and research

By product – market segment the 2014 world TechTex market of 28,374 kt splits as follows: continued

Figure 122: Market segment split 2014 by product iii

	(kt)	Spunmelt Nonwovens <sup>1)</sup>	Drylaid <sup>2)</sup>	Airlaid / Wetlaid <sup>3)</sup>	Mineralic (glass, basalt) and carbon filament	Man made Filament other than glass, basalt and carbon
Hygiene	Diapers / women's hygiene / adult incontinence	1842.3	21.5	207.8	0.0	0.0
	Wipes (hygiene)	26.9	481.6	91.1	0.0	0.0
	All other Hygiene 20)	0.0	64.6	0.0	0.0	0.0
	Total Hygiene	1,869.2	567.7	299.0	0.0	0.0
MOBILTECH	Tire cord	0.0	0.0	0.0	0.0	1,067.0
	Composites <sup>21)</sup>	0.0	0.0	39.1	1,007.5	3.2
	Automotive acoustics	78.5	320.5	70.3	0.0	0.0
	All other  Mobiltech	25.4	70.4	7.8	0.0	840.1
	Total Mobiltech	103.9	391.0	117.2	1,007.5	1,910.3
PACKTECH	FIBC (Big bags)	0.0	0.0	0.0	0.0	19.7
	Yarns / twines and nets	0.0	0.0	0.0	0.0	115.2
	All other Packtech 23)	252.2	32.1	413.2	0.0	32.0
	Total Packtech	252.2	32.1	413.2	0.0	166.9
PROTECH	PPE <sup>24)</sup>	44.3	11.7	0.0	0.0	187.7
	All other Protech 25)	44.3	11.7	0.0	0.0	144.3
	Total Protech	88.7	23.3	0.0	0.0	331.9
SPORTTECH	Bags, shoppers, rucksacks	24.2	25.5	0.0	0.0	511.6
	Sporttech Composites	0.0	0.0	0.0	78.0	3.2
	All other Sporttech	24.2	25.5	0.0	0.0	249.7
	Total Sporttech	48.5	51.0	0.0	78.0	764.5
Total KT Cons	sumption 2014	3,881	3,849	1,131	3,850	5,843

By product – market segment the 2014 world TechTex market of 28,374 kt splits as follows: (continued)

Figure 123: Market segment split 2014 by product iv

	(kt)	Synthetic staple fibre	Other (non synthetic) staple fibre	Natural fibres	Slit film ('tape')	Total KT 2014
Hygiene	Diapers / women's hygiene / adult incontinence	0.0	0.0	0.0	0.0	2,071.6
	Wipes (hygiene)	0.0	1.1	2.0	0.0	602.7
	All other Hygiene 20)	16.1	1.7	13.8	0.0	96.2
	Total Hygiene	16.1	2.8	15.8	0.0	2,770.6
MOBILTECH	Tire cord	24.1	1.4	7.9	0.0	1,100.4
	Composites	0.0	24.4	265.5	0.0	1,339.7
	Automotive acoustics	0.0	5.6	0.0	25.0	500.0
	All other Mobiltech 22)	38.9	12.2	70.9	0.0	1,065.7
	Total Mobiltech	63.0	43.7	344.3	25.0	4,005.8
PACKTECH	FIBC (Big bags) Yarns / twines and	0.0	0.0	0.0	500.0	519.7 600.1
	nets All other Packtech 23)	0.0	0.0	1,611.0	750.0	3,090.5
	Total Packtech	38.0	0.0	1,807.9	1,500.0	4,210.3
PROTECH	PPE <sup>24)</sup>	39.8	28.6	39.5	0.0	351.5
	All other Protech 25)	17.9	4.2	83.3	0.0	305.6
	Total Protech	57.7	32.9	122.7	0.0	657.1
SPORTTECH	Bags, shoppers, rucksacks	80.4	0.0	71.0	0.0	712.7
	Sporttech Composites	16.4	12.2	0.0	0.0	109.8
	All other Sporttech 26)	103.9	2.8	75.4	125.0	606.5
	Total Sporttech	200.7	15.0	146.3	125.0	1,429.0
Total KT Con	sumption 2014	2,105	556	4,659	2,500	28,375

By product – market segment the 2014 world TechTex market of 115 Bn € splits as follows:

Figure 124: Market segment split 2014 by product i

	(M€)	Spunmelt Nonwovens	Drylaid <sup>2)</sup>	Airlaid / Wetlaid	Mineralic (glass, basalt) and carbon filament	Man made Filament other than glass, basalt and carbon
AGROTECH	Ropes, Twines & Nets	0.0	0.0	0.0	0.0	2,046.9
	All other Agrotech 10)	169.9	50.5	0.0	0.0	649.5
	Total Agrotech	169.9	50.5	0.0	0.0	2,696.4
BUILDTECH	Composites	0.0	58.1	0.0	5,069.5	372.3
	Concrete / Cement reinforcement	0.0	0.0	0.0	0.0	0.0
	All other Buildtech	806.1	1,887.8	0.0	0.0	1,491.0
	Total Buildtech	806.1	1,945.9	0.0	5,069.5	1,863.3
CLOTHTECH	Interlining	6.4	371.3	0.0	0.0	262.4
	Sewing Thread	0.0	0.0	0.0	0.0	592.0
	All other Clothtech 12)	14.9	108.6	0.0	0.0	410.4
	Total Clothtech	21.2	479.8	0.0	0.0	1,264.8
GEOTECH	Total Geotech <sup>27)</sup>	201.8	1,022.8	0.0	0.0	1,180.5
HOMETECH	Fibrefill and  Waddings	0.0	0.0	0.0	0.0	0.0
	Carpet Backing	191.2	227.3	0.0	0.0	11.8
	Ticking (Pillow, Mattress)	169.9	0.0	0.0	0.0	148.0
	All other Hometech 14)	810.7	1,794.5	390.7	1,182.9	642.6
	Total Hometech	1,171.8	2,021.8	390.7	1,182.9	802.4
INDUTECHT	Filters 15)	270.8	511.4	293.0	0.0	409.6
	Conveyor belts (LWCB)	0.0	0.0	0.0	0.0	432.0
	MRG <sup>16)</sup>	0.0	0.0	0.0	0.0	432.0
	Electrical components	31.9	37.9	0.0	66,81.5	448.6
	Abrasives	0.0	30.3	0.0	0.0	0.0
	All other Indutech 18)	379.1	727.8	70.3	4,435.8	1,262.9
	Total Indutech	681.8	1,307.4	363.3	11,117.3	2,985.1
MEDTECH	Gowns and drapes (Medtech)	363.4	196.4	0.0	0.0	11.8
	Wound dressing and bandages	33.0	117.8	0.0	0.0	11.8
	All other Medtech and Hygiene	43.4	95.7	0.0	0.0	2,198.5
	Total Medtech	439.8	410.0	0.0	0.0	2,222.2

By product – market segment the 2014 world TechTex market of 115 Bn € splits as follows: (continued)

Figure 125: Market segment split 2014 by product ii

	(M€)	Synthetic staple fibre	Other (non synthetic) staple fibre	Natural fibres	Slit film ('tape')	Total M€ 2014
AGROTECH	Ropes, Twines & Nets	125.5	0.0	1,429.9	1,237.5	4,839.9
	All other Agrotech	38.0	0.0	1,203.8	825.0	2,936.7
	Total Agrotech	163.5	0.0	2,633.7	2,062.5	7,776.6
BUILDTECH	Composites	0.0	0.0	417.2	0.0	5,917.0
	Concrete / Cement reinforcement	555.4	1,169.3	110.3	0.0	1,834.9
	All other Buildtech	422.8	328.7	183.4	82.5	5,202.4
	Total Buildtech	978.2	1,498.0	710.8	82.5	12,954.4
CLOTHTECH	Interlining	64.3	24.5	366.9	0.0	1,095.7
	Sewing Thread	514.5	0.0	366.9	0.0	1,473.4
	All other Clothtech 12)	951.6	16.3	183.4	0.0	1,685.3
	Total Clothtech	1,530.5	40.8	917.2	0.0	4,254.4
GEOTECH	Total Geotech 27)	0.0	0.0	695.3	165.0	3,265.3
HOMETECH	Fibrefill and Waddings 13)	2,172.0	0.0	1,047.4	0.0	3,219.4
	Carpet Backing	64.3	0.0	110.3	412.5	1,017.4
	Ticking (Pillow, Mattress)	346.3	24.5	183.4	0.0	872.2
	All other Hometech 14)	663.6	154.7	912.6	41.3	6,593.5
	Total Hometech	3,246.2	179.2	2,253.8	453.8	11,702.4
INDUTECHT	Filters 15)	710.6	124.2	146.8	0.0	2,466.4
	Conveyor belts (LWCB)	128.6	116.0	146.8	0.0	823.4
	MRG <sup>16)</sup>	128.6	146.5	73.4	0.0	780.6
	Electrical components 17)	154.4	174.0	0.0	0.0	7,528.2
	Abrasives	160.8	0.0	293.5	0.0	484.6
	All other Indutech 18)	475.4	135.7	424.9	41.3	7,953.1
	Total Indutech	1,758.4	696.4	1,085.2	41.3	20,036.2
MEDTECH	Gowns and drapes (Medtech)	32.2	0.0	36.7	0.0	640.5
	Wound dressing and bandages	64.3	65.3	366.9	0.0	659.2
	All other Medtech and Hygiene	67.3	16.3	73.4	0.0	2,494.6
	Total Medtech	163.8	81.6	477.0	0.0	3,794.3

By product – market segment the 2014 world TechTex market of 115 Bn € splits as follows: (continued)

Figure 126: Market segment split 2014 by product iii

	(M€)	Spunmelt Nonwovens <sup>1)</sup>	Drylaid <sup>2)</sup>	Airlaid / Wetlaid <sup>3)</sup>	Mineralic (glass, basalt) and carbon filament	Man made Filament other than glass, basalt and carbon
Hygiene	Diapers / women's hygiene / adult incontinence	4,237.3	56.0	519.6	0.0	0.0
	Wipes (hygiene)	61.9	1,252.1	227.9	0.0	0.0
	All other Hygiene 20)	0.0	167.9	0.0	0.0	0.0
	Total Hygiene	4,299.2	1,476.0	747.4	0.0	0.0
MOBILTECH	Tire cord	0.0	0.0	0.0	0.0	5,465.7
	Composites <sup>21)</sup>	0.0	0.0	97.7	6,548.1	11.8
	Automotive acoustics	180.6	833.4	175.8	0.0	0.0
	All other  Mobiltech	58.4	183.1	19.5	0.0	3544.6
	Total Mobiltech	239.0	1,016.5	293.0	6,548.1	9,022.1
PACKTECH	FIBC (Big bags)	0.0	0.0	0.0	0.0	50.2
	Yarns / twines and nets	0.0	0.0	0.0	0.0	489.5
	All other Packtech 23)	580.0	83.5	1,033.0	0.0	118.4
	Total Packtech	580.0	83.5	1,033.0	0.0	658.1
PROTECH	PPE <sup>24)</sup>	102.0	30.3	0.0	0.0	2,833.2
	All other Protech 25)	102.0	30.3	0.0	0.0	626.0
	Total Protech	203.9	60.6	0.0	0.0	3,459.2
SPORTTECH	Bags, shoppers, rucksacks	55.8	66.3	0.0	0.0	2,156.6
	Sporttech Composites	0.0	0.0	0.0	506.9	11.8
	All other Sporttech	55.8	66.3	0.0	0.0	1,423.9
	Total Sporttech	111.5	132.6	0.0	506.9	3,592.3
Total M€ Consumption 2014		8,926	10,007	2,828	24,425	29,746

By product – market segment the 2014 world TechTex market of 115 Bn € splits as follows: (continued)

Figure 127: Market segment split 2014 by product iv

	(M€)	Synthetic staple fibre	Other (non synthetic) staple fibre	Natural fibres	Slit film ('tape')	Total M€ 2014
Hygiene	Diapers / women's hygiene / adult incontinence	0.0	0.0	0.0	0.0	4,812.8
	Wipes (hygiene)	0.0	6.5	9.2	0.0	1,557.6
	All other Hygiene 20)	64.3	9.8	64.2	0.0	306.2
	Total Hygiene	64.3	16.3	73.4	0.0	6,676.6
MOBILTECH	21)	96.5 0.0	8.2 1,16.0	36.7	0.0	5,607.0
	Automotive acoustics	0.0	32.6	983.3	82.5	7,756.8 1,304.9
	All other Mobiltech 22)	222.1	58.0	257.2	0.0	4,342.9
	Total Mobiltech	318.6	2,14.8	1,277.1	82.5	19,011.7
	FIBC (Big bags) Yarns / twines and nets	0.0	0.0	0.0 698.2	1,650.0 825.0	1,700.2 2,158.8
	All other Packtech 23)	0.0	0.0	5,656.5	2,475.0	9,946.4
	Total Packtech	146.2	0.0	6,354.7	4,950.0	13,805.5
PROTECH	PPE <sup>24)</sup>	705.0	171.0	183.4	0.0	4,025.0
	All other Protech 25)	303.1	24.5	327.6	0.0	1,413.5
	Total Protech	1,008.1	195.5	511.1	0.0	5,438.4
SPORTTECH	Bags, shoppers, rucksacks	321.6	0.0	293.7	0.0	2,893.9
	Sporttech Composites	180.7	58.0	0.0	0.0	757.5
	All other Sporttech 26)	460.3	16.3	290.9	412.5	2,726.1
	Total Sporttech	962.6	74.3	584.6	412.5	6,377.4
Total M€ Consumption 2014		10,340	2,997	17,574	8,250	115,093

#### Market segmentation Technical Textiles (Notes)

- 1) Includes Spunbond, SMS and Meltblown Non Wovens
- Includes thermal bonded and chemical bonded, as well as needlefelt, stitchbonded and spunlaced nonwovens
- 3) Includes airlaid and wet laid nonwovens
- Continuous filament, tape or roving based FRP reinforcements only. All tons shown are without plastic matrix material
- Mainly PET (e.g. for tire cord or coated fabrics), PA (e.g. for MRG), PP (e.g. for ropes and nets) and Viscose (e.g. for tire cord)
- 6) Mainly PET, PP and PA
- <sup>7)</sup> Viscose, Metal fibres, Glass staple fibres, Basalt fibres...
- 8) Cotton, Jute, Hemp, Kenaf, Wool.
- Extruded thermoplastic film slit into individual small width tapes for subsequent weaving or knitting into fabric, to give an example. Chiefly made of PE or PP (e.g. for big bags FIBC)
- Crop covers / Corp protection, aggrotech tarpaulins, nettings for crop collection, capillary matting (e.g. for horticulture) etc.
- Roofing, House wrap, Awnings / Canopies, Architectural Membranes / Temporary Buildings, Tarpaulins, Scaffolding Nets / Hoardings, etc.
- <sup>12)</sup> Shoe components / laces, Waddings, Labels, zippers, etc.
- Fibre fill for e.g. duvets and pillows and waddings for fibre quilts
- Hometech wipes / dust cloth, Filters (such as for vacuum cleaners or HVAC), Non ticking mattress components, FR furniture fabric, FR curtain fabric and tape, etc. Nota bene: sewing threads used in Hometech covered under Clothtech
- <sup>15)</sup> Air and liquid filters, w.o. cigarette filters
- Hoses, belts, compensators, etc.
- <sup>17)</sup> Cable components, battery separators, electrical composites
- Brushes, wipes, cigarette filters, PMC, Seals & Gaskets, fibrefill (e.g. for insulation), nonelectrical composites, ropes and nets (e.g. for lifting), miscellaneous coated fabrics (robot encasings, spray booth protection, industrial doors, etc.)
- Sterile packaging, artificial veins, orthopaedic composites & bandages, compression stockings, medical wipes, etc.
- Mattress protectors, incontinence covers (for mattresses), cotton wool and pads (bleached), etc.
- High performance FRP for cars, commercial vehicles, boats, trains, planes, metro cars, etc.
- Belts, airbags, car interior fabrics, carpet (passenger compartment, trunk), trims-ropes and nets, sun shading, etc. Nota bene: Filters used in Mobiltech covered under Indutech
- <sup>23)</sup> Teabags, sacks, miscellaneous packaging
- Personal Protection equipment (FR, Ballistic protection, Heat insulation, Coldroom clothing, Chemical protection, Electric arc, metal splash, FWC)
- Dust protection, clean room clothing, Hi-Vis part of work wear, ropes and harnesses, etc. Nota bene: a) traditional (Polyester-Cotton) work wear not counted under Technical Textiles and b) face masks counted under Indutech (filtration)
- Boat covers, Bookcloth, Artificial Leather substrates, sail cloth, ropes & nets (for Sporttech), artificial turf, airport fabrics, sleeping bag fabrics fillings, flags and banners, webbings (such as for dogs or horses), etc. Nota Bene: without outdoor apparel
- Total Geotech now includes Oekotech (Pond and Pit liners, Geomembranes (waste dump liners), shore liners / erosion control, canal liners, etc.)

## **End of Appendix 1:**

World market for Technical Textiles

**Start of Appendix 2:** 

EU market for Technical Textiles

## Appendix 2: EU market for Technical Textiles

Figure 128: EU TechTex market: Fibre Break-up i

(kt)	Spunmelt NW	Drylaid NW	Airlaid / Wetlaid NW	Mineralic	Man made Filament
TOTAL KT 2014 *	1,129	976	297	646	701
Polyester HT fil.	0	0	0	0	288
Nylon 6	0	0	0	0	63
Nylon 66	0	0	0	0	58
Sutures	0	0	0	0	1
PP Polymer	891	0	0	0	0
PP fibres	0	302	101	0	0
PP Mono	0	0	0	0	1
PP HT Fil.	0	0	0	0	54
PE Polymer	83	0	0	0	0
Viscose fibre	0	39	0	0	0
Viscose Fil.	0	0	0	0	8
PET Polymer	154	0	0	0	0
PET fibres	0	446	0	0	0
Polyester Regular	0	0	0	0	192
Nylon Regular	0	0	0	0	28
Acrylic / Modac	0	7	0	0	0
Aramid staple	0	2	8	0	0
Aramid filament	0	0	0	0	9
Other Organic	0	6	0	0	0
Glass	0	3	13	0	0
Metal	0	0	0	0	0
Cotton	0	67	0	0	0
Bast fibre	0	26	0	0	0
Glass Fil.	0	0	0	639	0
Basalt Fil.	0	0	0	1	0
Carbon Fil.	0	0	0	6	0
BICO	0	46	10	0	0
Wood Pulp	0	32	165	0	0

<sup>\*</sup> Based on World average data

EU TechTex market: Fibre Break-up (cont'd)

Figure 129: EU TechTex market: Fibre Break-up ii

(kt)	Synthetic staple fibre	Other (non synthetic) staple fibre	Natural fibres	Slit film ('tape')	Total KT 2014
TOTAL KT 2014 *	366	104	648	417	5284
Polyester HT fil.	0	0	0	0	288
Nylon 6	11	0	0	0	73
Nylon 66	0	0	0	0	58
Sutures	0	0	0	0	1
PP Polymer	0	0	0	417	1,308
PP fibres	35	0	0	0	437
PP Mono	0	0	0	0	1
PP HT Fil.	0	0	0	0	54
PE Polymer	0	0	0	0	83
Viscose fibre	0	11	0	0	49
Viscose Fil.	0	0	0	0	8
PET Polymer	0	0	0	0	154
PET fibres	280	0	0	0	725
Polyester Regular	0	0	0	0	192
Nylon Regular	0	0	0	0	28
Acrylic / Modac	25	0	0	0	32
Aramid staple	6	0	0	0	16
Aramid filament	0	0	0	0	9
Other Organic	10	2	0	0	18
Glass	0	46	0	0	61
Metal	0	46	0	0	46
Cotton	0	0	110	0	177
Bast fibre	0	0	538	0	564
Glass Fil.	0	0	0	0	639
Basalt Fil.	0	0	0	0	1
Carbon Fil.	0	0	0	0	6
BICO	0	0	0	0	56
Wood Pulp	0	0	0	0	198

<sup>\*</sup> Based on World average data

EU Techtex market: Segment-wise

Figure 130: EU Techtex market: Segment-wise

(kt)	Spunmelt NW	Drylaid NW	Airlaid / Wetlaid NW	Mineralic*	Man made Filament**
Agrotech	40.7	26.5	0.0	0.0	15.4
Buildtech	114.9	149.0	0.0	134.0	60.6
Clothtech	1.3	26.2	0.0	0.0	44.7
Geotech	31.0	69.3	0.0	0.0	2.5
Hometech	145.9	234.6	62.1	43.2	40.5
Indutech	109.2	100.5	54.0	297.1	100.8
Medtech	66.1	28.0	0.0	0.0	3.5
Hygiene	443.7	134.8	71.0	0.0	0.0
Mobiltech	70.1	150.8	22.7	160.4	285.5
Packtech	75.4	31.4	82.6	0.0	33.4
Protech	13.6	7.3	5.0	0.0	19.7
Sporttech	16.9	17.2	0.0	11.1	94.6
Total KT	1,129.0	975.5	297.5	645.8	701.1

(kt)	Synthetic staple fibre	Other (non synthetic) staple fibre	Natural fibres	Slit film ('tape')	Total KT 2014
Agrotech	2.8	0.0	40.9	48.6	175.0
Buildtech	28.8	50.0	24.6	4.6	566.6
Clothtech	53.6	1.0	28.0	0.0	154.8
Geotech	0.0	0.0	24.2	6.3	133.3
Hometech	154.7	7.1	60.7	32.6	781.4
Indutech	62.8	28.0	50.1	2.5	805.1
Medtech	8.6	3.4	14.7	0.0	124.3
Hygiene	3.8	0.7	3.7	0.0	657.7
Mobiltech	12.2	8.5	61.8	4.8	776.8
Packtech	7.6	0.0	311.5	299.9	841.9
Protech	5.6	3.2	9.4	0.0	63.7
Sporttech	25.5	2.1	17.8	17.8	202.9
Total KT	365.9	104.0	647.6	417.2	5,284

<sup>\*</sup> Mineralic (glass, basalt) and carbon filament
\*\* Man made Filament other than glass, basalt and carbon

# **End of Appendix 2:**

EU market for Technical Textiles

**Start of Appendix 3:** 

EU trade in Technical Textiles

### Appendix 3: EU trade in Technical Textiles

EU Yarn type TechTex trade (key countries): In volume, USA is the No. 1 export country and China the No. 1 import country.

Figure 131: EU Yarn type TechTex trade (key countries) – without DU products

	EU Yarn type Imports							
Area	2000	2005	kt 2010	2013	2014	2014 MUSD		
China	12.25	26.30	31.82	35.18	40.30	200.36		
Turkey	3.12	7.96	7.57	8.00	9.65	72.54		
Serbia	0.00	0.00	0.86	4.85	5.65	28.58		
India	2.93	3.31	3.36	3.54	5.15	24.62		
USA	3.46	1.98	3.62	3.32	3.42	418.95		
Rep. of Korea	2.41	2.81	1.91	2.40	2.48	21.98		
Brazil	4.55	3.89	2.32	4.98	2.13	30.41		
Switzerland	2.38	2.32	2.14	2.07	2.12	139.66		
Pakistan	1.31	1.32	1.59	1.67	1.65	4.05		
Madagascar	1.65	0.61	1.30	1.84	1.64	9.18		
Others	22.99	20.53	15.71	12.27	13.84	143.07		
Total kt	57.06	71.03	72.20	80.12	88.04			
Total MUSD	396.84	606.36	857.22	1,043.64	1,093.39			
USA	3.46	1.98	3.62	3.32	3.42	418.95		
S. Korea	2.41	2.81	1.91	2.40	2.48	21.98		
Brazil			2.32	4.98	2.13	30.41		
Japan			0.56	0.44	0.52	16.55		

	EU Yarn type Exports							
Area	2000	2005	kt 2010	2013	2014	2014 MUSD		
USA	11.07	11.17	10.18	15.85	21.37	288.40		
Norway	2.56	3.47	5.34	4.80	7.51	58.35		
Canada	6.57	3.64	4.07	5.36	5.82	27.22		
Other Europe, nes	0.00	6.29	0.00	0.00	5.68	30.54		
Tunisia	3.31	2.27	5.01	3.89	3.23	31.34		
Russian Federation	0.66	1.88	3.00	3.74	3.19	234.13		
Turkey	2.60	2.80	2.42	2.51	2.89	49.45		
Morocco	3.37	2.37	3.17	2.68	2.53	29.14		
Switzerland	2.35	2.16	2.53	2.48	2.30	67.14		
Ukraine	0.58	1.84	1.80	2.61	2.18	21.22		
Others	22.49	26.77	31.38	32.10	34.05	868.69		
Total kt	55.57	64.65	68.90	76.02	90.75			
Total MUSD	574.54	915.01	2,270.73	1,473.81	1,685.62			
USA			10.18	15.85	21.37	288.40		
Brazil			1.10	0.93	0.94	20.66		
S. Korea			0.81	0.62	0.67	37.09		
Japan			0.24	0.30	0.34	79.75		

EU Yarn Trade: In value Medical Sutures and ropes & cables are the two main export products.

Figure 132: EU Yarn trade 2000-2014 – without DU products

	EU Yarn type Imports								
Area	2000	2005	kt — 2010	2013	2014	2014 MUSD			
5607	21.69	26.78	27.38	32.42	34.88	161.16			
5609	5.23	9.76	13.23	15.50	17.94	69.35			
5401	5.01	7.72	5.40	7.03	8.67	77.21			
5508	10.94	11.20	8.35	8.51	8.67	45.56			
5606	3.27	6.70	7.72	5.94	6.92	90.83			
5604	3.99	4.26	4.29	4.52	4.88	35.03			
300610	0.96	1.41	2.40	2.42	2.31	568.50			
5204	4.28	2.08	2.29	2.24	2.18	18.36			
5605	1.69	1.11	1.14	1.54	1.60	27.40			
Total kt	57.06	71.03	72.20	80.12	88.04				
Total MUSD	396.84	606.36	857.22	1,043.64	1,093.39				

	EU Yarn type Exports								
Area	2000	2005	kt — 2010	2013	2014	2014 MUSD			
5607	30.34	39.19	37.51	50.37	64.85	376.93			
5401	5.72	5.65	7.28	6.96	7.09	148.93			
5604	2.40	6.20	6.84	4.39	4.97	64.96			
5606	6.45	6.12	3.52	4.08	4.43	75.82			
300610	1.55	1.69	4.05	2.47	2.57	897.27			
5609	1.35	1.96	2.94	2.42	2.28	19.83			
5204	2.69	1.54	3.86	2.75	2.26	19.83			
5508	4.35	2.02	2.47	2.05	1.74	26.99			
5605	0.71	0.28	0.41	0.53	0.56	29.07			
Total kt	55.57	64.65	68.90	76.02	90.75				
Total MUSD	574.54	915.01	2,270.73	1,473.81	1,685.62				

HS Codes	Description
300610	Sterile surgical catgut, similar sterile matter, etc.
5204	Cotton sewing thread, whether or not put up for retail sale
5401	Sewing thread of man-made filaments, whether or not put up for retail sale
5508	Sewing thread of man-made staple fibres, whether or not put up for retail sale
5604	Rubber Thread and cord, Textile covered, Textile yarn, Impregnated coated, covered, sheathed with rubber
5605	Metallized yarn, whether or not gimped being textile yarn, strip or powder or covered with metal
5606	Gimped Yarn & Strip, 5404/5405 Chenille Yarn, Loop Wale-Yarn
5607	Twine, Cordage, Rope & Cables, Coated etc. or Not
5609	Article of yarn, strip or the like heading 5404 or 5405, Twine, cordage, NES

EU Fabric type TechTex trade: In volume, USA is the No. 1 export country and China the No. 1 import country.

Figure 133: EU Fabric type TechTex trade 2000-2014 – without DU products

	EU Fabric type Imports								
Area	2000	2005	kt 2010	2013	2014	2014 MUSD			
China	43.3	189.2	395.2	372.5	402.4	2255.7			
India	71.5	85.4	119.8	153.5	176.6	551.6			
Turkey	70.4	119.2	119.9	112.9	115.4	629.1			
USA	38.5	41.9	47.9	37.1	38.3	571.2			
Rep. of Korea	17.1	19.6	27.4	31.9	32.1	231.5			
Vietnam	6.7	16.1	18.8	22.5	24.7	81.0			
Bangladesh	16.2	11.0	16.4	17.4	22.5	54.6			
Other Asia, nes	17.9	14.1	11.9	12.4	14.6	119.0			
Indonesia	12.1	12.1	14.5	17.5	14.5	45.7			
Switzerland	12.6	14.3	15.3	12.7	13.3	389.9			
Others	70.5	95.2	114.5	104.1	117.5	843.4			
Total kt	376.7	618.1	901.6	894.5	972.1				
Total MUSD	2,133.8	3,403.7	4,976.6	5,377.9	5,772.8				
USA			47.9	37.1	38.3	571.2			
S. Korea			27.4	31.9	32.1	231.5			
Japan			5.97	4.89	4.68	108.8			
Brazil			1.14	1.24	1.58	12.86			

	EU Fabric type Exports								
Area	2000	2005	kt 2010	2013	2014	2014 MUSD			
USA	40.2	67.8	52.9	64.6	64.6	1,118 3			
Switzerland	20.1	26.1	31.8	30.7	33.4	515.3			
Turkey	17.4	23.2	28.9	31.7	32.5	320.0			
Russian Federation	14.6	29.8	25.7	32.6	30.2	351.3			
China	4.3	8.5	20.0	23.0	25.2	513.5			
Morocco	8.5	11.7	16.3	17.7	18.4	221.6			
Norway	12.3	15.4	15.9	14.7	15.7	196.8			
Ukraine	4.3	12.9	12.6	14.6	11.9	129.4			
Brazil	4.7	4.7	7.1	9.1	11.9	119.3			
Tunisia	9.6	11.1	13.3	10.8	9.5	158.4			
Others	140.3	133.3	155.9	164.0	156.3	2,315.4			
Total kt	276.3	344.4	380.4	413.5	409.5				
Total MUSD	2,545.3	3,942.6	5,356.1	5,750.3	5,959.4				
USA			52.9	64.6	64.6	1,118.3			
Brazil			7.1	9.1	11.9	119.3			
S. Korea			3.74	6.03	5.99	90.8			
Japan			4.35	5.16	4.76	108.3			

EU Key Fabric trade: Coated fabrics and bandages (wound dressing) are the two most important export items. (for HS code details see Appendix 9.1)

Figure 134: EU Key Fabric trade 2010-2014 – without DU products

EU Fabric type Imports								
Area	2010	kt 2013	2014	2014 MUSD				
630532	167.67	190.18	207.87	682.5				
3005	91.98	94.96	97.68	1,182.9				
5903	78.43	88.44	97.34	617.11				
630392	73.11	73.56	81.99	700.88				
630533	69.96	72.23	75.17	199.29				
5902	51.2	61.26	69.00	289.35				
701931	35.14	43.86	46.22	83.72				
540720	23.79	27.87	34.11	102.41				
5806	22.06	22.59	26.36	244.44				
5608	23.57	21.30	25.33	145.26				
5906	19.94	20.53	22.37	131.69				
701959	51.13	22.01	20.99	100.35				
701940	22.7	23.73	20.28	53.74				
531010	21.64	18.17	20.23	33.84				
540710	11.21	13.78	16.22	167.27				
5911	12.33	13.08	16.10	361.05				
701932	23.26	11.35	15.14	77.46				
5901	20.30	14.14	14.04	56.19				
701952	17.29	11.37	12.87	59.15				

EU Fabric type Exports								
Area	2010	kt 2013	2014	2014 MUSD				
5903	75.40	88.90	94.58	1,171.54				
5911	33.44	34.43	34.06	895.71				
3005	36.24	34.26	33.97	1,302.77				
540720	24.59	37.47	25.74	129.05				
701931	21.77	25.63	22.74	92.48				
5906	19.92	23.91	21.44	261.92				
701932	13.15	13.74	20.65	122.58				
5806	19.02	18.62	18.97	316.07				
5608	15.04	17.30	18.54	158.2				
701959	15.40	17.34	15.98	192.67				
540710	12.51	13.53	13.13	181.14				
5902	19.6	11.58	12.89	61.09				
5909	7.20	9.87	8.89	112.19				
630532	9.18	8.82	8.62	49.38				
701940	6.73	6.26	8.14	37.10				
5907	8.46	6.78	7.56	107.65				
5910	8.49	10.40	7.09	142.62				
630392	4.05	5.58	6.61	139.98				
570250	3.21	4.99	5.19	47.29				

EU Key Fabric trade: Coated fabrics and bandages (wound dressing) are the two most important export items

Figure 135: EU Key Fabric trade 2010-2014 – without DU products

EU Fabric type Imports								
Area	2010	kt 2013	2014	2014 MUSD				
5907	11.80	10.27	9.83	91.29				
630399	13.38	7.97	9.16	80.37				
520811	12.73	7.71	6.51	53.76				
5910	2.97	4.79	4.86	41.67				
5909	2.91	3.04	4.40	30.05				
570250	4.53	4.52	4.29	19.67				
520821	5.22	3.30	3.79	28.26				
5807	2.02	2.23	2.82	72.68				
531090	1.10	0.99	1.74	3.52				
540810	2.28	1.57	1.69	26.34				
701951	3.41	1.74	1.52	9.88				
5803	0.98	0.89	1.14	11.33				
551229	1.23	0.83	0.75	8.01				
5908	0.13	0.14	0.18	7.21				
5809	0.10	0.08	0.12	3.05				
580230	0.11	0.05	0.09	0.71				
Total kt	901.61	894.53	972.20					
Total MUSD	4,976.64	5,377.87	5,772.78					

EU Fabric type Exports								
Area	2010	kt	2014	2014 MUSD				
5807	5.69	4.23	4.13	145.04				
5901	4.57	4.57	3.98	41.16				
551229	3.29	3.82	3.84	76.39				
630533	3.04	2.3	2.82	11.21				
701952	2.84	2.39	2.52	36.21				
701951	1.08	0.61	1.89	16.98				
580230	0.87	1.61	1.38	8.69				
540810	1.28	1.06	0.99	27.45				
630399	0.69	0.84	0.87	37.44				
520811	1.57	1.14	0.51	10.28				
531010	0.33	0.36	0.51	1.34				
5908	0.8	0.44	0.42	12.27				
520821	0.84	0.23	0.41	7.65				
531090	0.06	0.32	0.32	2.17				
5809	0.32	0.28	0.32	6.23				
5803	0.12	0.13	0.09	3.62				
Total kt	380.79	413.74	409.79					
Total MUSD	5,356.16	5,750.27	5,959.41					

Source: UN Comtrade

For details on HS Codes please see Appendix 9.1.

EU Nonwoven type TechTex trade (Key countries): Russia and the USA were the two top export countries in 2014.

Figure 136: EU Nonwoven type TechTex trade (Key countries) 2010-2014

	EU Nonwoven type Imports								
Area	2000	2005	kt 2010	2013	2014	2014 MUSD			
China	14.2	47.0	117.7	153.4	186.4	795.3			
Turkey	12.1	24.9	32.5	63.0	77.1	289.3			
USA	49.6	78.6	63.4	56.2	58.4	470.8			
Pakistan	14.6	26.8	42.7	40.8	51.9	353.6			
Switzerland	23.4	25.9	17.4	44.3	41.7	189.8			
Israel	16.5	29.3	35.8	33.1	32.8	124.4			
India	2.2	7.7	11.5	12.7	12.6	79.5			
Saudi Arabia	0.7	3.6	4.7	11.7	12.5	37.6			
Canada	1.9	1.5	1.9	6.7	10.0	68.8			
Russian Federation	1.0	1.5	12.3	5.1	9.6	37.4			
Others	34.4	52.6	53.3	61.0	75.3	467.8			
Total kt	170.7	299.3	393.3	488.1	568.2				
Total MUSD	876.1	1,366.6	1,993.4	2,542.7	2,914.2				
USA			63.4	56.2	58.4	470.8			
Japan			7.66	7.29	7.52	100.4			
S. Korea			3.85	4.06	5.71	46.0			
Brazil			1.20	0.36	0.32	1.5			

	EU Nonwoven type Exports								
Area	2000	2005	kt 2010	2013	2014	2014 MUSD			
Russ. Feder.	20.1	41.0	35.7	141.7	132.4	782.2			
USA	36.0	51.0	53.1	63.8	73.6	525.2			
Turkey	18.5	31.6	41.8	62.4	68.0	356.2			
Switzerland	20.5	22.4	34.3	66.8	64.9	438.1			
Ukraine	3.7	17.8	13.9	64.7	53.5	246.1			
Norway	6.2	9.2	12.5	41.6	42.0	224.0			
China	5.8	10.3	22.3	28.7	30.8	245.1			
South Africa	2.6	3.3	6.4	27.5	29.0	154.0			
Australia	6.5	6.1	4.5	26.3	27.9	129.4			
Serbia	0.0	0.0	6.3	21.0	23.6	123.4			
Others	102.7	110.3	166.5	285.0	302.4	1,820.7			
Total kt	222.6	303.1	397.2	829.5	848.2				
Total MUSD	987.7	1,620.4	2,372.9	4,849.8	5,044.4				
USA			53.1	63.8	73.6	525.2			
Japan			12.45	17.87	19.73	146.1			
Brazil			6.18	7.10	7.34	47.8			
S. Korea			4.24	6.68	6.44	66.7			

NW roll good (5603) is the main EU export item.

Figure 137: EU Nonwoven trade 2010-2014

EU Nonwoven type Imports									
Area	2010	kt 2013	2014	2014 MUSD					
5603	175.59	206.86	245.98	1,195.39					
961900	0.00	85.66	93.10	429.05					
630232	51.25	52.93	60.75	377.47					
630222	47.00	40.65	48.02	339.15					
701939	50.11	37.59	45.00	134.15					
5602	19.80	20.24	25.21	75.53					
5601	24.71	18.65	20.63	141.61					
630253	18.12	15.82	18.29	121.23					
630293	6.70	9.69	11.22	100.61					
Total kt	393.2888	488.0884	568.2031						
Total MUSD	1,993.357	2,542.653	2,914.201						

EU Nonwoven type Exports									
Area	2010	kt 2013	2014	2014 MUSD					
961900	0	379.05	384.59	2,067.03					
5603	296.46	340.51	342.63	2,069.25					
5601	47.31	45.04	46.68	512.04					
701939	26.46	38.14	46.65	164.46					
5602	23.60	22.68	23.14	166.54					
630232	1.34	1.89	1.83	24.74					
630222	1.06	1.35	1.53	20.84					
630253	0.57	0.49	0.62	12.60					
630293	0.39	0.36	0.48	6.94					
Total kt	397.19	829.51	848.16						
Total MUSD	2,372.90	4,849.82	5,044.44						

HS Codes	Description
5601	Text wadding & articles; Text fibres Nov 5 Mm, etc.
5602	Felt, impregnated, coated, etc. or not
5603	Nonwovens, whether or not impregnated, coated etc.
6302 22 10	Nonwovens - Printed bedlinen of nonwovens of man-made fibres
6302 32 10	Nonwovens - Bedlinen of nonwovens of man-made fibres (excl. printed)
6302 53 10	Nonwovens - Table linen of nonwovens of man-made fibres
6302 93 10	Nonwovens - Toilet linen and kitchen linen of nonwovens of man-made fibres (excl. floor cloths, polishing cloths, dishcloths and dusters)
7019 39 00	Webs, mattresses, boards and similar nonwoven products, of glass fibres (excl. mats and thin sheets "voiles")
96190031	Sanitary towels and tampons, napkins and napkin
96190039	Sanitary towels and tampons, napkins and napkin
96190041	Sanitary towels, tampons and similar articles
96190049	Sanitary towels, tampons and similar articles
96190030	Sanitary towels and tampons, napkins and napkin liners for babies and similar sanitary articles, of wadding of textile materials
96190040	Sanitary towels, tampons and similar articles, of textile materials (excl. of wadding)

EU Industrial yarn type (like High Tenacity filament that is raw material for Technical Textiles) TechTex trade: In volume, USA is the No1 export country and China the No 1 import country.

Figure 138: EU Industrial yarn type TechTex trade 2010-2014

	EU Industrial Yarn type Imports									
Area	2000	2005	kt 2010	2013	2014	2014 MUSD				
China	2.7	16.7	78.4	88.2	101.5	263.4				
Rep. of Korea	20.3	17.5	31.3	35.1	36.4	114.8				
Spec. categs.	0.0	0.0	3.8	23.5	23.1	48.5				
Belarus	4.7	8.3	14.1	10.1	10.1	30.1				
Turkey	5.0	1.2	9.9	7.2	9.4	45.4				
Other Asia, nes	2.8	7.3	13.6	9.5	9.2	24.6				
Switzerland	10.9	6.8	10.5	5.5	5.3	29.6				
Other Europe, nes	0.0	0.0	0.0	0.0	3.9	21.6				
India	6.5	3.9	4.7	4.3	3.6	15.1				
Thailand	1.5	2.0	3.7	3.4	2.9	13.5				
Others	18.1	11.6	12.4	10.2	8.7	64.5				
Total kt	72.5	75.4	182.3	197.0	214.2					
Total MUSD	162.3	218.5	546.2	619.7	671.0					
S. Korea			31.3	35.1	36.4	114.8				
USA			2.25	1.58	1.69	9.32				
Japan			2.99	1.20	1.35	31.65				
Brazil			0.01	0.01	0.00	0.01				

EU Industrial Yarn type Exports								
Area	2000	2005	kt 2010	2013	2014	2014 MUSD		
USA	4.8	7.6	8.5	6.3	6.8	72.1		
Other EU, nes	0.0	0.0	0.0	0.0	6.1	31.4		
China	0.0	0.0	2.9	3.5	5.8	53.3		
Spec. Categs.	0.0	0.0	2.9	3.7	5.0	66.0		
Turkey	1.7	3.0	2.2	3.6	2.5	13.6		
Norway	0.1	0.8	1.6	2.0	1.5	7.0		
Switzerland	0.1	0.7	2.0	1.7	1.5	11.2		
Russ. Fed.	0.0	0.1	1.6	2.3	1.2	5.5		
India	0.1	0.0	1.0	0.7	1.0	9.9		
Tunisia	0.2	0.7	0.9	0.9	1.0	3.3		
Others	2.3	6.7	8.9	6.3	5.5	50.1		
Total kt	9.2	19.7	32.6	30.9	38.0			
Total MUSD	24.3	59.5	347.2	288.8	323.4			
USA			8.5	6.3	6.8	72.1		
Brazil			0.32	1.15	0.91	6.51		
Japan			0.34	0.01	0.25	5.19		
S. Korea			0.01	0.23	0.08	0.54		

EU Key products of Industrial yarn trade: In value Polyester industrial yarn is the main EU import item and Aramids are the main export item.

Figure 139: EU Key products of Industrial yarn trade

	EU Industrial Yarn type Imports								
Area	2000	2005	kt 2010	2013	2014	2014 MUSD			
540220	66.27	71.06	135.92	154.50	165.36	415.00			
540219	0.00	0.00	41.47	36.93	39.40	173.76			
540310	6.23	4.35	3.69	4.12	8.06	41.76			
540211	0.00	0.00	1.25	1.44	1.42	40.51			
Total kt	72.50	75.41	182.33	196.99	214.25				
Total MUSD	162.31	218.45	546.24	619.68	671.03				

	EU Industrial Yarn type Exports								
Area	2000	2005	kt 2010	2013	2014	2014 MUSD			
540220	9.14	17.00	13.20	14.61	16.57	62.42			
540219	0.00	0.00	9.32	8.43	10.75	62.42			
540211	0.00	0.00	9.78	7.76	10.62	197.71			
540310	0.10	2.67	0.26	0.15	0.10	0.90			
Total kt	9.24	19.67	32.56	30.95	38.04				
Total MUSD	24.34	59.54	347.15	288.79	323.44				

HS Codes	Description
540220	High-tenacity filament yarn of polyesters
540219	High-tenacity filament yarn of nylon or other polyamides
540211	High-tenacity filament yarn of aramids
540310	High-tenacity yarn of viscose rayon filament

EU Made-ups type TechTex trade: In volume, Switzerland and the USA are the No. 1 and No. 2 export countries and China the No 1 import country.

Figure 140: EU Made-ups type TechTex trade

	EU Made-ups type Imports									
Area	2000	2005	kt 2010	2013	2014	2014 MUSD				
China	136.09	310.73	477.31	433.05	478.56	3,361.80				
India	36.51	57.63	97.56	129.83	149.80	526.00				
Turkey	48.14	84.25	81.53	82.72	81.93	643.92				
Viet Nam	9.17	20.08	26.58	42.19	53.42	300.11				
Bangladesh	17.60	25.91	30.60	46.92	49.63	480.51				
Pakistan	9.64	16.81	19.61	18.52	19.55	213.70				
USA	8.48	5.69	7.90	6.82	17.85	140.34				
Indonesia	10.44	9.80	13.73	13.53	13.32	71.51				
Thailand	4.95	4.39	10.03	11.44	12.77	85.03				
Tunisia	9.91	15.62	11.41	11.56	11.62	247.71				
Others	55.67	67.15	66.67	68.42	76.54	986.63				
Total kt	346.61	618.07	842.93	864.98	964.99					
Total MUSD	2,016.36	3,807.12	5,758.69	6,478.95	7,057.27					

	EU Made-ups type Exports								
Area	2000	2005	kt 2010	2013	2014	2014 MUSD			
Switzerland	7.92	11.21	15.00	16.38	18.79	374.53			
USA	8.26	12.51	7.92	9.92	11.86	317.11			
Russian Federation	3.43	9.16	10.54	11.71	9.83	252.71			
China	0.31	1.52	2.53	5.11	8.77	254.97			
Norway	7.09	9.93	7.35	8.30	8.37	146.72			
Turkey	2.67	4.68	5.90	5.09	5.08	93.33			
Morocco	1.11	3.11	1.87	2.21	3.51	25.45			
Tunisia	1.85	8.79	2.47	2.78	3.29	50.64			
Rep. of Korea	0.73	1.90	1.64	2.53	2.63	57.27			
China, Hong Kong SAR	0.65	0.72	0.75	2.50	2.62	205.74			
Others	24.79	27.97	39.25	40.36	42.83	886.21			
Total kt	58.82	91.50	95.21	106.88	117.59				
Total MUSD	646.00	1,364.42	1,741.00	2,428.40	2,664.69				

EU imports from World are as follows:

Figure 141: EU imports from World

			Mn US\$			KT	
Segments	HS Code	2010	2013	2014	2010	2013	2014
	6307 (Othr)	1800	1988	2273	240	253	320
	6305 (FIBC)	764	926	998	264	289	309
Made-ups	6306 (Tarp)	700	676	733	163	132	141
	870821	150	202	161	15	19	15
	Total	3,414	3,792	4,165	682	693	784
Industrial and occupational garments	Total	1,833	2,069	2,209	102	105	108
Gloves	611693	221	252	268	13	12	13
Nonwoven	621010	290	366	415	45	55	59
Grand Total		5,759	6,479	7,057	843	865	965

Source: UN Comtrade

EU exports to World are as below:

Figure 142: EU exports to World

			Mn US\$			KT	
Segments	HS Code	2010	2013	2014	2010	2013	2014
	6307 (Othr)	481	618	753	33	36	42
	6306 (Tarp)	214	269	285	16	21	23
Made-ups	870821	271	361	390	21	21	21
	6305 (FIBC)	69	124	121	15	15	16
	Total	1,035	1,372	1,549	84	92	102
Industrial and occupational garments	Total	460	602	603	7.7	9.1	9.5
Gloves	611693	15.5	22.7	21.3	0.3	0.4	0.4
Nonwoven	621010	230	432	492	3.3	4.9	5.5
Grand Total		1,741	2,428	2,665	95	107	118

# **End of Appendix 3:**

EU trade in Technical Textiles

Start of Appendix 4:

USA market and trade in Technical Textiles

### Appendix 4: USA market and trade in Technical Textiles

#### TechTex market USA

Figure 143: US TechTex market: Segment-wise

	Spunmelt NW	Drylaid NW	Airlaid / Wetlaid NW	Mineralic*	Man made Filament**
Agrotech	8.0	2.1	0.0	0.0	84.1
Buildtech	35.1	74.9	0.0	78.0	49.0
Clothtech	1.0	19.0	0.0	0.0	32.4
Geotech	10.1	45.5	0.0	0.0	39.2
Hometech	134.6	205.5	41.3	48.1	45.1
Indutech	47.9	81.2	23.5	291.1	91.2
Medtech	87.1	59.5	0.0	0.0	5.4
Hygiene	494.2	150.1	79.0	0.0	0.0
Mobiltech	36.5	71.0	15.3	131.3	206.0
Packtech	40.7	5.2	66.7	0.0	26.9
Protech	17.4	4.6	0.0	0.0	65.0
Sporttech	5.0	5.3	0.0	8.0	78.7
Total KT	917.6	723.6	225.7	556.5	723.1

	Synthetic staple fibre	Other (non synthetic) staple fibre	Natural fibres	Slit film ('tape')	Total KT 2014
Agrotech	3.9	0.0	77.9	67.7	243.8
Buildtech	21.0	27.0	18.7	2.5	306.1
Clothtech	38.8	0.7	20.3	0.0	112.3
Geotech	0.0	0.0	22.4	5.8	123.0
Hometech	200.0	7.9	151.1	36.3	869.9
Indutech	50.8	22.7	40.5	2.0	650.8
Medtech	13.4	5.3	23.7	0.0	194.3
Hygiene	4.3	0.7	4.2	0.0	732.6
Mobiltech	8.2	5.7	44.9	3.3	522.1
Packtech	6.1	0.0	291.7	242.0	679.2
Protech	11.3	6.4	24.1	0.0	128.8
Sporttech	20.7	1.5	15.1	12.9	147.2
Total KT	378.5	78.1	734.4	372.5	4,710

<sup>\*</sup> Mineralic (glass, basalt) and carbon filament
\*\* Man made Filament other than glass, basalt and carbon

US TechTex market: Fibre breakup

Figure 144: US TechTex market: Fibre breakup i

	Spunmelt NW	Drylaid NW	Airlaid / Wetlaid NW	Mineralic	Man made Filament
TOTAL KT 2014 *	918	724	226	557	723
Polyester HT fil.	0	0	0	0	297
Nylon 6	0	0	0	0	65
Nylon 66	0	0	0	0	60
Sutures	0	0	0	0	1
PP Polymer	724	0	0	0	0
PP fibres	0	224	77	0	0
PP Mono	0	0	0	0	1
PP HT Fil.	0	0	0	0	56
PE Polymer	68	0	0	0	0
Viscose fibre	0	29	0	0	0
Viscose Fil.	0	0	0	0	8
PET Polymer	125	0	0	0	0
PET fibres	0	330	0	0	0
Polyester Regular	0	0	0	0	198
Nylon Regular	0	0	0	0	29
Acrylic / Modac	0	5	0	0	0
Aramid staple	0	2	6	0	0
Aramid filament	0	0	0	0	9
Other Organic	0	4	0	0	0
Glass	0	2	10	0	0
Metal	0	0	0	0	0
Cotton	0	50	0	0	0
Bast fibre	0	20	0	0	0
Glass Fil.	0	0	0	551	0
Basalt Fil.	0	0	0	1	0
Carbon Fil.	0	0	0	5	0
BICO	0	34	7	0	0
Wood Pulp	0	24	126	0	0

<sup>\*</sup> Based on World average data

US TechTex market: Fibre breakup

Figure 145: US TechTex market: Fibre breakup ii

	Synthetic staple fibre	Other (non synthetic) staple fibre	Natural fibres	Slit film ('tape')	Total KT 2014
TOTAL KT 2014 *	378	78	734	372	4710
Polyester HT fil.	0	0	0	0	297
Nylon 6	11	0	0	0	76
Nylon 66	0	0	0	0	60
Sutures	0	0	0	0	1
PP Polymer	0	0	0	372	1,097
PP fibres	36	0	0	0	336
PP Mono	0	0	0	0	1
PP HT Fil.	0	0	0	0	56
PE Polymer	0	0	0	0	68
Viscose fibre	0	8	0	0	37
Viscose Fil.	0	0	0	0	8
PET Polymer	0	0	0	0	125
PET fibres	289	0	0	0	620
Polyester Regular	0	0	0	0	198
Nylon Regular	0	0	0	0	29
Acrylic / Modac	26	0	0	0	31
Aramid staple	6	0	0	0	14
Aramid filament	0	0	0	0	9
Other Organic	10	2	0	0	16
Glass	0	34	0	0	46
Metal	0	34	0	0	34
Cotton	0	0	124	0	174
Bast fibre	0	0	610	0	630
Glass Fil.	0	0	0	0	551
Basalt Fil.	0	0	0	0	1
Carbon Fil.	0	0	0	0	5
BICO	0	0	0	0	42
Wood Pulp	0	0	0	0	150

<sup>\*</sup> Based on World average data

#### USA TechTex trade

USA Yarn type TechTex trade: EU is the No. 1 import supplier

Figure 146: USA Yarn type TechTex trade 2000-2014 – without DU products

	USA Yarn type Imports										
Area	2000	2005	kt	2013	2014	2014 MUSD					
China	6.2	26.6	35.7	41.0	44.1	249.6					
Brazil	43.8	30.3	29.6	23.8	23.5	56.3					
EU 28	10.2	14.5	10.9	15.3	18.2	405.9					
Mexico	23.0	21.1	14.2	8.3	8.5	62.2					
Philippines	6.6	6.7	5.5	6.4	6.5	21.6					
India	1.6	3.4	5.6	6.3	6.2	20.1					
Vietnam	0.0	1.3	2.2	2.6	3.8	10.6					
Rep. of Korea	3.3	4.8	3.5	3.2	3.3	14.6					
Indonesia	1.6	0.9	0.8	2.7	3.1	7.8					
Canada	5.9	6.5	2.9	2.8	2.9	19.9					
Others	25.2	21.2	14.5	10.6	10.1	99.0					
Total kt	127.5	137.3	125.4	123.0	130.1						
Total MUSD	450.9	692.5	790.6	928.9	967.6						

The TechTex trade balance in yarn type products is positive in favour of the EU

	USA Yarn type Exports										
Area	2000	2005	kt 2010	2013	2014	2014 MUSD					
Mexico	39.5	23.7	14.3	16.5	16.8	204.5					
Canada	11.6	11.6	9.4	11.2	9.5	127.0					
Eu 28	3.6	2.6	3.0	3.2	3.8	308.8					
Honduras	3.4	2.1	1.6	1.1	2.1	14.2					
Costa Rica	1.0	2.9	0.2	0.7	1.4	13.2					
El Salvador	1.6	1.3	1.8	1.3	1.2	12.2					
China	0.2	0.3	1.2	0.8	1.1	28.1					
Dominican Rep.	2.5	2.2	1.0	1.2	1.0	11.1					
Switzerland	0.0	0.0	0.1	0.3	0.8	9.5					
Rep. of Korea	0.2	0.4	0.8	0.4	0.8	25.1					
Others	7.7	8.0	7.4	13.0	7.1	566.6					
Total kt	71.3	55.2	40.8	49.7	45.5						
Total MUSD	630.1	627.6	961.2	1,335.5	1,320.3						

USA Yarn import details: Main EU import product is sutures, going down in export volume to the US between 2010 and 2014. Overall EU import volumes are increasing in 2014 – after a sharp decline between 2010 and 2013 – due to the success of EU made twines / cords and cable components on the US market.

Figure 147: USA Yarn import details 2000-2014 – without DU products

HS Code	Description	201 Total In		lmp	2014 orts from E	:U28	Impo	orts from MUSD	i EU
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
5607	Twine, Cordage, Rope & Cables, Coated Etc Or Not	89.79	310.65	17.88	20%	84.07	27.43	54.41	84.07
5609	Article of yarn, strip or the like heading 5404 or 5405, Twine, cordage, NES	27.55	187.91	0.15	1%	11.38	6.28	10.87	11.38
5606	Gimped Yarn & Strip, 5404/5405 Chenille Yarn, Loop Wale- Yarn	3.18	30.63	0.53	17%	8.89	8.18	7.28	8.89
5401	Sewing thread of man-made filaments	2.77	33.21	0.58	21%	19.68	17.15	18.07	19.68
5508	Sewing thread of man-made staple fibres	2.53	12.38	0.06	2%	0.88	0.56	0.45	0.88
5604	Rubber thread a. cord, Textile covered, Textile yarn, Impregnated coated, covered, sheathed with rubber	2.49	28.98	1.50	60%	19.40	16.34	16.20	19.40
300610	Sterile Surgical Catgut, Similar Sterile Meter, Etc	1.04	342.88	0.40	104%	131.21	25.19	120.78	131.21
5204	Cotton sewing thread	0.82	10.03	0.09	11%	4.14	3.59	5.20	4.14
5605	Metallised yarn, whether or not gimped being textile yarn, strip or powder or covered with metal	0.62	10.97	0.18	29%	8.74	3.50	7.67	8.74
Total	Without DU	130.84	967.64	21.37	16%	288.40	308.23	240.92	288.40

USA Nonwoven type TechTex trade: EU is third largest import supplier.

Figure 148: USA Nonwoven type TechTex trade 2000-2014

		USA Nonw	oven type I	mports		
Area	2000	2005	kt 2010	2013	2014	2014 MUSD
China	0.5	48.4	91.3	156.2	180.6	1,056.7
Canada	76.9	98.2	32.6	127.8	148.4	828.2
Mexico	16.9	42.5	35.8	96.3	109.4	493.6
EU28	43.5	64.3	57.8	72.8	73.5	525.1
Israel	19.2	23.4	19.1	23.5	26.4	123.1
India	0.3	3.8	8.6	13.3	15.8	58.5
Japan	8.1	8.6	9.4	10.0	11.8	126.7
Turkey	1.0	6.6	4.9	7.5	11.2	55.4
Other Asia, nes	2.2	2.9	5.9	8.1	9.3	45.7
Others	17.8	51.7	41.5	24.8	37,6	168.7
Total kt	186.4	350.6	307.0	540.4	623.9	
Total MUSD	849.0	1,568.9	1,562.3	3042.0	3481.8	

The EU trade balance in Nonwovens is slightly negative in favour of the USA

	USA Nonwoven type Exports										
Area	2000	2005	kt 2010	2013	2014	2014 MUSD					
Canada	79.8	107.5	129.1	252.2	253.2	3,500.3					
Mexico	69.9	81.5	83.9	110.4	129.8	1.191.2					
EU 28	37.6	54.7	65.6	69.1	71.5	667.5					
China	2.3	21.5	44.4	35.7	33.4	529.2					
Japan	11.5	10.1	16.6	17.0	15.8	204.9					
Rep. of Korea	4.6	5.4	6.9	11.3	13.8	101.0					
Honduras	5.0	7.6	10.5	12.9	14.3	73.3					
Brazil	3.8	5.9	7.3	10.3	10.3	62.6					
Australia	2.1	2.3	11.7	16.3	15.2	62.4					
Others	36.5	59.4	76.9	115.6	110.2	58.1					
Total kt	253.1	356.0	452.9	651.0	667.5						
Total MUSD	1,091.0	1,678.8	2,165.2	3,420.0	3,500.3						

USA Nonwoven import details: Strong growth in Nonwoven imports from the EU between 2010 and 2014 covering more or less all NW HS-codes.

Figure 149: USA Nonwoven import details 2000-2014

HS Code	Description		014 Imports	lmį	2014 ports from	EU28	Imp	orts fron MUSD	n EU
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
5603	Nonwovens, Whether Or Not Impregnated, Coated Etc	234.94	1,143.31	53.31	23%	377.48	281.76	351.27	377.48
961900	Sanitary towels (pads) and tampons, napkins and napkin liners for babies and similar articles, of any material	201.63	1,118.94	9.70	5%	58.37	-	39.64	58.37
701939	Webs, mattresses, boards and similar nonwoven products, of glass fibres	64.76	337.60	6.31	10%	34.96	5.51	10.25	34.96
630232	Bed linen (excl. knitted/crocheted), of man-made fibres (excl. printed)	38.07	213.64	0.13	-	2.67	1.95	1.49	2.67
630222	Bed linen (excl. knitted/crocheted), printed, of man-made fibres	22.13	208.69	0.06	-	1.11	1.54	0.81	1.11
630253	Table linen (excl. knitted or crocheted), of man-made fibres	20.87	190.90	0.07	-	2.67	2.06	1.89	2.67
5601	Text Wadding & Articles; Text Fibres Nov 5 Mm, Etc	20.14	112.84	2.73	14%	27.59	22.27	23.80	27.59
5602	Felt, Impregnated, Coated, Etc. Or Not	15.32	80.45	1.25	8%	19.82	8.96	15.09	19.82
630293	Toilet linen & kitchen linen other than of terry fabrics, of man-made fibres	6.05	75.45	0.02		0.51	0.23	0.31	0.51
Total		623.90	3,481.83	73.58	12%	525.17	324.28	444.55	525.17

USA Fabric type TechTex trade

Figure 150: USA Fabric type TechTex trade 2000-2014 – without DU products

	USA Fabric type Imports											
Area	2000	2005	kt 2010	2013	2014	2014 MUSD						
China	21.1	202.3	222.8	264.8	280.5	1,921.5						
India	21.4	44.1	66.3	84.7	103.6	346.2						
Mexico	46.8	66.5	74.3	82.3	91.6	679.9						
Vietnam	0.0	2.4	56.1	68.2	73.5	265.6						
Canada	84.0	92.7	71.8	70.6	71.9	563.7						
EU 28	37.3	47.6	51.5	63.5	64.6	1118.4						
Rep. of Korea	16.5	31.1	28.9	25.4	29.0	187.6						
Other Asia, nes	12.1	20.5	19.2	23.9	24.4	246.4						
Others	68.2	92.3	79.8	93.5	95.9	822.2						
Total kt	307.6	599.7	670.8	776.8	835.1							
Total MUSD	1,913.9	3,660.5	4,627.2	5,629.7	5,995.4							

The TT trade balance in fabric type products is positive in favour of the EU

		USA F	abric type Ex	ports		
Area	2000	2005	kt 2010	2013	2014	2014 MUSD
Canada	67.9	96.5	107.2	174.5	180.1	724.3
Mexico	132.1	116.8	112.3	123.6	139.4	1,612.3
EU 28	34.3	30.6	42.2	36.0	36.3	517.6
China	3.0	15.9	15.4	14.9	13.8	176.3
Honduras	10.4	5.8	16.5	10.7	6.3	33.7
Rep. of Korea	2.9	2.1	14.4	5.5	6.2	60.6
Japan	7.8	4.1	4.3	5.4	5.4	110.6
Brazil	2.9	3.0	5.0	4.6	4.8	76.0
Dominican Rep.	9.5	9.8	3.8	4.8	4.5	43.8
Others	58.0	61.2	67.8	57.1	58.7	701.7
Total kt	328.8	345.7	388.9	437.2	455.6	
Total MUSD	2,448.7	2,892.9	3,335.0	3,871.5	4,056.8	

Figure 151: USA fabric import details 2014

HS Code	Description	T	014 otal ports	lmp	2014 ports from	EU28	Imports from EU MUSD		
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
630532	Flexible intermediate bulk containers, for the packing of goods, of synthetic or man- made textile materials	100.63	342.02	0.67	0.7%	6.52	3.29	4.63	6.52
540720	Synthetic filament yarn fabric from the strip	97.57	336.06	6.93	7.1%	35.53	32.89	33.76	35.53
5903	Textile fabrics (not tire cord) coat etc, plastics	97.28	908.47	12.96	13.3%	149.33	82.74	138.63	149.33
5902	Tire cord fabric of High Tenacity yarn, Nylon etc	75.86	320.01	0.60	0.8%	5.22	5.22	3.25	5.22
630392	Curtains, incl. drapes, and interior blinds, curtain or bed valances of nonwovens of synthetic fibres (excl. awnings and sun blinds)	69.38	892.47	0.55	0.8%	9.41	4.99	7.03	9.41
630533	Sacks and bags, for the packing of goods, of polyethylene or polypropylene strip or the like (excl. flexible intermediate bulk containers)	62.40	197.11	0.13	0.2%	0.76	0.61	0.75	0.76
5911	Textile products etc. for specific Tech uses nesoi	59.13	714.64	5.18	8.8%	130.63	120.72	115.71	130.63
3005	Bandages etc coated etc or in retail medic etc Fm	58.89	936.79	6.95	11.8%	444.03	307.46	414.37	444.03
701931	Mats of irregularly laminated glass fibres	58.03	120.13	6.68	11.5%	26.44	13.45	24.53	26.44

Figure 152: USA fabric import details 2014 (cont'd)

HS Code	Description		2014 Imports	lmp	2014 oorts from l	EU28	Imports from EU MUSD		
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
5806	Narrow woven fabrics of textile materials, with a width of <= 30 cm (excl. labels, badges and similar articles); narrow fabrics consisting of warp without weft assembled by means of an adhesive "bolducs"	31.82	304.42	1.57	4.9%	25.20	19.55	22.34	25.20
5906	Rubberized Textile Fabr., Other Than Tire Cord	19.54	162.11	2.31	11.8%	26.76	29.80	41.06	26.76
531010	Woven fabrics of jute or of other textile bast fibres of heading 5303, unbleached	17.11	25.83	0.01	0.0%	0.10	0.06	0.09	0.10
5901	Textile Book Cov Fab; Trac Cl; Paint Canvas Etc	15.74	90.42	0.25	1.6%	5.97	5.50	6.88	5.97
701952	Woven fabrics, incl. narrow fabrics, of glass filaments, of width of > 30 cm, plain weave, weighing < 250 g/m², made of yarn of a linear density of <= 136 tex per single yarn (excl. fabrics made from rovings)	8.62	60.79	0.39	4.5%	5.66	8.23	3.88	5.66
5608	Knotted Net Of Twine Etc; Fish Net Etc Of Textiles	7.53	46.77	1.16	15.4%	17.90	13.45	17.27	17.90
701959	Woven fabrics, incl. narrow fabrics, of glass fibres, of a width of > 30 cm (excl. plain weave, weighing < 250 g/m², of a linear density of <= 136 tex per single yarn, and fabrics made from rovings)	7.09	54.59	2.05	28.9%	36.31	18.92	35.81	36.31
701940	Woven fabrics of glass fibres made from rovings	6.72	21.18	1.12	16.7%	6.54	4.73	4.69	6.54
701932	Thin sheets "voiles" of irregularly laminated glass fibres	5.65	42.76	6.29	111.2%	40.17	17.53	26.59	40.17

Figure 153: USA fabric import details 2014 (cont'd)

HS Code	Description	_	014 Imports	lmį	2014 ports from	EU28	Imports from EU MUSD		
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
5909	Textile Hose piping And Similar Textile Tubing	4.85	54.27	3.61	74.4%	35.65	13.02	43.00	35.65
5910	Transmsn/Convyr Belt,Tex Mat,Whthr/Nt Reinfcd, Ctd	4.61	61.29	1.05	22.8%	22.86	25.54	20.80	22.86
540710	Woven Fabrics Of High Tenacity Yarn, Nylon, Other	4.02	51.73	0.64	16.0%	12.25	14.04	10.93	12.25
5907	Textl Fabrc,Coatd,Etc,Theatrcl Scenery,Back-Cloths	3.01	43.48	1.11	37.0%	30.08	8.63	16.04	30.08
570250	Carpets and other floor coverings,	2.64	22.00	1.56	58.9%	18.69	9.45	17.26	18.69
630399	Curtains, incl. drapes, and interior blinds, curtain or bed valances of nonwovens (excl. of cotton and synthetic fibres, awnings and sunblinds)	2.50	45.47	0.03	1.3%	2.66	1.94	2.25	2.66
5803	Gauze (excl. narrow woven fabrics of heading 5806)	1.88	16.00	0.00	0.1%	0.19	0.20	0.29	0.19
520811	Plain Woven Fabrics Of Cotton For The Manufacture	1.74	15.87	0.03	1.8%	0.66	3.09	2.07	0.66
520821	Plain Woven Fabrics Of Cotton For The Manufacture	1.64	17.33	0.00	0.3%	0.20	0.44	0.13	0.20
551229	Woven Fabrics Containing >= 85% Acrylic Or Modacrylic	1.24	24.67	0.49	39.4%	11.64	6.86	11.62	11.64
701951	Woven fabrics, incl. narrow fabrics, of glass, of a width of <= 30 cm (excl. rovings)	1.14	12.09	0.07	6.1%	1.72	1.47	1.41	1.72

Figure 154: USA fabric import details 2014 (cont'd)

HS Code	Description	_	2014 2014 Total Imports Imports from EU28		lmp	EU			
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
5807	Labels, badges and similar articles, of textile materials, in the piece, in strips or cut to shape or size, not embroidered	1.06	33.18	0.08	8.0%	3.39	4.96	4.23	3.39
5908	Textile Wicks For Lamps Etc And Gas Mantles Etc	0.89	7.69	0.05	5.9%	2.38	1.49	1.88	2.38
540810	Woven Fabrics Of High Tenacity Viscose Yarn, Incl	0.07	1.36	0.02	27.0%	1.49	0.63	1.37	1.49
580230	Tufted Textile Fabrics, Other Than Floor Covers	0.01	0.04	0.00	2.8%	0.03	0.01	0.00	0.03
5809	Woven Fabrics Of Metal Thread & Metalized Yarn Nec	0.00	1.72	0.01		1.19	1.68	1.13	1.19
531090	Other Woven fabrics of jute or of other textile bast fibres of heading 5303, bleached, dyed, made of yarn of different colours, or printed	0.00	10.56	0.03		0.79	0.29	0.59	0.79
Total	Without DU	830.28	5,995.36	64.61	7.8%	1,118.35	782.88	1,036.25	1,118.35

Source: UN Comtrade

Summary: The highest volume in EU TT fabric exports to the USA is given in

Bandages for medical use:
 Coated fabrics:
 Specific use TT fabrics (e.g. for filtration):
 Glass fibre fabrics:
 444 Mn USD
 Mn USD
 Mn USD
 Mn USD

USA Industrial yarn type (TT raw material, such as Polyester High Tenacity filament) TechTex trade small import volume from EU:

Figure 155: USA Industrial yarn type TechTex trade 2000-2014

	USA Industrial yarn type Imports											
Area	2000	2005	kt — 2010	2013	2014	2014 MUSD						
China	2.0	11.3	47.1	57.3	80.4	168.1						
Canada	0.1	0.6	29.7	33.5	34.3	191.9						
Rep. of Korea	14.2	30.9	11.8	15.6	13.6	37.3						
EU - 28	10.3	9.8	11.8	8.6	6.9	72.1						
Other Asia, nes	2.6	6.9	6.9	5.6	6.2	14.2						
Mexico	11.9	11.0	5.8	4.2	5.8	16.5						
Japan	0.8	3.4	3.2	4.3	3.1	33.8						
Others	7.8	2.9	4.4	6.3	6.2	41.9						
Total kt	49.8	76.9	120.7	135.5	156.5							
Total MUSD	122.4	205.6	503.4	580.0	576.0							

The trade balance in industrial yarn is positive in favour of the EU

	USA Industrial yarn type Exports											
Area	2000	2005	kt 2010	2013	2014	2014 MUSD						
Canada	13.5	5.8	9.5	12.3	11.9	47.1						
Mexico	0.5	4.5	8.4	7.9	6.7	38.3						
China	0.3	1.1	3.3	4.2	4.4	33.4						
Brazil	1.0	0.7	1.3	1.1	4.2	23.3						
EU 28	4.2	1.0	1.2	2.6	3.1	28.8						
Thailand	0.0	1.3	1.5	1.0	1.5	5.6						
Indonesia	0.0	1.2	0.9	0.0	0.9	3.2						
Hong Kong	0.0	0.2	0.3	0.6	0.8	9.6						
Others	2.8	4.1	5.7	7.4	3.7	25.3						
Total kt	22.4	19.9	32.2	37.1	37.2							
Total MUSD	61.8	69.6	180.7	226.5	214.6							

USA Industrial Yarn import details: Main EU export product to the USA is aramids. Overall EU import volumes are stagnating (2013-2014) or going down (2010-2014).

Figure 156: USA Industrial Yarn import details 2014

HS Code	Description	T	014 otal ports	otal 2014			Impo	Imports from EU MUSD		
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014	
540219	High-tenacity filament yarn of nylon or other polyamides	42.8	228.7	1.98	4.6%	8.76	11.07	9.70	8.76	
540220	High-tenacity filament yarn of polyesters	105	233.2	1.94	1.8%	7.95	8.74	7.93	7.95	
540211	High-tenacity filament yarn of aramids	7.3	106.1	2.93	40.1%	55.41	97.88	52.89	55.41	
540310	High-tenacity yarn of viscose rayon filament	1.3	8.0	-	0.0%	0.02	0.23	0.17	0.02	
Total		156.5	576	6.85	4.4%	72.14	117.92	70.68	72.14	

On top would come imports (chiefly from Austria) of specialty viscose fibres (such as FR or for specialty nonwoven raw materials), Highly UV resistant PAC fibres (chiefly from Germany) and possibly UHMW-PE filament from the Netherlands and functional PA and Polyester staple fibres (like FR or anti-microbial), which are not clearly identifiable by a specific HD code but – nevertheless – could constitute a significant EU export volume.

USA Made-up type TechTex trade:

Figure 157: USA Made-up type TechTex trade 2000-2014

		USA M	ade-ups Imp	oorts		
Area	2000	2005	kt 2010	2013	2014	2014 MUSD
China	119.31	450.72	603.63	600.35	625.60	4,661.35
Mexico	204.94	140.28	104.70	91.35	92.17	893.97
India	37.91	45.94	45.89	59.12	68.49	26.43
Pakistan	39.49	59.37	59.82	62.26	65.94	265.20
Bangladesh	16.75	24.48	38.89	38.79	37.15	359.70
Viet Nam	0.10	8.39	24.11	34.11	34.69	345.17
Indonesia	16.37	16.88	12.98	12.58	12.65	122.14
Honduras	5.73	10.94	11.81	11.25	12.55	130.46
EU 28	8.26	12.51	7.92	9.92	11.86	317.00
Dominican Rep.	9.13	9.32	7.22	10.07	10.90	122.41
Others	132.32	126.97	74.20	58.10	54.50	935.81
Total kt	590.31	905.79	991.14	987.89	1,026.49	
Total MUSD	4,953.34	6,207.94	7,015.07	7,888.36	8,179.65	

The trade balance in TT made-ups exported to the USA is positive in favour of the EU

	USA Made-ups Exports											
Area	2000	2005	kt 2010	2013	2014	2014 MUSD						
Canada	78.76	91.16	34.85	43.96	42.15	403.98						
Mexico	54.60	32.82	25.00	37.78	36 79	367.28						
EU-28	8.48	5.69	7.90	6.82	17.85	140.34						
Australia	1.13	2.85	4.45	4.59	4.51	45.92						
Germany	6.12	0.54	2.99	4.38	3.49	57.34						
Dominican Rep.	0.57	0.99	0.70	2.16	2.06	2.95						
Rep. of Korea	0.80	1.18	2.00	1.64	1.81	51.34						
China	3.49	3.18	1.56	1.45	1.48	32.39						
Japan	0.50	0.38	0.82	1.23	1.42	24.56						
Chile	0.00	0.00	0.00	0.00	0.00	26.71						
Others	19.51	22.70	25.94	22.18	12.18	234.43						
Total kt	173.97	161.48	106.22	126.19	123.74							
Total MUSD	1,094.72	1,036.83	1,217.21	1,395.40	1,387.24							

USA Made-ups import details:

Figure 158: USA Made-ups import details 2014

HS Code	Description		14 mports	lmţ	2014 ports from	EU28	Imports from EU MUSD		
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
6307	Made-up articles of textile materials, incl. dress patterns, n.e.s.		4,036.60	2.93	0.6%	86.52	57.76	63.66	86.52
6305	Sacks and bags, of a kind used for the packing of goods, of all types of textile materials	174.24	618.77	1.20	0.7%	12.92	5.31	10.74	12.92
6306	Tarpaulins, awnings and sun blinds; tents; sails for boats, sailboards or land craft; camping goods of all types of textile materials	108.32	630.96	3.39	3.1%	46.11	32.26	37.88	46.11
621010	Garments, made up of fabrics	105.87	742.37	0.17	0.2%	28.15	15.94	24.34	28.15
6203- 6204	Industrial and occupational garments (Considered 11% of total trade	104.63	1,799.35	0.49	0.5%	48.84	30.91	50.45	48.84
611693	Gloves, mittens and mitts, knitted or crocheted of synthetic fibres	12.19	262.73	0.02	0.1%	1.43	0.82	1.47	1.43
870821	Safety seat belts	6.78	88.85	3.66	54.0%	93.13	43.38	73.89	93.13
Total		1,026.49	8,179.65	11.86	1.2%	317.11	186.39	262.43	317.11

# **End of Appendix 4:**

USA market and trade in Technical Textiles

### **Start of Appendix 5:**

Brazil market and trade in Technical Textiles

### Appendix 5: Brazil market and trade in Technical Textiles TechTex market Brazil

Figure 159: Brazil Techtex market: Segment-wise

	Spunmelt NW	Drylaid NW	Airlaid / Wetlaid NW	Mineralic*	Man made Filament**
Agrotech	6.0	1.6	0.0	0.0	63.2
Buildtech	12.4	26.5	0.0	27.6	17.3
Clothtech	0.2	4.4	0.0	0.0	7.6
Geotech	2.4	10.7	0.0	0.0	9.3
Hometech	26.1	30.1	8.0	19.1	8.7
Indutech	8.7	13.2	4.3	65.3	28.5
Medtech	7.3	6.0	0.0	0.0	0.5
Hygiene	82.3	22.6	7.2	0.0	0.0
Mobiltech	5.4	15.3	6.1	52.2	99.0
Packtech	9.4	1.2	15.5	0.0	6.3
Protech	2.1	0.5	0.0	0.0	7.8
Sporttech	1.2	1.2	0.0	1.9	18.4
Total KT	163.6	133.4	41.0	166.1	266.6

Figure 160: Brazil Techtex market: Segment-wise (cont'd)

	Synthetic staple fibre	Other (non synthetic) staple fibre	Natural fibres	Slit film ('tape')	Total KT 2014
Agrotech	2.9	0.0	58.5	50.9	183.1
Buildtech	7.4	9.6	6.6	0.9	108.4
Clothtech	9.1	0.2	4.8	0.0	26.3
Geotech	0.0	0.0	5.3	1.4	29.0
Hometech	38.8	1.5	29.3	7.1	168.8
Indutech	11.4	5.1	9.1	0.5	145.9
Medtech	1.3	0.5	3.9	0.0	19.6
Hygiene	10.9	10.2	25.9	0.0	159.1
Mobiltech	8.3	2.3	17.8	1.3	207.6
Packtech	1.4	0.0	67.7	56.2	157.7
Protech	1.4	0.8	2.9	0.0	15.5
Sporttech	4.8	0.4	3.5	3.5 3.0	
Total KT	97.8	30.5	235.3	121.1	1,255

<sup>\*</sup> Mineralic (glass, basalt) and carbon filament
\*\* Man made Filament other than glass, basalt and carbon
Source: Gherzi market model and research

Brazil Techtex market: Fibre break-up

Figure 161: Brazil Techtex market: Fibre break-up i

	Spunmelt NW	Drylaid NW	Airlaid / Wetlaid NW	Mineralic	Man made Filament	
TOTAL KT 2014 *	164	164 133		166	267	
Polyester HT fil.	0	0	0	0	110	
Nylon 6	0	0	0	0	24	
Nylon 66	0	0	0	0	22	
Sutures	0	0	0	0	0	
PP Polymer	129	0	0	0	0	
PP fibres	0	41	14	0	0	
PP Mono	0	0	0	0	0	
PP HT Fil.	0	0	0	0	21	
PE Polymer	12	0	0	0	0	
Viscose fibre	0	5	0	0	0	
Viscose Fil.	0	0	0	0	3	
PET Polymer	22	0	0	0	0	
PET fibres	0	61	0	0	0	
Polyester Regular	0	0	0	0	73	
Nylon Regular	0	0	0	0	11	
Acrylic / Modac	0	1	0	0	0	
Aramid staple	0	0	1	0	0	
Aramid filament	0	0	0	0	3	
Other Organic	0	1	0	0	0	
Glass	0	0	2	0	0	
Metal	0	0	0	0	0	
Cotton	0	9	0	0	0	
Bast fibre	0	4	0	0	0	
Glass Fil.	0	0	0	164	0	
Basalt Fil.	0	0	0	0	0	
Carbon Fil.	0	0 0 0		2	0	
BICO	0	6	1	0	0	
Wood Pulp	0	4	23	0	0	

<sup>\*</sup> Based on World average data

Brazil Techtex market: Fibre break-up

Figure 162: Brazil Techtex market: Fibre break-up ii

	Synthetic staple fibre	Other (non synthetic) staple fibre	Natural fibres	Slit film ('tape')	Total KT 2014
TOTAL KT 2014 *	98	30	235	121	1,255
Polyester HT fil.	0	0	0	0	110
Nylon 6	3	0	0	0	27
Nylon 66	0	0	0	0	22
Sutures	0	0	0	0	0
PP Polymer	0	0	0	121	250
PP fibres	9	0	0	0	64
PP Mono	0	0	0	0	0
PP HT Fil.	0	0	0	0	21
PE Polymer	0	0	0	0	12
Viscose fibre	0	3	0	0	8
Viscose Fil.	0	0	0	0	3
PET Polymer	0	0	0	0	22
PET fibres	75	0	0	0	136
Polyester Regular	0	0	0	0	73
Nylon Regular	0	0	0	0	11
Acrylic / Modac	7	0	0	0	8
Aramid staple	2	0	0	0	3
Aramid filament	0	0	0	0	3
Other Organic	3	1	0	0	4
Glass	0	13	0	0	16
Metal	0	13	0	0	13
Cotton	0	0	40	0	49
Bast fibre	0	0	195	0	199
Glass Fil.	0	0	0	0	164
Basalt Fil.	0	0	0	0	0
Carbon Fil.	0	0	0	0	2
BICO	0	0	0	0	8
Wood Pulp	0	0	0	0	27

<sup>\*</sup> Based on World average data

#### Brazil TechTex trade

Brazil yarn type TechTex trade: EU is 3rd largest import supplier

Figure 163: Brazil yarn type TechTex trade 2000-2014 – without DU products

Brazil Yarn type Imports									
Area	2000	2005	kt 2010	2013	2014	2014 MUSD			
China	0.29	0.62	2.89	5.26	5.58	24.86			
Eu28	0.71	0.41	2.23	0.84	0.87	17.89			
Other Asia, nes	0.15	0.05	0.28	1.06	0.89	2.94			
Colombia	0.01	0.06	0.46	0.45	0.23	3.39			
India	0.32	0.14	0.24	0.44	0.50	3.61			
USA	0.23	0.20	0.33	0.37	0.44	28.01			
Rep. of Korea	0.31	0.04	0.09	0.14	0.18	1.94			
Vietnam	0.00	0.00	0.00	0.14	0.25	0.55			
Costa Rica	0.06	0.07	0.09	0.09	0.07	0.18			
Thailand	0.00	0.01	0.05	0.07	0.05	0.36			
Others	0.34	0.18	0.33	0.28	0.31	3.47			
Total kt	2.43	1.77	6.99	9.13	9.37				
Total MUSD	18.87	21.10	71.69	88.81	87.21				

Source: UN Comtrade

The TT trade balance in yarn type products was negative in favour of Brazil

Figure 164: Brazil yarn type TechTex trade 2000-2014 (cont'd)

Brazil Yarn type Exports									
Area	2000	2005	kt — 2010	2013	2014	2014 MUSD			
USA	50.06	30.9	21.27	17.73	18.06	49.74			
EU-28	4.55	3.89	2.32	4.98	2.13	30.41			
Paraguay	1.05	0.95	0.97	1.12	0.97	4.66			
Canada	0.86	0.04	0.74	1.24	0.85	1.68			
Argentina	0.52	0.82	0.84	0.55	0.71	12.48			
Russia	-	0.02	0.13	0.57	0.64	1.41			
Peru	0.23	0.23	0.75	0.33	0.36	2.7			
Chile	0.81	0.64	0.46	0.4	0.27	6.62			
Others	2.7	0.82	0.37	0.12	1.05	37.22			
Total kt	60.78	38.31	27.85	27.04	25.04				
Total MUSD	85.85	83.07	130.29	139.76	146.92				

Brazil key yarn type TT Imports

Figure 165: Brazil key yarn type TT Imports 2014

HS Code	LIASCRIPTION		014 otal ports	otal Imports from FII28		Imports from EU MUSD			
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
5607	Twine, Cordage, Rope & Cables, Coated Etc Or Not	3.37	17.08	0.64	19%	3.55	2.11	5.28	3.55
5606	Gimped Yarn & Strip, 5404/5405 Chenille Yarn, Loop Wale-Yarn	2.35	15.39	0.09	4%	0.99	0.76	1.29	0.99
5609	Article of yarn, strip or the like heading 5404 or 5405, Twine, cordage, NES	1.40	5.39	0.09	6%	2.61	0.63	2.92	2.61
5604	Rubber Thread and cord, Textile covered, Textile yarn, Impregnated coated, covered, sheathed with rubber	0.86	4.81	0.03	3%	0.44	5.54	0.43	0.44
5401	Sewing thread of man-made filaments	0.55	5.05	0.01	2%	0.36	0.41	0.24	0.36
5204	Cotton sewing thread	0.34	2.78	0.01	3%	0.22	0.01	0.01	0.22
5605	Metallized yarn, whether or not gimped being textile yarn, strip or powder or covered with metal	0.28	2.58	0.01	4%	0.46	0.35	0.25	0.46
5508	Sewing thread of man-made staple fibres	0.16	1.52	0.03	19%	0.26	0.05	0.34	0.26
300610	Sterile Surgical Catgut, Similar Sterile Mater Etc	0.07	32.60	0.03	43%	11.79	133.67	8.67	11.79
Total	Without DU	9.37	87.21	0.94	10%	20.66	143.54	19.44	20.66

Brazil Nonwoven type TechTex trade: EU is 2nd largest import supplier

Figure 166: Brazil Nonwoven type TechTex trade 2000-2014

		Brazil Non	woven type	Imports		
Area	2000	2005	kt — 2010	2013	2014	2014 MUSD
China	0.23	1.36	10.63	15.23	19.06	72.68
Argentina	4.35	5.59	11.56	12.03	11.03	38.18
EU-28	2.69	3.48	6.18	7.10	7.34	47.80
USA	3.52	2.32	5.57	6.74	7.00	44.38
Mexico	0.22	0.11	1.43	6.21	6.28	24.03
Japan	0.05	0.03	0.05	0.07	2.42	15.49
Peru	-	-	-	3.45	2.16	12.36
Paraguay	-	1.40	1.04	0.75	1.96	6.75
Colombia	0.02	0.23	0.28	1.21	1.55	7.78
Others	3.35	3.60	2.89	5.18	4.43	16.92
Total kt	14.43	18.10	39.63	57.96	63.23	
Total MUSD	70.03	73.99	173.77	267.93	286.36	

Source: UN Comtrade

The trade balance in NW is positive in favour of the EU

Figure 167: Brazil Nonwoven type TechTex trade 2000-2014 (cont'd)

		Brazil	Nonwoven typ	oe Exports		
Area	2000	2005	kt 2010	2013	2014	2014 MUSD
Argentina	6.33	9.41	16.54	19.57	17.51	72.74
Venezuela	0.42	2.63	7.48	8.21	8.14	39.42
USA	1.80	15.52	15.40	3.39	4.61	20.08
Chile	0.84	4.87	4.74	4.05	3.80	14.60
Costa Rica	0.77	3.24	5.28	4.05	3.77	11.55
Colombia	0.71	1.92	3.18	6.73	3.68	13.73
EU-28	0.73	0.36	1.20	0.36	0.32	1.58
Peru	0.18	2.28	5.71	3.09	2.72	11.63
Uruguay	0.54	0.82	1.14	2.46	2.50	9.05
Others	4.97	5.53	9.07	11.63	9.36	39.26
Total kt	17.29	46.58	69.75	63.54	56.41	
Total MUSD	58.57	135.29	222.37	261.24	233.64	

Brazil key Nonwoven type imports

Figure 168: Brazil key Nonwoven type imports 2014

HS Code	Description	Т	014 otal ports	lmį	2014 ports from	ı EU28	Impo	orts fron MUSD	n EU
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
5603	Nonwovens, whether or not impregnated, coated, etc.	37.05	153.44	4.80	13%	28.53	28.11	29.17	28.53
961900	Sanitary towels (pads) and tampons, napkins and napkin liners for babies and similar articles, of any material	14.35	74.42	1.79	12%	9.93	-	7.52	9.93
701939	Webs, mattresses, boards and similar nonwoven products, of glass fibres (excl. mats and thin sheets "voiles")	5.13	12.54	0.09	2%	1.23	0.20	1.00	1.23
5602	Felt, impregnated, coated, etc. or not	2.13	11.93	0.27	13%	2.62	2.64	3.20	2.62
630222	Bed linen (excl. knitted/crocheted), printed, of man- made fibres	1.38	7.59	1	-	0.02	0.01	-	0.02
5601	Text wadding & articles; Text fibres Nov 5 Mm, Etc	1.23	12.92	0.37	30%	5.27	8.07	4.57	5.27
630253	Table linen (excl. knitted or crocheted), of manmade fibres	0.94	6.31	0.01	1%	0.16	0.35	0.20	0.16
630232	Bed linen (excl. knitted/crocheted), of man-made fibres (excl. printed)	0.64	4.34	-	-	-	-	0.03	-
630293	Toilet linen & kitchen linen other than of terry fabrics, of man-made fibres	0.38	2.87	-	-	0.04	0.04	0.08	0.04
Total		63.23	286.36	7.34	12%	47.80	39.42	45.76	47.80

Brazil Fabric type TechTex trade: EU is 2nd largest import supplier

Figure 169: Brazil Fabric type TechTex trade 2000-2014 – without DU products

		Braz	til Fabric type li	mports		
Area	2000	2005	kt 2010	2013	2014	2014 MUSD
China	1.19	6.17	31.58	42.36	52.22	200.22
USA	3.79	5.80	12.93	14.69	14.36	104.51
EU-28	4.71	4.72	7.11	9.10	11.87	119.30
Paraguay	-	0.96	2.70	5.53	7.19	29.43
Vietnam	-	0.07	0.68	3.46	4.93	17.96
Colombia	0.13	0.05	0.98	3.65	4.48	20.00
Other Asia, nes	12.43	9.56	4.43	5.38	4.47	14.82
India	0.17	0.28	1.36	3.53	3.48	8.97
Mexico	0.52	0.20	1.20	3.72	1.81	11.09
Rep. of Korea	4.09	5.76	7.77	3.81	1.78	9.81
Others	11.02	8.73	13.87	8.31	6.52	68.03
Total kt	38.05	42.31	84.62	103.54	113.10	
Total MUSD	192.45	204.09	454.59	582.24	604.13	

The trade balance in fabric type TT products is positive in favour of the EU

Figure 170: Brazil Fabric type TechTex trade 2000-2014 (cont'd)

		Braz	il Fabric type E	Exports		
Area	2000	2005	kt 2010	2013	2014	2014 MUSD
Argentina	10.71	17.19	15.63	10.43	7.29	47.35
USA	2.82	5.56	5.22	5.13	4.91	101.23
Mexico	0.20	3.17	5.22	3.41	3.22	19.66
Paraguay	0.46	1.08	1.16	1.88	2.08	10.12
EU-28	1.10	0.43	1.14	1.24	1.58	12.86
Uruguay	0.91	1.19	1.31	1.55	1.41	11.24
Venezuela	0.22	1.13	3.34	1.21	1.28	9.13
Peru	0.44	2.80	1.11	1.20	1.19	8.08
Bolivia	0.45	1.02	0.82	0.81	0.72	4.26
Chile	1.61	2.19	0.76	0.57	0.67	13.46
Others	1.32	5.53	4.31	3.70	3.45	35.00
Total kt	20.24	41.27	40.02	31.13	27.81	
Total MUSD	70.97	206.43	280.17	294.49	272.40	

Figure 171: Brazil key Fabric type TT imports 2014

HS Code	Description	Т	014 otal ports	lmţ	2014 oorts from	EU28	Impo	orts fron MUSD	n EU
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
5903	Textile fabrics (not tire cord) coat, etc, plastics	25.61	97.81	0.30	1.2%	6.02	11.29	6.70	6.02
701931	Mats of irregularly laminated glass fibres	20.48	42.18	1.07	5.2%	3.33	1.34	2.94	3.33
5902	Tire cord fabric of High Tenacity yarn, Nylon, etc.	16.40	73.54	0.90	5.5%	5.23	1.18	4.80	5.23
540720	Synthetic filament yarn fabric from the strip	6.99	19.71	0.36	5.2%	1.88	2.03	1.97	1.88
5906	Rubberized textile fabrics, other Than Tire Cord	6.17	36.35	3.58	58%	24.40	18.37	17.23	24.40
3005	Bandages etc. coated etc. or in retail medic etc Fm	5.07	79.36	0.28	5.5%	18.72	15.24	15.08	18.72
5806	Narrow woven fabrics of textile materials	4.12	29.48	0.44	10.7%	3.54	3.41	4.54	3.54
630392	Curtains (including drapes) and interior blinds of synthetic	3.80	29.01	0.01	0.3%	0.31	0.12	0.31	0.31
701940	Woven fabrics of glass fibres made from rovings	3.70	10.00	2.79	75.4%	8.84	0.07	3.64	8.84
5911	Textile products etc. for specific Tech uses nesoi	2.80	69.04	0.71	25.4%	24.34	28.14	28.93	24.34
531010	Woven fabrics of jute or of other textile bast fibres of heading 5303, unbleached	2.67	4.69	0.00	0.0%	0.00	0.00	0.00	0.00
5907	Textl fabrc , coated , etc, theatrcl scenery, back-cloths	2.37	16.95	0.07	3.1%	0.74	1.02	1.33	0.74

Figure 172: Brazil key Fabric type TT imports 2014 (cont'd)

HS Code	Description	Т	014 otal ports	lmp	2014 ports from	EU28	Impo	orts fron MUSD	n EU
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
5608	Knotted net of twine etc; Fish net etc. of textiles	2.15	14.42	0.07	3.1%	0.64	0.14	1.27	0.64
630532	Flexible intermediate bulk containers, for the packing of goods, of synthetic or man-made textile materials	2.07	7.98	0.00	0.2%	0.07	0.24	0.33	0.07
701959	Woven fabrics, incl. narrow fabrics, of glass fibres, of a width of > 30 cm (excl. plain weave, weighing < 250 g/m², of a linear density of <= 136 tex per single yarn, and fabrics made from rovings)	1.36	14.48	0.16	12.0%	3.29	2.58	2.52	3.29
5910	Transmsn/Convyr belt,Tex mat,whthr/nt reinfcd, ctd	1.26	13.36	0.33	26.1%	5.95	3.58	6.00	5.95
5909	Textile hose piping a. similar textile tubing	0.90	5.42	0.03	3.3%	0.53	0.71	1.59	0.53
630533	Sacks and bags, for the packing of goods, of polyethylene or polypropylene strip or the like (excl. flexible intermediate bulk containers)	0.84	2.85	0.03	3.2%	0.14	0.00	0.01	0.14
540710	Woven fabrics of High Tenacity yarn, Nylon, other	0.68	7.67	0.14	19.8%	3.04	3.30	3.41	3.04
551229	Woven fabrics containing >= 85% Acrylic or Modacrylic	0.68	5.43	0.09	13.3%	1.92	0.97	2.15	1.92
520821	Plain woven fabrics of cotton for the manufacture	0.65	6.27	0.00	0.0%	0.00	0.02	0.00	0.00
5901	Textile book cov fab; trac cl; paint canvas etc.	0.59	3.39	0.01	1.6%	0.17	0.30	0.19	0.17
701932	Thin sheets "voiles" of irregularly laminated glass fibres	0.54	3.81	0.33	62.1%	2.69	1.58	1.95	2.69

Figure 173: Brazil key Fabric type TT imports 2014 (cont'd)

HS Code	Description		2014 Imports	lm	2014 ports from	EU28	Imp	orts from MUSD	EU
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
701952	Woven fabrics, incl. narrow fabrics, of glass filaments, of width of > 30 cm, plain weave, weighing < 250 g/m², made of yarn of a linear density of <= 136 tex per single yarn (excl. fabrics made from rovings)	0.30	2.51	0.07	23.1%	0.82	0.94	0.81	0.82
5807	Labels, badges and similar articles, of textile materials, in the piece, in strips or cut to shape or size, not embroidered	0.22	2.81	0.02	8.7%	1.36	0.68	1.87	1.36
570250	Carpets and other floor coverings, of polypropylene, woven, not tufted or flocked, not of pile construction, not made-up (excl. Kelem, Schumacks, Karamanie and similar hand-woven rugs)	0.14	0.45	0.07	47.9%	0.35	0.17	0.62	0.35
701951	Woven fabrics, incl. narrow fabrics, of glass, of a width of <= 30 cm (excl. rovings)	0.11	1.51	0.01	6.8%	0.56	0.97	1.23	0.56
580230	Tufted Textile Fabrics, Other Than Floor Covers	0.10	0.51	0.00	0.0%	0.00	0.00	0.01	0.00
630399	Curtains, incl. drapes, and interior blinds, curtain or bed valances of nonwovens (excl. of cotton and synthetic fibres, awnings and sun blinds)	0.1	1.51	0	4.80%	0.32	0	0.15	0.32
540810	Woven fabrics of High Tenacity Viscose yarn, incl	0.08	0.58	0	0.10%	0	0.16	0.02	0
5803	Gauze (excl. narrow woven fabrics of heading 5806)	0.08	0.37	0	0.30%	0.01	0.06	0	0.01
5809	Woven fabrics of metal thread & metalized yarn Nec	0.03	0.31	0	3.70%	0.05	0.01	0.01	0.05

Figure 174: Brazil key Fabric type TT imports 2014 (cont'd)

HS Code	Description	Т	014 otal ports	lmp	2014 oorts from	EU28	Imports from EU MUSD			
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014	
520811	Plain woven fabrics of Cotton for the manufacture	0.02	0.27	0	7.40%	0.03	0.38	0.03	0.03	
5908	Textile wicks for lamps etc. and gas mantles etc.	0	0.13	0	0.20%	0	0	0	0	
531090	Other woven fabrics of jute or of other textile bast fibres of heading 5303, bleached, dyed, made of yarn of different colours, or printed	0	0	0	0.00%	0	0	0	0	
Total	Without DU	113.1	604.13	11.87	10.50%	119.3	99.01	111.62	119.3	

Brazil Industrial yarn (TT raw material, such as High Tenacity Polyester filament) TechTex trade:

Figure 175: Brazil Industrial yarn type TechTex trade 2000-2014

	ı	Brazil Indust	rial yarn typ	e Imports		
Area	2000	2005	kt <b>-</b> 2010	2013	2014	2014 MUSD
China	0.0	0.0	5.3	18.1	20.0	43.9
Argentina	0.0	0.0	3.7	9.9	10.1	41.9
EU-28	0.3	1.4	2.4	2.3	2.8	35.5
Rep. of Korea	0.5	2.8	7.7	7.2	7.9	25.3
USA	1.3	0.9	1.3	1.2	3.8	23.6
Japan	0.0	0.0	1.8	1.2	0.5	9.8
Colombia	0.0	0.0	0.5	0.7	0.7	2.6
Turkey	0.0	0.0	0.5	0.5	0.6	2.5
Others	2.7	1.8	1.2	1.3	1.6	4.8
Total kt	4.8	6.9	24.4	42.4	48.0	
Total MUSD	13.29	21.76	107.63	163.26	189.98	

Source: UN Comtrade

The trade balance in industrial yarns is positive in favour of the EU

Figure 176: Brazil Industrial yarn type TechTex trade 2000-2014 (cont'd)

		Brazil Nonv	voven type E	Exports		
Area	2000	2005	kt 2010	2013	2014	2014 MUSD
Mexico	-	-	0.18	0.09	0.22	1.20
Argentina	0.13	1.16	0.39	0.21	0.15	1.14
Colombia	-	0.30	0.06	0.06	0.03	0.71
USA	0.46	0.21	0.01	0.02	0.03	0.52
Guatemala	-	-	0.03	0.03	0.01	0.07
Chile	-	0.01	-	-	0.01	0.12
Others	1.1-	0.07	0.54	0.06	0	0.12
Total kt	1.66	1.75	1.21	0.47	0.45	
Total MUSD	3.20	5.16	6.45	3.86	3.88	

Brazil Industrial yarn (TT raw material) imports

Figure 177: Brazil Industrial yarn (TT raw material) imports 2014

HS Code	Description	Т	014 otal ports	lmţ	2014 ports from	EU28	Imports from EU MUSD		
	ı	kt	MUSD	kt	% import share	MUSD	2010	2013	2014
540220	High-tenacity filament yarn of polyesters	29.77	69.66	0.46	1.56%	2.51	1.34	3.13	2.51
540219	High-tenacity filament yarn of nylon or other polyamides	15.51	65.78	0.44	2.85%	3.97	0.28	3.92	3.97
540211	High-tenacity filament yarn of aramids	2.63	54.06	0.00	0.00%	0.01	0.65	0.02	0.01
540310	High-tenacity yarn of viscose rayon filament	0.06	0.49	0.00	6.51%	0.03	0.02	0.19	0.03
Total		47.97	189.98	0.91	1.89%	6.51	2.29	7.27	6.51

Brazil TT Made-ups trade (CIRFS Technical Textile report definition)

Figure 178: Brazil TT Made-ups trade 2000-2014

	Brazil Made-ups Imports									
Area	2000	2005	kt 2010	2013	2014	2014 MUSD				
China	1.30	3.77	10.27	15.95	20.67	112.67				
Paraguay	0.58	0.98	0.29	0.93	1.63	7.54				
EU-28	0.31	1.06	0.75	1.41	1.35	26.43				
Mexico	0.07	0.04	0.29	1.29	1.47	21.96				
Rep. of Korea	0.09	0.02	0.27	1.11	1.20	10.92				
India	0.11	0.08	0.28	2.58	1.15	6.75				
China, Hong Kong SAR	0.40	0.22	0.44	0.54	0.49	2.75				
Poland	0.01	0.08	0.23	0.64	0.45	8.31				
Indonesia	0.00	0.04	0.04	0.17	0.29	1.65				
Bangladesh	0.01	0.00	0.11	0.22	0.25	4.88				
Others	3.35	0.75	1.95	0.86	1.23	17.53				
Total kt	6.22	7.02	14.91	25.70	30.18					
Total MUSD	38.22	33.55	97.33	202.58	221.39					

The trade balance in TT made-ups is positive in favour of the EU

Figure 179: Brazil TT Made-ups trade 2000-2014 (cont'd)

		Brazi	Made-ups E	xports		
Area	2000	2005	kt 2010	2013	2014	2014 MUSD
Argentina	3.27	2.20	4.17	3.23	2.44	30.01
Bolivia (Plurinational State of)	0.14	0.59	0.60	0.58	0.45	2.13
Uruguay	0.77	0.67	0.69	0.54	0.44	2.17
Cuba	0.00	0.00	0.00	0.29	0.34	1.35
Paraguay	0.25	0.31	0.34	0.31	0.34	2.40
EU-28	0.46	1.14	0.36	0.20	0.21	2.95
Gambia	0.00	0.04	0.18	0.19	0.20	0.78
Peru	0.04	0.09	0.16	0.14	0.15	0.85
Iraq	0.00	0.00	0.01	0.01	0.08	0.30
Venezuela	0.16	0.30	0.11	0.14	0.08	1.06
Others	2.78	1.91	0.78	0.60	0.35	5.56
Total kt	7.87	7.25	7.40	6.22	5.09	
Total MUSD	47.71	47.32	66.67	65.95	49.54	root IN Comtrado

Brazil TT Made-ups import: Key products

Figure 180: Brazil TT Made-ups import 2014

HS Code	Description	Т	014 otal ports	2014 Imports from EU28		Imports from EU MUSD		n EU	
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
6307	Made-up articles of textile materials, incl. dress patterns, n.e.s.	7.13	49.07	0.19	2.67%	5.23	2.49	4.06	5.23
6306	Tarpaulins, awnings and sun blinds; tents; sails for boats, sailboards or land craft; camping goods of all types of textile materials	6.95	23.15	0.11	1.63%	2.08	0.91	2.52	2.08
870821	Safety seat belts	3.98	46.70	0.91	22.98%	12.96	6.54	18.06	12.96
6305	Sacks and bags, of a kind used for the packing of goods, of all types of textile materials	3.48	13.69	0.05	1.43%	0.99	0.26	1.07	0.99
611693	Gloves, mittens and mitts, knitted or crocheted Of synthetic fibres	3.46	13.90	0.00	0.02%	0.08	0.01	0.06	0.08
6203 - 6204	Industrial and Occupational garments (Considered 11% of total trade	2.95	57.90	0.08	2.59%	4.13	1.36	3.71	4.13
621010	Garments, made up of fabrics	2.24	16.99	0.00	0.21%	0.96	0.98	1.78	0.96
Total		30.18	221.39	1.35	4.47%	26.43	12.56	31.26	26.43

# **End of Appendix 5:**

Brazil market and trade in Technical Textiles

## **Start of Appendix 6:**

South Korea market and trade in Technical Textiles

## Appendix 6: South Korea market and trade in Technical Textiles TechTex market South Korea

Figure 181: South Korea TechTex market: Segment-wise

	Spunmelt NW	Drylaid NW	Airlaid / Wetlaid NW	Mineralic*	Man made Filament**
Agrotech	0.1	0.0	0.0	0.0	0.8
Buildtech	6.2	13.3	0.0	13.8	8.7
Clothtech	0.1	1.9	0.0	0.0	3.3
Geotech	1.1	4.9	0.0	0.0	4.3
Hometech	10.1	15.9	2.2	2.6	2.4
Indutech	11.4	20.8	3.1	32.6	9.1
Medtech	2.3	1.9	0.0	0.0	0.2
Hygiene	25.8	7.8	4.1	0.0	0.0
Mobiltech	15.0	43.5	5.6	31.5	74.3
Packtech	8.8	3.7	9.5	0.0	3.8
Protech	1.3	0.3	0.0	0.0	4.9
Sporttech	1.5	1.5	0.0	0.8	6.1
Total KT	83.7	115.7	24.5	81.4	117.9

Figure 182: South Korea TechTex market: Segment-wise (cont'd)

	Synthetic staple fibre	Other (non synthetic) staple fibre	Natural fibres	Slit film ('tape')	Total KT 2014
Agrotech	0.0	0.0	0.8	0.7	2.4
Buildtech	3.7	4.8	3.3	0.4	54.3
Clothtech	3.9	0.1	2.1	0.0	11.4
Geotech	0.0	0.0	2.4	0.6	13.4
Hometech	5.6	0.4	5.0	1.9	46.2
Indutech	4.7	2.0	2.4	0.3	86.4
Medtech	0.4	0.2	1.2	0.0	6.1
Hygiene	0.2	0.0	0.2	0.0	38.2
Mobiltech	3.0	2.1	16.6	1.2	193.0
Packtech	0.9	0.0	35.4	34.4	96.5
Protech	0.9	0.5	1.8	0.0	9.8
Sporttech	2.1	0.2	1.5	1.3	15.1
Total KT	25.6	10.3	72.8	40.8	573

<sup>\*</sup> Mineralic (glass, basalt) and carbon filament
\*\* Man made Filament other than glass, basalt and carbon

Korea TechTex market: Fibre break-up

Figure 183: South Korea TechTex market: Fibre break-up i

	Spunmelt NW	Drylaid NW	Airlaid / Wetlaid NW	Mineralic	Man made Filament
TOTAL KT 2014	84	116	25	81	118
Polyester HT fil.	0	0	0	0	48
Nylon 6	0	0	0	0	11
Nylon 66	0	0	0	0	10
Sutures	0	0	0	0	0
PP Polymer	66	0	0	0	0
PP fibres	0	36	8	0	0
PP Mono	0	0	0	0	0
PP HT Fil.	0	0	0	0	9
PE Polymer	6	0	0	0	0
Viscose fibre	0	5	0	0	0
Viscose Fil.	0	0	0	0	1
PET Polymer	11	0	0	0	0
PET fibres	0	53	0	0	0
Polyester Regular	0	0	0	0	32
Nylon Regular	0	0	0	0	5
Acrylic / Modac	0	1	0	0	0
Aramid staple	0	0	1	0	0
Aramid filament	0	0	0	0	1
Other Organic	0	1	0	0	0
Glass	0	0	1	0	0
Metal	0	0	0	0	0
Cotton	0	8	0	0	0
Bast fibre	0	3	0	0	0
Glass Fil.	0	0	0	81	0
Basalt Fil.	0	0	0	0	0
Carbon Fil.	0	0	0	1	0
BICO	0	5	1	0	0
Wood Pulp	0	4	14	0	0

Korea TechTex market: Fibre break-up

Figure 184: South Korea TechTex market: Fibre break-up ii

	Synthetic staple fibre	Other (non synthetic) staple fibre	Natural fibres	Slit film ('tape')	Total KT 2014
TOTAL KT 2014	26	10	73	41	573
Polyester HT fil.	0	0	0	0	48
Nylon 6	1	0	0	0	11
Nylon 66	0	0	0	0	10
Sutures	0	0	0	0	0
PP Polymer	0	0	0	41	107
PP fibres	2	0	0	0	47
PP Mono	0	0	0	0	0
PP HT Fil.	0	0	0	0	9
PE Polymer	0	0	0	0	6
Viscose fibre	0	1	0	0	6
Viscose Fil.	0	0	0	0	1
PET Polymer	0	0	0	0	11
PET fibres	20	0	0	0	72
Polyester Regular	0	0	0	0	32
Nylon Regular	0	0	0	0	5
Acrylic / Modac	2	0	0	0	3
Aramid staple	0	0	0	0	1
Aramid filament	0	0	0	0	1
Other Organic	1	0	0	0	2
Glass	0	5	0	0	6
Metal	0	5	0	0	5
Cotton	0	0	12	0	20
Bast fibre	0	0	60	0	64
Glass Fil.	0	0	0	0	81
Basalt Fil.	0	0	0	0	0
Carbon Fil.	0	0	0	0	1
BICO	0	0	0	0	6
Wood Pulp	0	0	0	0	18

### South Korea TechTex trade

South Korea Yarn type TechTex trade: EU is No. 2 import supplier

Figure 185: South Korea Yarn type TechTex trade 2000-2014 – without DU products

	S. Korea Yarn type Imports									
Area	2000	2005	kt 2010	2013	2014	2014 MUSD				
China	3.43	6.26	10.99	9.95	10.61	43.16				
Bangladesh	0.25	0.41	1.22	0.92	0.91	0.74				
Sri Lanka	0.03	-	0.23	0.51	0.83	1.30				
USA	0.23	0.29	0.67	0.50	0.80	29.18				
Viet Nam	0.20	1.05	0.87	0.64	0.69	2.00				
EU-28	0.55	0.83	0.81	0.62	0.67	37.09				
Philippines	0.06	0.43	0.39	0.46	0.57	3.17				
Japan	0.34	0.30	0.50	0.31	0.27	7.14				
Indonesia	0.07	0.05	0.04	0.23	0.21	0.87				
Others	0.98	0.95	1.39	0,.61	0,54	2.07				
Total kt	6.14	10.57	17.11	14.75	16.10					
Total MUSD	42.51	63.17	108.29	125.53	126.72					

Source: UN Comtrade

The TT trade balance in yarn type products is positive in favour of the EU.

Figure 186: South Korea Yarn type TechTex trade 2000-2014 (cont'd)

	S. Korea Yarn type Exports										
Area	2000	2005	kt 2010	2013	2014	2014 MUSD					
Vietnam	2.42	3.63	5.58	5.00	5.47	49.62					
Singapore	5.27	5.80	5.66	4.28	5.08	15.19					
Chile	2.76	3.57	4.89	3.14	4.22	9.75					
USA	4.34	5.16	3.79	3.54	3.92	14.63					
Indonesia	4.12	3.66	4.12	3.73	3.38	30.08					
China	10.16	9.82	4.73	3.63	3.15	30.83					
EU-28	2.41	2.81	1.91	2.40	2.48	21.98					
Japan	3.78	2.76	1.74	2.22	1.96	10.37					
Russia	2.75	2.27	1.60	2.01	1.75	11.46					
Others	24.92	21.94	17.72	15.5	17.32	101.1					
Total kt	62.93	61.42	51.74	45.45	48.73						
Total MUSD	264.55	269.20	270.47	288.66	295.00						

South Korea Yarn type TechTex import: Sutures is the main product imported from the EU. Overall value of EU imports is going down with declining suture sales.

Figure 187: South Korea Yarn type import 2014

HS Code	Description	Т	2014 Total Imports from EU28			Impo	Imports from EU MUSD		
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
5607	Twine, Cordage, Rope & Cables, Coated Etc Or Not	7.54	26.12	0.36	5%	5.90	2.63	3.33	5.90
5508	Sewing thread of man-made staple fibres	3.70	14.23	-	-	0.01	0.02	0.04	0.01
5609	Article of yarn, strip or the like heading 5404 or 5405, Twine, cordage, NES	1.71	7.11	0.04	2%	0.53	2.27	1.27	0.53
5401	Sewing thread of man-made filaments	1.07	10.66	0.12	11%	2.95	1.73	2.24	2.95
5604	Rubber Thread and cord, Textile covered, Textile yarn, Impregnated coated, covered, sheathed with rubber	1.05	10.51	0.02	2%	0.05	0.12	0.05	0.05
5606	Gimped Yarn & Strip, 5404/5405 Chenille Yarn, Loop Wale-Yarn	0.55	3.77	0.06	11%	1.55	0.16	2.22	1.55
300610	Sterile Surgical Catgut, Similar Sterile Mater Etc	0.22	51.10	0.07	32%	25.72	<b>)</b> 13.41	27.53	25.72
5204	Cotton sewing thread	0.17	1.64	-	-	0.09	1.48	0.04	0.09
5605	Metallised yarn, whether or not gimped being textile yarn, strip or powder or covered with metal	0.08	1.57	0.01	13%	0.30	0.06	0.12	0.30
Total	Without DU	16.10	126.72	0.67	4%	37.09	51.88	36.83	37.09

South Korea Nonwoven type TechTex trade: EU is co-No. 3 import supplier

Figure 188: South Korea Nonwoven type TechTex trade 2000-2014

	S. Korea Nonwoven type Imports										
Area	2000	2005	kt 2010	2013	2014	2014 MUSD					
China	5.33	12.35	38.62	69.21	89.02	280.93					
Japan	6.39	5.31	7.34	12.55	12.13	100.41					
USA	4.45	4.91	4.52	6.73	8.05	66.21					
Other Asia, nes	1.23	3.61	3.53	7.57	6.68	29.85					
EU-28	1.89	3.73	4.24	6.68	6.44	66.73					
Mexico	0.54	0.07	0.08	2.05	2.14	15.88					
Singapore	0.05	-	3.04	1.50	1.82	17.39					
Thailand	0.37	1.43	0.61	0.83	1.47	5.40					
Vietnam	0.22	0.19	1.32	0.98	1.35	5.04					
Others	2.43	7.24	3.53	3.78	4.28	37.71					
Total kt	22.90	38.84	66.83	111.88	133.38						
Total MUSD	122.58	195.00	343.07	564.08	625.55						

Source: UN Comtrade

Figure 189: South Korea Nonwoven type TechTex trade 2000-2014 (cont'd)

	S. Korea Nonwoven type Exports									
Area	2000	2005	kt 2010	2013	2014	2014 MUSD				
China	7.31	18.87	18.73	51.52	47.61	277.07				
Japan	12.48	17.22	14.92	22.36	20.88	78.65				
Vietnam	3.84	5.94	7.21	10.11	9.92	68.28				
Hong Kong	4.16	5.44	2.83	5.97	7.02	44.69				
USA	0.36	2.35	5.15	7.23	6.09	44.66				
Indonesia	6.36	5.15	7.02	7.00	5.99	42.53				
EU-28	3.86	2.45	3.85	4.06	5.71	46.08				
Other Asia, nes	2.04	5.58	7.22	5.31	3.93	25.60				
Australia	0.71	0.95	0.16	2.20	2.91	14.61				
Others	-7.53	16.41	23.04	25.18	23.65	150.58				
Total kt	48.65	80.36	90.13	140.94	133.71					
Total MUSD	312.35	426.83	492.73	804.97	792.75					

South Korea Nonwoven import: Strong growth in NW imports from the EU 'till 2013. Growing general NW exports (HS code 5603) and exports of hygiene NW (HS code 961900) have not been able to compensate the decline in EU exports of NEW waddings to S. Korea.

Figure 190: South Korea Nonwoven import 2014

HS Code	Description		014 Imports	lm	2014 ports from	n EU28	Imports from EU MUSD		
		kt	MUSD	kt	%import share	MUSD	2010	2013	2014
5603	Nonwovens, whether or not impregnated, coated, etc.	79.41	329.74	2.58	3%	22.55	18.69	21.18	22.55
961900	Sanitary towels (pads) and tam- pons, napkins and napkin liners for babies and similar articles, of any material	29.63	140.00	2.29	8%	13.26	-	9.80	13.26
701939	Webs, mattresses, boards and similar nonwoven products, of glass fibres	14.94	46.0	0.16	6%	2.83	4.16	4.41	2.83
5601	Text wadding & articles; text fibres Nov 5 Mm, etc.	6.85	89.47	1.07	16%	25.68	4.84	30.79	25.68
630232	Bed linen (excl. knitted/crocheted), of man-made fibres (excl. printed)	1.14	3.25	0.03	3%	0.43	0.13	0.32	0.43
5602	Felt, impregnated, coated, etc. or not	1.05	14.31	0.33	31%	1.85	1.54	1.59	1.85
630293	Toilet linen & kitchen linen other than of terry fabrics, of manmade fibres	0.20	2.16	-	-	0.03	0.01	0.03	0.03
630253	Table linen (excl. knitted or crocheted), of man-made fibres	0.08	0.79	-	-	0.08	0.02	0.07	0.08
630222	Bed linen (excl. knitted/crocheted), printed, of man- made fibres	0.08	0.92	-	-	0.04	0.16	0.02	0.04
Total		133.38	625.55	6.44	5%	66.73	29.54	68.23	66.73

South Korea Fabric type TechTex trade: EU is co-No. 3 in respect to South Korea's import suppliers.

Figure 191: South Korea Fabric type TechTex trade 2000-2014 – without DU products

	S. Korea Fabric type Imports										
Area	2000	2005	kt 2010	2013	2014	2014 MUSD					
China	18.73	78.83	117.91	109.90	108.56	435.89					
Viet Nam	0.07	5.50	37.90	57.95	58.04	173.05					
Other Asia, nes	10.25	8.58	12.91	11.83	11.27	52.31					
EU-28	3.86	6.03	3.56	5.85	5.79	89.36					
Indonesia	2.49	4.86	7.38	5.25	4.78	24.85					
USA	3.52	2.84	3.64	3.93	3.97	65.42					
Italy	0.46	2.51	1.15	4.06	3.24	23.60					
Bangladesh	0.93	1.07	0.88	1.51	1.93	3.06					
Japan	5.52	2.88	2.08	1.80	1.68	86.76					
Philippines	0.09	0.03	0.37	0.8	1.26	5.9					
Others	4.13	2.25	3.97	0.05	1.37	31.86					
Total kt	50.05	115.38	191.75	202.93	201.89						
Total MUSD	327.03	510.44	831.23	983.85	992.06						

Source: UN Comtrade

The TT trade balance in fabric type products is negative in favour of S. Korea.

Figure 192: South Korea Fabric type TechTex trade 2000-2014 (cont'd)

		S. Korea	Fabric type E	xports		
Area	2000	2005	kt 2010	2013	2014	2014 MUSD
EU-28	16.04	18.67	26.33	31.26	31.51	228.10
Vietnam	20.00	22.09	23.65	26.80	29.31	355.97
USA	20.42	36.54	28.91	25.91	28.96	184.51
China	88.45	74.87	48.72	31.82	28.15	317.45
Japan	21.51	22.89	20.37	19.38	22.68	93.93
Thailand	9.14	7.76	11.25	13.23	11.74	62.15
Indonesia	33.91	14.85	11.14	10.44	9.88	121.56
Hong Kong	55.00	28.08	14.96	7.35	6.40	102.84
Other Asia, nes	7.62	8.44	7.48	6.51	5.96	28.15
Philippines	10.68	5.83	4.83	3.84	5.38	35.88
Others	82.36	48.96	52.78	48.22	46.5	314.46
Total kt	365.13	288.98	250.42	224.76	226.47	
Total MUSD	2,103.63	1,609.39	1,713.78	1,809.23	1,845.75	

South Korea TechTex Fabric type import: Slight growth in fabric imports from the EU in a highly fragmented sector.

Figure 193: South Korea Fabric type import 2014

HS Code	Description	Т	014 otal ports	lmţ	2014 ports from	EU28	lmpo	orts fron MUSD	n EU
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
630532	Flexible intermediate bulk containers, for the packing of goods, of synthetic or man-made textile materials	63.47	167.14	0.00	0.0%	0.06	0.11	0.13	0.06
5902	Tire cord fabric of High Tenacity aarn, Nylon etc.	33.57	132.42	0.13	0.4%	1.07	1.28	1.32	1.07
630533	Sacks and bags, for the packing of goods, of polyethylene or polypropylene strip or the like (excl. flexible intermediate bulk containers)	23.89	41.15	0.00	0.0%	0.00	0.00	0.00	0.00
5903	Textile fabrics (not tire cord) coat etc, plastics	19.80	130.34	0.65	3.3%	12.24	18.70	10.43	12.24
5608	Knotted net of twine etc; Fish net etc of textiles	19.00	60.55	0.20	1.1%	1.54	1.19	1.62	1.54
701931	Mats of irregularly laminated glass fibres	9.26	20.50	2.99	32.3%	9.54	1.74	10.99	9.54
701952	Woven fabrics, incl. narrow fabrics, of glass filaments, of width of > 30 cm, plain weave, weighing < 250 g/m², made of yarn of a linear density of <= 136 tex per single yarn (excl. fabrics made from rovings)	9.21	79.72	0.01	0.1%	0.10	0.04	0.08	0.10
520811	Plain woven fabrics of Cotton for the manufacture	8.41	59.36	0.00	0.0%	0.03	0.20	0.07	0.03
701959	Woven fabrics, incl. narrow fabrics, of glass fibres, of a width of > 30 cm (excl. plain weave, weighing < 250 g/m², of a linear density of <= 136 tex per single yarn, and fabrics made from rovings)	5.98	28.88	0.21	3.5%	3.37	1.24	3.80	3.37

South Korea TechTex Fabric import: Slight growth in fabric imports from the EU in a highly fragmented sector.

Figure 194: South Korea TechTex Fabric import 2014 (cont'd)

HS Code	Description	2014 Total Imports		2014 Imports from EU28			Imports from EU MUSD		
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
3005	Bandages etc coated etc or in retail medic etc Fm	5.28	83.10	0.22	4.2%	14.54	13.26	13.39	14.54
5806	Narrow woven fabrics of textile materials, with a width of <= 30 cm (excl. labels, badges and similar articles); narrow fabrics consisting of warp without weft assembled by means of an adhesive "bolducs"	3.61	23.48	0.07	1.9%	1.67	0.91	1.56	1.67
5911	Textile products etc. for specific Tech uses nesoi	3.31	102.36	0.49	14.8%	26.45	30.08	25.78	26.45
630392	Curtains, incl. drapes, and interior blinds, curtain or bed valances of nonwovens of synthetic fibres (excl. awnings and sun blinds)	2.11	16.28	0.01	0.4%	0.23	0.14	0.20	0.23
701932	Thin sheets "voiles" of irregularly laminated glass fibres	1.67	7.81	0.19	11.2%	2.14	0.92	0.34	2.14
531010	Woven fabrics of jute or of other textile bast fibres of heading 5303, unbleached	1.54	2.40	0.00	0.0%	0.01	0.00	0.00	0.01
540710	Woven fabrics of High Tenacity yarn, Nylon, other	1.46	9.81	0.02	1.3%	1.19	0.38	0.84	1.19
5910	Transmsn/Convyr belt, Tex mat,whthr/nt reinfcd, ctd	1.30	17.47	0.07	5.2%	3.26	3.05	3.28	3.26
5909	Textile hose piping and similar textile tubing	0.93	6.31	0.04	4.0%	0.58	1.49	0.40	0.58
5906	Rubberized textile fabrics, other than tire cord	0.92	12.58	0.14	15.7%	3.55	4.09	3.26	3.55

South Korea TechTex Fabric import: Slight growth in fabric imports from the EU in a highly fragmented sector

Figure 195: South Korea TechTex Fabric import 2014 (cont'd)

HS Code	Description		4 Total ports	lm	2014 ports from	n EU28	Impo	orts fron MUSD	n EU
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
5907	Textl fabrc, coated, etc, theatrcl scenery, back- cloths	0.81	6.36	0.02	2.0%	0.15	0.27	0.30	0.15
531090	Other woven fabrics of jute or of other textile bast fibres of heading 5303, bleached, dyed, made of yarn of different colours, or printed	0.74	1.12	0.00	0.2%	0.06	0.08	0.01	0.06
701940	Woven fabrics of glass fibres made from rovings	0.71	2.21	0.05	7.2%	0.96	0.04	0.92	0.96
630399	Curtains, incl. drapes, and interior blinds, curtain or bed valances of nonwovens (excl. of cotton and synthetic fibres, awnings and sun blinds)	0.71	12.46	0.00	0.2%	0.10	0.13	0.41	0.10
540720	Synthetic filament yarn fabric from the strip	0.63	3.30	0.09	13.9%	1.25	1.25	2.26	1.25
701951	Woven fabrics, incl. narrow fabrics, of glass, of a width of <= 30 cm (excl. rovings)	0.55	2.30	0.01	1.1%	0.25	0.07	0.15	0.25
5807	Labels, badges and similar articles, of textile materials, in the piece, in strips or cut to shape or size, not embroidered	0.51	8.27	0.01	1.0%	0.37	0.31	0.37	0.37
520821	Plain woven fabrics of Cotton for the manufact.	0.47	3.65	0.00	0.3%	0.01	0.09	0.01	0.01
5901	Text. book cov fab; Trac cl; paint canvas etc	0.34	1.72	0.02	5.4%	0.35	0.13	0.27	0.35
551229	Woven fabrics containing >= 85% Acrylic or Modacrylic	0.32	5.50	0.23	72.4%	4.32	2.67	3.20	4.32
570250	Carpets and other floor coverings, of polypropylene, woven, not tufted or flocked, not of pile construction, not madeup (excl. Kelem, Schumacks, Karamanie and similar hand-woven rugs)	0.19	1.62	0.12	65.2%	1.21	0.60	1.44	1.21

South Korea TechTex Fabric import: Slight growth in fabric imports from the EU in a highly fragmented sector.

Figure 196: South Korea TechTex Fabric import 2014 (cont'd)

HS Code	Description	T	2014 Total Imports from EU28			Imports from EU MUSD			
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
580230	Tufted textile fabrics, other than floor covers	0.08	0.59	0.02	29.3%	0.20	0.00	0.19	0.20
540810	Woven fabrics of High Tenacity Viscose yarn, incl.	0.05	0.91	0.00	1.6%	0.06	0.09	0.16	0.06
5803	Gauze (excl. narrow woven fabrics of heading 5806)	0.03	0.30	0.00	10.1%	0.08	0.01	0.01	0.08
5908	Textile wicks for lamps etc. and gas mantles etc	0.01	0.54	0.00	9.1%	0.08	0.01	0.01	0.08
5809	Woven fabrics of metal thread & metalized yarn nec	0.00	0.11	0.00	81.8%	0.09	0.25	0.09	0.09
Total	Without DU	220.89	1,052.61	6.01	2.7%	91.09	84.81	87.27	91.09

Source: UN Comtrade

Summary: The highest volume in TT fabric exports by S. Korea is given in

Coated fabrics:
 Glass fibre mats:
 Bandages for medical use:
 Specific use TT fabrics:
 Mn USD
 Mn USD
 Mn USD

South Korea Industrial yarn (TT raw material, such as High Tenacity Polyester filament) TechTex trade: Small import volume from the EU

Figure 197: South Korea Industrial yarn type TechTex trade 2000-2014

	S. Korea Industrial yarn type Imports										
Area	2000	2005	kt — 2010	2013	2014	2014 MUSD					
China	0.0	3.6	27.3	30.4	41.1	156.4					
Japan	1.2	0.0	0.2	3.1	3.4	110.3					
EU 28	0.1	0.1	1.8	1.6	1.6	17.7					
Canada	0.0	0.0	4.3	0.9	1.2	13.4					
Indonesia	0.0	0.0	0.1	0.6	0.7	6.5					
Russia	0.0	0.0	0.3	0.6	0.6	2.9					
Vietnam	0.0	0.0	0.6	0.5	0.4	1.9					
Other Asia, nes	0.1	1.3	1.5	0.4	0.4	0.8					
USA	0.1	0.0	0.8	0.1	0.0	1.4					
Thailand	0.0	0.0	0.1	0.0	0.0	1.4					
Others	0.3	0.1	0.0	0.1	0.0	0.0					
Total kt	1.8	5.1	36.9	38.3	49.5						
Total MUSD	3.4	11.9	116.5	130.4	156.4						

Source: UN Comtrade

Trade balance in Industrial yarns (TT raw material) vastly negative in favour of S. Korea

Figure 198: South Korea Industrial yarn type TechTex trade 2000-2014 (cont'd)

		S. Korea N	onwoven typ	e Exports		
Area	2000	2005	kt — 2010	2013	2014	2014 MUSD
EU 28	12.9	17.5	31.3	33.1	34.7	108.6
USA	13.5	30.8	11.2	15.9	14.7	39.6
China	0.4	7.7	13.8	7.3	9.0	36.2
Brazil	0.2	3.0	7.6	6.7	8.2	26.1
Philippines	0.0	2.6	2.8	3.3	4.5	11.3
Viet Nam	0.0	0.1	1.5	1.7	2.2	12.7
Japan	0.0	0.4	1.5	1.8	2.0	5.3
Thailand	0.0	0.2	1.7	1.2	1.6	4.9
Argentina	0.2	1.9	1.7	1.3	1.5	3.5
Others	6.7	15.2	17.2	12.2	9.4	44.0
Total kt	33.9	79.4	90.3	84.5	87.8	
Total MUSD	64.9	188.7	253.3	281.5	292.2	

South Korea Industrial yarn import: Details

Figure 199: South Korea Industrial yarn import 2014

HS Code	Description	2014 Total Imports from EU28			Imports from EU MUSD				
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
540220	High-tenacity filament yarn of polyesters	29.2	55.5	0.07	0.1%	0.29	0.06	0.27	0.29
540219	High-tenacity filament yarn of nylon or other polyamides	19.8	90.3	0.01	0.0%	0.21	0.05	0.02	0.21
540211	High-tenacity filament yarn of aramids	0.4	10.6	0.00	0.0%	0.02	0.02	3.30	0.02
540310	High-tenacity yarn of viscose rayon filament	0.0	0.0	0.00	0.2%	0.02	0.00	0.05	0.02
Total		49.5	156.4	0.08	0.2%	0.54	0.13	3.64	0.54

On top would come imports (chiefly from Austria) of specialty viscose fibres (such as FR or specialty nonwoven raw materials) which are no identifiable by a specific HS code but – nevertheless – constitute a significant EU fibre related export volume to S. Korea

South Korea Made-up type TechTex imports: EU is the No. 3 import supplier

Figure 200: South Korea Made-up type TechTex trade 2000-2014

		S. Korea	Made-ups I	mports		
Area	2000	2005	kt — 2010	2013	2014	2014 MUSD
China	14.65	64.70	89.94	102.43	100.11	459.51
Viet Nam	0.29	4.29	24.17	37.92	42.36	186.32
EU-28	0.73	1.90	1.64	1.60	1.60	53.85
Bangladesh	0.01	0.01	0.06	2.31	2.34	23.06
USA	0.42	0.56	0.66	0.90	1.04	14.47
Indonesia	0.07	1.34	0.81	1.00	0.91	17.42
Sri Lanka	0.06	0.09	1.57	0.92	0.78	1.59
Myanmar	0.00	0.06	0.31	0.51	0.51	12.44
Mexico	0.02	0.29	0.04	0.46	0.44	5.86
Cambodia	0.00	0.01	0.02	0.21	0.42	4.24
Japan	1.56	3.41	0.40	0.18	0.29	7.81
Others	2.07	1.40	0.72	0.00	0.00	0.00
Total kt	19.87	78.05	120.34	148.44	150.80	
Total MUSD	115.65	333.71	466.35	737.93	786.57	

Source: UN Comtrade

The trade balance in TT made-ups is negative in favour of S. Korea

Figure 201: South Korea Made-up type TechTex trade 2000-2014 (cont'd)

		S. Kore	a Made-ups E	xports		
Area	2000	2005	kt	2013	2014	2014 MUSD
EU-28	6.45	4.32	5.51	6.63	6.85	89.23
China	1.58	5.68	5.74	3.65	3.83	40.41
USA	11.97	3.98	2.67	3.94	3.35	31.48
Japan	7.19	2.08	1.62	2.20	3.14	57.05
Russian Federation	1.03	0.75	0.46	1.55	1.79	17.45
Viet Nam	0.46	1.57	2.48	1.09	1.48	14.38
Uzbekistan	0.00	0.00	0.00	1.40	1.39	5.86
Brazil	0.02	0.02	0.04	0.88	0.96	10.38
Saudi Arabia	1.78	2.10	0.84	0.54	0.82	6.39
Germany	0.67	0.45	0.52	0.61	0.73	16.85
Malaysia	0.27	0.13	0.30	0.16	0.61	3.02
Others	15.38	7.13	4.23	6.45	5.47	46.71
Total kt	46.82	28.22	24.41	29.10	30.43	
Total MUSD	238.54	202.05	201.69	315.52	339.22	

South Korea Made-ups import: The main EU export product is garments (PPE) showing good growth between 2010 and 2014

Figure 202: South Korea Made-ups import 2014

HS Code	Description	_	014 Imports	lmp				orts from MUSD	n EU
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
6305	Sacks and bags, of a kind used for the packing of goods, of all types of textile materials	92.76	234.89	0.03	0.03%	0.94	0.17	0.99	0.94
6307	Made-up articles of textile materials, incl. dress patterns, n.e.s	27.20	117.52	0.73	2.68%	12.86	5.98	9.46	12.86
6306	Tarpaulins, awnings and sun blinds; tents; sails for boats, sailboards or land craft; camping goods of all types of textile materials	15.29	159.36	1.49	9.75%	3.84	0.73	3.13	3.84
621010	Garments, made up of fabrics	3.48	24.76	0.07	2.08%	22.29	1.95	13.17	22.29
6203 - 6204	Industrial and Occupational garments (considered 11% of total trade)	9.56	215.11	0.09	0.97%	11.16	6.81	9.51	11.16
611693	Gloves, mittens and mitts, knitted or crocheted of synthetic fibres	1.92	23.94	0.0021	0.11%	0.22	0.11	0.37	0.22
870821	Safety seat belts	0.60	10.99	0.22	36.71%	5.97	16.64	10.29	5.97
Total		150.80	786.57	2.63	1.75%	57.27	32.38	46.94	57.27

# **End of Appendix 6:**

South Korea market and trade in Technical Textiles

**Start of Appendix 7:** 

Japan market and trade in Technical Textiles

# Appendix 7: Japan market and trade in Technical Textiles TechTex market Japan

Figure 203: Japan TechTex market: Segment-wise

	Spunmelt NW	Drylaid NW	Airlaid / Wetlaid NW	Mineralic*	Man made Filament**
Agrotech	0.2	0.1	0.0	0.0	2.3
Buildtech	14.3	26.9	0.0	54.1	33.9
Clothtech	0.3	5.9	0.0	0.0	10.1
Geotech	3.2	14.5	0.0	0.0	12.5
Hometech	23.9	26.7	10.4	12.1	11.3
Indutech	18.5	26.4	9.1	112.5	35.2
Medtech	12.4	10.2	0.0	0.0	0.9
Hygiene	112.8	22.9	10.0	0.0	0.0
Mobiltech	11.1	41.6	12.5	107.2	203.3
Packtech	10.8	2.0	10.8	0.0	10.4
Protech	2.0	0.5	0.0	0.0	7.6
Sporttech	1.5	1.6	0.0	2.4	23.6
Total KT	210.9	179.3	52.7	288.3	351.3

Figure 204: Japan TechTex market: Segment-wise (cont'd)

	Synthetic staple fibre	Other (non synthetic) staple fibre	Natural fibres	Slit film ('tape')	Total KT 2014
Agrotech	0.1	0.0	2.1	1.8	6.6
Buildtech	24.5	28.7	28.0	1.7	212.1
Clothtech	12.1	0.2	6.3	0.0	35.0
Geotech	0.0	0.0	7.1	1.8	39.2
Hometech	70.4	2.0	53.0 9		219.1
Indutech	24.6	8.8	15.7	0.8	251.5
Medtech	2.3	0.9	6.6	0.0	33.3
Hygiene	11.1	7.3	21.1	0.0	185.1
Mobiltech	6.7	4.6	36.6	2.7	426.4
Packtech	22.4	0.0	112.9	93.7	263.0
Protech	1.3	0.8	2.8	0.0	15.1
Sporttech	6.2	0.5	4.5	3.9	44.2
Total KT	181.7	53.8	296.8	115.6	1,730

 <sup>\*</sup> Mineralic (glass, basalt) and carbon filament
 \*\* Man made Filament other than glass, basalt and carbon

Japan TechTex market: Fibre break-up

Figure 205: Japan TechTex market: Segment-wise i

	Spunmelt NW	Drylaid NW	Airlaid / Wetlaid NW	Mineralic	Man made Filament
TOTAL KT 2014	211	179	53	288	351
Polyester HT fil.	0	0	0	0	144
Nylon 6	0	0	0	0	31
Nylon 66	0	0	0	0	29
Sutures	0	0	0	0	0
PP Polymer	167	0	0	0	0
PP fibres	0	55	18	0	0
PP Mono	0	0	0	0	1
PP HT Fil.	0	0	0	0	27
PE Polymer	16	0	0	0	0
Viscose fibre	0	7	0	0	0
Viscose Fil.	0	0	0	0	4
PET Polymer	29	0	0	0	0
PET fibres	0	82	0	0	0
Polyester Regular	0	0	0	0	96
Nylon Regular	0	0	0	0	14
Acrylic / Modac	0	1	0	0	0
Aramid staple	0	0	1	0	0
Aramid filament	0	0	0	0	4
Other Organic	0	1	0	0	0
Glass	0	0	2	0	0
Metal	0	0	0	0	0
Cotton	0	12	0	0	0
Bast fibre	0	5	0	0	0
Glass Fil.	0	0	0	285	0
Basalt Fil.	0	0	0	0	0
Carbon Fil.	0	0	0	3	0
BICO	0	9	2	0	0
Wood Pulp	0	6	29	0	0

Japan TechTex market: Fibre break-up

Figure 206: Japan TechTex market: Fibre break-up ii

	Synthetic staple fibre	Other (non synthetic) staple fibre	Natural fibres	Slit film ('tape')	Total KT 2014
TOTAL KT 2014	182	54	297	116	1,730
Polyester HT fil.	0	0	0	0	144
Nylon 6	5	0	0	0	37
Nylon 66	0	0	0	0	29
Sutures	0	0	0	0	0
PP Polymer	0	0	0	116	282
PP fibres	17	0	0	0	91
PP Mono	0	0	0	0	1
PP HT Fil.	0	0	0	0	27
PE Polymer	0	0	0	0	16
Viscose fibre	0	5	0	0	13
Viscose Fil.	0	0	0	0	4
PET Polymer	0	0	0	0	29
PET fibres	139	0	0	0	221
Polyester Regular	0	0	0	0	96
Nylon Regular	0	0	0	0	14
Acrylic / Modac	13	0	0	0	14
Aramid staple	3	0	0	0	5
Aramid filament	0	0	0	0	4
Other Organic	5	1	0	0	7
Glass	0	24	0	0	26
Metal	0	24	0	0	24
Cotton	0	0	50	0	63
Bast fibre	0	0	247	0	251
Glass Fil.	0	0	0	0	285
Basalt Fil.	0	0	0	0	0
Carbon Fil.	0	0	0	0	3
BICO	0	0	0	0	10
Wood Pulp	0	0	0	0	35

## Japan TechTex trade

Japan Yarn type TechTex trade: In value, the EU is Japan's second largest import supplier behind the US and ahead of China.

Figure 207: Japan Yarn type TechTex trade 2000-2014 – without DU products

	Japan Yarn type Imports											
Area	2000	2005	kt — 2010	2013	2014	2014 MUSD						
China	9.2	10.8	10.8	12.1	12.3	71.0						
Bangladesh	3.5	4.6	5.1	5.0	5.1	11.3						
Rep. of Korea	2.3	1.9	1.6	2.5	2.0	10.9						
Vietnam	0.0	0.4	0.9	1.5	1.7	7.6						
Malaysia	0.8	0.8	0.8	0.7	0.8	3.5						
India	1.6	1.0	1.0	0.8	0.7	1.2						
Thailand	2.5	1.5	0.4	0.5	0.5	2.1						
Indonesia	1.1	0.9	0.5	0.4	0.5	3.8						
United Rep. of Tanzania	1.4	1.0	0.5	0.4	0.4	0.9						
USA	0.4	0.8	0.3	0.3	0.4	163.1						
EU-28	0.7	0.4	0.2	0.3	0.3	79.8						
Others	1.1	0.9	0.8	0.8	0.8	38.2						
Total kt	24.6	24.9	23.0	25.3	25.5							
Total MUSD	142.8	147.5	181.9	393.0	393.3							

The TT trade balance in yarn type products is positive in favour of the EU

	Japan Yarn type Exports											
Area	2000	2005	kt 2010	2013	2014	2014 MUSD						
China	2.2	2.2	1.9	1.6	1.3	29.5						
Vietnam	0.2	0.2	0.7	0.6	0.6	11.8						
Hong Kong	1.3	0.9	0.5	0.4	0.6	22.0						
EU-28	1.2	0.6	0.6	0.4	0.5	16.6						
USA	0.9	0.8	0.4	0.3	0.4	17.6						
Thailand	0.5	0.5	0.4	0.3	0.3	6.9						
Philippines	0.1	0.2	0.2	0.3	0.2	6.8						
Rep. of Korea	0.3	0.5	0.4	0.2	0.2	5.0						
Singapore	0.5	0.2	0.2	0.2	0.2	2.5						
Other Asia, nes	0.7	0.5	0.2	0.1	0.1	5.0						
United Arab Emirates	0.1	0.1	0.1	0.1	0.1	3.4						
Others	2.4	1.7	0.6	0.7	0.6	19.4						
Total kt	10.4	8.3	6.0	5.2	5.3							
Total MUSD	169.8	152.0	156.1	146.7	146.4							

Two thirds of Japan yarn type TT imports concern medical sutures (HS Code - 300610 - Sterile surgical catgut). For these USA and Mexico are the key import suppliers.

Figure 208: Japan suture import 2010-2014

	2010		20	11	2	012	2013 201		14	
	KT	Mn US\$	KT	Mn US\$	KT	Mn US\$	KT	Mn US\$	KT	Mn US\$
USA	0.06	30.82	0.07	44.27	0.08	53.40	0.18	127.66	0.24	158.90
Mexico	0.00	0.02	-	-	0.00	0.37	0.10	84.43	0.09	56.81
Germany	0.02	21.63	0.02	20.96	0.02	17.73	0.02	15.12	0.02	14.76
Austria	0.00	20.06	0.00	27.45	0.00	27.35	0.00	22.15	0.00	23.79
Rep. of Korea	0.00	0.46	0.00	0.92	0.00	7.31	0.01	13.16	0.00	2.32
Spain	0.00	0.17	0.00	0.21	0.00	0.19	0.00	0.41	0.00	0.34
World	0.09	75.66	0.10	96.10	0.10	108.27	0.31	267.34	0.36	265.91
Unit Value Rate (US\$/Kg)		847.49		965.38		1,043.67		860.05		728.80

Japan – key yarn import: 92% of Japan's yarn type imports from the EU are medical sutures, where Japan oriented export values are going down, though.

Figure 209: Japan Yarn type TT import 2010-2014 (cont'd)

HS Code	Description	Т	014 otal ports	2014 Imports from EU28		Impo	Imports from EU MUSD		
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
5607	Twine, cordage, rope & cables, coated etc. or not	18.82	61.56	0.16	0.9%	3.51	3.34	4.58	3.51
5609	Article of yarn, strip or the like heading 5404 or 5405, twine, cordage, NES	2.75	24.96	0.01	0.4%	0.51	0.67	0.44	0.51
5508	Sewing thread of man-made staple fibres	1.31	13.96	-	-	0.01	0.09	-	0.01
5401	Sewing thread of man-made filaments	0.81	10.57	-	-	0.49	0.42	0.28	0.49
5604	Rubber thread and cord, Textile covered, Textile yarn, impregnated coated, covered, sheathed with rubber	0.72	8.90	0.07	9.7%	0.76	0.42	0.78	0.76
5606	Gimped yarn & strip, 5404/5405 Chenille yarn, Loop Wale-yarn	0.63	6.04	0.01	1.6%	0.52	0.19	0.58	0.52
300610	Sterile surgical catgut, similar sterile matter etc.	0.36	265.84	0.07	19.4%	73.61	106.19	73.34	73.61
5204	Cotton sewing thread	0.07	0.87	-	-	0.10	0.08	0.10	0.10
5605	Metallized yarn, whether or not gimped being textile yarn, strip or powder or covered with metal	0.03	0.60	-	-	0.24	0.18	0.52	0.24
Total	Without DU	25.50	393.30	0.34	1.3%	79.75	111.58	80.62	79.75

Japan Nonwoven type TechTex trade: In value the EU is Japan's second largest import supplier behind China and ahead of Thailand.

Figure 210: Japan Nonwoven type TechTex trade 2000-2014

	Japan Nonwoven type Imports											
Area	2000	2005	kt — 2010	2013	2014	2014 MUSD						
China	22.36	33.60	58.76	85.16	104.30	504.15						
Thailand	1.53	10.96	20.31	24.87	28.91	95.96						
Malaysia	0.60	3.36	9.84	18.60	20.12	61.59						
EU-28	10.90	6.91	12.45	17.87	19. 73	146.15						
Rep. of Korea	14.04	19.88	15.22	19.15	18.75	77.39						
Other Asia, nes	6.16	10.42	12.15	16.76	16.43	62.93						
USA	10.92	8.68	10.66	8.38	7.77	78.90						
Indonesia	0.24	2.25	3.16	5.65	6.44	31.16						
Vietnam	0.00	0.15	1.13	2.59	3.03	18.39						
Others	4.97	4.50	2.20	3.37	1.99	26.20						
Total kt	71.72	100.70	145.89	202.40	227.47							
Total MUSD	358.42	435.46	718.57	1,023.76	1,102.81	-						

Source: UN Comtrade

The trade balance in nonwovens is slightly positive in favour of the EU.

Figure 211: Japan Nonwoven type TechTex trade 2000-2014 (cont'd)

	Japan Nonwoven type Exports											
Area	2000	2005	kt	2013	2014	2014 MUSD						
China	5.05	12.87	18.38	72.43	109.48	800.96						
Russian	0.01	0.15	0.46	26.13	32.01	213.26						
Hong Kong	5.34	7.05	7.72	20.44	20.16	177.15						
Other Asia, nes	2.34	3.42	2.51	20.81	20.11	104.80						
USA	7.22	10.89	10.26	10.41	12.35	140.84						
Rep. of Korea	5.13	4.83	6.02	10.60	10.12	82.63						
EU-28	9.78	9.31	7.66	7.29	7.52	100.41						
Vietnam	0.80	0.36	0.99	4.44	6.20	50.95						
Thailand	1.25	3.19	3.00	6.06	6.04	50.58						
Indonesia	0.96	1.53	1.41	8.97	4.06	33.78						
India	0.10	0.22	0.86	4.56	3.11	18.69						
Other	4.67	6.22	8.97	15.72	18.20	130.11						
Total kt	42.66	60.05	68.23	207.86	249.36							
Total MUSD	545.47	657.15	856.76	1,639.21	1,904.16							

Japan – Key Nonwovens product import: Japan Nonwoven imports from the EU are growing (in value) by 8% p.a.

Figure 212: Japan – Key Nonwovens product import 2014

HS Code	Description		014 Imports	In	2014 nports fron	n EU28	Import	s from EU	MUSD
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
5603	Nonwovens, whether or not impregnated, coated etc.	162.98	654.37	12.10	7%	88.55	65.07	76.10	88.55
961900	Sanitary towels (pads) and tampons, napkins and napkin liners for babies and similar articles, of any material	21.36	110.11	4.27	20%	15.39	-	14.91	15.39
5601	Text wadding & articles; Text fibres Nov 5 Mm, etc.	13.38	103.13	2.74	20%	37.27	41.01	39.83	37.27
630222	Bed linen (excl. knitted/crocheted), printed, of man- made fibres	9.36	79.22	-	-	0.21	0.01	0.16	0.21
701939	Webs, mattresses, boards and similar nonwoven products, of glass fibres (excl. mats and thin sheets 'voiles')	6.99	24.46	0.54	8%	2.10	0.69	1.13	2.10
630232	Bed linen (excl. knitted/crocheted), of man-made fibres (excl. printed)	5.30	53.21	-	-	0.14	0.13	0.06	0.14
630293	Toilet linen & kitchen linen other than of terry fabrics, of man-made fibres	5.24	49.62	-	-	0.08	0.16	0.36	0.08
5602	Felt, impregnated, coated, etc. or not	1.87	17.13	0.06	3.10%	1.99	1.50	1.84	1.99
630253	Table linen (excl. knitted or crocheted), of man- made fibres	1.00	11.55	0.01	0.70%	0.44	0.81	0.62	0.44
Total		227.47	1'102.81	19.73	9%	146.15	109.40	135.00	146.15

Japan Fabric type TechTex trade: EU 28 is only No. 5 among Japan's import suppliers of fabric type Technical Textiles.

Figure 213: Japan Fabric type TechTex trade 2000-2014 – without DU products

		Japan Fa	abric type In	nports		
Area	2000	2005	kt — 2010	2013	2014	2014 MUSD
China	74.36	135.91	160.47	197.99	218.52	994.52
Vietnam	4.14	9.94	16.07	29.81	44.78	172.39
Rep. of Korea	19.92	25.13	22.81	28.12	31.17	101.37
Other Asia, nes	13.72	18.94	19.08	16.82	18.67	83.03
Indonesia	9.83	12.24	12.01	12.81	12.16	66.65
EU-28	3.57	4.09	3.59	4.46	4.11	97.92
India	4.56	5.71	3.93	3.89	3.41	13.51
Масао	1.17	2.89	2.60	2.91	3.38	17.04
Thailand	1.96	2.36	2.30	2.82	3.20	35.24
Philippines	2.33	4.65	3.76	4.01	3.17	16.08
USA	4.21	3.87	3.34	3.25	2.98	101.20
Others	7 18	4 13	3 29	4 25	4 89	29 13
Total kt	146.94	229.85	253.26	311.13	350.44	
Total MUSD	685.91	974.38	1,313.25	1,639.44	1,728.09	

Source: UN Comtrade

The EU – Japan TT trade balance in fabric type products is more or less breakeven.

Figure 214: Japan Fabric type TechTex trade 2000-2014

	Japan Fabric type Exports											
Area	2000	2005	kt 2010	2013	2014	2014 MUSD						
Vietnam	1.36	5.66	9.98	15.01	16.16	67.05						
China	7.08	10.43	12.86	11.37	6.86	197.40						
USA	3.92	6.92	10.30	9.00	5.52	118.15						
EU-28	4.14	4.45	5.66	4.53	4.28	86.11						
Thailand	1.85	3.18	3.92	4.07	2.57	44.88						
Germany	0.90	1.28	1.44	2.24	2.31	48.98						
Other Asia, nes	6.19	3.46	2.92	3.68	2.26	47.29						
Rep. of Korea	6.02	2.69	4.02	3.06	1.65	47.15						
Philippines	1.51	2.26	1.36	1.79	1.56	16.48						
Indonesia	1.11	2.21	0.92	1.50	1.55	26.75						
Hong Kong	3.42	2.84	2.55	1.49	1.47	45.86						
Others	10.91	6.85	4.36	5.38	3.23	89.74						
Total kt	48.42	52.23	60.28	63.11	49.41							
Total MUSD	686.66	792.67	1,099.90	1,131.34	835.84							

Figure 215: Japan – Key Fabric type import 2014

HS Code	Description	T	014 otal ports	lmţ	2014 ports from	ı EU28	Imports from EU MUSD		
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
630532	Flexible intermediate bulk containers, for the packing of goods, of synthetic or man-made textile materials	126.41	401.95	0.05	0.0%	0.27	0.77	0.31	0.27
5902	Tire cord fabric of High Tenacity yarn, Nylon etc.	42.51	162.88	0.00	0.0%	0.01	0.02	0.00	0.01
5608	Knotted net of twine etc; Fish net etc. of textiles	29.26	139.19	0.34	1.2%	2.64	3.47	4.88	2.64
630533	Sacks and bags, for the packing of goods, of polyethylene or polypropylene strip or the like (excl. flexible intermediate bulk containers)	25.18	57.81	0.00	0.0%	0.00	0.02	0.00	0.00
701931	Mats of irregularly laminated glass fibres	22.80	46.09	0.62	2.7%	2.55	1.33	2.20	2.55
630392	Curtains, incl. drapes, and interior blinds, curtain or bed valances of nonwovens of synthetic fibres (excl. awnings and sunblinds)	22.15	196.48	0.03	0.1%	1.77	1.52	1.33	1.77
701952	Woven fabrics, incl. narrow fabrics, of glass filaments, of width of > 30 cm, plain weave, weighing < 250 g/m², made of yarn of a linear density of <= 136 tex per single yarn (excl. fabrics made from rovings)	20.52	96.99	0.02	0.1%	0.33	0.19	0.42	0.33
3005	Bandages Etc Coated Etc Or In Retail Medic Etc Fm	12.64	223.22	0.72	5.7%	39.98	35.97	39.23	39.98

Figure 216: Japan – Key Fabric type import 2014 (cont'd)

HS Code	Description	Т	014 otal ports	lmţ	2014 ports from	EU28	Imports from EU MUSD		
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
5903	Textile fabrics (not tire cord) coat etc, plastics	10.27	107.45	0.65	6.30%	10.42	13.21	9.78	10.42
540720	Synthetic filament yarn fabric from the strip	9.44	27.92	0.02	0.20%	1.24	1.3	1.39	1.24
5806	Narrow woven fabrics of textile materials, with a width of <= 30 cm (excl. labels, badges and similar articles); narrow fabrics consisting of warp without weft assembled by means of an adhesive "bolducs"	7.29	55.13	0.2	2.80%	4.96	4.13	4.79	4.96
5911	Textile products etc. for specific Tech uses nesoi	7.22	149.73	0.37	5.10%	20.49	21.4	20.61	20.49
580230	Tufted textile fabrics, other than floor covers	5.3	23.11	0.02	0.50%	0.2	0	0.19	0.2
701959	Woven fabrics, incl. narrow fabrics, of glass fibres, of a width of > 30 cm (excl. plain weave, weighing < 250 g/m², of a linear density of <= 136 tex per single yarn, and fabrics made from rovings)	4.07	30.55	0.17	4.30%	2.55	1.97	2.48	2.55
5906	Rubberized textile fabrics, other than tire cord	3.75	24.78	0.10	2.8%	1.76	1.66	1.12	1.76
531010	Woven fabrics of jute or of other textile bast fibres of heading 5303, unbleached	3.21	4.94	0.00	0.0%	0.06	0.00	0.03	0.06

Figure 217: Japan – Key Fabric type import 2014 (cont'd)

HS Code	Description	T	014 otal ports	lmţ	2014 ports from	EU28	Imports from EU MUSD		
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
520811	Plain woven fabrics of cotton for the manufacture	2.18	18.36	0.00	0.1%	0.11	0.28	0.46	0.11
5909	Textile hose piping and similar textile tubing	1.35	14.58	0.30	22.3%	3.82	3.29	2.80	3.82
701932	Thin sheets "voiles" of irregularly laminated glass fibres	1.22	5.86	0.05	4.1%	0.99	0.08	0.05	0.99
701940	Woven fabrics of glass fibres made from rovings	1.17	3.51	0.07	6.0%	0.38	1.01	0.35	0.38
540710	Woven fabrics of High Tenacity yarn, Nylon, other	0.86	10.67	0.14	16.6%	1.59	1.15	2.17	1.59
701951	Woven fabrics, incl. narrow fabrics, of glass, of a width of <= 30 cm (excl. rovings)	0.52	7.04	0.00	0.5%	0.15	0.38	0.11	0.15
5803	Gauze (excl. narrow woven fabrics of heading 5806)	0.28	4.93	0.00	0.1%	0.01	0.03	0.04	0.01
5910	Transmsn/Convyr belt,Tex mat,whthr/nt reinfcd, ctd	0.26	5.32	0.08	30.2%	3.15	3.27	4.43	3.15
520821	Plain woven fabrics of Cotton for the manufacture	0.23	3.44	0.00	0.6%	0.08	0.13	0.15	0.08
5901	Textile book cov fab; trac cl; paint canvas etc.	0.17	1.57	0.05	27.0%	0.83	0.26	1.22	0.83
630399	Curtains, incl. drapes, and interior blinds, curtain or bed valances of nonwovens (excl. of cotton and synthetic fibres, awnings and sunblinds)	0.15	3.17	0.01	5.1%	0.31	0.07	0.17	0.31

Figure 218: Japan – Key Fabric type import 2014 (cont'd)

HS Code	Description	Т	014 otal ports	lm	2014 ports fron	1 EU28	Imports from EU MUSD		
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
5907	Textl fabrc, coatd, etc,theatrcl scenery, Back-Cloths	0.13	3.55	0.14	102.5%	1.02	1.07	1.53	1.02
570250	Carpets and other floor coverings, of polypropylene, woven, not tufted or flocked, not of pile construction, not made-up (excl. Kelem, Schumacks, Karamanie and similar hand-woven rugs)	0.09	0.47	0.54	617.5%	3.63	1.38	4.89	3.63
5807	Labels, badges and similar articles, of textile materials, in the piece, in strips or cut to shape or size, not embroidered	0.03	3.17	0.01	26.4%	1.12	0.85	0.79	1.12
551229	Woven fabrics containing >= 85% Acrylic or Modacrylic	0.03	0.93	0.01	51.2%	0.78	0.86	1.19	0.78
5908	Textile wicks for lamps etc. and gas mantles etc	0.01	0.39	0.00	13.4%	0.02	0.02	0.02	0.02
540810	Woven fabrics of High Tenacity Viscose yarn, incl	0.01	0.20	0.01	101.9%	0.34	0.39	0.50	0.34
531090	Other woven fabrics of jute or of other textile bast fibres of heading 5303, bleached, dyed, made of yarn of different colours, or printed	0.01	0.05	0.00	7.0%	0.07	0.01	0.03	0.07
5809	Woven fabrics of metal thread & metalized yarn Nec	0.00	0.23	0.02	1173.8%	0.72	0.06	0.36	0.72
Total	Without DU	360.7	1,835.63	4.76	1.3%	108.34	101.55	110.04	108.34

Japan Industrial yarn (TT raw material, such as Polyester High Tenacity filament) trade: EU is the No. 2 import supplier to Japan, though small in value.

Figure 219: Japan Industrial yarn type TechTex trade 2000-2014

		Japan Indus	trial yarn ty	pe Imports		
Area	2000	2005	kt 2010	2013	2014	2014 MUSD
Other Asia, nes	0.25	0.59	3.23	6.25	13.45	35.94
China	0.00	0.02	1.68	2.69	3.58	10.52
Thailand	0.01	0.13	2.41	2.25	2.61	7.83
India	0.21	1.24	0.10	0.55	2.08	10.35
Rep. of Korea	1.13	0.28	1.00	1.51	1.85	5.13
EU28	1.03	1.57	2.34	1.75	1.56	14.95
Others	0.00	0.02	0.39	0.09	0.67	3.19
Total kt	2.64	3.85	11.16	15.09	25.80	
Total MUSD	7.60	16.72	47.41	55.24	87.91	

Source: UN Comtrade

Figure 220: Japan Industrial yarn type TechTex trade 2000-2014 (cont'd)

		Japan No	nwoven type	Exports		
Area	2000	2005	kt 2010	2013	2014	2014 MUSD
Thailand	0.09	0.63	9.70	13.70	15.17	86.62
Philippines	0.08	0.08	2.53	5.94	7.35	34.84
China	0.95	0.50	1.09	2.84	5.20	34.73
Rep. of Korea	1.14	0.08	0.19	2.97	3.29	15.59
Vietnam	0.01	0.00	0.00	2.66	3.12	19.94
USA	7.11	7.36	2.61	3.05	2.03	31.70
Brazil	0.00	0.00	0.49	1.07	0.58	6.02
Other Asia, nes	1.26	0.58	0.46	0.73	0.55	2.49
Netherlands	0.01	0.04	0.46	0.25	0.46	15.82
Hong Kong	0.05	0.07	0.32	0.29	0.29	5.74
Others	5.02	1.46	1.52	0.83	1.21	14.41
Total kt	15.72	10.8	19.37	34.33	39.25	
Total MUSD	37.92	30.35	146.14	229.07	267.9	

Japan Industrial yarn import:

Figure 221: Japan Industrial yarn import 2014

HS Code	Description	Т	014 otal ports	lmţ	2014 ports from	EU28	Imports from EU MUSD		
		kt	MUSD	kt	% import share	MUSD	2010	2013	2014
540220	High-tenacity filament yarn of polyesters	17.15	42.09	0.00	0.0%	0.03	0.24	0.04	0.03
540219	High-tenacity filament yarn of nylon or other polyamides	5.00	20.10	0.00	0.0%	0.04	0.05	0.04	0.04
540310	High-tenacity yarn of viscose rayon filament	3.36	19.41	0.00	0.0%	0.03	0.03	0.04	0.03
540211	High-tenacity filament yarn of aramids	0.29	6.30	0.25	86.2%	5.09	9.55	0.01	5.09
Total		25.80	87.91	0.25	1.0%	5.19	9.87	0.12	5.19

Source: UN Comtrade

Not considered in this statistic are fibres which cannot be singled out as purely for TT use, like viscose (part of which would be viscose FR, also exported to Japan) or specialty nonwoven raw materials (like short fibres for wetlaid specialty papers).

Japan Made-ups type TechTex trade: EU import position in Techtex made-ups (selected products only) is comparably weak.

Figure 222: Japan Made-ups type TechTex trade 2000-2014

		Japan N	/lade-ups Im	ports		
Area	2000	2005	kt 2010	2013	2014	2014 MUSD
China	129.22	215.36	250.15	285.40	299.84	2041.39
Viet Nam	5.10	5.90	8.49	16.99	26.90	218.42
Indonesia	12.22	10.01	11.44	13.25	13.12	90.18
Thailand	6.79	11.71	13.90	11.03	10.65	107.84
Rep. of Korea	6.04	2.28	1.63	2.37	3.39	65.71
Bangladesh	2.43	2.08	1.80	2.86	3.16	26.44
Other Asia, nes	3.39	2.91	1.90	2.35	2.56	36.15
India	1.13	0.83	0.70	1.70	1.79	20.23
Myanmar	0.22	0.30	0.45	1.11	1.33	19.73
EU-28	1.75	1.41	1.16	1.15	1.38	91.18
Others	8.61	5.79	3.56	4.42	4.31	63 80
Total kt	176.90	258.59	295.18	342.64	368.43	
Total MUSD	1137.01	1578.88	2246.90	2787.82	2781.08	

Source: UN Comtrade

The trade balance is nevertheless positive

Figure 223: Japan Made-ups type TechTex trade 2000-2014 (cont'd)

		Japan	Made-ups Ex	ports		
Area	2000	2005	kt	2013	2014	2014 MUSD
EU-28	0.73	0.93	2.65	2.26	1.61	40.02
Other Asia, nes	0.31	0.46	0.52	0.56	1.15	8.90
Viet Nam	0.02	0.04	0.40	0.36	0.82	9.55
China	0.75	1.31	1.57	0.92	0.67	23.52
USA	0.48	0.77	0.63	0.53	0.43	19.42
China, Hong Kong SAR	0.26	0.37	0.46	0.24	0.36	9.85
Belgium	0.09	0.46	0.40	0.34	0.31	5.09
Mexico	3.06	0.16	0.08	0.24	0.25	4.38
France	0.05	0.03	0.03	0.17	0.24	5.35
Thailand	0.78	0.67	0.35	0.30	0.24	5.03
Others	2.95	2.15	0.00	0.00	0.00	4.16
Total kt	9.48	7.35	7.09	5.93	6.07	
Total MUSD	158.73	145.26	199.68	144.58	135.27	

Japan Made-ups import: The main EU export product is garments (PPE), showing good growth between 2010 and 2014

Figure 224: Japan Made-ups import 2014

HS Code	Description	2014 Total Imports		lmp	2014 oorts from	EU28	Imports from EU MUSD		
			MUSD	kt	% import share	MUSD	2010	2013	2014
6305	Sacks and bags, of a kind used for the packing of goods, of all types of textile materials	153.37	468.05	0.09	0.06%	1.88	1.89	1.87	1.88
6307	Made-up articles of textile materials, incl. dress patterns, n.e.s.	122.69	1240.26	0.63	0.52%	23.93	16.25	19.40	23.93
611693	Gloves, mittens and mitts, knitted or crocheted Of synthetic fibres	34.85	184.93	0.01	0.02%	0.76	0.99	0.94	0.76
6203- 6204	Industrial and Occupational garments (Considered 11% of total trade	19.10	531.27	0.25	1.32%	27.89	25.32	31.36	27.89
6306	Tarpaulins, awnings and sun blinds; tents; sails for boats, sailboards or land craft; camping goods of all types of textile materials	15.14	104.95	0.18	1.20%	3.28	1.99	4.07	3.28
870821	Safety seat belts	13.82	165.44	0.05	0.39%	2.48	2.40	1.69	2.48
621010	Garments, made up of fabrics	9.46	86.19	0.03	0.27%	30.96	9.84	21.73	30.96
Total		368.43	2781.08	1.38	0.38%	91.18	58.67	81.07	91.18

## **End of Appendix 7:**

Japan market and trade in Technical Textiles

## **Start of Appendix 8:**

TechTex company profiles by country

- USA
- Brazil
- South Korea
- Japan

## Appendix 8: TechTex company profiles by country USA

## **Snapshot**

Name: Ethicon, Inc. Ownership: Johnson and Johnson

Headquarters : Sommerville (NJ), USA Revenue : n.a. Founded : 1949 Employees : n.a.

#### **Business overview**

- Ethicon operates as a subsidiary of Johnson and Johnson (U.S.). The company offers a wide range of products dealing with wound closure, wound management, aesthetic medicine, women's health, urology, and general surgery. It also offers a broad range of equipment in the wound closure segment, such as surgical staplers, sutures, and suturing devices
- The mother company, Johnson & Johnson, is engaged in developing and marketing healthcare products.
   The company operates in three major segments, namely consumer, pharmaceutical and medical devices with 139 manufacturing sites globally and over 250 companies in 60 countries

## Agrotech Builtech Clothtech Geotech Hometech Indutech Medtech Hygiene Mobiltech Packtech Protech Sporttech

## **Products offered**

- ETHICON synthetic absorbable sutures exhibit a range of different characteristics and capabilities. From VICRYL RAPIDE Suture for effective short-term wound support, to VICRYL Suture for medium-term applications
- Non-absorbable materials are used to suture tissues requiring long-term or permanent support in which
  the product strength is critical. They tend to be classed in two areas; whether they are monofilament or
  multifilament, and if they are natural or synthetic. ETHICON has a wide range of non-absorbable sutures to
  including the smooth PROLENE Suture and the superior strength of braided ETHIBOND Suture

	Recent developments								
March 2013	Prod. launch	Ethicon EMEA launched STRATAFIX™ Knotless Tissue Control Devices, it will provide surgeons more consistent control over every pass (through the tissue), and combine the strength and security of interrupted closure with the efficiency of continuous closure							
April 2013	Branding	The new Ethicon brand consists of a broad range of surgical solutions including stapling, energy and suturing devices. The launch of a new brand strategy will unify the brands of Ethicon, Inc. and Ethicon Endo-Surgery, Inc.							
Sept 2012	Expansion	Johnson & Johnson/Ethicon has expanded by, investing \$185 million in a plant expansion in Athens, GA, to boost its ability to make more surgical sutures. The company thus due to this expansion expected to add 75 additional jobs at the Athens, GA enterprise over the next few years							

Name: Demetech Corp. Ownership: Private / non-listed

Headquarters: Miami Lakes (Florida), USA Revenue: n.a. Founded: 1990 Employees: n.a.

- The U.S. Demetech Corporation is a manufacturer of surgical sutures, surgical staplers and blades
- Demetech produces both absorbable & non-absorbable surgical sutures and its products are certified by FDA, CE and ISO. The company maintains a distribution network in over 100 countries. The U.S. Small Business Administration's South Florida District awarded Small Business Exporter of the Year Award in 2011 to Demetech
- Demetech Corporation is a privately held company and financial information is not available in public domain. Hence, in-depth financial details are not available
- Demetech Corporation is engaged in design, developing, and marketing of sutures (both absorbable & non absorbable for wound closer as well as surgical stapler and blades). The company opted to grow inorganically by increasing distribution network for its products globally. In line with its strategy company signed an agreement with Markss Healthcare which is intended to increase company's market share and also strengthen its customer base in South-east Asia

	mer base in South-east Asia	·····							
	Segments								
Agrotech Builtech Clothtech Geotech Hometech Indutech Medtech Hygiene Mobiltech Packtech Protech Sp									
	Products offered								
Absorbable sutures DemeSORB DemeCRYL DemeQUICK	Non absorbable sutures	Surgical stapler  • DemeTECH Skin stapler							
DemeGUT     DemeGUT Plain     DemeDIOX     DemeCAPRONE	<ul><li>Deme LENE</li><li>DemeBOND</li><li>DemeDAC</li><li>DemeSTEEL</li></ul>	Surgical blades  • Disposable carbon / stainless steel surgical blade							
	Recent developments								
Oct. 2010 Agreemen	t Demetech signed an agreement with Macompany), to launch Demetech's suture import and market of Demetech's produ	in Sri Lanka. The MoU focused on							

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Name: Conmed Corp. Ownership: Public

Headquarters: New York (NY), USA Revenue: US\$ 719 million (2015)

Founded: 1970 Employees: 3,500

#### **Business overview**

- Founded in 1970 and headquartered at New York, the U.S. Conmed Corporation is a medical device company engaged in manufacture of surgical devices for minimally invasive procedures, surgical imaging including wound closure products and sutures
- The company operates through three business segments namely: Orthopaedic surgery, general surgery and surgical visualization. The company is also engaged in to research & development for the development of new products. In 2014, the company invested US\$27.8 million for R&D activities
- Conmed Corporation markets its product ranges globally (Direct as well as via distributors), spanning Europe, Asia-Pacific and Latin Americas, with its office presence in 16 countries apart from U.S.

# Agrotech Builtech Clothtech Geotech Hometech Indutech Medtech Hygiene Mobiltech Packtech Protech Sporttech

## **Products offered**

## Orthopaedics

- · HI-FI: High strength sutures
- · Shuttle Relay Suture passer
- · Suture Saver Kit
- · Blitz Suture Retriever
- Suture Tram: suture passer
- · Hawkeye Suture needle
- · Teaser Knot tier

## **Recent developments**

Nov. 2015 Acquisition

Conmed acquired SurgiQuest, a privately held medical device company for US\$ 265 million. Through the acquisition, the QirSeal System, developed by SurgiQuest for integrated access management technology for use in laparoscopic and robotic procedures becomes a part of Conmad's product portfolio

Name: Boston Scientific Ownership: Public

Headquarters: Marlborough (MA), USA Revenue: US\$ 8,068 million (2015)

Founded: 1979 Employees: 25,000

#### **Business overview**

- Boston Scientific Corporation is a developer, manufacturer and marketer of medical devices that are used in a range of interventional medical specialties
- The Company offers its products by seven core businesses: Interventional Cardiology, Peripheral Interventions (PI), Cardiac Rhythm Management (CRM), Electrophysiology (EP), Endoscopy, Urology and Pelvic Health, and Neuromodulation
- The Company operates through three segments: Cardiovascular, Rhythm Management and MedSurg. Its Cardiovascular segment consists of Interventional Cardiology and PI businesses. Its Rhythm Management segment consists of CRM and EP businesses. Its MedSurg segment consists of Endoscopy, Urology and Pelvic Health, and Neuromodulation businesses

# Agrotech Builtech Clothtech Geotech Hometech Indutech Medtech Hygiene Mobiltech Packtech Protech Sporttech

## **Products offered**

- · Endoscopy
- · Interventional cardiology
- Neuromodulation
- · Periphal interventions
- · Rhythm management
- · Urology and pelvic health

Recent devel	Recent developments							
March 2015	Acquisition	the company announced it would acquire Endo International Plcs urology business for at least US\$ 1.6 billion, expanding the company's health and prostate treatments						
June 2012	Acquisition	Boston Scientific officially acquired Cameron Health for a total sum of US US\$1.3 billion, paid out incrementally as various revenue milestones were achieved						
April 2006	Acquisition	The company acquired long-time competitor Guidant for US\$ 27.2 billion. The former Guidant was split between BSC and Abbott Laboratories						

Name: Kimberley-Clarke Corporation Ownership: Public

Headquarters: Irving (Texas), USA Revenue: US\$ 19,724 million (2014)

Founded: 1870 Employees: 42,500

- Kimberly-Clarke Corporation is the leading manufacturer of personal care, consumer tissue, and K-C professional products worldwide with manufacturing facilities in 35 countries and a commercial presence in 175 countries. The company's products are sold under well-known brands such as Kleenex, Scott, Huggies, Pull-Ups, Kotex and Depend, under three global business segments Personal Care, Consumer Tissue, and K-C Professional ("KCP")
- The company sells its products directly to warehouse clubs, mass merchandisers, supermarkets, drugstores, department stores, and other retail outlets, as well as through other distributors and e-commerce sites. It also sells products directly to office buildings, manufacturing, lodging, food service, etc.
- The company operates in highly competitive international and domestic markets against renowned branded products and low-cost private label products. The company is budding its operations outside the U.S., especially in developing markets such as Latin America, China, and Eastern Europe. R&D expenditures are directed towards new or improved personal care, tissue, wiping, and nonwoven materials

	. •		care, tissue, wiping			•	experiun	ures are		
Segments										
Agrotech Builte	ech Clothtech G	eotech Hometech	Indutech Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech		
Products offe	ered									
BLOCK-IT Fall	ultrav	iolet rays	abrics that shield v		·	•		metered		
SMS Lab Clothing KIMTECH PUR	SMS It is n fluids	nade up of prote or chemicals an ers security with	aminates fibre that ctive 3-layer SMS d offers exception exceptional filtrati	fabric. It p nal resistar	provides p	protection	from exp			
Recent devel	opments									
April 2015	Prod. launch	made with rap toward susta	ke Professional bidly renewable pl inable fibre manu lity and performan	ant fibre. T Ifacturing	This is the	company	y's new a	approach		
Dec. 2014	Investment	Kimberly-Clarke invested USD 28 million for a plant expansion in New Milford. This was done to expand its innovative product production for Kleenex and Huggies, especially in Australia and New Zealand								
Jan 2013	Expansion	•	Kimberly-Clarke installed state-of-the-art nappy and feminine care production lines in its Epping Mill factory in Cape Town, South Africa							
Sep. 2012	Agreement		ount Vernon, WA) support productio							

Name: E.I. Du Pont De Nemours & Company Ownership: Public

Headquarters: Wilmington (DE), USA Revenue: US\$ 34,723 million (2014)

Founded: 1802 Employees: 64,000

- E.I. Du Pont De Nemours and Company commonly referred to as DuPont provides science-based products & services, offering sustainable solutions for a better, safer, and healthier lifestyle. The company's product portfolio provides solutions to sectors such as agriculture, food, building & construction, communications, and transportation
- The company innovates and offers technical textile solutions for various industries such as automotive, agriculture, packaging, building & construction, and healthcare applications. DuPont works closely with apparel and textile manufacturers to understand the various areas of application for technical textiles; these include protection wear for firefighters, industrial workers, law enforcement, emergency response professionals, and military personnel
- The company mainly focuses on science-driven innovation to develop fabrics, fibres, and protective apparel. Some of the company's competitors are The Dow Chemical Company (U.S.), Bayer AG (Germany), Asahi Kasei Corporation (Japan), and Kimberly-Clarke Corporation (U.S.)

Segmen	its										
Agrotech	Builtech	Clothtech	Geotech	Hometech	Indutech	Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech

Products offered	d Commence of the Commence of
Sorona	DuPont Sorona is an automotive technical textile that has both the resiliency of nylon and the softness of polyester
Nomex	Nomex thermal-resistant products provide safety and security from fires, BLEVE fires, flash fires, and jet fires
Kevlar	Kevlar is a lightweight, durable, and strong material used to make clothing, accessories, and equipment that are safe and cut-resistant
Teflon	Teflon provides excellent resistance from high temperatures, chemicals, corrosion, and stress cracking
Tychem	Tychem is a chemical-resistant textile used in the petroleum, pulp & paper, etc.

Recent devel	opments	Recent developments								
May 2105	Partnership	DuPont and Reebok International Ltd. (U.S.) collaborate to develop, Kevlar for a new Reebok CrossFit Collection. Kevlar fibre is known for its extreme strength and durability								
June 2014	Prod. launch	DuPont Protection Technologies launched DuPont Kevlar XP for army and defence services. The product aims to provide high-level protection								
Nov. 2013	Prod. dev.	DuPont Protection Technologies launched the Next Generation of Innovations with DuPont Kevlar. It is an expansion in the range of protective solutions for the military, police, and security forces								
Sep. 2013	Prod. launch	DuPont announced the launch of DuPont Nomex MHP fabrics. They provide better protection from inherent and multi-hazardous activities. It is the latest breakthrough in flame-resistant innovations with comfort and durability								
August 2012	Acquisition	DuPont has signed an agreement to acquire the assets of BAE Systems Tensylon High Performance Materials, Inc. (U.K.)								

Name: Avintiv Inc. Ownership: Public

Headquarters: Charlotte (NC), USA Revenue: US\$ 1,880 million (2014)

Founded: 1992 Employees: 4,000

- AVINTIV Inc. (AVINTIV) is a leading global innovator and manufacturer of specialty materials, focused
  primarily on the production of fabric for the hygiene, healthcare, wipes, and technical specialties, building,
  and geo-synthetics markets. With one of the largest global platforms in the industry, AVINTIV operates
  manufacturing and converting facilities across nine countries. AVINTIV technical specialties provide a broad
  range of process technologies and a variety of fibres and resins for many applications. The company was
  formerly known as Polymer Group, Inc. (PGI), and changed its name to AVINTIV in June 2015
- AVINTIV has operations across all regions such as North America, South America, Europe, and Asia, with 22 manufacturing facilities in 14 countries spread across these regions. Thus, the company has a strategically competitive advantage in matching needs of customers across the globe
- Polymer Group Inc. has many competitors in the technical textiles industry; these include E. I. du Pont De Nemours and Company (U.S.), Ahlstrom Oyj Company (Finland), Fiberweb plc (U.K.), Mitsui Chemicals, Inc. (Japan), and Toray Saehan, Inc. (Tokyo)

Segments		
Agrotech Built	tech Clothtech (	Geotech Hometech Indutech Medtech Hygiene Mobiltech Packtech Protech Sporttec
Products off	ered	
SuperSoft		product superior softness, comfort, and hygiene, and is hence used in hygiene healthcare-related products
Typar		100% polypropylene spunbond nonwoven. It offers excellent uniformity, high ngth, and durability
Reemay	This	technical fibre offers superior strength, stiffness, purity, and uniformity
DiamondWeb	) This	is a flexible, drapable fabric with high strength and heat resistance properties
Fiberweb Mel	tblown It off	ers exceptional insulation, softness, and filtration characteristics
Recent deve	lopments	
Feb. 2014	Investment	Polymer Group Inc. invested approximately USD 8 million to upgrade machinery and expand its manufacturing plant in Waynesboro, U.S.
Sep. 2014	Expansion	Polymer Group Inc. enhanced its Spinlace technology at its plant in Benson, NC. It enables the company to produce and deliver innovative nonwovens
Jan. 2014	Agreement	Polymer Group Inc, signed a definitive agreement with one of its main rivals, Companhia Providencia Industria e Comercio, a São José dos Pinhais, a Brazil-based manufacturer of nonwovens. A part of PGI's global growth strategy, this deal enabled the company to enhance its presence into Brazil
Nov. 2013	Acquisition	Polymer Group completed acquisition of Fiberweb as part of the company's strategy of accelerated and sustainable growth, bringing both companies into new market segments and expanding PGI's global footprint

Name: Durafiber Technologies Ownership: Sun Capital Partners
Headquarters: Huntersville / Charlotte (NC), USA Revenue: US\$ 300 million (2015)

Founded: 1965 as Fiber Industries Employees: n.a.

#### **Business overview**

- DuraFiber Technologies is a leading producer of polyester fibres and fabrics for industrial and tire reinforcement applications
- With manufacturing operations in North America and Europe, DuraFiber provides innovative product solutions, technical support, and supply chain expertise to customers around the world
- After the sale of our Asia operations in early 2015, the company was rebranded from Performance Fibers to DuraFiber Technologies

## Agrotech Builtech Clothtech Geotech Hometech Indutech Medtech Hygiene Mobiltech Packtech Protech Sporttech

## **Products offered**

Tire reinforcements

Sewing thread

Coated fibres and fabrics

Single end cord

Engineered reinforcements

Specialty yarn

Narrow fabrics

Treated fabrics

· Rope and cordage

Passenger cars, Sport utility vehicles, light trucks, motorcycles, etc.

Embroidery, outdoor fabrics, awnings, banners, flags, outdoor signs, etc.

Marine fabrics, roofing, canopies, upholstery, tents, tarps, sleeving, etc. Carcass reinforcement, overlay in high-performance tires, air springs, etc.

Conveyor belts, V-belts and poly-rib belts, industrial tubing, etc.

IFR PET, Multoplex, Nylon 6, PBT, PEEK, PEN, PPS, etc.

Cargo tie down wraps, slings, tow straps, luggage, etc.

Tire carcass and overlay reinforcement, conveyor belts, etc.

Boating/marine lines and rigging, mooring lines, fishing lines and netting, etc.

#### **History**

- DuraFiber Technologies has a distinguished heritage that traces back to AlliedSignal, Honeywell and the very invention of textile reinforcement solutions
- Although born in early 2015 out of the divestment of operations in Asia, DuraFiber Technologies is the outcome of successful consolidation and turn around of Performance Fibers
- DuraFiber Technologies operates in America and Europe and has operated in the same regions as a consolidated entity since 2004 when the business was sold by Honeywell International to Sun Capital Partners.Inc.
- · Initially, the fibres group produces nylon for use in apparel and industrial applications
- In the early 1970s, production of polyester began and in the years that followed came product improvements and innovation, as well as domestic and international expansion

## Brazil

## **Snapshot**

Name: Embrasatec Ind. E Com de Embalagens Ownership: Private / non-listed

Headquarters : Sumaré (SP), Brazil Revenue : n.a.
Founded : 1973 Employees : 800

## **Business overview**

- Embrasa is a Brazilian group that began operations in 1973 in the city of Campinas / SP producing polyethylene packaging
- Seeking diversification, the company began in 1980 the raffia production activities (braided polypropylene tapes) and has currently 3 units in Sumaré / SP, Catalan / GO and Artur Nogueira / SP, with approximately 800 employees
- It started production of FIBC in 2004 and became one of the largest companies and a reference in innovation
- Third generation family business, the company has established itself as an innovation-driven company for packaging solutions serving several important sectors

## Segments

Agrotech	Builtech	Clothtech	Geotech	Hometech	Indutech	Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech
					6						

## **Products offered**

Segments covered include solutions for the following sectors :

- · Animal nutrition
- Fertilizers
- Flour and meal
- Mining
- Chemicals
- Rafia
- Big bags
- Construction

## Recent developments









Name: Sanduy Ownership: Private / non-listed

Headquarters: Embu (SP), Brazil Revenue: n.a.
Founded: 1966 Employees: >500

#### **Business overview**

- · Sansuy was founded in 1966 by Japanese immigrants dedicated to agriculture
- In 1974 Sansuy, associating with Japan's Totaku, form Kanaflex, a manufacturing company of telecommunication ducts, chemical industry, civil construction ad agriculture
- The first major step was the development of high pressured hoses for agricultural spraying
- Over time, with the increase of its investments in technology and structure, it started servicing several industry sectors
- Currently Sansuy has a production capacity of 38,000 tons/year, industrial units in São Paulo and Bahia and
  offices in São Paulo, Paraná, Rio Grande do Sul, Minas Gerais, Rio de Janeiro, Goiás, Mato Grosso,
  Pernambuco, and Bahia
- The result of all the effort is the conquest of important certifications like ISO 9002, QS 9000, ISO 9001:2008, ISO TS 16949:2009, the South American leadership in manufacturing PVC (Polyvinyl Chloride) laminates and the increase of its exports

## **Segments**

Agrotech	Builtech	Clothtech	Geotech	Hometech	Indutech	Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech

## **Products offered**

Segments covered include solutions for the following sectors:

- · Agribusiness (Warehouse and hangar, storage, tent, static coverage, horticulture, irrigation, etc.)
- Architecture and construction (Water storage and transportation, floor, pools, underground works, etc.)
- Automotive (Maritime hood, internal lining, tarpaulins)
- Communication (Banners, panels, forepart facades)
- Environment (Landfill, sewer and effluent treatment, lakes and vinasse channels)
- · Mining (Storage, venting, etc.)
- etc.















Name: Maccaferri Latin America Ownership: Private / non-listed
Headquarters: Jundiai (SP), Brazil Revenue: US\$ 560 million (2015)

Founded: 1966 Employees: 2,830

#### **Business overview**

- · Maccaferri Latin America was founded In 1974 with a first plant established in Brazil
- Today the group have factories also in Argentina, Peru and Costa Rica, maintaining technical and commercial units in other Latin American countries
- The group operates in several market segments providing solutions for environmental engineering, structural engineering, wires and fences
- The staff with over 120 engineers assists clients through partnerships, seeking and finding solutions for technical-economical high performance and using the technologies provided by the company
- Maccaferri is a point of reference in Latin America for DT mesh solutions, but the recent diversification process has shown a strong increase in market share also in Geosynthetics
- What differentiates Maccaferri Brazil most from its competitors in the Geosynthetics market is the fact that the group operates with its own manufacturing locally
- · Having two laboratories allows Maccaferri to show clients "hands-on" the benefits of their products

## **Segments**

Agrotech	Builtech	Clothtech	Geotech	Hometech	Indutech	Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech

## **Products offered**

Segments covered include solutions for the following sectors :

- · Agribusiness (nets, drainage, erosion control, hydraulic works, soil stabilisation & pavements)
- Building, Industry, Sport (waterproofing, synthetic grass, etc.)
- · Coastal & River Control works (engineering geosynthetics, river bank protection, reservoirs, etc.)
- Environmental protection (MacLine® impermeable liners, MacGrid® geogrids to reinforce soil, etc.)
- Mining (MacRES® reinforced soil structures, Rockfall protection embankment, etc.)
- Oil & gas / energy (geogrids and geotextiles to reinforce access tracks, etc.)
- · Transportation infrastructure
- Urban infrastructure













Name: Nortène Ownership: Private
Headquarters: Alphaville-Barueri (SP), Brazil Revenue: n.a.
Founded: 1981 Employees: n.a.

#### **Business overview**

- Nortène began its activities in Brazil in 1981, pioneering the supply of plastic polyethylene screens, tarps for construction industry, and agricultural films
- With an entrepreneurial spirit, Nortène has expanded and strengthened its share on Brazilian market through the acquisition of Engepol, a forerunner industry in manufacturing of geomembrane reservoirs in Brazil, and Santeno, manufacturer of a unique polyethylene hose for micro-sprinkling irrigation
- The company commercializes its products throughout Brazil and abroad and it is experiencing a period of continuous growth, by increasing its products portfolio and modernizing its quality laboratory

## **Segments**

Agrotech Builtech Clothtech Geotech Hometech Indutech Medtech Hygiene Mobiltech Packtech Protech Sporttech

## **Products offered**

- Geosynthetic HDPE geomembrane, reservoirs, geocomposites for drainages, geotextiles, etc.
- Civil construction Tarp, woven fabrics, extruded screen concrete reinforcing, etc.

## **Recent developments**







Name: Rafitec Ownership: Private / non-listed

Headquarters: Xaxim (SC), Brazil Revenue: n.a.
Founded: 1995 Employees: 1,100

#### **Business overview**

- The company is engaged in export, manufacturing and wholesale trade of bags of raffia, yarn, polypropylene and polyethylene films
- All machines used in Rafitec process are latest equipment; the PP extruders imported from Austria with
  active matrix and radioactive measurement ensure better stability of film thickness as well as looms, printers
  and cutting and sewing machines completing a structure that guarantee the quality of the product from the
  beginning to end
- Rafitec is organised with three product lines namely sacks, big bags and fabrics

## **Segments**

Agrotech	Builtech	Clothtech	Geotech	Hometech	Indutech	Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech
					Č.						

## **Products offered**

Sacks Stitche raffia / Welded raffia / Raffia + pp film

Big bags Big bag / caught big bag / Big bag for dangerous good

Fabrics Light and heavy fabrics







Name: Cordoaria Sao Leopoldo Original Ltda Ownership: Private / non-listed

Headquarters : Sao Leopoldo (RS), Brazil Revenue : n.a. Founded : 1929 Employees : n.a.

## **Business overview**

- · CSL is a genuine Brazilian company, internationally recognized as a leader synthetic rope manufacturer
- It started began manufacturing cables and natural fibre ropes (such as jute and sisal)
- It was important stage since it marked CSL's entrance into the fishing market, through sisal twisted ropes, and later on offering synthetic fibre ones
- The company is organised with 6 product lines namely marine, yachting, fish, off-road, height and multipurpose

## **Segments**



## **Products offered**

- · Twisted 3-strand
- · Sportive double-braided
- · Braided 8-strand
- · Braided 12-strand
- · Marine double-braided
- Circular







Name: Pollibox Ecoadesivos Ownership: Private / non-listed

Headquarters: Novo Hamburgo (RS), Brazil Revenue: n.a. Founded: 1929 Employees: n.a.

## **Business overview**

- · Pollibox is a Brazilian company, producer of film adhesives and technical textiles
- The company is an expert in bonding processes for textiles, shoes, labels, apparel, carpets, etc.

## **Segments**

Agrotech Builtech Clothtech Geotech Hometech Indutech Medtech Hygiene Mobiltech Packtech Protech Sporttech

## **Products offered**

Adhesive film
 Adhesive films in rolls, EVAs, hot melts, CoPa, TPUs, PUs, etc.

All film adhesives are produced in rolls, for a faster lamination, without waste, solvent

free, no bad smell, etc.

All kinds of textiles, with film adhesive laminated on 1 side







Name: Schwanke Industrial Ownership: Private / non-listed

Headquarters : Blumenau (SC), Brazil Revenue : n.a.
Founded : 1948 Employees : n.a.

#### **Business overview**

- The first business activities Schwanke began in 1948, with a general goods store in the Asylum neighbourhood Blumenau SC
- In 1951, it creates the Schwanke Industrial benefiting and transforming textile waste raw material for quilts factories, upholstery and also tows for industrial cleaning. For decades these activities boosted the growth of the company
- Today, the company has two major divisions: industrial and consumption
  - 1. The Industrial Division serves the productive sector in the footwear sectors, automotive, filter elements, among other sectors. The main products offered for this Division are non-woven, used as raw materials and finishes in its operations
  - 2. The Consumer Division is divided into two main channels: Direct and Indirect

## Segments

Agrotech	Builtech	Clothtech	Geotech	Hometech	Indutech	Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech

## **Products offered**

- Alklin: Mops, wipes, micro fiber fabrics, etc.
- · Alklin Pro: Cleaning fabrics in rolls, etc.
- · Autoklin: Wipes and cleaning products for cars
- · Brilhex : Wipes and sponges









## **Snapshot** Private / non-listed Name: Conteflex Ownership: Headquarters: Feira de Santana (BA), Brazil Revenue: n.a. Founded: 1998 Employees: 1,200 **Business overview** • Producer of FIBCs in Brazil **Segments** Builtech Medtech Agrotech Clothtech Geotech Hometech Indutech Hygiene Mobiltech Packtech Protech Sporttech **Products offered** Big bag 4 straps 1 ponta Magicont Illustrations New production unit in Novo Hamburgo (RS) to improve customer service in the 2015 Expansion South of Brazil and in Mercosur 2012 Expansion Increase of the Viradouro-sp unit capacity 2004 Expansion The company established a new unit in Feira de Santana (BA) in order to improve customer service and market share in the North East of Brazil

## South Korea

## **Snapshot**

Name: Duksung Co., Ltd. Ownership: Private

Headquarters: GyeongGi-Do, South Korea Revenue: US\$ 100 million (2014)

Founded: 1966 Employees: n.a.

## **Business overview**

· First company in Korea to start producing synthetic leather

Inospo

- Self-supply of synthetic resin, Duksung provides synthetic resin for other companies in the industry which constitutes approx. 20% of the company's sales
- Duksung will also develop eco-friendly products free of organic solvent and industrial materials and carry out continuous to develop the 3rd synthetic leather
- Apart fom the shoe materials, Duksung also produces textile-based materials for furniture and gloves at its Suwon factor
- The company includes 7 SBUs namely chemical products, artifical leather, synthetic resin, Applied superconductivity, electronic materials, multi-function high technology textile and polymer

## Segments

Agrotech	Builtech	Clothtech	Geotech	Hometech	Indutech	Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech

## **Products offered**

· Functional fabric

Fashion fabric Inotex Advanced leather looking fabric / artificial suede fabric / High density and compact fabric in cotton and linen / luxury velveting / diverse design printing with multi-process / shiny and metal look

Waterproof with PU membrane / Tailor-made controlled moisture

vapour permeability

IndoDry 0% wetting polypropylene used / 2-layer combined structure / stretch

rich knitted fabric / anti-microbial function / anti-UV

micro-fibre / FR fabric / Premium artificial suede fabric







Name: Saenal Tech Tex Co., Ltd Ownership: Private
Headquarters: Kyungbuk, South Korea Revenue: n.a.
Founded: 1988 Employees: n.a.

#### **Business overview**

- The company was founded as weaver specialized in technical fabric and started production of PES Base Fabric for Coating and Geotextiles
- The company diversified in the mid-90's in the production of car airbag fabric
- In 2004, Saenal established a production unit in Jiangyin, China
- The company is now a specialist of OPW type side curtain airbag

## Segments

Agrotech	Builtech	Clothtech	Geotech	Hometech	Indutech	Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech

## **Products offered**

Base fabric for coating
 Tarpaulin, Truck cover, awning, safety mesh

Geotextile Geo-mat, fabric form

Filter cloth
 Woven fabric used for needle-punched filter fabric

Car airbag fabric Driver side, passenger side, side impact, side curtain airbags

Conveyer belt fabrics
 Chafer, conveyer belt, PES mono belt fabric, etc.

Technical yarns
 Twisted / cabled high tenacity filament yarn used for broad fabrics, slings,

hoses, cables, etc.

Warping



Weaving



Twisting



Name: Duek Keum Ownership: Private
Headquarters: Seoul, South Korea Revenue: n.a.
Founded: 1987 Employees: n.a.

#### **Business overview**

- Duek Keum is a global textile company specialized in technical & protective fabric for workwear as well as sportswear
- · Top-class direct coating and transfer laminating facilities in Korea
- · Duek Keum has representative offices in Russia, Poland, Belarus and Ukraine
- The company is organised in 4 SBUs :
  - 1. Classic workwear fabric
  - 2. Fire protective fabric
  - 3. Medical and cleanroom fabric
  - 4. Military & police fabric

## **Segments**

Agrotech	Builtech	Clothtech	Geotech	Hometech	Indutech	Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech

## **Products offered**

- · Coated textiles
- · Textiles for professional and protective clothing
- · Textiles for sport and active wear
- · Protective clothing
- · Heat protection clothing
- Weatherproof and winter-proof clothing
- · Textile reinforced armouring
- · Sportswear

## Illustrations

## CW028 Multinorm



- Fabric content : 98%
   Polyester and 2%
   Carbon conductive fibre
   (Belltron) + 100% FR PU
   Breathable coated with
   Teflon finish
- 2. Weight of fabric : 250~260gr/m²
- 3. Width of fabric : 150cm

## FP056 Proguard



- Fabric content : 94% meta-Aramid, 5% para-Aramid and 1% carbon conductive fibre
- 2. Fabric weight : 220gr/m²
- 3. Fabric width: 150cm

## CW229 Hi-Vis



- Fabric content : 100%
   Polyester fabric + 100%
   PU breathable membrane
- 2. Fabric weight : 185gr/m²
- 3. Fabric width: 150cm (145cm effective)

## FP037 Protex Multinorm



- Fabric content : 60%
   Protex, 38% Cotton and
   Carbon conductive
  fibre
- 2. Fabric weight : 280gr/m²
- 3. Fabric width: 150cm

## CW032 Hi-Vis



- Fabric content :
   100% Polyester +
   100% PU breathable
   membrane
- 2. Fabric weight : 210~220gr/m²
- 3. Fabric width : 150cm(142cm effective)

Name: Wonpoong Corporation Ownership: Private
Headquarters: Seoul, South Korea Revenue: n.a.
Founded: 1973 Employees: n.a.

## **Business overview**

- Wonpoong supplies various products, which are applicable to industrial, building, and real-life fields, to over 70 countries in the domestic and overseas markets
- These products include high functioning industrial coated material; Superguard, Korea's first KS-approved roofing membrane; Innogreen, the internationally patented, 100% recyclable TPO sign media; a special oil fence fabric, inflatable boat fabric for leisure, and a potable water tank fabric

## **Segments**

Agrotech Builtech Clothtech Geotech Hometech Indutech Medtech Hygiene Mobiltech Packtech Protech Sporttech

## **Products offered**

SuperTarp (General Tarpaulin)
 Various special treatments are available and products width

is available up to 3.2meter in width

Geoloy 530/328
 High molecular-weight polymer classified as Ethylene interpolymer

alloy unlike conventional plasticizers used in PVC

· Drinking Water Tank Fabric

• Superguard (TPO Roofing Membrane) Outdoor, indoor roofing membrane with superior pigment such as UV

stabilizer, anti-fungicide, FR and discoloration

• EFM (Eco Friendly Material) TPU (Thermoplastic Poly Urethane), EVA (Ethylene Vinyl Acretate)







Name :You Sung IndustrialOwnership :PrivateHeadquarters :Daegu, South KoreaRevenue :n.a.Founded :1999Employees :n.a.

## **Business overview**

- Manufacturer of industrial knit & woven fabrics with Karl Mayer & Smit Sulzer Rapier, located at Daegu, Korea
- You Sung has been established in 1999 and been a major supplier of material for PVC coating and laminating for local and oversea markets
- · The company offers 5 different product lines :
  - 1. Knitted fabrics made of other fibres
  - 2. Coated textiles
  - 3. Laminated textiles
  - 4. Laminating and coating materials
  - 5. Advertising materials

## **Segments**

Agrotech	Builtech	Clothtech	Geotech	Hometech	Indutech	Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech

## **Products offered**

Kit fabrics
 You Sung Industrial produces knit fabrics up to 245 inch width that are used for the

reinforcement of plastic and rubber for end uses such as banner, tarpaulins, roofing, signboard, awning, mesh and base fabrics for adhesive tapes

You Sung Industrial produces knit fabrics up to 183 inch width that are used for the

reinforcement of plastic and rubber for end uses such as truck cover, tarpaulins,

roofing, geotextiles, awning, mesh and filter cloth









Name: Kolon Fashion Materials Ownership: Kolon Indutries Inc.

Headquarters: Gwacheon, South Korea Revenue: US\$ 323 million (2015)

Founded: 2008 Employees: 380

#### **Business overview**

- · Kolon Fashion Material, Inc. engages in the manufacture and sales of chemical fibers, yarns and fabrics.
- The Yarn business provides yarns made of nylon and polyester through its brands including UVEIL, Mimofil, Cella, and DuraMax.
- The Fabric business provides woven, knit, and functional textile materials such as breathable waterproof and nanofiber

## Agrotech Builtech Clothtech Geotech Hometech Indutech Medtech Hygiene Mobiltech Packtech Protech Sporttech

## **Products offered**

Cypan is a form of spandex, single knitted material produced by applying new synthetic fibre

to yarn processing technology to knitted material for use in gym or for yoga

Hipan Stretch material containing Spandex. Can be used to make almost all types of clothes

including formal suits, blouses, swimwear, jackets, coats and suede

NeoVENT Excellent waterproof and moisture permeability functions for sportswear

Nanopora Next-generation material in the field of sports and outdoor activities with excellent moisture-

permeable, waterproof function and freshness features

X2O High-density, moisture-permeable and waterproof PES material

Polarlon Highly functional fleece

## **Recent developments**

2013 Expansion Complete construction of Yangju Finance

2012 Finance Listed on KOSPI

2008 Organisation Physical separation of thread business, founded Kolon Fashion Material / Merged

with fabric business Kolon Hitex

Name: Samyang Corporation Ownership: Listed

Headquarters: Jongno-gu (Seoul), South Korea Revenue: US\$ 126 million (2015)

Founded: 1924 Employees: n.a.

#### **Business overview**

- Samyang Corporation is a Korea-based company principally engaged in the food and chemical businesses.
- Along with its subsidiaries, the Company operates in two business segments: food segment, which produces sugar, wheat flour, wheat flour, pre-mix products, oil, cooking syrup and others, and chemical segment, which manufactures engineering plastic products, fibres used as industrial materials, polyethylene terephthalate (PET) bottles, touch panel materials, ion exchange resins and others
- The Company distributes its products within domestic market and to overseas markets
- On July 1, 2013, the Company merged with Samyang EMS Co., Ltd., a Korea-based company mainly engaged in the manufacturing and sales of semiconductor and electric materials
- The company was formerly known as Samsu Company and changed its name to Samyang Corporation in 1931. Samyang Corporation was founded in 1924 and is based in Seoul, South Korea. Samyang Corporation operates as a subsidiary of Samyang Holdings Corporation

#### **Segments**

Agrotech	Builtech	Clothtech	Geotech	Hometech	Indutech	Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech

#### **Products offered**

High-tenacity yarn Developed for especially stronger industrial use than for textile fibers, high tenacity

yarn range from 100 to 8000 denier, including its most demanded 1,000 denier

Spunbond Samyang Spunbond, primarily made from polypropylene, has the significant growth

potential in broad applications, including hygiene, household, furniture, bedding,

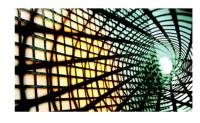
agriculture, horticulture

Geogrid Geogrid is used in civil engineering reinforcement applications. Produced in both

textile and extrusion types, applications include retaining walls, slope reinforcement,

road reinforcement, and soft ground reinforcement

Monofilament Single-strand fiber with a diameter over 0.1 mm







Name: Gumho NT Ownership: Public / Listed

Headquarters: Gumi-si, South Korea Revenue: US\$ 45 million (2014)

Founded: 1979 Employees: n.a.

#### **Business overview**

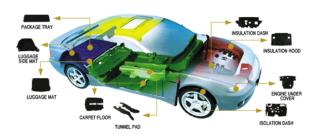
- Gumho N.T. Co., Ltd. engages in manufacturing and distribution of non-woven fabrics used in interior furnishings for automobile, interior decoration and industrial use
- It provides non-woven fabrics for interior furnishings of automobiles; sound-absorbing non-woven fabrics that are used as engine covers, trunk trims, wheel covers, engine hoods, and other anti-noise accessories; and non-inflammable non-woven fabrics for hospitals and lodging industries
- It primarily exports its products to Japan, the United States, South America, India, the Slovak Republic, China, Russia, and others. The company was formerly known as SamChang Textile & Chemical Ind., Co. and changed its name to Gumho N.T. Co., Ltd. in July 2001. Gumho N.T. Co., Ltd. was founded in 1979 and is headquartered in Gumi, South Korea

## **Segments**



## **Products offered**

- · Nonwoven fabric for interior furnishings of automobile
- · Nonwoven fabrics for construction materials
- Regular nonwoven fabrics



### Japan

#### **Snapshot**

Name: Komatsu Seiren Co., Ltd. Ownership: Public

Headquarters: Ishikawa, Japan Revenue: US\$ 373 million (2015)

Founded: 1943 Employees: 1,250

#### **Business overview**

- Komatsu Seiren is a leading fabric manufacturer with diverse business domains ranging from fashion to nanotech materials, which are based on dyeing
- The company operates in a wide range of fields, including the field of clothing such as fashion and sports garments, where it supplies products to leading overseas brands, the field of materials such as medical, architectural, and electrical materials, and the field of advanced materials centred on eco-friendly materials such as carbon fibres and ultra-foam ceramic building materials
- The company is organised in three departments namely :
  - 1. Advanced Fabric Department
  - 2. Advanced Film and Film Fabric Department
  - 3. Product Manufacturing Department

# Agrotech Builtech Clothtech Geotech Hometech Indutech Medtech Hygiene Mobiltech Packtech Protech Sporttech

#### **Products offered**

Fashion Coats, blousons, jackets, shirts, blouses, T-shirts, cut and sewn, tops, etc.

Sports Outdoor wear, outdoor shoes, outdoor gloves, skiing and snowboarding clothing, etc.

Medical Bed sheet covers for nursing care, adult diapers, baby sheets, corsets, and adhesive plasters

Electrical electromagnetic shields, wave absorbers, and organic EL sealants

Automobile Car seats and car seat covers, car mats, and ceiling materials (for cars)

Housing Bedding, curtains, sofas, chair upholstery, cushions, and wallpaper

Ecological Adjuvant for greening without irrigation, ceramics for roof greening and wall greening, etc.

Recent de	Recent developments						
2015	Alliance	Comprehensive alliance with KOLON FASHION MATERIAL, INC. for fabric business expansion					
	Alliance	Business partnership with Daiwa Lease Co., LTD for environment symbosis business expansion					
	Prod. dev.	Developed a environmentally-conscious hybrid fabric, ONIBEGIE (for PES)					
2014	Prod. dev. Prod. dev.	Developed a environmentally-conscious hybrid fabric, ONIBEGIE Developed a green wall system that brings fresh light and wind, GREEN LOUVER					
2013	Alliance Strategy	Comprehensive alliance with Limonta SpA  Merge of KS DYEING & PRINTING Co.,LTD and K'S TEC Co.,LTD and form a new company Komaxon Co., LTD					
2012	Acquisition	Acquisition of Pazzo Co., Ltd.					

Name: Hiraoka Ownership: Private
Headquarters: Tokyo, Japan Revenue: -

Founded: 1902 Employees: <500

#### **Business overview**

- Hiraoka & Co. Ltd. is the prominent name engaged in manufacturing, supplying and exporting a qualityassured range of Architectural Membrane & Structure Fabrics and Eliminating Meshes
- · HIraoka offers various types of membranes for tension structures
- Especially, PVDF-FL (PVDF Film Type) and SX Series (Transparent Series) are attractive membranes for sophisticated designs
- The company also manufactures mesh products. The range of products is widely used in poultry, agro & dairy farming, among other sectors. These meshes are highly demanded in the market for their smooth finish, light weight and excellent breathability

#### **Segments**

Agrotech Builtech Clothtech Geotech Hometech Indutech Medtech Hygiene Mobiltech Packtech Protech Sporttech

#### **Products offered**

#### Architecture

- Architectural Structures Membrane
- · Membranes For Tent
- Membranes For Modular Tensile Structures
- Membranes For Awning & Canopies
- Constructive Membrane

#### Eliminating mesh

· Odour eliminating mesh

#### Architecture structure fabrics

- · Architectural Structure Fabrics
- · Structural Fabrics
- · Odour Eliminating Fabric
- · Semi Transparent Fabric
- · Fabric Combinations
- · Weather Protection Fabric
- SAC Fabric

#### Illustrations

PVDF-FL Series



102T-FL (Type I) 212T-FL (Type-II) 313T-FL (Type III) 412T-FL (Type-IV) G3500-FL (Glass Cross) Transparent Series



SX-4180 65% Light Transmission SX-1800-H 62% Light Transmission SX-1800-C 54% light Transmission SX-1800-H Semi-transparent membranes



102T(SAC) 40% Light Transmission 212T(SAC) 35% Light Transmission 313T(SAC) 30% Light Transmission Translucent



104T Weight 635g 102T Weight 800g 212T Weight 940g 313T Weight 1100g 412T Weight 1450g Opaque (block out)



Type I: 102T(BP), 102T(B) Type II: 212T(BP), 212T(B) Type III: 313T(BP). 313T(B)T Type IV: 412T(BP), 412T(B)

Name: Achilles Corporation Ownership: Private

Headquarters: Tokyo, Japan Revenue: US\$ 863 million (2015)

Founded: 1947 Employees: 1,350

- Achilles Corporation is engaged in the manufacture and sale of shoes, plastic products and industrial materials
- The Company operates in three business segments namely :
  - 1. the Shoes segment offers shoes products,
  - 2. the Plastic Products segment offers vehicle interior materials, general leather, synthetic leather and laminates, films, construction materials and coated fabrics,
  - 3. the Industrial Materials segment offers urethane, thermal insulation materials, industrial materials and shock absorbers
- The Company had 29 subsidiaries and four associated companies

Segme	ents										
Agrotecl	h Builtech	Clothtech	Geotech	Hometech	Indutech	Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech
Produ	cts offered	l									
Achilles Vinistar Super Achilles Heat Shielding			Filn	nsparent f n absorbir most of U	ng around	1 50% of	IR (Infrar		o keep co	ol inside	and also
Achilles Tarpaulin  Achilles Vinistar Extruded			stre high	ngth poly	ester scri arent, ex	m for Higl truded fle	h Speed	Roll-up Do	aminated voor applicated h	ation	
Achilles	s Oreru Cry	/stal		Accordion type foldable crystal clear antistatic curtain							
Illustra	itions										
2015	Relocatio	n Th	e head of	ffice is rel	ocated to	Kita-shin	juku, Shii	njuku-ku,	Tokyo		
2009	Alliance		rtnership hilles sho		signed wi	th ITOCH	U Corpoi	ration for "	'SYUNSO	KU" bran	d of
2008	Expansio	n As	ales offic	ce of Achil	les USA,	Inc. oper	ns in Detr	oit, USA			
2008	Expansio		Achilles Advanced Technology Co., Ltd. is established in Taiwan to meet dem from the ever-expanding semiconductor market			demands					
2007	Certificat	on Ac	Achilles, as a whole business, acquires ISO9001 certification								
2007	Investme						-		ikaga Fac	•	

Name: Asahi Kasei Corporation Ownership: Public

Headquarters: Tokyo, Japan Revenue: US\$ 22,160 million (2014)

Founded: 1922 Employees: 30,300

- Asahi Kasei Corporation is the leading manufacturer of apparel material & products, technical textiles & nonwovens, plastic material, chemicals, and construction material. In 2015, the Asahi Kasei Group of companie—Asahi Kasei Trading Co., Ltd., Asahi Kasei Intertextiles Corporation, and Asahi Kasei Commerce Co., Ltd.—merged to form a new entity, "Asahi Kasei Advance Corporation", improve the company's operations and promote business, globally
- · Asahi Kasei has nine core operating companies, with seven operating segments
- Asahi Kasei has a presence in Europe, North America, the Middle East, and Asia. The company's technical
  textiles business deals with a wide range of materials and related products such as cotton, yarns, textiles,
  and processed products. The group is highly focused on new product development by striving hard towards
  their research & development activities and innovations

	o.							
Segments								
Agrotech Built	ech Clothtech	Geotech Hometech	Indutech Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech
Products offe	ered							
Tyvek		vide protection aga cesses	ainst hazardous m	aterials u	sed during	g manufac	turing	
Cubit	It is	3-dimensional ho	neycomb structure	e knitting r	naterial u	sed in car	seats	
Lamous		s exceptional dime ports wide range o	-		al strengt	h, and we	ear resis	tance. It
PES Polyamic	de mesh It is	a mesh fabric of n	nonofilament yarn	used for	tea bags a	and filters		
Recent devel	lopments							
July 2015	Expansion	cellulose non	Fibers plans to co woven fabric in No Fibers to better me	beoka, M	iyazaki, J	apan. This		
June 2015	Prod. dev.	Asahi Kasei ( (PCD) and a	Asahi Kasei developed a new production line for Duranol polycarbor (PCD) and a second line for Duranate hexamethylene diisocyanate based polyisocyanate at its plant in Nantong, China					
March 2015	Expansion		Medical plans to co nembranes for Pla				_	
April 2013	Expansion	hexamethylen	Chemicals announ ne diisocyanate (H company's positio	DI) plant's	s producti	on capaci	ty. This w	

Name: Mitsui Chemicals, Inc. Ownership: Public

US\$ 15,501 million (2014) Headquarters: Minato-tu, Tokyo, Japan Revenue:

Founded: 1997 Employees: 14,270

- · Mitsui Chemicals, Inc. is one of the leading global chemical manufacturing companies. The company, through its technology and research & development influences the market for the automobile, electronics, general commodities, healthcare, foods, housing, and energy industries worldwide
- · Mitsui Chemicals, Inc. deals in nonwovens and synthetic fibres that are intertwined to form a fabric. These fabrics are different from regular fabrics, paper, or films. The company heavily invests in research & development in the performance materials business which comprises higher performance polymers, elastomers, films, parts, systems, and solutions. This improves the uniqueness, functionality, and profitability of its offerings
- The company has its global presence in 24 countries across North America, Europe, Asia, and Latin

	America. The company faces stiff competition from local as well as global players such as E.I. du Pont De Nemours and Co. (U.S.), Kimberly-Clarke Corporation (U.S.), Asahi Kasei Corporation (Japan), etc.						Pont De				
Segments	Segments										
Agrotech Builte	ch Cloth	tech G	eotech	Hometech	Indutech	Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech
Products offe	red										
SYNTEX MB	clothin EX MB This is			nishing, fil	lter, medi	cal, and h	nygiene in	dustry	d in the a	_	
TAFNEL This i mater TAFNEL Oil Blotter This i SWP This i		rial in tl s an oi is a hig	is a spun-bonded nonwoven polypropylene matting Used in filter, and as all in the civil and geo textile industries is an oil-adsorbent fabric used in the oil & lubrication sector is a highly fibrillated fibre for the paper-making process, to make heat sealable for packaging and filtration								
Recent devel	opments	•									
August 2015	Expans	Expansion		Mitsui Chemicals is expanding its PP spun bond nonwovens in J company currently has the production capacity of 49,000 tons/y lines, and 15,000 tons/year will be added when the new line is int late 2017				tons/yea	r on six		
July 2014	Expansion		Mitsui Chemicals, Inc. started a new company for production and sale of spun-bonded nonwovens in response to the growing need for disposable diapers in China								
Nov. 2013	Prod. dev.		TAK raw	Mitsui Chemicals to launched two high-performance products in its TAKELAC and TAKENATE product series. They are used for coatin raw material synthesis in automobile and waterborne hot stamping ink applications							

Name: Toyobo Ltd. Ownership: Public

Headquarters: Osaka, Japan Revenue: US\$ 3,518 million (2014)

Founded: 1882 Employees: 10,100

- Toyobo Co., Ltd. is one of the leading textile companies that manufactures high-function products globally, through its technology, innovation, and research & development initiatives. Toyobo focuses on expanding the range of its technical and functional textiles materials to sports apparel, innerwear, and other areas
- Toyobo has a strong customer base globally. It is focusing on geographic development through expansions
  and modification of units in different regions. Its strategy is to expand overseas business development; for
  this it is strengthening overseas production through strategic joint ventures. The company is targeting the
  textile market of the sub-continental regions by providing more innovative and sustainable technical textile
  solutions to its customers
- The organization is also enhancing its product catalogue by launching innovative and environment-friendly products. The company competes with players such as E.I. du Pont de Nemours and Company (U.S.), Kimberly-Clarke Corporation (U.S.), and Asahi Kasei Corporation (Japan)

					-					
Segments										
Agrotech Builte	ech Clothte	ch Geotech	Hometech	Indutech	Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech
Products offe	ered									
BREATHAIR			a 3-dimensional structure fiber, with excellent durability, air & water ability, durability, safe, and antibacterial properties							
, ,			are high-performance fibers, textile materials, high-performance filter als that contribute to environmental preservation							
TOYOBO NYI	_ON	This is a ligh	a lightweight, high-strength, heat & fire resistance product							
ARROWSTOR	DX	This produc	roduct has excellent anti-bacterial resistance and deodorizing properties							
Feelfresh		This is a ba	s a bacteria-resistant and deodorizing product							
Recent devel	opments									
Jan. 2014	n. 2014 Acquisition		Toyobo acquired Airbag Yarn Manufacturer PHP Fibers GmbH (Germany), jointly with Indorama Ventures Public Co., (Thailand). This acquisition enabled Toyobo to expand its scope of business to Europe and the United States					1		
Jul. 2013	Expansion		Toyobo Specialties Trading Co., Ltd., established P.T. Toyobo (Indone The company deals mainly in sports fabrics and product sales					lonesia).		
Nov. 2012	Prod. de		obo succe ntifying co	-		actile ser	nse meası	ıring techı	nology fo	r
April 2012	Expansi	,	obo estab trengthen				_	brics in M	ichigan, t	the U.S.,

Name: Mitsubishi Rayon Co., Ltd. Ownership: Mitsubishi Chemical Holdings

Headquarters: Tokyo, Japan Revenue: US\$ 5.3 billion (2015)

Founded: 1933 Employees: 9,400

#### **Business overview**

- Mitsubishi Rayon Co., Ltd., together with its subsidiaries, engages in the production and supply of metyl methacrylate (MMA), acrylonitrile (AN), and AN derivatives
- The company provides chemical products, including MMA, methacrylic acid, methacrylic esters, chelating agents, organic solvents, acrylonitrile, acrylamide, and flocculants
- In addition, Mitsubishi Rayon Co., Ltd. Provides micro acrylic fibre, anti-pilling acrylic fibre, antibacterial deodorant acrylic fibre, short-cut acrylic fibre, compound atilic fibre, deodorant acrylic fibre, tri-acetate filament yarn, di-acetate filament yarn, pulsating fibre, acetate-polyester composite fibre, di-acetate tow, polyester filament yarn, polypropylene filament yarn, and carpets
- The company produces also carbon fibres and composite materials; aqua products, such as hollow fibre membranes, triple-layer composite hollow fibre membranes, water purifiers, artificial spa generators, water purification and wastewater treatment systems, and water treatment, separation, and purification equipment

#### **Segments**

Agrotech Builtech Clothtech Geotech Hometech Indutech Medtech Hygiene Mobiltech Packtech Protech Sporttech

#### **Products offered**

- · Man-made fibres
- · Flock fibres
- · Nonwovens made of man-made fibres
- · Materials with additional functions
- Clothing
- · Antistatic textile filters / filtration
- · Indutech general

#### **Recent developments**



Newly developed nonwoven dry spunlaced fabric, using special micro fibril acrylic fibres, succeeded to attain high water retention and an effective wiping performance



By COREBRID mixing in padding, down or spun, the clothes can have heat-generation by sunlight and antistatic function



For example, by fiber rope using COREBRID, it hardly has static generation by frictioning and falling away



Vonnel M.V.P is an Acrylic short cut fiber which is strong against battery plate paste shedding



Newly developed acrylic wadding, using special micro acrylic fibers, succeeded to attain high bulkiness and warmth like feather

# **End of Appendix 8:**

TechTex company profiles by country

**Start of Appendix 9:** 

TechTex commercial codes

# Appendix 9: TechTex commercial codes

## Yarn (9 Codes)

Sr. No	HS Codes	Description
1	300610	Sterile surgical catgut, similar sterile matter, etc.
2	5204	Cotton sewing thread, whether or not put up for retail sale
3	5401	Sewing thread of man-made filaments, whether or not put up for retail sale
4	5508	Sewing thread of man-made staple fibres, whether or not put up for retail sale
5	5604	Rubber thread and cord, textile covered, textile yarn, Impregnated coated, covered, sheathed with rubber
6	5605	Metallized yarn, whether or not gimped being textile yarn, strip or powder or covered with metal
7	5606	Gimped yarn & strip, 5404/5405 chenille yarn, loop wale-yarn
7	5607	Twine, cordage, ropes & cables, coated etc. or not
9	5609	Article of yarn, strip or the like heading 5404 or 5405, twine, cordage, NES

## Industrial Yarn (4 Codes)

Sr. No	HS Codes	Description
1	540220	High-tenacity filament yarn of polyesters
2	540219	High-tenacity filament yarn of nylon or other polyamides
3	540211	High-tenacity filament yarn of aramids
4	540310	High-tenacity yarn of viscose rayon filament

## Nonwovens (14 Codes)

Sr. No	HS Codes	Description
1	5601	Text. wadding & articles; Text. fibres Nov 5 Mm, etc.
2	5602	Felt, impregnated, coated, etc. or not
3	5603	Nonwovens, whether or not impregnated, coated, etc.
4	6302 22 10	Nonwovens – Printed bedlinen of nonwovens of man-made fibres
5	6302 32 10	Nonwovens – Bedlinen of nonwovens of man-made fibres (excl. printed)
6	6302 53 10	Nonwovens – Table linen of nonwovens of man-made fibres
7	6302 93 10	Nonwovens – Toilet linen and kitchen linen of nonwovens of man- made fibres (excl. floor cloths, polishing cloths, dishcloths and dusters)
8	7019 39 00	Webs, mattresses, boards and similar nonwoven products, of glass fibres (excl. mats and thin sheets "voiles")
9	96190031	Sanitary towels and tampons, napkins and napkin li
10	96190039	Sanitary towels and tampons, napkins and napkin li
11	96190041	Sanitary towels, tampons and similar articles, kni
12	96190049	Sanitary towels, tampons and similar articles, of
13	96190030	Sanitary towels and tampons, napkins and napkin liners for babies and similar sanitary articles, of wadding of textile materials
14	96190040	Sanitary towels, tampons and similar articles, of textile materials (excl. of wadding)

## Fabrics (36 Codes), Part 1

Sr. No	HS Codes	Description
1	5903	Textile fabrics (not tire cord) coat etc., plastics
2	5906	Rubberized textile fabrics, other than tire cord
3	5608	Knotted net of twine etc; Fish net etc. of textiles
4	580230	Tufted textile fabrics, other than floor covers
5	3005	Bandages etc. coated etc. or in retail medic etc. fm
6	52081110	Plain woven fabrics of cotton for the manufacture
7	52082110	Plain woven fabrics of cotton for the manufacture
8	5310 10	Woven fabrics of jute or of other textile bast fibres of heading 5303, unbleached
9	5310 90	Other woven fabrics of jute or of other textile bast fibres of heading 5303, bleached, dyed, made of yarn of different colours, or printed
10	54071000	Woven fabrics of high tenacity yarn, nylon, other
11	540720	Synthetic filament yarn fabric from the strip
12	54081000	Woven fabrics of high tenacity viscose yarn, incl.
13	55122990	Woven fabrics containing >= 85% Acrylic or modacrylic
14	57025031	Carpets and other floor coverings, of polypropylene, woven, not tufted or flocked, not of pile construction, not made-up (excl. Kelem, Schumacks, Karamanie and similar hand-woven rugs)
15	57025039	Carpets and other floor coverings, of man-made textile materials, woven, not tufted or flocked, not of pile construction, not made up (excl. those of polypropylene and Kelem, Schumacks, Karamanie and similar hand-woven rugs)
16	5803	Gauze (excl. narrow woven fabrics of heading 5806)
17	5806	Narrow woven fabrics of textile materials, with a width of <= 30 cm (excl. labels, badges and similar articles); narrow fabrics consisting of warp without weft assembled by means of an adhesive "bolducs"

## Fabrics (36 Codes), Part 2

Sr. No	HS Codes	Description
18	5807	Labels, badges and similar articles, of textile materials, in the piece, in strips or cut to shape or size, not embroidered
19	5809	Woven fabrics of metal thread & metalized yarn Nec
20	5901	Textile book cov fab; trac cl; paint canvas etc.
21	5902	Tire cord fabric of iigh tenacity yarn, nylon etc.
22	5907	Textl fabric, coated, etc., theatrcl scenery, back-cloths
23	5908	Textile wicks for lamps etc. and gas mantles etc.
24	5909	Textile hose piping and similar textile tubings
25	5910	Transmission/conveyor belt, tex. mat, whether/not reinforced, ctd
26	5911	Textile products etc. for specific tech uses nesoi
27	63039210	Curtains, incl. drapes, and interior blinds, curtain or bed valances of nonwovens of synthetic fibres (excl. awnings and sunblinds)
28	63039910	Curtains, incl. drapes, and interior blinds, curtain or bed valances of nonwovens (excl. of cotton and synthetic fibres, awnings and sunblinds)
29	630532	Flexible intermediate bulk containers, for the packing of goods, of synthetic or man-made textile materials
30	630533	Sacks and bags, for the packing of goods, of polyethylene or polypropylene strip or the like (excl. flexible intermediate bulk containers)
31	7019 31 00	Mats of irregularly laminated glass fibres
32	7019 32 00	Thin sheets / 'voiles' of irregularly laminated glass fibres
33	7019 40 00	Woven fabrics of glass fibres made from rovings
34	7019 51 00	Woven fabrics, incl. narrow fabrics, of glass, of a width of ≤ 30 cm (excl. rovings)
35	7019 52 00	Woven fabrics, incl. narrow fabrics, of glass filaments, of width of > 30 cm, plain weave, weighing < 250 g/m², made of yarn of a linear density of ≤ 136 tex per single yarn (excl. fabrics made from rovgs)
36	7019 59 00	Woven fabrics, incl. narrow fabrics, of glass fibres, of a width of > 30 cm (excl. plain weave, weighing < 250 g/m², of a linear density of ≤ 136 tex per single yarn, and fabrics made from rovings)

## Made-ups (28 Codes), Part 1

Sr. No	HS Codes	Description
		Industrial and Occupational garments (Considered 11% of total trade)
1	620322	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Ensembles: // of cotton
2	620323	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Ensembles: // of synthetic fibres
3	620329	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Ensembles: // of other textile materials
4	620332	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Jackets and blazers : // of cotton
5	620333	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Jackets and blazers : // of synthetic fibres
6	620339	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Jackets and blazers : // of other textile materials
7	620342	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Trousers, bib and brace overalls, breeches and shorts : // of cotton
8	620343	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Trousers, bib and brace overalls, breeches and shorts: // of synthetic fibres
9	620349	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Trousers, bib and brace overalls, breeches and shorts: // of other textile materials
10	620422	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Ensembles : // of cotton
11	620423	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Ensembles : // of synthetic fibres

## Made-ups (28 Codes), Part 2

Sr. No	HS Codes	Description
12	620429	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Ensembles : // of other textile materials
13	620432	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Jackets and blazers : // of cotton
14	620433	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Jackets and blazers : // of synthetic fibres
15	620439	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Jackets and blazers : // of other textile materials
16	620462	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Trousers, bib and brace overalls, breeches and shorts : // of cotton
17	620463	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Trousers, bib and brace overalls, breeches and shorts : // of synthetic fibres
18	620469	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swimwear). // - Trousers, bib and brace overalls, breeches and shorts : // of other textile materials
19	621132	Track suits, ski suits and swimwear; other garments. // - Other garments, men's or boys' : // of cotton
20	621133	Track suits, ski suits and swimwear; other garments. // - Other garments, men's or boys' : // of man-made fibres
21	621142	Track suits, ski suits and swimwear; other garments. // - Other garments, women's or girls' : // of cotton
22	621143	Track suits, ski suits and swimwear; other garments. // - Other garments, women's or girls' : // of man-made fibres

## Made-ups (28 Codes), Part 3

Sr. No	HS Codes	Description
		Description - Other Made-ups
23	6306	Other made up textile articles; sets; worn clothing and worn textile articles; rags // Tarpaulins, awnings and sunblinds; tents; sails for boats, sailboards or landcraft; camping goods.
24	6305	Sacks and bags of a kind used for packing of goods
25	6307	Other made up textile articles; sets; worn clothing and worn textile articles; rags // Other made up articles, including dress patterns.
26	870821	Parts and accessories of the motor vehicles of headings 87.01 to 87.05. // - Other parts and accessories of bodies (including cabs) : // Safety seat belts
		Description – Gloves
27	611693	Articles of apparel and clothing accessories, knitted or crocheted // Gloves, mittens and mitts, knitted or crocheted. // - Other : // Of synthetic fibres
		Description – Nonwoven Garments
28	621010	Articles of apparel and clothing accessories, not knitted or crocheted // Garments, made up of fabrics of heading 56.02, 56.03, 59.03, 59.06 or 59.07. // -Of fabrics of heading 56.02 or 56.03

# Prodcom codes

## Prodcom – Yarn type (13 Codes)

Sr. No	Code	Description
1	13106200	Cotton sewing thread
2	13108510	Sewing thread of man-made filaments
3	13108550	Sewing thread of man-made staple fibres
4	13941130	Twine, cordage, rope or cables, of sisal or other textile fibres of 'agave', of jute or other textile bast fibres and hard leaf fibres (excluding binder or baler twine)
5	13941153	Sisal binder or baler (agricultural) twines
6	13941155	Polyethylene or polypropylene binder or baler (agricultural) twines
7	13941160	Cordage, ropes or cables of polyethylene, polypropylene, nylon or other polyamides or of polyesters measuring > 50 000 decitex, of other synthetic fibres (excluding binder or baler twine)
7	13941170	Twines of polyethylene or polypropylene, of nylon or other polyamides or polyesters measuring ≤ 50 000 decitex (5 g/m) (excluding binder or baler twine)
9	13941190	Twines, cordage, rope and cables of textile materials (excluding jute and other textile bast fibres, sisal, abaca or other hard leaf fibres, synthetic fibres)
10	13961100	Metallised yarn or metallized gimped yarn
11	13961300	Rubber thread and cord, textile covered; textile yarn and strip impregnated, coated, covered or sheathed with rubber or plastics
12	21202430	Sterile surgical catgut
13	32505030	Sterile surgical or dental adhesion barriers, whether or not absorbable; sterile suture materials, including sterile absorbable surgical or dental yarns (excluding catgut); sterile tissue adhesives for surgical wound closure; sterile laminaria and sterile laminaria tents; sterile absorbable surgical or dental haemostatics

## Prodcom – Nonwoven type (13 Codes)

Sr. No	Code	Description
1	13102600	Jute and other textile fibres (except flax, true hemp and ramie), processed but not spun
2	13102900	Other vegetable textile fibres, processed but not spun
3	13921270	Bed linen of non-woven man-made fibres (excluding knitted or crocheted)
4	13921370	Table linen of non-woven man-made fibres
5	13921470	Toilet linen and kitchen linen, of non-woven man-made fibres
6	13921570	Curtains and interior blinds, curtain or bed valances, of non-woven materials
7	13922953	Floor-cloths, dish-cloths, dusters and similar cleaning cloths, of non-woven textiles
7	13931930	Needlefelt carpets and other needlefelt textile floor coverings (excluding tufted or flocked)
9	13951010	Non-wovens of a weight ≤ 25 g/m² (including articles made from non-wovens) (excluding articles of apparel, coated or covered)
10	13951020	Non-wovens of a weight of > 25 g/m² but ≤ 70 g/m² (including articles made from non-wovens) (excluding articles of apparel, coated or covered)
11	13951030	Non-wovens of a weight of > 70 g/m² but ≤ 150 g/m² (including articles made from non-wovens) (excluding articles of apparel, coated or covered)
12	13951050	Non-wovens of a weight of > 150 g/m² (including articles made from non-wovens) (excluding articles of apparel, coated or covered)
13	13951070	Non-wovens, coated or covered (including articles made from non-wovens) (excluding articles of apparel)

# Prodcom – Fabric types (24 Codes), Part 1

Sr. No	Code	Description
1	13201400	Woven fabrics of jute or of other textile bast fibres (excluding flax, true hemp, ramie)
2	13202019	Woven fabrics of cotton, not of yarns of different colours, weighing ≤ 200 g/m², for technical or industrial uses (excluding gauze, medical gauze)
3	13202049	Woven fabrics of cotton, not of yarns of different colours, weighing > 200 g/m², for technical or industrial uses
4	13202079	Woven fabrics of cotton of yarns of different colours, for technical or industrial uses
5	13203130	Woven fabrics of man-made filament yarns obtained from high tenacity yarn, strip or the like (including nylon, other polyamides, polyester, viscose rayon)
6	13204400	Gauze (excluding medical gauze, narrow woven fabrics)
7	13204500	Tufted textile fabrics (excluding tufted carpets and other textile floor coverings)
7	13204600	Woven fabrics of glass fibre (including narrow fabrics, glass wool)
9	13922150	Sacks and bags, of knitted or crocheted polyethylene or polypropylene strip, used for packing goods
10	13922170	Sacks and bags, of polyethylene or polypropylene strip, used for packing goods (excluding knitted or crocheted)
11	13941233	Made-up fishing nets from twine, cordage or rope of man-made fibres (excluding fish landing nets)
12	13941235	Made-up fishing nets from yarn of man-made fibres (excluding fish landing nets)
13	13941253	Made-up nets from twine, cable or rope of nylon or other polyamides (excluding netting in the piece produced by crochet, hairnets, sports and fishing nets)
14	13941255	Made-up nets of nylon or other polyamides (excluding netting in the piece produced by crochet, hairnets, sports and fishing nets, those made from twine, cable or rope)
15	13941259	Knotted netting of textile materials (excluding made-up fishing nets of man-made textiles, other made-up nets of nylon or other polyamides)

## Prodcom – Fabric type (24 Codes), Part 2

Sr. No	Code	Description
16	13961200	Woven fabrics of metal thread and woven fabrics of metallised yarn, used in apparel, as furnishing fabrics or similar purposes
17	13961400	Textile fabrics, impregnated, coated or covered n.e.c.
18	13961500	Tyre cord fabrics of high tenacity yarn, of nylon, other polyamides, polyesters or viscose rayon
19	13961620	Textile hose piping and similar textile tubing, whether or not impregnated or coated, with or without lining, armour or accessories of other materials
20	13961650	Textile wicks, conveyor belts or belting (including reinforced with metal or other material)
21	13961680	Textile fabrics and felts, for paper-making machines or similar machines (including for pulp or asbestos-cement)
22	13961730	Narrow woven fabrics other than labels, badges and other similar articles
23	13961750	Labels, badges and similar articles in textile materials (excluding embroidered)
24	13961770	Braids in the piece; tassels and pompons, ornamental trimmings (excluding knitted or crocheted)

# **End of Appendix 9:**

TechTex commercial codes

**Start of Appendix 10:** 

TechTex short list product definition

# Appendix 10: TechTex short list product definition

Category	HS code	Definition							
	300610	Sterile Surgical Catgut, Similar Sterile Mater, etc.							
Yarn type	5607 5609	Twine, Cordage, Rope & Cables, Coated etc. or Not Article of yarn, strip or the like heading 5404 or 5405, Twine, cordage, NES							
	3005	Bandages Etc Coated Etc Or In Retail Medic Etc Fm							
	5903	Textile Fabrics (Not Tire Cord) Coated, etc, Plastics							
	5911 540720	Textile Products, Etc. For Specific Tech Uses Nesoi Synthetic Filament Yarn Fabric From The Strip							
Fabric	630392	Curtains, incl. drapes, and interior synthetic fibres (excl. awnings and	blinds, curtain or bed valances of nonwovens of sunblinds)						
	5806	Narrow woven fabrics of textile materials, with a width of <= 30 cm (excl. labels, badges and similar articles); narrow fabrics consisting of warp without weft assembled by means of an adhesive "bolducs"							
	5902	Tire Cord Fabric Of High Tenacity Yarn, Nylon Etc							
	560311&91	Nonwovens, Whether Or Not Impregnated, Coated Etc	Weighing not more than 25 g/m2 (chiefly spunbond)						
	560312&13 560392&93		Weighing more than 25 g/m2 but not more than 150 g/m2 (chiefly spunlace)						
Nonwoven	560314&94		Weighing more than 150 g/m2 (chiefly needlefelt)						
	961900	Sanitary towels (pads) and tampor articles	ns, napkins and napkin liners for babies, and similar						
	630222 (32.53.93)	Nonwovens -Bedlinen of nonwovens of man-made fibres (excl. printed)							
	540211	High-tenacity filament yarn of aramids							
Industrial yarns	540219	High-tenacity filament yarn of nylon or other polyamides							
	540220	High-tenacity filament yarn of polyesters							
	621010	Garments made up of nonwovens, whether or not impregnated, coated, covered or laminated							
Made-ups	620332 (33,42,43) 621132 (33,42,43)	Industrial and occupational garments							
	6306	Tarpaulins, awnings and sun blinds; tents; sails for boats, sailboards or land craft; camping goods of all types of textile materials							

Category	HS code	Description	Agrotech	Buildtech	Clothtech	Geotech	Hometech	Indutech	Medtech	Hygiene	Mobiltech	Packtech	Protech	Sporttech
Yarn type	300610	Sterile Surgical Catgut, etc.							Χ					
_ <del>\</del>	5607 5609	Twine, Cordage, Rope & Cables, etc.	X	X				X			X	X	X	X
	3005	Bandages, etc.							Х					
	5903	Coated textile Fabrics, etc.	X			X		Х		X	X	X	X	Х
Fabric	5911 540720	Synthetic Filament Yarn Fabrics, etc.	X	X	X	X	Х	X	X		X	X	X	Х
Fat	630392	Curtains, interior blinds, curtain, etc.		X			X							
	5806	Narrow woven fabrics, etc.	X		X		X	X	X		X	X	X	Х
	5902	Tire Cord Fabric Of High Tenacity Yarn									X			
	560311,91	Nonwovens (chiefly spunbond)								Х				
en	560312,13 560392,93	Nonwovens (chiefly spunlace)			х		х	X	Х	Х	Х	Х	X	х
Nonwoven	560314,94	Nonwovens (chiefly needlefelt)	X	X	Х	X	X	Х	X		X	X	X	Х
2	961900	Sanitary towels (pads), tampons, napkins, etc.							X	X				
	630222 <u>.</u> 32 <u>.</u> 53 <u>.</u> 93	Nonwovens - Bedlinen of nonwovens of man- made fibres (excl. printed)					X							
<u>a</u>	540211	High-tenacity filament yarn of aramids			Χ			Χ			X		Χ	Х
Industrial yarns	540219	High-tenacity filament yarn of nylon, etc.						X			X		X	Х
Inc \	540220	High-tenacity filament yarn of polyesters	X		X	X	Χ	X			X	X	X	Х
Made-ups	621010	Garments made up of nonwovens							Х				Χ	
	620332 (33,42,43) 621132 (33,42,43)	Industrial and occupational garments											X	
	6306	Tarpaulins, awnings, tents, sails for boats, etc.					Х				Χ			Х

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## **END OF REPORT**