



Development of EU Ecolabel Criteria for Absorbent Hygiene Products

(formerly referred to as “Sanitary Products”)

Technical Report – Draft v.4

October 2013



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List of Abbreviations

ABL	Absorption before leakage
ADEME	Agence de l'Environnement et de la Maîtrise de l'Energie (The French Environment and Energy Management Agency)
ADL	Acquisition and distribution layer
AHP	Absorbent hygiene products
AOX	Adsorbable organic halogen compounds
AP	Acidification potential
ASTM	<u>American Society for Testing and Measurement</u>
BBP	Benzyl butyl phthalate
BOM	Bill of materials
CAS	Chemical Abstracts Service
CHP	Combined heat and power plant
CLP	Classification, labelling and packaging
CMR	Carcinogenic, mutagenic and reprotoxic
CO _{2,eq}	Carbon Dioxide, equivalent
COD	Chemical oxygen demand
CSA	Canadian Standards Association
CS ₂	Carbon Disulfide
CTMP	Chemi-Thermo-Mechanical pulp
DBP	Dibutyl phthalate
DEHP	Bis(2-ethylhexyl)phthalate
DIN	Deutsches Institut für Normung (German Institute for Standardization)
DnOP	di-n-octyl phthalate
ECF	Elemental Chlorine Free
ECNZ	Environmental Choice New Zealand
ECHA	European Chemicals Agency
ECOCERT	Organisme de contrôle 6 de certification au service de l'homme et de l'environnement
EDANA	The international association for the nonwovens and related industries
EEC	European Economic Community
EINECS	European Inventory of Existing Commercial Chemical Substances

EMAS	Eco-Management and Audit Scheme
EP	Eutrophication potential
EPD	Environmental Product Declaration
ESP	Electrostatic precipitator
EU	European Union
FF	Fabric filter
FSC	Forest Stewardship Council
GECA	Good Environmental Choice Australia
GHG	Greenhouse gas
GmbH	Gesellschaft mit beschränkter Haftung (company with limited liability)
GOTS	Global organic textile standard
GPP	Green Public Procurement
GPSD	General Product Safety Directive
GWP	Global warming potential
H ₂ SO ₄	Sulfuric acid
HRIPT	Human Repeat Insult Patch Test
IFOAM	International Federation of Organic Agriculture Movements
IPTS	Institute for Prospective Technological Studies
ISO	International Organization for Standardization
JRC	Joint Research Centre
LCA	Life Cycle Assessment
LDPE	Low density polyethylene
NaOH	Sodium hydroxide
NaOCl	Sodium hypochlorite
NO _x	Nitrous oxides
P	Phosphorus
MBT	Mechanical-biological treatment
OCIA	Organic Crop Improvement Association
PBT	Persistent, bioaccumulative and toxic
PCR	Product category rules
PE	Polyethylene
PEFC	Programme for the Endorsement of Forest Certification
PET	Polyethylene terephthalate
POCP	Photochemical ozone creation potential

PP	Polypropylene
PPWD	Packaging and Packaging Waste Directive
PU	Polyurethane
PVC	Polyvinyl chloride
RAPEX	Rapid Exchange of Information System
REACH	Registration, Evaluation, Authorisation and Restriction of Chemical substances
REPA	Recycling system for packaging (Sweden)
S	Sulphur
SAF	Superabsorbent fibres
SAP	Superabsorbent polymers
SEMCo	Swedish Environmental Management Council
SFI	Sustainable Forestry Initiative
SVHC	Substances of very high concern
TARIC	Tarif intégré des Communautés européennes (Integrated tariff of the European Union)
TCF	Total Chlorine Free
TEWL	Transepidermal water loss
TMP	Thermomechanical pulp
TOC	Total organic carbon
vPvB	Very persistent and very bioaccumulative
WSP	Worldwide Strategic Partners
Zn	Zinc

1. Introduction

The Institute for Prospective Technological Studies (IPTS) delivers scientific and interdisciplinary analyses with the overall goal of supporting the EU policy-making process. In particular, the services of the Sustainable Consumption and Production Unit within the IPTS include providing socio-economic analyses with regards to key aspects of sustainable consumption and performing techno-economic and environmental impact assessment of technologies, products and processes.

The aim of this project is to develop EU Ecolabel criteria for absorbent hygiene products (AHP). The implementation of the EU Ecolabel scheme will assist in the reduction of negative impacts of consumption and production on the environment, on human health and on natural resources.

Please note that the product scope initially referred to “sanitary products”. However, during the course of this project, it was recommended by stakeholders to change the name to “absorbent hygiene products (AHP)”.

The preliminary report delivered for this project outlines the scientific basis for the development of EU Ecolabel criteria for AHP. The report, available at <http://susproc.jrc.ec.europa.eu/sanitaryproducts/stakeholders.html>, contains the following information:

- The rationale for the products to be included in this project;
- A review of existing legislation, standards and environmental schemes outlines rules, requirements and criteria currently in existence for the relevant products;
- A market analysis for the products within the scope of this project assisting in understanding the economic relevance of the selected AHPs;
- A technical analysis providing information on the composition and functionality of AHPs, describing production processes and the main materials needed for the manufacture of AHPs and providing insights on the potential environmental burdens associated with AHPs over their entire life cycle.

In order to award AHPs with an EU Ecolabel, a set of criteria has to be defined. Based on the information contained in the preliminary report, an initial set of criteria was developed. This set of criteria was identified considering factors such as:

- The environmental relevance of requirements over the life cycle of AHPs,
- Quality and performance issues of relevance for AHPs
- Potential impacts on human health;
- Alignment with relevant pieces of legislation (e.g. Regulation (EC) No 66/2010 on the EU Ecolabel);
- The effectiveness and feasibility of the requirement, also in terms of assessment and verification;
- The potential for improvement.

Feedback gained through stakeholder consultations was also considered and discussed.

This report outlines the list of criteria currently proposed for the EU Ecolabel for AHPs. A definition for the product scope is provided in Section 2 and, then, each draft criterion is presented, including: rationale; evaluation of technical feasibility, potential costs and benefits; assessment and verification methods; preliminary proposal of the criteria text. Where suitable, the relevant criteria thresholds are also described.

Companies wishing to apply for the EU Ecolabel will have to provide evidence that they fulfil the criteria for a particular product and will then be awarded the right to display the EU Ecolabel logo on their product or packaging.

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2. Definition of the product group scope

In accordance with the product scope as defined in the preliminary report (Sections 2.4), the following definition is proposed for the product group scope:

1. *The product group “adsorbent hygiene products” shall include products which:*
 - a. *Are used for the physical and direct collection of human body waste streams and*
 - b. *Are composed of a mix of natural fibres and polymers, with the fibre content lower than 90% by weight and*
 - c. *Are disposable.*
2. *The product group shall comprise:*
 - a. *all types of baby diapers*
 - b. *all types of feminine care pads (e.g. sanitary pads/napkins and panty liners)*
 - c. *all types of tampons*
 - d. *breast pads*
3. *The product group shall not comprise incontinence products and any other type of products falling under the scope of the Council Directive 93/42/EEC 14 June 1993 concerning medical devices.*

Based on the feedback received by stakeholders, it is generally agreed that **products with specific design and size** (e.g. a size-4 pull-on diaper produced by the company X) should be awarded the EU Ecolabel

3. List of Proposed Criteria for the EU Ecolabel of Absorbent Hygiene Products

Based on the outcomes of the preliminary report, the following EU Ecolabel criteria are proposed for AHPs.

Table 1: Overview of criteria areas and individual criteria proposed for the EU Ecolabel of AHPs

Criteria area	Proposed criteria
Materials	1. Use of materials 2. Fluff pulp 3. Man-made fibres 4. Cotton 5. Polymers 6. Other materials
Chemicals	7. Excluded or limited substances or mixtures
Manufacture	8. Material efficiency
End-of-life	9. Disposal of AHP
Fitness for Use	10. Fitness for use and quality of the product
Other issues	11. Information appearing on the EU Ecolabel 12. Social aspects

4. EU Ecolabel criteria proposal

4.1 Materials

As apparent from the outcomes of the preliminary report, materials are the main driver in determining the environmental impacts of AHPs since they contribute for 62%-97% to all environmental impact categories.

The first action that could significantly improve the environmental performance of the products would be to act on the eco-design of AHPs to decrease the weight of the product and to select more eco-friendly materials, while at the same time ensuring the fulfilment of the functions expected from the product.

LCA is the key tool to depict the environmental impacts of products but at the moment it seems difficult to set criteria based on life cycle indicators and/or requiring applicants to carry out LCA studies. This is also due to:

- The lack of solid and widely accepted rules (the Commission has developed a Product Environmental Footprint methodology but conditions are not yet mature enough for its application to AHPs).
- The lack of information about the performance variation within equivalent categories of AHPs.

Environmental impacts are a function of product design (weight and composition) and performance of materials. Decoupling the issue in two parts can be seen as a practical way to simplify and solve the problem. In general, environmental benefits could be indeed achieved through:

1. Restrictions in the **use of materials** for AHPs;
2. Requirements with which to identify **materials and components** presenting superior environmental performance in terms of sourcing and production.

With respect to the **first issue**, LCA evidence show that environmental impacts can be decreased through a reduction of the product weight (and thus with a lower use of materials). In some cases (e.g. diapers), environmental benefits have been obtained through a change of product design and composition. However, influencing the composition of the products through a direct restriction of some materials is generally seen by industry as a limit to innovation.

Setting a maximal weight threshold could be the initial parameter of screening, at least **for some types of AHPs**. Products offering a better or a worse environmental performance could be otherwise selected based on **environmental indicators**, for instance the Global Warming Potential (GWP), which expresses the impact on climate change given by greenhouse gases (GHG) emissions in terms of equivalent mass of CO₂. However the implementation of one of these options would require a statistically representative sample of information on products categorization, weight and composition with which to define such thresholds.

With respect to the **second issue**, setting only thresholds per mass of product on specific environmental issues (e.g. GWP per kg of AHP) is not considered by the Commission a suitable and coherent approach. Such criterion indeed would focus on the composition of the product without taking into account for the overall amount of

materials used in the product itself. In other terms, the potential environmental benefits of manufacturing a product A which present a lower GWP per kg than a product B may be offset in practice if A is sufficiently heavier than B. Reasoning in terms of mass of product does not ensure that more eco-friendly products are placed on the market, reference to the overall size of functionally equivalent products is necessary. Moreover, criteria should be flexible and not hinder innovation. For instance, defining fixed characterization factors for a pre-set list of materials could be an over-simplification of the reality since this would not allow taking fully into account for the different performance of alternative material options (e.g. renewables-based materials, as described in the preliminary report).

In order to understand which requirements on materials are likely to produce some environmental benefits, results from the background analysis have been coupled with pieces of information contained in relevant BREF documents^{1 2 3} in available literature on chemistry⁴, in environmental criteria developed for AHPs and/or other products by the Commission⁵ or by other organisations⁶. Stakeholders have been also involved actively in the process through questionnaires and personal interaction.

The proposed set of **criteria on materials** is presented in the followings. The general goal of these requirements is the reduction of the environmental impacts in the sourcing and production of materials (due, for instance, to emissions into water and air and/or to consumption of energy and resources). Requirements even focus on substances and materials of potential concern for AHPs.

1 European Commission: Best Available Techniques (BAT) Reference Document for the Production of Pulp, Paper and Board, Draft May 2012.

2 European Commission: Best Available Techniques (BAT) Reference Document for the Textiles Indus, July 2003.

3 European Commission: Reference Document on Best Available Techniques in the Production of Polymers. August 2007; http://eippcb.jrc.es/reference/BREF/pol_bref_0807.pdf

4 Ullmann's Encyclopedia of Industrial Chemistry, Wiley online library. Copyright 1999-2012 by John Wiley and Sons, Inc.

5 European Commission 2009: Establishing the ecological criteria for the award of the Community Eco-label for copying and graphic paper, Commission Decision 2011/332/EU; <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:149:0012:0024:EN:PDF>

6 Ecolabelling 2008: Nordic Ecolabelling of sanitary products, Version 5.3; <http://www.nordic-ecolabel.org/criteria/product-groups/?p=3>

Criterion 1: Use of materials

1) Product Description

A description of product and packaging shall be provided (product name, classification, functionalities) together with information on:

- the total weight of the product,
- the materials and additives used in the product with their respective weights and, whenever applicable, their respective CAS numbers.

Information on the weight shall be also displayed in the packaging.

Assessment and verification:

The applicant shall provide a sample of the product and a report including the technical description and the weight of the product and of each material used.

Rationale and technical feasibility:

Materials are the main contributors to the environmental impacts of AHPs. Some options have been evaluated to deal with the use of materials in the final product.

Option 1: Setting maximal weight thresholds

LCA evidence shows that environmental impacts can be decreased through a reduction of the product weight (and thus with a lower use of materials). For some types of AHPs a maximal weight threshold could be set in order to exclude the products on the market which use greater amounts of materials.

Baby diapers are used as an example to explain the approach to follow in order to implement this option. Information about the classification used by industry and the weight of hypothetical diapers has been gathered by the Commission. Four types of diapers have been identified:

- Taped diapers;
- Pull-on diapers;
- Swimming diapers;
- Night diapers.

Size classification used by some producers is reported below. Weight ranges have been highlighted in yellow when they differ from the most frequent values found within the same size.

TAPED DIAPERS	Size*									Source
	0	1	2	3	4	4+	5	5+	6	
DODOT ES		2-5	3-6	4-10	9-15	11-16	13-18	15-20	17-28	IPTS
DODOT PT		2-5		4-10	9-15		13-18			IPTS

HAPPY			3-6	4-10	8-15		12-25		>16	BE CB
HUGGIES			3-6							BE CB
KRUIDVAT	<2,5	2-5	3-6	4-9	7-18	9-20	11-25		15-30	BE CB
MOLTEX			3-6	4-9	7-18		11-25			BE CB
NATY		2-5	3-6	4-9	7-18		11-25			IPTS
PAMPERS BE		2-5	3-6	4-9 / 4-7	7-18	9-20	11-25	13-27		BE CB
PAMPERS ES		4-6	5-8	7-13	10-17		>12		>16	BE CB
PAMPERS IT		2-5	3-6	4-9	7-18		11-25	13-27	>16 / 15-30	IPTS
PAMPERS UK	1-2.5	2-5	3-6	4-9	7-18	9-20	11-25	13-27	>16	IPTS
TESCO	1-2.5	2-5	3-6	4-9	7-18	9-20	11-25	14-30	14-30	IPTS

* For each size the corresponding children weight range is reported in kg (when no unit of measure is provided)

PULL ON DIAPERS	Size*							Source
	3	4	4+	5	6	7	8	
CHEEKY BOT		7-18		9-20	11-25			IPTS
HAPPY		9-15		11-18	17-28			BE CB
KRUIDVAT			10-16	13-20	16-26			BE CB
NATY		7-18		12-18	>16			IPTS
PAMPERS BE		8-15		12-18	>16			BE CB
PAMPERS IT		8-15		12-18	>16			IPTS
PAMPERS UK		8-15		12-18	>16	17-29	29-39	IPTS
DODOT ES	4-10	9-15		13-18				IPTS
TESCO		7-18		12-18	>16			IPTS

* For each size the corresponding children weight range is reported in kg (when no unit of measure is provided)

SWIMMING DIAPERS	Size*		Source
	4	4 +	
KRUIDVAT	6-12	10-18	BE CB

* For each size the corresponding children weight range is reported in kg (when no unit of measure is provided)

NIGHT DIAPERS	Size*		Source
	M	L	
KRUIDVAT	20-37	35-60	BE CB
HUGGIES	4-7 years	8-15 years	BE CB

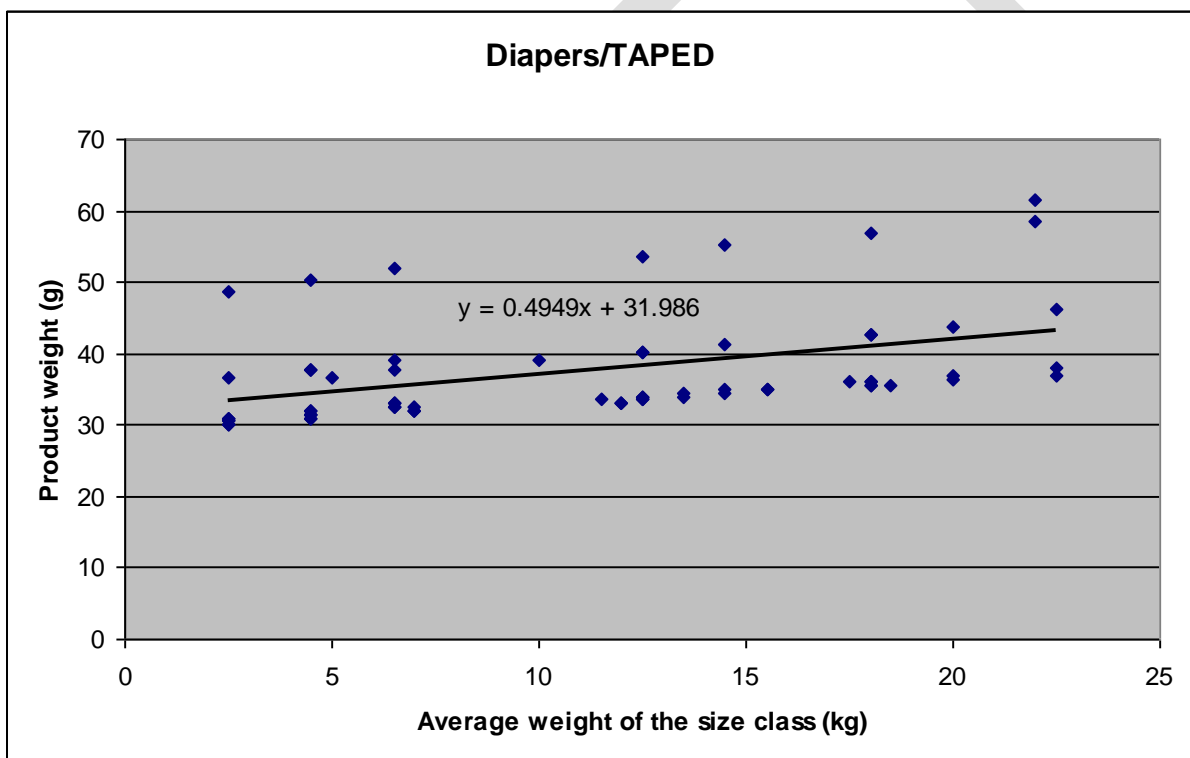
* For each size the corresponding children weight range is reported in kg (when no unit of measure is provided)

Even if classification is not harmonised between different producers, this is not as much different as expected, with most of producers setting sizes based on the same weights of children.

However, what is difficult to receive from producers, directly or through their web-pages, is information about the weight of their products. An exercise was done to estimate the weight distribution of taped diapers under the following assumptions:

- 70% of products on the market weight between 30-38 grams and they are uniformly distributed in 8 classes of weight;
- For all classes, 20% of the products are 20% heavier;
- For all classes, 10% of the products are 60% heavier.

A distribution of product weights as a function of the average weight of the corresponding size classes has been plotted in a graph and a linear regression line has been calculated.



All the products above the linear regression equation are considered to weight above the average and could be thus excluded from the basket of products eligible for the EU Ecolabel. Weight thresholds can be identified by entering the average weight of the product size class. The same could be repeated for pull-on diapers, swimming diapers, night diapers and for other categories of AHPs included within the scope.

However, this option is generally perceived by stakeholders as an oversimplification of reality which does not take into full account for the design of products and which could thus limit innovation.

It was reported that producers are already efficient with the use of materials for economic reasons and that the market trend is towards lighter products.

Moreover, the lack of harmonization for the classification of the products appeared a significant bottleneck for the development of any prescriptions in this area. The work in this area could be easier for diapers but for feminine care products would be practically impossible due to the variety of size and materials.

Option 2: Setting environmental thresholds based on the GWP of the product

Starting from the information on classification, weight and composition of single products, it could be possible to calculate roughly the average impacts due to materials for some AHPs. In other words, products would be screened based on their environmental performance.

Focusing on Global Warming Potential (GWP) could be a way to simplify the problem at this stage of the process (this is the first attempt to develop environmental criteria and further refinements could be done in the next revisions). Estimating a linear regression line for GWP would be theoretically feasible since average composition and impact characterisation factors for different materials are available in the literature. However, this would be possible in practice only if data about product weights are available.

As shown for option 1, all the products which present indicators below the threshold (i.e. which perform better than the average) would be eligible for the EU Ecolabel.

Some stakeholders support this option and ask for an additional effort in this direction. However, practical difficulties and limitations are apparent to all stakeholders and would prevent from setting such a requirement in the short term:

- Since reference to the entire product is necessary, information on the weight of products would be needed as for the previous option.
- Default values for setting GWP thresholds are provided for instance in the Nordic Swan set of criteria⁷, however, average market data would be needed.
- Product performance should be based on real data but it would be difficult to take into account for specificities existing in each supply chain and to assess and verify the robustness of the information provided.
- GWP is only one of the environmental indicators. The overall environmental performance of the product should be depicted considering also other key environmental impacts.

Option 3: Product description

Because of the current lack of data and harmonised classification, options described above cannot be taken into consideration in the short term. At this stage the best way to select the most environmentally friendly AHPs on the market is to rely on the other criteria outlined in the technical report. Since product design is the key factor

⁷ Ecolabelling 2008: Nordic Ecolabelling of sanitary products, Version 5.3; <http://www.nordic-ecolabel.org/criteria/product-groups/?p=3>

influencing the environmental impacts of AHPs, this could be an issue to reconsider in next revision processes, possibly following a full LCA approach.

Nevertheless, for the moment it is considered important to include at least an introductory criterion fostering the definition of AHPs in terms of weights and contained materials, as done also for other product groups (e.g. Commission Decision of 30 November 2009 on establishing the ecological criteria for the award of the Community eco-label for wooden furniture⁸).

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⁸ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:320:0023:0032:EN:PDF>

Criterion 2: Fluff pulp

2.1) Sourcing

All pulp fibres shall be covered by valid sustainable forest management and chain of custody certificates issued by an independent third party certification scheme such as FSC, PEFC or equivalent.

A minimum of 25% pulp fibres shall be manufactured from wood that has been grown according to the principles of Sustainable Forestry Management as defined by the UN FAO.

The remaining proportion of pulp fibres shall be from wood that is sourced from legal forestry and plantations.

Assessment and verification:

The applicant shall provide valid, independently certified chain of custody certificates from the pulp supplier(s) demonstrating that pulp fibres have been grown according to Sustainable Forestry Management principles and/or are from legal sources.

FSC, PEFC and PEFC endorsed schemes shall be accepted as independent certification.

The pulp manufacturer shall demonstrate that due diligence processes have been followed as specified in Regulation (EC) 995/2010 in order to ensure that timber has been legally harvested. Valid FLEGT (Forest Law Enforcement, Governance and Trade) or CITES (Convention on International Trade in Endangered Species) licenses or third party certification shall be accepted as evidence of legal sourcing.

Rationale and technical feasibility:

The sustainable sourcing of raw materials would guarantee that wood sources are managed in an environmentally, socially, appropriate and economically viable manner. This would help exclude the following sources:

- Illegally harvested forests;
- Wood harvested in violation of traditional and civil rights;
- Wood harvested in forests in which High Conservation Values (areas particularly worth of protection) are threatened through management activities;
- Wood harvested from conversion of natural forests;
- Wood harvested from areas where genetically modified trees are planted.

The text proposed has been adapted from the existing EU Ecolabel criteria for Copying and Graphic Paper⁹ and from the recently revised EU Ecolabel criteria for Textiles. This last in particular represents the most recently updated criterion of the EU Ecolabel scheme in terms of pulp sourcing.

9 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:149:0012:0024:EN:PDF>

Stakeholders have been consulted to try to understand the availability of SFM certified wood for this product group. According to stakeholders involved in the project:

- The estimated proportion of total round wood production from certified forests in 2011-2012 was around 26%. This is considered to increase up to 28.3% in 2012-2013.
- Differently from graphic paper, fluff pulp is made of softwood. 90% of fluff pulp is produced in the USA. 96% of this pulp is procured through certified fibre sourcing and the amount of fibres from certified is 24%. By comparison, in Europe 61.6% of virgin wood fibres used by the industry is PEFC or SFC certified. The level of certified fibres in the USA is 24% and it would be difficult to achieve a 50% level even in 2-5 years since the availability of certified wood is progressing slowly.

Based on the elements collected, it is proposed to set the threshold for SFM-certified wood fibres to 25%, to be increased in the next revision. Some stakeholders informed that US producers can respect Nordic Swan criteria for AHPs, but the threshold set there for SFM-certified fibres is apparently 20%¹⁰.

The accepted certification schemes cover FSC, PEFC and PEFC endorsed schemes. According to experts in the area of forestry certification, this would not exclude SFI certificate holders as such but only those which do not comply with PEFC requirements. SFI is PEFC's largest member in terms of certified land and the only PEFC member which has its own Chain of Custody system and its own labels. PEFC has endorsed the SFI Forest Management standard but not the SFI Chain of Custody standard. Any company that sources timber from SFI-certified forests and would like to sell it as PEFC-certified or use the PEFC label needs to obtain PEFC Chain of Custody certification. SFI does not have a minimum of 70% certified/post-consumer reclaimed material content requirement for its labels and it also has a "fibre sourcing" certification, which looks similar to PEFC's controlled sources, but adds more procedural requirements (and does not include a ban on GMOs).

2.2) Bleaching:

The pulp used in the product shall not be bleached with the use chlorine gas. The total amount of AOX emissions from pulp manufacturing shall not exceed 0.17 kg/ADT.

Assessment and verification:

The applicant shall provide a declaration from the pulp supplier that chlorine gas is not used and a test report showing compliance with the AOX limit value. ISO 9562 or the equivalent EPA 9562 shall be accepted as test methods and detailed calculations shall be included in the test report, together with related supporting documentation.

The supporting documentation shall include an indication of the measurement frequency. AOX shall only be measured in processes where chlorine compounds are used for the bleaching of the pulp.

¹⁰ <http://www.nordic-ecolabel.org/criteria/product-groups/?p=3>

Measurements shall be taken on unfiltered and unsettled samples either after treatment at the plant or after treatment by a public treatment plant.

The measurement period shall be 12 months of production. Measurements shall be taken on a monthly basis from representative composite samples (24 hours composite).

For a new or re-built plant or a change of process at the production plant, measurements shall be done on a weekly basis for a total of 8 consecutive weeks following steady running of the plant. The measurement shall be representative of the respective campaign.

Rationale and technical feasibility:

During the production of fluff pulp, negative effects on the environment and on human health, should be minimized. Until the early '90s, chlorine gas was used as the main component of the bleaching. At that time, it was discovered that significant amounts of the dioxin and furan chemical families were being discharged to watercourses. This led to the introduction of bleaching systems based on alternative chemicals, i.e. TCF and ECF bleaching processes (see Preliminary Report for further details). The TCF bleaching process has the advantage of repressing the production of chlorinated organic compounds. However, stakeholders involved in this project reported that ECF is a widely accepted technology and that almost all fluff pulp worldwide is ECF bleached. Thus, both the processes were considered to be supported. No additional costs are expected with respect to fulfilling this requirement being both the processes already deployed.

Chlorinated organic compounds are released into water as effluent from the bleaching process. AOX (Adsorbable Organic Halide) is a surrogate measure of the amount of chlorinated organic compounds in pulp and paper effluent discharge. A limit on AOX is proposed in alignment with the EU Ecolabel criteria for Copying and graphic paper (Commission Decision 2011/332/EU)¹¹.

The limit value of 0.17 kg AOX/ADT is aligned with the Commission Decision 2011/332/EU. Industry reported that, differently from graphic paper, fluff pulp is made of softwood, which is more difficult to bleach. Stricter limit could be proposed for the next revision.

However, in comparison with the Commission Decision 2011/332/EU, the assessment and verification procedure has been slightly modified because reported by stakeholders that

- Measurements should be taken on a monthly basis from representative composite samples (24 hours composite);
- Equivalent test method EPA 1650C should be accepted.
- It was to be clarified what is included within the definition of "new or re-built production plant".

¹¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:149:0012:0024:EN:PDF>

2.3) Optical brighteners and colouring agents

Optical brighteners and colouring agents, including fluorescent whitening agents, shall not be intentionally added to the pulp.

Assessment and verification: The applicant shall provide a declaration from the supplier that the requirements have been fulfilled.

Rationale and technical feasibility:

During the production of fluff pulp, negative effects on the environment and on human health should be minimised. Visual whitening and colouring agents are proposed to be banned as they are not needed for this application. A similar prescription is present in the Nordic Swan criteria for sanitary products¹² and in the GPP guidelines developed by EDANA for AHPs (see Preliminary Report). No additional costs are expected.

The group of restricted substances already includes fluorescent whitening agents, which are difficult to biodegrade. However, these have been mentioned explicitly because it was asked to emphasize the restriction of this specific type of optical brighteners.

2.4) Emission of COD and phosphorous (P) to water and sulphur (S) compounds and NOx to air from production

The emissions to air and/or water from the pulp production shall be expressed in terms of points (P_{COD} , P_{S} , P_{NOx} , P_{P}). Points are calculated by dividing actual emission by the reference values reported below.

Pulp grade	Reference values (kg/ADT)			
	COD_{ref}	S_{ref}	NOx_{ref}	P_{ref}
Bleached chemical pulp (others than sulphite)	18.0	0.6	1.6	0.045 (*)
Bleached chemical pulp (sulphite)	25.0	0.6	1.6	0.045
CTMP	15.0	0.2	0.3	0.005

(*) Net emissions of P are considered in the calculation. The P naturally contained in wood raw materials and in water can be subtracted from the total emissions of P. Reductions up to 0.010 kg/ADT shall be accepted.

- None of the individual points P_{COD} , P_{S} , P_{NOx} , P_{P} shall exceed 1.5.
- The total number of points ($P_{\text{total}} = P_{\text{COD}} + P_{\text{S}} + P_{\text{NOx}} + P_{\text{P}}$) shall not exceed 4.0.

In case of a co-generation of heat and electricity at the same plant, the emissions of S and NOx resulting from electricity generation shall be subtracted from the total amount.

The following equation shall be used to calculate the proportion of the emissions

¹² <http://www.nordic-ecolabel.org/criteria/product-groups/?p=3>

resulting from heat generation:

$$[\text{MWh}(\text{heat}) - \text{MWh}(\text{heat})_{\text{sold}}] / [\text{MWh}(\text{heat}) + 2 \times \text{MWh}(\text{electricity})]$$

Where,

- MWh(electricity) is the electricity produced at the co-generation plant.
- MWh(heat) is the useful heat produced in a cogeneration process
- MWh(heat)_{sold} is the useful heat that is used outside the pulp manufacturing plant.

Assessment and verification: The applicant shall provide detailed calculations showing compliance with this criterion, together with related supporting documentation which shall include test reports using the following test methods:

- COD: ISO 6060, EPA SM 5220D or HACH 8000;
- NO_x: ISO 11564 or EPA 7E;
- S(oxid.): EPA 8;
- S(red.): EPA 8 or EPA 16A;
- S content in oil: ISO 8754 or EPA 8;
- S content in coal: ISO 351 or EPA 8;
- P: ISO 6878, SM4500, APAT IRSA CNR 4110 or Dr Lange LCK 349.

The supporting documentation shall include an indication of the measurement frequency and the calculation of the points for COD, S, NO_x and P. It shall include all emissions of S and NO_x which occur during the production of pulp, including steam generated outside the production site, except those emissions related to the production of electricity.

Measurements shall include recovery boilers, lime kilns, steam boilers and destructor furnaces for strong smelling gases. Diffuse emissions shall be taken into account.

Reported emission values for S to air shall include both oxidised and reduced S emissions (dimethyl sulphide, methyl mercaptan, hydrogen sulphide and the like). The S emissions related to the heat energy generation from oil, coal and other external fuels with known S content may be calculated instead of measured, and shall be taken into account.

Measurements of emissions to water shall be taken on unfiltered and unsettled samples either after treatment at the plant or after treatment by a public treatment plant.

The measurement period shall be 12 months of production. Measurements for COD and P shall be taken on a monthly basis, measurements for S and NO_x on a yearly basis.

For a new or re-built plant or a change of process at the production plant, measurements shall be done on a weekly basis for a total of 8 consecutive weeks following steady running of the plant. The measurement shall be representative of the respective campaign.

Rationale and technical feasibility:

During the production of fluff pulp, negative effects on the environment and on human health should be minimised. Requirements for emissions of COD and P to water and for emissions of S and NO_x to air from fluff pulp production are proposed as set in the EU Ecolabel criteria for copying and graphic paper (Commission Decision 2011/332/EU)¹³. However, in comparison with the Commission Decision 2011/332/EU, the assessment and verification procedure has been slightly modified because reported by stakeholders that:

- Measurements for S and NO_x should be taken on a yearly basis;
- Equivalent test methods should be accepted.
- It was to be clarified what is included within the definition of "new or re-built production plant".

In addition to this,

- Clarifications on phosphorous emissions and allocation procedure have been made
- Measurements for COD and P have been set on a monthly basis in accordance with what required for AOX measurement.

A quantification of costs and environmental benefits associated with this prescription would be difficult.

2.5) Emissions of CO₂ from production

CO₂ emissions from non-renewable energy sources shall not exceed 500 kg per tonne of pulp produced. Reference values according to the following table shall be taken into account:

Fuel	CO ₂ fossil emissions (g CO _{2fossil} /MJ)
Coal	95
Crude oil	73
Fuel oil 1	74
Fuel oil 2-5	77
LPG	69
Natural Gas	56
Grid Electricity	400

Assessment and verification: The applicant shall provide detailed calculations showing compliance with this criterion, together with related supporting documentation.

The applicant shall provide data on the air emissions of carbon dioxide. This shall

¹³ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:149:0012:0024:EN:PDF>

include all sources of non-renewable fuels during the production of pulp, including the emissions from the production of electricity (whether on-site or off-site).

The measurement period shall be 12 months of production. Measurements shall be done on a yearly basis.

For a new or re-built plant or a change of process at the production plant, measurements shall be done on a weekly basis for a total of 8 consecutive weeks following steady running of the plant. Results have to be shown also after 12 months of production. The measurement shall be representative of the respective campaign.

The amount of energy from renewable sources purchased and used for the production processes will not be considered in the calculation of the CO₂ emissions: appropriate documentation that this kind of energy are actually used at the mill or are externally purchased shall be provided by the applicant.

Rationale and technical feasibility:

During the production of fluff pulp, negative effects on the environment and on human health should be minimised.

A threshold on the emissions of CO₂ from fossil sources of energy is proposed as set in the EU Ecolabel criteria for copying and graphic paper (Commission Decision 2011/332/EU)¹⁴. However, in comparison with the Commission Decision 2011/332/EU, the assessment and verification procedure has been slightly modified because reported by stakeholders that measurements should be taken on a yearly basis. A better definition was moreover needed to clarify what is included within the definition of "new or re-built production plant".

The threshold has been discussed with stakeholders. Some stakeholders asked to keep it at 1100 kg/ADT, as required in the criteria for copying and graphic paper. Other stakeholders asked to decrease it at 100-200 kg/ADT because saying that the limit value set in copying and graphic paper refer to production of paper. However, it was reported by stakeholders that, compared to paper, fluff pulp production presents an important drying process (the moisture content of fluff pulp must be 95%) that requires energy and produces CO₂. Based on information received by stakeholders it is considered that a more ambitious threshold for fluff pulp could be sensibly set at 500 kg/ADT.

Having a requirement on the emission of CO₂ is important because this is an indirect indicator of the consumption of energy from fossil fuels.

¹⁴ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:149:0012:0024:EN:PDF>

Criterion 3: Man-made cellulose fibres (including viscose, modal, lyocell, cupro, triacetate)

3.1) Sourcing

(a) All pulp fibres shall be covered by valid sustainable forest management and chain of custody certificates issued by an independent third party certification scheme such as FSC, PEFC or equivalent.

A minimum of 25% pulp fibres shall be manufactured from wood that has been grown according to the principles of Sustainable Forestry Management as defined by the UN FAO.

The remaining proportion of pulp fibres shall be from wood that is sourced from legal forestry and plantations.

(b) Dissolving pulp produced from cotton linters shall meet with the requirement 4.1 for cotton (sourcing and traceability).

Assessment and verification:

(a) The applicant shall provide valid, independently certified chain of custody certificates from the pulp supplier(s) demonstrating that pulp fibres have been grown according to Sustainable Forestry Management principles and/or are from legal sources.

FSC, PEFC and PEFC endorsed schemes shall be accepted as independent certification.

The pulp manufacturer shall demonstrate that due diligence processes have been followed as specified in Regulation (EC) 995/2010 in order to ensure that timber has been legally harvested. Valid FLEGT (Forest Law Enforcement, Governance and Trade) or CITES (Convention on International Trade in Endangered Species) licenses or third party certification shall be accepted as evidence of legal sourcing.

(b) The application shall provide evidence of compliance according to criterion 4.1 for cotton (sourcing and traceability).

Rationale and technical feasibility:

For pulp fibres made from wood rationale is described in criterion 2.1 for fluff pulp. Nevertheless, percentage of SFM-certified fibres has been aligned with the recently revised EU Ecolabel criteria for Textiles, where extensive discussion on dissolving pulp has been held. The presented value (25%) coincides with that currently proposed for fluff pulp after discussion with stakeholders.

For dissolving pulp produced from cotton rationale is described in criterion 4.1 for cotton.

3.2) Bleaching

The pulp used to manufacture fibres shall not be bleached with the use of chlorine gas. The resulting total amount of adsorbable organically bound halogens (AOX) and

organically bound chlorine (OCI) shall not exceed:

- 0.17 kg/ADT, if measured in the wastewater from pulp manufacturing (AOX), or
- 150 ppm, if measured in the finished fibres (OCI).

Assessment and verification:

The applicant shall provide a declaration from the pulp supplier that chlorine gas is not used and a test report showing compliance with either the AOX or the OCI requirement, using the appropriate test method:

- ISO 9562 or the equivalent EPA 9562 for AOX;
- ISO 11480 for OCI.

Rationale and technical feasibility:

Rationale for this criterion is reported in the discussion of criterion 2.2 for fluff pulp. Wording and thresholds for dissolving pulp have been defined accordingly with the recently revised EU Ecolabel criteria for Textiles, where extensive discussion on dissolving pulp has been held.

OX has been changed with OCI following the indications of the standard ISO 11480.

3.3) Optical brighteners and colouring agents

Optical brighteners and colouring agents, including fluorescent whitening agents, shall not be intentionally added to the fibres.

Assessment and verification:

The applicant shall provide a declaration from the supplier that the requirements have been fulfilled.

Rationale and technical feasibility:

Rationale for this criterion is reported in the discussion of criterion 2.3 for fluff pulp.

3.4) Production of fibres

(a) More than 50% of pulp used to manufacture fibres shall be obtained from dissolving pulp mills that recover value from their spent process liquor either by i) generating on-site electricity and steam and/or ii) by manufacturing chemical co-products.

(b) The following limit values for the emission of sulphur compounds to air shall be respected in the viscose and in the modal fibres production process:

Fibre type	Sulphur emissions to air - Limit value (g/kg)
Staple fibre	30

Filament fibre	
- Batch washing	40
- Integrated washing	170
<i>Note: Limit values expressed as annual average</i>	

Assessment and verification:

(a) The applicant shall make the fibres manufacturers to provide a list of pulp suppliers used to produce the fibres and the proportion they supply. Supporting documentation and evidence shall be provided that the required proportion of suppliers has the appropriate energy generating equipment and/or co-product recovery and manufacturing systems installed at related production sites.

(b) The applicant shall provide detailed documentation and/or test reports showing compliance with this criterion, together with a declaration of compliance.

Rationale and technical feasibility:

(a) Negative effects on the environment due to resource consumption should be minimized. Environmental benefits and potential cost saving should be achieved by using pulp obtained from dissolving pulp mills that recover value from their spent process liquor (e.g. by generating on-site electricity and steam and/or by manufacturing chemical co-products).

The proposed wording is adapted from the recently revised EU Ecolabel criteria for Textiles, where extensive discussion on dissolving pulp has been held.

(b) During the production of viscose, negative effects on the environment and on health due to emissions should be minimized. Limit values for production of viscose staple fibres (and filaments) are suggested in the BREF documents on polymers¹⁵.

The previous proposal presented in April 2013 was setting requirements on:

- Emissions of sulphur compounds to air from the viscose and from the modal fibres production process;
- Emissions of zinc to water from the viscose and from the modal fibres production process;
- Emissions of copper to water from the cupro fibres production process.

In accordance with the recently revised EU Ecolabel criteria for Textiles, where discussion with producer of man-made cellulose fibres already took place, values limits have been proposed only for the emissions of sulphur compounds to air from the viscose and from the modal fibres production process.

Some stakeholders involved in this project even proposed to implement requirements on:

- COD emissions (< 25 kg/ADT) or TOC emissions (< 9 kg/ADT) to wastewater

¹⁵ European Commission: Reference Document on Best Available Techniques in the Production of Polymers. August 2007; http://eippcb.jrc.es/reference/BREF/pol_bref_0807.pdf

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- Energy consumption.

However, alignment with the EU Ecolabel criteria for Textiles was considered the priority.

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Criterion 4: Cotton and other natural cellulosic seed fibres

4.1) Sourcing and traceability

(a) More than 10% of cotton and other natural cellulosic seed fibres (hereinafter referred to as cotton) shall be grown according to the requirements laid down in Regulation (EC) No 834/2007¹⁶, the US National Organic Programme (NOP) or equivalent legal obligations set by trade partners of the EU. The organic cotton content may include organically grown cotton and transitional organic cotton.

(b) With the exception of organic cotton, all the cotton used shall be grown without the use of any of the following substances:

Alachlor, aldicarb, aldrin, campheclor (toxaphene), captafol, chlordane, 2,4,5-T, chlordimeform, chlorobenzilate, cypermethrin, DDT, dieldrin, dinoseb and its salts, endosulfan, endrin, glyphosulfate, heptachlor, hexachlorobenzene, hexachlorocyclohexane (total isomers), methamidophos, methyl-o-demeton, methylparathion, monocrotophos, neonicotinoids (chlothianidine, imidacloprid, thiametoxam), parathion, phosphamidon, pentachlorophenol, thiofanex, triafanex, triazophos

Cotton shall not contain more than 0.5 ppm in total of the substances listed above.

(c) All the cotton used shall come from non-genetically modified varieties and shall be fully traceable from the point of verification of the production standard.

Assessment and verification:

(a) Organic content should be certified by an independent control body to have been produced in conformity with the production and inspection requirements laid down in Regulation (EC) No 834/2007, the US National Organic Programme (NOP) or those set by other trade partners. Verification shall be provided on an annual basis for each country of origin.

(b) Cotton shall be tested for the listed substances. A test report shall be provided based on the following test methods, as appropriate:

- US EPA 8081 B (organo-chlorine pesticides, with ultrasonic or Soxhlet extraction and apolar solvents (iso-octane or hexane)),
- US EPA 8151 A (chlorinated herbicides, using methanol),
- US EPA 8141 B (organophosphorus compounds),
- US EPA 8270 D (semi-volatile organic compounds).

Tests shall be made on samples of raw cotton from each country of origin and before it passes through any wet treatment. For each country of origin testing shall be carried out on the following basis:

- Where only one lot of cotton is used per year a sample shall be taken from a randomly selected bale,
- If more than two lots of cotton are used per year composite samples shall be

¹⁶ Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91 (OJ L 189, 20.7.2007, p. 1)

taken from 5 % of the bales.

Cotton is not required to be tested where it has been certified as organic.

(c) Non-genetically modified varieties of cotton shall be verified in conformity with Regulation (EC) No 1830/2003 of the European Parliament and of the Council of 22 September 2003 concerning the traceability and labelling of genetically modified organisms.

The applicant shall also demonstrate compliance with the minimum cotton content requirement either for the annual volume of cotton purchased or for the blend of cotton used to manufacture the final product(s) and according to each product line:

- On an annualised basis: Transaction records and/or invoices shall be provided that document the quantity of cotton purchased on an annual basis from farmers or producer groups, and/or the total weight of certified bales up until greige fabric production.
- On a final product basis: Documentation shall be provided from the non-woven fabric production stages. All documentation shall reference the Control Body or certifier of the different forms of cotton.

Rationale and technical feasibility:

The use of organic and responsibly produced cotton would produce benefit to farmers, retailers and consumers all along the value chain.

The environmental benefits of organic cotton relate primarily to the avoidance of pesticide use and the avoidance of artificial fertilisers. Its cultivation is one of the most intensive users of agrochemicals worldwide. Artificial fertilisers and pesticides are energy and resource intensive to produce, contribute to the degradation of the soil structure and health, and also contribute to nitrous oxide emissions from soil which means that conventionally grown cotton can also contribute more to the greenhouse effect than organic cotton. In some of areas of cultivation cotton also requires substantial irrigation water, but organic cotton does not necessarily address this issue.

The use of organic cotton results thus in a reduction in the emission of greenhouse gases but the major environmental benefit is the avoidance of the use of pesticides which benefits both the environment and the health of farmers and local communities that do not have to handle or be exposed to pesticides which, according to studies by the UN FAO, in some cotton growing regions may be applied in large quantities without sufficient protection and precision. Pesticides used may include substances listed under Categories IA/B, II and III of the WHO pesticide hazard classifications and substances listed under the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

The measures for the sustainable sourcing of cotton have been aligned as much as possible with the recently revised EU Ecolabel criteria for Textiles.

Based on the consultation of the stakeholders involved in this project, the following elements have been recommended for the sourcing of the cotton used in AHP:

- Setting a minimal threshold on the amount of cotton coming from organic sources;
- Testing the presence of pesticides on the balance to 100%;
- Tracing cotton from the origin to the fabric/product manufacturing stage.

Compared with what proposed for the revision of the Commission Decision 2009/567/EC, establishing ecological criteria for the award of the Community eco-label for textile products, requirements on IPM cotton have been not presented because not considered appropriate by stakeholders for this product group.

Additional restrictions on the non-use of genetically modified varieties resulted after internal discussion within the Commission.

With respect to the threshold to set for the minimal amount of organic cotton, stakeholders involved in this project reported that:

- Organic cotton used in AHP presents lower staple length and/or organic comber noils and is hardly in competition with textile grade cotton fibres. Requiring 100% organic cotton could strengthen the market for organic cotton.
- Organic cotton represents only few per cent of the market (less than 1% in 2007/2008). Even with dramatic increases (+30%/year), it will be well below 10% of total global production in 2015 (in-house calculation).

Considering that these would represent the first generation of criteria for AHP and that there are practical limitations on the availability of cotton (below 10% by 2015 based on in-house calculation), a 10% threshold by weight is proposed. This would even be equal to the general threshold set in the revised EU Ecolabel criteria for textiles.

4.2) Bleaching

Cotton shall not be bleached with the use of chlorine gas.

Assessment and verification: The applicant should provide a declaration from the supplier that chlorine gas is not used.

Rationale and technical feasibility:

Rationale for this criterion is reported in the discussion of criterion 2.2 for fluff pulp.

4.3) Optical brighteners and colouring agents

Optical brighteners and colouring agents, including fluorescent whitening agents, shall not be intentionally added to the cotton.

Assessment and verification:

The applicant shall provide a declaration from the supplier that the requirements have been fulfilled.

Rationale and technical feasibility:

Rationale for this criterion is reported in the discussion of criterion 2.3 for fluff pulp.

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Criterion 5: Plastic materials and Super Absorbent Polymers

Taking inspiration from the Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food¹⁷, the following definitions are proposed for the criteria on plastic materials and synthetic polymers:

- 'Bio-plastics' means plastic materials produced from renewable sources.
- 'Bio-polymers' means synthetic polymers produced from renewable sources.
- 'Bio-SAPs' means super absorbent polymers produced from renewable sources.
- 'Cellulose pulp' means a fibrous material obtained from the treatment of lignocellulosic materials (wood or other agricultural fiber sources) with one or more aqueous solutions of pulping and/or bleaching chemicals. This is composed of cellulose, hemi-cellulose, lignin, and other minor components. The relative amounts of these components depend on the extent of the pulping and bleaching processes.
- 'Plastic materials', also referred to as 'Plastics', means synthetic polymers to which additives or other substances may have been added which can be moulded and used as main structural component of final materials and articles.
- 'Synthetic polymers' means macromolecular substances other than cellulose pulp intentionally obtained either by:
 - A polymerisation process such as poly-addition or poly-condensation, or by any other similar process of monomers and other starting substances;
 - Chemical modification of natural or synthetic macromolecules;
 - Microbial fermentation.
- 'Super absorbent polymers (SAP)' means synthetic polymers designed for absorbing and retaining large amounts of liquid compared to their own mass.

5.1) Sourcing and production of synthetic polymers used in plastic materials

(a) For the polymers used to produce plastic materials reported below, cradle-to-gate emissions of greenhouse gases and demand of energy resources shall be lower than the thresholds reported in the table (when applicable).

Synthetic polymer	GWP (kg CO ₂ eq/kg)	Energy resources (MJ/kg, HHV)	
		Fuel energy	Feedstock
LDPE, resin	2.13	26.5	51.6
LLDPE, resin	1.89	24.1	48.6
HDPE, resin	1.96	22.5	54.3
PP, resin	2.00	20.8	52.6

¹⁷ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:012:0001:0089:EN:PDF>

PS, general purposes	2.25	36.48	46.3
PS, high impact	2.43	40.69	48.8

(b) The following measures shall be implemented in the plants producing plastic materials and synthetic polymers used in the product:

- Water-saving solutions (e.g. monitoring of water flow in a facility and circulating the water in closed systems);
- Integrated waste management plan to optimize prevention, reuse, recycling, recovery and final disposal of waste (e.g. separation of different waste fractions)
- Optimization of energy efficiency and energy management (e.g. reuse of the steam generated during the manufacture of SAPs)

Assessment and verification:

(a) Cradle-to-gate emissions of greenhouse gases and demand of non-renewable energy from the polymers used to manufacture the plastic materials listed in the table above shall be calculated according to ISO 14040/44, ISO 14025 and the guidelines provided by Plastic Europe in

- <http://www.plasticseurope.org/Documents/Document/20100312112214-PlasticsEuropeEPDProgrammelnstructions200709-20070620-006-EN-v1.pdf>
- http://www.plasticseurope.org/documents/document/20110421141821-plasticseurope_eco-profile_methodology_version2-0_2011-04.pdf.

Results will be third-party reviewed according to ISO 14040/44, ISO 14025 and ISO/DTS 14071 and summarised in a concise technical report for Competent Bodies.

(b) The applier shall make suppliers to provide a report describing how these requirements have been fulfilled in all the production plants. These may include layouts of the manufacturing plants with brief explanation and appropriate certification according to ISO 14001 (Environmental Management Systems) and ISO 50001 (Energy Management Systems).

Rationale and technical feasibility:

(a) As described in the Preliminary report, plastics and SAPs represent a significant share of the weight of AHPs, with trends showing an increasing importance of this group of materials. The four most important synthetic polymers in terms of weight share are:

- Super-absorbent polymers (SAP),
- Polypropylene (PP),
- Polyethylene (PE) and
- Polyester (PET).

In addition to them, the non-exhaustive list of synthetic polymers that could be found in AHPs may for instance include:

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- Polyurethane (PU)
 - Polystyrene (PS),
 - Elastane (lycra, spandex) and polymers based on renewable raw materials.

Possibilities for setting criteria on the sourcing and production of synthetic polymers are limited.

A criterion promoting the use of synthetic polymers based on renewable materials is present in the set of Nordic Swan criteria¹⁸. For this product group there is an overall trend towards the introduction of polymers based on renewable materials, also named bio-polymers or bio-plastics in this context.

In principle, the use of renewable materials is considered to encourage conservation of resources. Some bio-polymers could present potential environmental advantages, such as the saving of fossil resources and the biological degradation at the end-of-life. However, environmental trade-offs can be associated to the use of materials from renewable sources, such as the increased demand of land for the production of biomass. For instance, it could be that a specific bio-polymer consumes more energy and produces more greenhouse-gases emissions than its fossil-based alternative. Moreover, it should be noted that biodegradability of polymers becomes a concrete benefit after use only if material does not go into landfills or incineration plants, which is the conventional disposal scenario for AHPs.

Another important point of discussion would be the apparently higher cost of most bio-based materials and their market availability. The current market volume of bio-plastics is about 1-1.5% and it was reported by stakeholders that any forecast beyond 2016 is pure speculation. Requiring that a certain amount of plastic comes from renewable sources could exclude almost all the products on the market.

Spatial and technical differences between different bio-plastic production chains can result in a significantly complex range of environmental performances. From a theoretical point of view, sustainability of bio-polymers can be supported only if the environmental lifecycle performance of these materials is evaluated in comparison with conventional, petroleum-based polymers.

A working group (CEN TC 411 Biobased products WG4 Sustainability and LCA) is currently involved in the development of two standards, for assessing the sustainability of bio-based products and also for performing LCAs. According to the information reported by stakeholders, the standards would be ready by 2016.

Based on these elements, it is not recommended that the promotion of bio-polymers is addressed in the current set of criteria.

Some criteria on plastic materials have been presented by the Australian Voluntary Environmental Labelling Standard for Nappy and Nappy Wipe Products¹⁹. According to this standard, the main requirements for plastics of potential interest for AHPs are:

- A threshold on the maximal emissions of SO₂ from the PE/PP manufacturing process (11 kg/tonne), production of energy from external sources excluded.

¹⁸ Ecolabelling 2008: Nordic Ecolabelling of sanitary products, Version 5.3; <http://www.nordic-ecolabel.org/criteria/product-groups/?p=3>

¹⁹ http://www.geca.org.au/media/medialibrary/2012/08/GECA_29-2005_-_Nappy_and_Nappy_Wipe_Products_May_2012.pdf

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- A threshold on the maximal emissions of NO_x from the PE/PP manufacturing process (12 kg/tonne), production of energy from external sources excluded.
 - No use of organic solvents for PE produced by fibre extrusions.

However, according to the stakeholders involved in the project, these requirements appear out-of-date.

Plastics Europe has recently developed updated eco-profiles for synthetic polymers typically used in products²⁰:

1. Polyolefin (PO) Family (including average data for PP from 28 sites, LDPE from 27 sites and HDPE from 24 sites)
2. PVC Family
3. PET Family (including average data for amorphous PET from 7 sites)
4. Acrylic Family
5. Styrenic Family (including average data for general purpose PS from 13 sites and high impact PS from 11 sites)
6. Polyamide (PA) Family
7. Epoxy Family
8. Polycarbonate (PC) Family
9. Polyurethane (PU) Family
10. On-site Energy
11. Other polymers, monomers & reactive precursors.

Eco-profiles represent Life Cycle Inventory datasets (LCI) and Environmental Product Declarations (EPD) for average synthetic polymers used in the product manufacturing. A methodology document has been also developed that provides guidelines for calculating the eco-profile of plastics according to Plastics Europe²¹.

The following indicators are considered:

- Consumption of non-renewable materials
 - Minerals
 - Fossil fuels
 - Uranium
- Renewable materials (biomass)
- Water use
- Non-renewable energy resources
 - Energy
 - Feedstock

20 <http://www.plasticseurope.org/plasticssustainability/eco-profiles/browse-by-family.aspx>

21 http://www.plasticseurope.org/documents/document/20110421141821-plasticseurope_eco-profile_methodology_version2-0_2011-04.pdf

- Renewable energy resources (biomass)
 - For energy
 - Feedstock
- Global Warming Potential
- Ozone Depletion Potential
- Acidification Potential
- Photochemical Ozone Creation Potential
- Nitrification Potential
- Dust/particulate matter
- Total particulate matter
- Waste
 - Non-hazardous
 - Hazardous

According to the literature²², sensitive variation of the environmental performance of polymers based on benzene and ethylene may be associated to the technological route follow for the synthesis of precursors. Based on this, it is proposed that the synthetic polymers must perform better than the average. Of all the indicators included in the eco-profile of Plastic Europe, GWP and energy demand have been selected as key indicator of screening. Average values provided by Plastic Europe are reported below for synthetic polymers most typically used in AHPs, and for which an eco-profile has been calculated

Synthetic polymer	GWP (kg CO ₂ eq/kg)	Energy resources (MJ/kg, HHV)	
		Fuel energy	Feedstock
LDPE, resin	2.13	26.5	51.6
LLDPE, resin	1.89	24.1	48.6
HDPE, resin	1.96	22.5	54.3
PP, resin	2.00	20.8	52.6
PS, general purposes	2.25	36.48 (34.48 - 38.48)	46.3 (44.3 - 48.3)
PS, high impact	2.43	40.69 (38.69 - 42.69)	48.8 (48.3 - 49.3)

It shall be declared that polymers listed in the table above and used in AHPs present cradle-to-gate emissions of greenhouse gases and demand of energy below the threshold set. Calculations shall be made according to ISO 14040/44, ISO 14025 and the guidelines provided by Plastic Europe in

²² <http://conferences.chalmers.se/index.php/LCM/LCM2013/paper/view/691/289>

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- <http://www.plasticseurope.org/Documents/Document/20100312112214-PlasticsEuropeEPDProgrammeInstructions200709-20070620-006-EN-v1.pdf>
 - http://www.plasticseurope.org/documents/document/20110421141821-plasticseurope_eco-profile_methodology_version2-0_2011-04.pdf.

Results will be third party reviewed according to ISO 14040/44, ISO 14025 and ISO/DTS 14071²³ and summarised in a concise technical report. Further guidance will be given in the User Manual.

This would represent a first step for the development of environmental criteria for plastics which could be developed further in the next revision of the criteria, also taking into account for the progresses of the Product Environmental Footprint²⁴.

(b) A series of additional measures is proposed to reduce the environmental impacts from the production of polymers. Measures have been identified through the critical screening of the Best Available Techniques (BAT) Reference Documents for Polymers. The list of requirements proposed for discussion does not include the ones prescribing the implementation of technical solutions with which to achieve objectives already set with other sub-criteria.

Negative effects on the environment due to water use and emissions to water and air should be minimized. Some measures can lead to cost savings (e.g. reduced water use and reduction of chemicals and other auxiliaries). However, costs may vary depending on their technological status.

Implementing energy and waste management strategies can save resources and produce monetary benefits. Although at first the implementation of a management system will probably be associated with additional costs (certification fee, labour cost etc.), it can be expected that cost saving can be achieved from the moment the measure is installed. Savings strongly depend on the efficiency of the processes before the implementation of new systems. Environmental and economic benefits could be even achieved through reusing, recycling or down-cycling materials.

5.2) Additives in plastic materials

(a) Contents of lead, cadmium, mercury, hexavalent chrome and related compounds and attendant impurities as well as organostannic compounds shall be lower than 0.01% (100 ppm) of the mass of each plastic material and synthetic polymer used in the product.

(b) Additives intentionally used in plastics in concentration above 0.1% by weight shall not be classified, according to Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 as:

- carcinogenic, mutagenic or toxic for reproduction, categories 1a, 1b and 2 (H340, H350, H350i, H360F, H360D, H360FD, H360Fd, H360Df);

²³ <http://conferences.chalmers.se/index.php/LCM/LCM2013/paper/download/531/132>

²⁴ http://ec.europa.eu/environment/eussd/smgp/product_footprint.htm

- acutely toxic, categories 1 and 2 (H300, H310, H330, H304);
- toxic to specific target organs (STOT), category 1: (H370, H372);
- hazardous to the aquatic environment, categories 1 and 2 (H400, H410, H411).

Assessment and verification:

(a, b) The applicant shall make suppliers to provide a declaration of non-use in conformity with ISO/IEC 17050, confirming that classified additives have not been intentionally used in the plastic material / synthetic polymer in concentrations above 0.01%. A list of added substances shall be also provided, including concentrations and related H statements/R phrases, supported by safety data sheets.

In order to facilitate follow-up and monitoring of the documentation provided, a random sample of suppliers may be examined. The supplier shall provide access to production facilities, warehouses and the like. Confidentiality applies to any documentation and information submitted and shared.

Rationale and technical feasibility:

The use of additives in plastic materials can contribute to the diffusion into the environment of hazardous substances and to the exposure to them. The aim of this requirement is to restrict the presence of hazardous additives used in plastic materials.

The first generation of this requirement takes inspiration from the EDANA's GPP guidelines Version 2008-11-06 (see Preliminary Report), which prescribed limitations in the content of heavy metals (cadmium, lead, mercury and chromium) and organotin compounds.

Heavy metals such as cadmium, lead, mercury and chromium are very persistent in the environment and hazardous for health and eco-systems.

Even if the use of these metals in plastic is regulated in the EU, cadmium, chromium and lead can still be found in products^{25 26 27}.

The use of Cadmium in the EU has been restricted in most of the plastics and further extensions are under evaluation^{28 29 30}.

A phase-out of lead is expected to take place in few years (by 2015)³¹.

Plastic seems a potential application even for chromium-based compounds³², while mercury seems not relevant, as expressed by the plastic industry association.

25 <http://www.isca.in/IJENS/Archive/v1/i4/5.ISCA-IRJEvsS-2012-059.pdf>

26 <http://www.nnewh.org/images/upload/attach/2502NNEWH%20Lit%20Review%20-%20Chem%20Exp%20and%20Plastics%20Production.pdf>

27 <http://www.investteda.org/swhdfile/yth/a10.pdf>

28 <http://www.sciencedirect.com/science/article/pii/S0306374713700496#>

29 http://echa.europa.eu/documents/10162/13641/status_report_cd_in_plastics_second_en.pdf

30 <http://www.speciation.net/News/ECHA-requests-comments-on-expanding-REACH-restriction-on-the-use-of-cadmium-in-plastics-~/2013/02/04/6530.html>

31 <http://www.stabilisers.org/stabilisers-types/lead-stabilisers>

Moreover, based on the available information it cannot be excluded that extra-EU producers do not use these metals.

Restrictions on cadmium, lead and chromium VI are thus considered appropriated while that on mercury is preliminary put on hold.

The concentration limit is established with the idea that concentrations below 0.01% by weight (100 ppm) are considered as contaminants. By comparison, limit values of heavy metals proposed within the revision of EU Ecolabel criteria for Bed Mattresses and for Textiles are stricter.

Analysis of metals can be carried-out by:

- inductively coupled plasma optical emission spectrometry (ICP-OES), also known as inductively coupled plasma atomic emission spectrometry (ICP-AES);
- atomic absorption spectrometry using a hydride or cold vapour process;
- Inductively coupled plasma mass spectrometry (ICP-MS);
- X-Ray fluorescence analysis.

Organotin compounds include persistent and toxic substances. Some of them may also accumulate in living organisms, have endocrine disrupting properties and interfere with reproduction. Examples of organotin substances of concern are Tributyltin (TBT), Dibutyltin (DBT), Monobutyltin (MBT), Tetrabutyltin (TeBT), Mono-octyltin (MOT), Dioctyltin (DOT), Tricyclohexyltin (TcyT), Triphenyltin (TPhT).

Some stakeholders reported that organotin compounds were found in some AHPs marketed in Scandinavia and that for this reason a threshold of 100 ppm (0.01%) for trace elements was thus set in Nordic Swan.

According to a position paper from EDANA, organotin compounds are not used in the manufacture of absorbent hygiene products (AHP). Trace levels can be found in disposable diapers and feminine hygiene products but it is shown that these are far below levels which would constitute a safety threat to consumers. EDANA members have agreed that the maximum content of organotin compounds in AHPs is 2 ppb for TBT and 10 ppb each other organotin compounds, far below 100 ppm threshold.

The Swedish Chemicals Agency (KemI) has analysed eleven different types of diapers to see if they contain any prohibited organotin compounds³³. None of the analysed diapers contained tributyltin (TBT), dibutyltin (DBT) and dioctyltin (DOT) in concentrations above 0.1% by weight of tin. Restrictions on TBT, DBT and DOT are already in place under REACH.

Unless demonstrated that organotin compounds can be present in AHPs above 100 ppm, it is considered recommendable to put restrictions on organotin substances are preliminary on hold.

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<http://www.bureauveritas.co.uk/wps/wcm/connect/b7ba3a004b31481fb6d9fe4611013ef8/ECHA+Candidate+List+Dec+2012.pdf?MOD=AJPERES>

33 <http://www.kemi.se/en/Content/News/No-organotin-compounds-found-in-diapers/>

Apart from the elements reported, other additives can be used in plastic materials³⁴. For instance, polypropylene and polyethylene are sensitive to oxidation and requires antioxidants and UV-stabilisers^{35 36}.

Since level of hazard of additives can vary, a proposal for preventing the recurring of hazardous plastic additives is presented, taking inspiration from the SEMco procurement criteria for medical devices³⁷.

Additives intentionally used in plastics in concentration above 0.1% by weight shall not be classified, according to Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 as:

- Carcinogenic, mutagenic or toxic for reproduction, categories 1a, 1b and 2 (H340, H350, H350i, H360F, H360D, H360FD, H360Fd, H360Df);
- Acutely toxic, categories 1 and 2 (H300, H310, H330, H304);
- Toxic to specific target organs (STOT), category 1: (H370, H372);
- hazardous to the aquatic environment, categories 1 and 2 (H400, H410, H411).

The applicant shall make suppliers to provide a declaration of non-use in conformity with ISO/IEC 17050, confirming that classified additives have not been intentionally used in the plastic material / synthetic polymer in concentrations above 0.01%. A list of added substances shall be also provided, including concentrations and related H statements/R phrases, supported by safety data sheets.

In order to facilitate follow-up and monitoring of the documentation provided, a random sample of suppliers may be examined. The supplier shall provide access to production facilities, warehouses and the like. Confidentiality applies to any documentation and information submitted and shared.

Alternatively, restrictions on additives could be even proposed based on a recent document reviewing the presence of hazardous substances in plastic materials³⁸.

5.3) Super Absorbent Polymers

(a) Acryl amide (CAS number: 79-06-1) shall not be intentionally added to the product.

(b) Super Absorbent Polymers used in the product may contain a maximum of 1000 ppm residual monomers (total of unreacted acrylic acid and cross linkers) that are classified with the H-statements reported in criterion 7 on excluded or limited substances or mixtures. Sodium polyacrylate (CAS number: 9003-04-7) is exempted

34 http://www.accustandard.com/assets/PLASTIC_ADD_GUIDE_2013.pdf

35 Lithner, D.; Larsson, A. and Dave, G. (2011) Environmental and health hazard ranking and assessment of plastic polymers based on chemical composition. *Science of the Total Environment* 409 (2011) 3309-3324.

36 [http://www.clariant.com/C12576850036A6E9/9822A4522F11A69EC12579FF002E918E/\\$FILE/DA3100E%2010.10.pdf](http://www.clariant.com/C12576850036A6E9/9822A4522F11A69EC12579FF002E918E/$FILE/DA3100E%2010.10.pdf)

37 <http://www.msr.se/en/Home/Procurement/SEMCO-Procurement-criteria/Nursing-and-care/Dialysis/Consumables-for-haemodialysis/Environmentally-hazardous-plastic-additives-in-single-use-articles-tubing-and-connectors/>

38 <http://www.miljodirektoratet.no/old/klif/publikasjoner/3017/ta3017.pdf>

from this requirement.

(c) SAP used in the product may as a maximum contain 10% (weight/weight) of water-soluble extracts (i.e. monomers and oligomers of acrylic acid with lower molecular weight than SAP according to ISO 17190). Sodium polyacrylate (CAS number: 9003-04-7) is exempted from this requirement.

Assessment and verification:

(a) The applicant shall provide a declaration of non-use of the substance.

(b) The applicant shall provide a declaration from the supplier documenting the composition of the superabsorbent polymer(s) used in the product. This must be done by means of a product safety data sheets which specify the full name and CAS number and the residual monomers contained in the product classified in accordance with the above requirements and the quantities thereof. Recommended test methods are ISO 17190, WSP 210.2 (05), ERT 410.2 (02)/IST 210.2(02).. The methods used for the analyses shall be described and the names of the laboratories used for analysis shall be stated.

(c) The applicant shall provide a declaration from the supplier specifying the quantity of water-soluble extracts in the super-absorbent polymer(s). Recommended test methods are ISO 17190, WSP 270.2 (05), ERT 470.2 (02)/IST 270.2(02). The methods used for the analyses shall be described and the analysis laboratories shall be stated.

Rationale and technical feasibility:

Concern on Super Absorbent Polymers is given by the release of residual monomers and by water-soluble extracts. In accordance with the Nordic Swan criteria for Sanitary Products, two prescriptions are proposed for residual monomers and water-soluble extracts³⁹. These substances are even subject to the requirement of Article 6(6) of the Regulation (EC) No 66/2010.

SAP industry reported that there is no evidence of risks due to residual monomers and water-soluble extracts. Sodium polyacrylate (CAS: 9003-04-7), the super absorbent polymer commonly used for AHPs, is not typically classified as hazardous (it is classified as H412 – "Harmful to aquatic life with long lasting effects" – only in 1 out of 223 notifications received by the European Chemicals Agency⁴⁰).

However, it is considered important to keep this criterion for other super absorbent polymers that could be used in AHPs. To this purpose, industry provided some elements for revising the requirement:

- Limit values for residual monomers should be set at 1000 ppm while the 5% threshold for water soluble extracts should be increased otherwise most of producers would be excluded from the EU Ecolabel.
- Salts are not relevant and do not count as extractable and reference should be made to the standard ISO 17190.

39 <http://www.nordic-ecolabel.org/criteria/product-groups/?p=3>

40 <http://clp->

inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=59137&HarmOnly=no?fc=true&lang=en

With respect to water soluble extracts, a 10% threshold has been preliminarily proposed.

In addition to the requirements above, it was recommended to ban explicitly the use acrylic amide (CAS number 79-06-1) that carries the following hazard statements: H301 (Toxic if swallowed); H312 (Harmful in contact with skin); H332 (Harmful if inhaled); H315 (Causes skin irritation); H319 (Causes serious eye irritation); H317 (May cause an allergic skin reaction); H361 (Suspected of damaging fertility or the unborn child); H340 (May cause genetic defects); H350 (May cause cancer); H372 (Causes damage to organs through prolonged or repeated exposure).

However, the use of this and other SAPs shall also respect criterion 7 on excluded or limited substances or mixtures.

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Criterion 6: Other materials

6.1) Adhesive materials

Adhesive materials must not contain:

- Colophony resins (CAS numbers 8050-09-7, 8052-10-6, 73138-82-6),
- Diisobutyl phthalate (DIBP, CAS number 84-69-5)
- Diisononyl phthalate (DINP, CAS number 28553-12-0)
- Formaldehyde (CAS number 50-00-0).

The requirement does not apply if these substances:

1. Are not intentionally added to the material or to the final product, and
2. Are present in the adhesive materials in concentrations below 100 ppm (0.010% by weight).

For formaldehyde, the maximum limit for the content of formaldehyde generated during adhesive production is 250 ppm, measured in newly produced polymer dispersion. Content of free formaldehyde in hardened adhesive (glue) must not exceed 10 ppm. Hotmelt adhesives are exempted from this requirement.

Assessment and verification:

The applicant shall provide a declaration from the supplier that the requirements have been fulfilled. Safety data sheets may be used as proof. Test results for formaldehyde shall be provided, with the exception of hotmelt adhesives.

Rationale and technical feasibility:

This criterion shall reduce sources of risk for workers and consumers with the final aim of protecting their health. The mentioned substances can be harmful to health and are even subject to Criterion 7 on Excluded or limited substances or mixtures. However, stricter requirements are set with this prescription.

Additives of colophony or colophony derivative classified as sensitising according to chemical regulations are not desirable in the product due to their allergenic potential. Similar prescriptions are set in the Nordic Swan criteria for Sanitary Products⁴¹. However, in this context reference has been made to the CAS numbers of the restricted colophony resins, in analogy with the EDANA's GPP guidelines Version 2008-11-06 and with the Swedish Environmental Management Council procurement criteria for incontinence and urology products Version 2.1 (see Preliminary Report).

Reference to the phthalates potentially used in adhesive applications has been also made: DIBP and DINP.

6.2) Inks and dyes

The product and any homogeneous part of it must not be dyed. This prescription

⁴¹ <http://www.nordic-ecolabel.org/criteria/product-groups/?p=3>

does not apply to tampon strings, packaging materials and tapes.

Titanium dioxide in polymers and viscose is exempted from this requirement.

Materials that are not directly in contact with the skin may however be dyed if the dye has the specific function of reducing visibility of the product through white or light coloured clothing.

Inks and dyes shall also comply with Criterion 7 on Excluded or limited substances or mixtures.

Assessment and verification:

The applicant shall provide and shall make suppliers to provide a declaration that the requirements have been fulfilled. In case dyes are used, their presence will be justified by indicating the specific function provided.

Rationale and technical feasibility:

Inks and dyes in the single materials of products are not directly necessary for the performance of a product (with some exceptions mentioned in the criterion text). The use of inks and dyes should be limited in order to minimise environmental impacts. Similar prescriptions are set in the Nordic Swan criteria for Sanitary Products⁴².

For inks and dyes is also considered important to underline that they shall have to comply with Criterion 7 on Excluded or limited substances or mixtures.

6.3) Fragrances

(a) Products intended for infants, babies and children under the age of twelve years shall be fragrance-free. Infant, baby and/or children products refers to products that are marketed as designed and intended for infants, babies and/or children under the age of twelve years or have any of these words on the label/packaging.

(b) Any ingoing substance added to the product as a fragrance shall be manufactured and handled following the code of practice of the International Fragrance Association (IFRA). The code can be found on IFRA website: <http://www.ifraorg.org>. The recommendations of the IFRA Standards concerning prohibition, restricted use and specified purity criteria for materials shall be followed by the manufacturer. The used fragrances shall also comply with Criterion 7 on Excluded or limited substances or mixtures.

(c) In case of their presence, the manufacturer shall indicate on the packaging the fragrances used in the product.

Assessment and verification:

(a), (b), (c) The applicant shall provide a declaration that the requirements have been fulfilled. A sample of product with packaging shall be also provided.

Rationale and technical feasibility

⁴² <http://www.nordic-ecolabel.org/criteria/product-groups/?p=3>

(a) According to Commission recommendation 98/485/EC of 1 July 1998, Member States shall adopt the measures required to ensure a high level of child health protection in regard to some hazardous substances in childcare articles and toys intended to be placed in the mouth for children of age lower than three years.

Children bodies and immune systems are still in development and consequently children react more than adults to allergens. Higher respiratory rate and their thinner skin are factors contributing to the fact that children are more susceptible to the effects of allergens.

Children are at risk of developing allergies because every day their skin is exposed at an early age to well-known allergens in fragrances. Thus, the highest possible safety standards should be applied to children to avoid the exposure to products containing allergenic substances such as perfumes.

For this reasons, it is proposed to introduce a new restriction on the use of fragrances in products which are intended for babies and children under the age of twelve years, in accordance with the feedback received from stakeholders.

(b) Although the environmental impacts associated with fragrances can be considered low, these substances may still contribute to environmental and/or health concerns.

The International Fragrances Association (IFRA) published a list of ingredients contained in fragrances that they consider safe for human health and the environment. The use of certain fragrances in consumer goods is restricted if there is concern for human health or the environment. Adherence to comply with this list is enforced through the IFRA Compliance Program⁴³.

A list of prohibited fragrances was also presented in the previous draft of criteria in accordance with the proposal made for the revision of the Commission Decision 2007/506/EC, establishing ecological criteria for the award of the Community eco-label for rinse-off cosmetic product group (soaps, shampoos and hair conditioners). That list was based on the SCCS opinion on fragrance allergens in cosmetic products from 2012⁴⁴. However, after internal consultation has been decided to allow the use of fragrances if it can be demonstrated that these are not hazardous. To this purpose, the used fragrances shall also comply with Criterion 7 on Excluded or limited substances or mixtures.

c) IFRA compliant fragrances may be contained in some AHPs for woman. For example, feminine care pads may be scented in order to increase the sensation of freshness. The benefit of choice should be given to consumers if the substance used has been proved to be safe. For this reason, the packaging should state which fragrances are contained in the product. The benefit could even be increased if the use of these substances is justified.

6.4) Lotions

In case of their presence, the manufacturer shall indicate on the packaging the lotions used on the product. The used lotions shall comply with Criterion 7 on

43 IFRA (2010): List of ingredients in fragrances. Available online: <http://www.ifraorg.org/en-us/Ingredients>

44 http://ec.europa.eu/health/scientific_committees/consumer_safety/docs/sccs_o_102.pdf

Excluded or limited substances or mixtures.

Assessment and verification:

The applicant shall provide a declaration that the requirements have been fulfilled. A sample of product with packaging shall be also provided.

Rationale and technical feasibility

Lotions may be contained in some AHPs example, for instance baby diapers to provide extra protection against skin rash. The benefit of choice should be given to consumers if the substance used has been proved to be safe. For this reason, the packaging should state which lotions are contained in the product. The benefit could even be increased if the use of these substances is justified. For example, some stakeholders involved in this project stated that parents usually apply extra lotion when changing the diaper of their babies. It was reported that the amount of lotion used by parents is considerably higher compared to the amount of lotion contained in a diaper “with lotion”. Consequently, if the addition of lotion were explained on the diaper packaging, the use of additional lotions could be avoided.

6.5) Silicone

a) Where components of the product are treated with silicone, the manufacturer shall ensure that employees are protected from the solvents.

b) Neither octamethyl cyclotetrasiloxane D4 (CAS 556-67-2) nor decamethyl cyclopentasiloxane D5 (CAS 541-02-6) shall be present in chemical products used in the silicone treatment of components. The requirement does not apply if D4 and D5:

1. are not intentionally added to the material or to the final product, and
2. are present in the silicone in concentrations below 100 ppm (0.01% by weight)

Assessment and verification:

a) The applicant shall provide information on the method used for the treatment of silicone and documentation attesting that employees are protected.

b) The applicant shall provide a declaration from the supplier that the requirement has been fulfilled.

Rationale and technical feasibility:

Some silicone components can be harmful to health. This criterion shall reduce source of risks for workers and consumers in order to protect health of people. Similar prescriptions are set in the Nordic Swan criteria for Sanitary Products. It is possible that an increase in protection mechanisms is accompanied by additional costs.

6.6) Nanosilver particles

Nanosilver particles shall not be intentionally added to the product or to any homogeneous part or material of it.

Assessment and verification

The applicant shall provide a declaration and shall make suppliers to provide a declaration that the requirement has been fulfilled.

Rationale and technical feasibility

Some products have been found advertising the use of nanosilver in AHPs⁴⁵

Silver nanoparticles are added to a variety of every day products as an antimicrobial. Although silver has been used safely for centuries, some people question whether the rapid expansion of new exposure sources to nanosilver could have adverse consequences⁴⁶. Some concerns related to the use of nanosilver because of its potential capability of promoting the antibiotic resistance of bacteria.

Additional research⁴⁷ shows that silver nanoparticles can be absorbed via all routes of exposure (oral dermal and inhalation). However, it is unclear in which form (as particles, free ions, silver ions or complexes) nanosilver is absorbed and distributed to target organs. At least for uptake via the oral route it is likely that at least some of the uptake occurs as ions. It appears that smaller particles exhibit higher toxicity as compared to larger particles; and if silver is absorbed as particles then the surface area is relevant.

Silver is known to be an ecotoxic metal and tests with silver nanoparticles (AgNP) do also reveal very low effect concentrations. Thus, for algae EC50-values as low as 4 µg/l have been found and also for crustaceans values far below 1 mg/l has been reported. This ranks AgNP as very toxic towards aquatic organisms. It is also important to note that at concentrations below 1 mg/l inhibition of nitrifying bacteria can occur and thus the function of wastewater treatment plants may be affected by the presence of AgNP. Possibly significant environmental effects arising from interactions with symbiotic bacteria present in organisms and in soil have also been documented.

The environmental concentration resulting from the use of AgNP in consumer products are at present uncertain, even though a number of different estimates have been proposed. Even low concentrations of the substances may constitute an environmental risk due to the high toxicity of silver.

It is debated today whether silver nanoparticles are in fact more toxic than their bulk counterpart, since effects in many cases can be ascribed to the ionic form of silver (Ag⁺). Some studies have documented a higher toxic effect from AgNP, however, even if AgNP are “only” as toxic as larger silver particles, silver is still a very ecotoxic metal.

⁴⁵ <http://www.fohow.com/index.php/Products/detail/id/44/l/en/>

⁴⁶ <http://ehp.niehs.nih.gov/121-a220/>

⁴⁷ Mikkelsen, S.H.; Hansen, E.; Christensen, T.B.; Baun, A.; Hansen, S.F.; Binderup, M.-L.; 2011. *Survey on basic knowledge about exposure and potential environmental and health risks for selected nanomaterials*. Environmental Project No. 1370, The Danish Environmental Protection Agency, Copenhagen.

Because of the uncertain consequences associated to a widespread use of nanosilver, with some indications suggesting the risk of promoting the antibiotic resistance of bacteria, and the potential hazards associated to the use of silver particles, a restriction on the use of nanosilver particles in AHPs is preliminarily proposed.

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4.2 Chemicals

Criterion 7: Excluded or limited substances or mixtures

(a) Hazardous substances and mixtures

The EU Ecolabel may not be awarded if the product or any article of it, as defined in Article 3(3) of Regulation (EC) No 1907/2006, or any homogenous part of it contain substances or mixtures meeting the criteria for classification with the hazard statements or risk phrases specified in the table below, in accordance with Regulation (EC) No 1272/2008 of the European Parliament and of the Council or Council Directive 67/548/EC, nor they contain substances or mixtures referred to in Article 57 of Regulation (EC) No 1907/2006, unless they have been specifically derogated.

The most recent classification rules adopted by the European Union shall take precedence over the listed hazard classifications and risk phrases. Applicants shall therefore ensure that any classifications are based on the most recent classification rules.

The hazard statements and the risk phrases in the table below generally refer to substances. However, if information on substances cannot be obtained, the classification rules for mixtures apply.

The use of substances or mixtures which change their properties upon processing (e.g. become no longer bioavailable or undergo chemical modification) so that the identified hazards no longer apply are exempted from the above requirements. This shall include for instance modified polymers and monomers or additives which become covalently bonded within plastic coatings.

Hazard Statement ¹	Risk Phrase ²
H300 Fatal if swallowed	R28
H301 Toxic if swallowed	R25
H304 May be fatal if swallowed and enters airways	R65
H310 Fatal in contact with skin	R27
H311 Toxic in contact with skin	R24
H330 Fatal if inhaled	R23/26
H331 Toxic if inhaled	R23
H340 May cause genetic defects	R46
H341 Suspected of causing genetic defects	R68
H350 May cause cancer	R45
H350i May cause cancer by inhalation	R49
H351 Suspected of causing cancer	R40

H360F May damage fertility	R60
H360D May damage the unborn child	R61
H360FD May damage fertility. May damage the unborn child	R60/61/60-61
H360Fd May damage fertility. Suspected of damaging the unborn child	R60/63
H360Df May damage the unborn child. Suspected of damaging fertility	R61/62
H361f Suspected of damaging fertility	R62
H361d Suspected of damaging the unborn child	R63
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.	R62-63
H362 May cause harm to breast fed children	R64
H370 Causes damage to organs	R39/23/24/25/26/27/28
H371 May cause damage to organs	R68/20/21/22
H372 Causes damage to organs	R48/25/24/23
H373 May cause damage to organs	R48/20/21/22
H400 Very toxic to aquatic life	R50
H410 Very toxic to aquatic life with long-lasting effects	R50-53
H411 Toxic to aquatic life with long-lasting effects	R51-53
H412 Harmful to aquatic life with long-lasting effects	R52-53
H413 May cause long-lasting effects to aquatic life	R53
EUH059 Hazardous to the ozone layer	R59
EUH029 Contact with water liberates toxic gas	R29
EUH031 Contact with acids liberates toxic gas	R31
EUH032 Contact with acids liberates very toxic gas	R32
EUH070 Toxic by eye contact	R39-41
H317 (Sub-category 1A): May cause allergic skin reaction (trigger concentration $\geq 0.1\%$ w/w) ³	R43
H317 (Sub-category 1B): May cause allergic skin reaction (trigger concentration $\geq 1.0\%$ w/w) ³	
H334: May cause allergy or asthma symptoms	R42

or breathing difficulties if inhaled	
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Notes

1 According to Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

2 According to Directive 67/548/EEC and the REACH Directive 2006/121/EC and Directive 1999/45/EC as amended.

3 According to Commission Regulation (EU) No 286/2011 of 10 March 2011 amending, for the purposes of its adaptation to technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labelling and packaging of substances and mixtures.

Assessment and verification:

The applicant shall provide the bill of materials of the product, including a list with all articles and homogeneous part of it.

The applicant shall screen the presence of substances and mixtures that may be classified with the hazard statements or risk phrases reported above in the criterion. The applicant shall provide a declaration of compliance with requirement 10(a) for the product, any article of it or any homogeneous part of it.

Applicants shall select the appropriate forms of verification. The main forms of verification are foreseen as follows:

- Articles manufactured according to a specific chemical formulation: Safety Data Sheets shall be provided for the final article or for the substances and mixtures composing the final article above a cut-off limit of 0.10% w/w.

- Homogeneous parts and any associated treatments or impurities (e.g. plastic parts): Safety Data Sheets shall be provided for the materials composing that part of product and for substances and mixtures used in the formulation and treatment of the materials remaining in the final part above a cut-off limit of 0.10% w/w.

- Chemical recipes used to impart a specific function to the product or to components of the product (e.g. glues and adhesives, dyes): Safety Data Sheets shall be provided for substances and mixtures used in the assembly of the final product or substances and mixtures applied to components of the product during production, dyeing, printing and finishing processes and remaining in the components of the product.

The declaration shall include related documentation, such as declarations of compliance signed by the suppliers, on the non-classification of the substances, mixtures or materials with any of the hazard classes associated to the hazard statements or risk phrases referred in the list above in accordance with Regulation (EC) No 1272/2008, as far as this can be determined, as a minimum, from the information meeting the requirements listed in Annex VII to Regulation (EC) No 1907/2006.

The information provided shall relate to the forms or physical states of the

substances or mixtures as used in the final product.

The following technical information shall be provided to support the declaration of classification or non-classification for each substance and mixture:

- (i) For substances that have not been registered under Regulation (EC) No 1907/2006 and/or which do not yet have a harmonised CLP classification: information meeting the requirements listed in Annex VII to that Regulation;
- (ii) For substances that have been registered under Regulation (EC) No 1907/2006 and which do not meet the requirements for CLP classification: information based on the REACH registration dossier confirming the non-classified status of the substance;
- (iii) For substances that have a harmonised classification or are self-classified: safety data sheets where available. If these are not available or the substance is self-classified then information shall be provided relevant to the substances hazard classification according to Annex II to Regulation (EC) No 1907/2006;
- (iv) In the case of mixtures: safety data sheets where available. If these are not available then calculation of the mixture classification shall be provided according to the rules under Regulation (EC) No 1272/2008 together with information relevant to the mixtures hazard classification according to Annex II to Regulation (EC) No 1907/2006.

Safety Data Sheets (SDS) shall be completed in accordance with the guidance in Section 10, 11 and 12 of Annex II of Regulation (EC) 1907/2006 (Requirements for the Compilation of Safety Data Sheets). Incomplete SDS will require supplementing with information from declarations by chemical suppliers.

Information on intrinsic properties of substances may be generated by means other than tests, for instance through the use of alternative methods such as in vitro methods, by quantitative structure activity models or by the use of grouping or read-across in accordance with Annex XI to Regulation (EC) No 1907/2006. The sharing of relevant data across the supply chain is strongly encouraged.

Where substances used are derogated according to their hazard classification then the declaration shall specifically identify those derogated substances and provide supporting evidence showing how the derogation conditions are met.

(b) Substances listed in accordance with Article 59(1) of Regulation (EC) No 1907/2006

No derogation from the exclusion in Article 6(6) of Regulation (EC) No 66/2010 shall be given concerning substances identified as substances of very high concern and included in the list provided for in Article 59(1) of Regulation (EC) No 1907/2006, present in mixtures, in an article or in any homogeneous part of the product in concentrations > 0.10% by weight.

Assessment and verification

Reference to the latest list of substances of very high concern shall be made on the date of application. The applicant shall provide a declaration of compliance with requirement 10(b), together with related documentation, including declarations of compliance signed by the material suppliers and copies of relevant Safety Data Sheets for substances or mixtures in accordance with Annex II to Regulation (EC) No

1907/2006 for substances or mixtures. Concentration limits shall be specified in the safety data sheets in accordance with Article 31 of Regulation (EC) No 1907/2006 for substances and mixtures.
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Rationale and technical feasibility

According to the Article 6(6) of Regulation (EC) No 66/2010 on the EU Ecolabel, the EU Ecolabel may not be awarded to goods containing:

1. Substances or preparations/mixtures meeting the criteria for classification as toxic, hazardous to the environment, carcinogenic, mutagenic or toxic for reproduction (CMR), in accordance with Regulation (EC) No 1272/2008 (CLP),
2. Substances of Very High Concern, as referred to in Article 57 of Regulation (EC) No 1907/2006 (REACH).

The identification of potential sources of hazard is based on a list of hazard statements / risk phrases which apply to all the EU Ecolabel products (see the table inserted in the proposed criterion). The list generally refers to substances. However, if information on substances cannot be obtained, the classification rules for mixtures apply.

Substances or mixtures which change their properties through processing (e.g., become no longer bioavailable, or undergo chemical modification in a way that removes the previously identified hazard) are exempted from the above requirement.

Stakeholders involved in the project underlined that AHPs are designed in order to ensure that no safety issues occur and that human health is not threatened at any time. Declaring that substances meeting the requirements for classification according to the table above are not contained in AHPs should not be a problem for manufacturers. However, it would be worth to investigate with stakeholders whether the design of different sizes of the same product type could eventually result in different concentrations of substances.

Hazards for the environment or human health would be minimised by ensuring that the product considered for the EU Ecolabel fulfil the requirements for excluded or limited substances. In order for the Competent Bodies to check whether the product complies with this criterion, it would be helpful if the applicant submits a list of all substances contained in or added to AHPs. It should be ensured that substances do not meet the requirements for being classified with the hazard statements and the risk phrases listed above.

Derogations are in general possible only if it is not technically feasible to substitute a substance or groups of substances or if the use of alternative substances would increase the environmental performance significantly. No derogation is instead possible for substances meeting the criteria of Article 57 of EC Regulation No 1907/2006 in concentrations exceeding 0.10% by weight. This is the minimal prescription to be respected. Stricter prescriptions can be even considered for particular groups of substances by decreasing concentration thresholds and/or referring to single materials, homogeneous parts of the product, or groups of substances. The list of substances identified so far as SVHC (Substances of Very High Concern) can be found in: <http://echa.europa.eu/web/guest/candidate-list-table>.

It has been explored if a derogation for sodium polyacrylates, the super absorbent polymer typically used for AHPs, was to be examined. Preliminary investigation indicates that sodium polyacrylates is classified as H412 – "Harmful to aquatic life with long lasting effects" – only in 1 out of 223 notifications received by the European Chemicals Agency⁴⁸. Based on this, no derogation has appeared necessary for this material.

The text of the presented criterion has been adapted from the one used for Bed Mattresses within the EU Ecolabel scheme. In addition to this overarching restriction of substances, further requirements for specific groups of substances/uses of substances have been proposed in the previous requirements on materials.

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⁴⁸ <http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=59137&HarmOnly=no?fc=true&lang=en>

4.3 *Manufacture of AHPs*

Criterion 8: Material efficiency in the manufacturing

The quantity of waste generated during the manufacture and packaging of the products, at the net of the fraction that is reused or converted into useful materials and/or energy, shall not exceed:

- 10% by weight of the end products for tampons
- 5% by weight of the end products for all the other products

Assessment and verification

The applicant shall provide evidence of the quantity of waste that has not been reused within the manufacturing process or that is not converted into materials and/or energy.

Calculations shall be shown in accordance with ISO 14025 and shall specify:

- the weight of product and packaging,
- all the waste streams generated during the manufacture and
- the respective treatment processing (e.g. recycling, incineration), including the fraction of recovered waste and that disposed of.

The net waste shall be calculated as waste produced – waste recovered.

Rationale and technical feasibility

The manufacturing process contributes to 1-12% of the environmental impacts associated with AHPs, depending on the indicator and on the specific product considered. The highest values are registered for global warming potential with tampons (8%) and breast pads (12%), mainly because of the lower weight of materials for these products.

The dominant proportion of environmental burdens is associated with a demand of energy. However, potential for setting criteria on this issue is considered limited due to the lack of statistical information on the consumption of energy per unit of product.

The development of a criterion on the production and disposal of waste seems more feasible, although this issue plays a less significant role. Clear economic and environmental benefits are associated with the reduction of production waste that cannot be reused in the AHP manufacturing process or that are not converted to useful materials and energy. Many stakeholders involved in this project stated that it is one of their key targets to reduce the amount of production waste.

4.4 End of Life

Criterion 9: Guidance on the product disposal

The producers shall write or indicate through visual symbols on the packaging

- That the product must not be flushed into toilets
- How to dispose the product correctly.

Assessment and verification:

The applicant shall provide a sample of the packaging.

Rationale and technical feasibility

The LCA carried out for this project reveals that contribution of the end-of-life stage to the impacts of AHPs is significant, especially with respect to eutrophication potential (16% to 25%) and to global warming potential (27% to 33%). Hence, reducing the impacts from the end-of-life would contribute towards an overall improved environmental performance. However, setting criteria on End of Life issues is complicated by the limited possibilities of intervention on the disposal of the AHPs after use.

At the moment, the only action identified for achieving some effective benefits for the environment would be to ask producers of AHPs to write on the packaging that the products have not to be flushed into the toilet but disposed correctly. Based on feedback received by stakeholders, it is proposed to apply this requirement to all the products within the scope of this Product Group.

4.5 Fitness for Use

Criterion 10: Fitness for use and quality of the product

The efficiency/quality of the product shall be satisfactory and at the least equivalent of products already on the market. Fitness-for-use shall be tested with respect to the characteristics and parameters reported in the table below. Performance thresholds shall be matched, where these have been identified.

Characteristic		Testing practice required (performance threshold)			
		Baby diapers	Feminine care pads	Tampons	Breast pads
Quality and Safety		Compliance with the WHO's Good Manufacturing Practices (GMP)			
In-use tests	U1. Absorption and leakage protection	Consumer panel test (Leakage occurs in less than 5% of the product uses)			
	U2. Skin dryness	Consumer panel test (80% of the consumers testing the product shall rate the performance as "good" (rating 7-8) or "very good" (rating 9-10) in a rating scale from 1 to 10)	Not applicable	As for baby diapers	
	U3. Fit and comfort	Consumer panel test (80% of the consumers testing the product shall rate the performance as "good" (rating 7-8) or "very good" (rating 9-10) in a rating scale from 1 to 10)			
	U4. Overall performance	Consumer panel test (80% of the consumers testing the product shall rate the performance as "good" (rating 7-8) or "very good" (rating 9-10) in a rating scale from 1 to 10)			
Technical tests	T1. Absorption and leakage protection	Absorption rate and absorption before leakage	Syngina method	No method recommended	
	T2. Skin dryness	TEWL, rewet method or corneometric testing	Not applicable	No method recommended	

Assessment and verification:

The applicant shall provide a declaration the of compliance with the WHO's Good Manufacturing Practices (GMP).

A test report shall be provided for in-use and technical tests including a description of test methods, test results and data used. Tests shall be carried out by laboratories certified to implement quality management systems, no matter if internal or external. Test results shall be assessed by an impartial and competent organization.

Sampling, test design, panel recruitment and the analysis of test results shall comply with ASTM E1958-07e1. Tests shall be conducted for all the products applying for the EU Ecolabel. Special care shall be taken regarding sampling, transport and storage of the products to guarantee reproducible results. It is recommended not to blind products or repack them in neutral packaging due to the risk of altering the performance of products and/or packaging.

Information on testing shall be made available to Competent Bodies and to all interested parties, for instance through the company website. Test results shall be clearly explained and presented in language, units and symbols that are understandable to consumers. The following elements shall be specified: place and data of the tests; criteria used to select the products tested and their representativeness; selected testing characteristics and, if applicable, the reasons why some were not included; test methods used and their limitations if any. External factors such as branding, market shares and advertising that may have an impact on the perceived performance of the products shall be communicated. Clear guidelines on the use of test results shall be provided.

Additional requirements for user tests:

- Consumer surveys shall be conducted and analysed according to standard statistical practices, e.g. ASTM E1958-07e1
- Each product shall be assessed on the basis of a questionnaire. The test is to last at least 72 hours, a full week when possible.
- For skin dryness, fit and comfort and overall performance, testers shall be asked to indicate how much they are satisfied from a scale 1 to 10, where 1-2 indicate a very bad performance, 3-4 indicate a bad performance, 5-6 indicate an average performance, 7-8 indicate a good performance, 9-10 indicate a very good performance.
- For absorption and leakage protection, testers shall be asked to indicate if leakage has occurred or not.
- The recommended number of testers shall be at least 30. All the individuals participating to the survey shall be current users of the specific type/size of product tested.
- When the product is not designed specifically for a single gender, the ratio of male to female individuals shall be 1:1
- A mixture of individuals representing proportionally different groups of consumers available on the market shall take part to the survey. Age, countries and genders shall be clearly stated.
- The product shall be used in the same way and conditions of the product normally used.
- Sick individuals and those with a chronic skin condition should not participate in the test. In cases where individuals become ill during the course of the user trial, this is to be indicated on the questionnaire and the answers shall not be taken into consideration for the assessment.
- For skin dryness, fit and comfort and overall performance, 80% of the consumers

testing the product shall rate the performance as "good" (rating 7-8) or "very good" (rating 9-10) in a rating scale from 1 to 10

- For absorption and leakage protection, leakage shall occur in less than 5% of the products tested
- The results are to be statistically evaluated after the user trial has been completed.

Additional requirements for technical tests:

- Test methods shall be based as much as possible on product-relevant, reproducible and rigorous methods.
- A minimum of 5 samples shall be tested. Average results shall be reported together with indication of the standard deviation
- Weight, dimensions and design features of the product shall be described and provided.

Rationale and technical feasibility

The environmental benefits associated with a product are influenced by conditions of use. One of the aims of the EU Ecolabel is that the advantages of having a product fulfilling certain environmental criteria are not off-set by a bad performance of the same, which could ultimately result in consuming more units of the product. Potential trade-offs between frequency of use and environmental impacts of the products should be avoided by ensuring that products fit adequately for their use.

To put into practice, manufacturers should provide evidence that the products registered for the EU Ecolabel fulfil an adequate level of quality and performance.

Tests are regularly carried out among manufacturers and have been under development for a long time. However, according to stakeholders involved in this project, no harmonised standards or widely accepted industry methods are available, at the moment, to test the most important performance characteristics for the products. However, a significant part of the industry would welcome the use of consumer panel tests.

Due to the fact that there are no harmonised test methods for the various fitness-for-use criteria, cost estimations are difficult to determine. Besides carrying out particular test methods as suggested below, manufacturers of AHP also resort to consumer panel tests. The costs for large scale consumer tests can be high (> EUR 100K) and sometimes can take up to 3 months. However, costs for these consumer tests should decrease considerably by requiring a minimum of 30 participants.

Applicants should ensure the quality of the product by performing both consumer and technical tests for limited number of key performance characteristics, identified with the help of stakeholders and reported in the table inserted in the criterion proposal.

According to the stakeholders of the project, there is no need to perform additional safety tests since the products meet the General Product Safety Directive and the REACH Directive. A declaration from the manufacturer that he complies with the Good Manufacturing Practices (GMP) should guarantee the quality of the product.

Members of EDANA informed the Commission that they are currently working on the definition of guidelines for the testing of baby diapers ("EDANA Guideline for the testing of baby diapers"). This document has been considered to represent an important reference point for designing a criterion of fitness-for.-use. While guidelines seem to refer to the comparison between products of different brands, the interest here is more on evaluating the performance of a single product, possibly against performance benchmarks. Thus, EDANA's guidelines has been adapted. to the needs of the EU Ecolabel scheme.

A description of the main functionalities of AHPs and typical industry practices for those performance characteristics is reported below.

Overall performance

According to stakeholders, the assessment of the overall performance of AHPs can be achieved only through consumer tests. The interaction of different features of AHPs (e.g. fit, breathability, fluid acquisition, rewet or bowel movement absorption in case of diapers) is indeed too complex to assess them separately.

In a consumer test, participants provide a subjective assessment by completing questionnaires. The test can be a diary study or it can be even carried-out only at the end of the trial period, which possibly should be at least one week long in the case of diapers.

Mixed views were provided by the stakeholders with respect to the number of participants to be involved in the test. Some stakeholders stated that the test should involve at least 100 test participants, representative of the market population. Other stakeholders believe that 30-40 is a more reasonable number.

Additional guidelines for user tests could be available for instance in:

- The Standard ISO 16021:2000 "Urine-absorbing aids - Basic principles for evaluation of single-use adult-incontinence-absorbing aids from the perspective of users and caregivers".
- The French Standard AFNOR Q34-019.

For instance, it could be asked consumers to evaluate AHPs with a rating scale from 1 to 10 (1-2 = very bad performance; 3-4 = bad performance; 5-6 = average performance; 7-8 = good performance; 9-10 = very good performance).

The assessment of the overall performance through consumer tests is considered of relevance for all the AHPs within the scope. Based on consultation with stakeholders, a satisfactory product should receive a score of at least 7 from 80% or more of the consumers tested.

The assessment and verification procedure described in the criterion addresses some practical issues related to the flexibility of the test, the representativeness of the sample of consumers and on the reliability of the results through independent assessment.

Because reproducing real life conditions, in-use tests are considered by stakeholders the most reliable method also for assessing some of the single performance areas reported in the followings.

Absorption and leakage protection

The absorption capacity generally describes the amount of liquid that can be absorbed by the product. Stakeholders involved in this project commented that absorption capacity under pressure is a generic testing concept that should not be assessed versus a maximum but rather versus an optimum. If the capacity is below the optimum, this can impact the dryness and leakage performance; if the capacity is above the optimum, it does not add further benefits from the point of view of performance.

Testing of the leakage protection is of key relevance for stakeholders. This is closely related to the moisture retention as it determines how well an AHP can hold a liquid without releasing it

For diapers, the most reliable test method to assess the leakage protection of the product is to perform a consumer test and to register the occurrence of leakage after each diaper change, similarly as described previously. This method takes into account both the liquid handling performance of a diaper as well as the diaper fit. The statistical evaluation of such studies allows also to assess the leakage protection under different conditions (day/night, different loading of the diaper, etc.) and therefore is the most comprehensive method. The leakage performance could be alternatively rated after 1 week of usage. According to stakeholders, best performing diapers could be selected as those for which leakage occurs in less than 5% of all product changes.

The assessment of leakage protection through consumer tests is considered of relevance for all the AHPs within the scope.

Typical test methods correlated to leakage protection in diapers have been also identified by stakeholders: measurement of absorption before leakage and speed of absorption.

The absorption before leakage (ABL) test has been developed by the independent test lab "Courtray's labservice"⁴⁹ to evaluate the performance of incontinence products. According to stakeholder feedback it has proved to be a good test method even for assessing leakage protection and adsorption under pressure of diapers. However, since the test is performed on a mannequin, movement of a child can only be simulated partially. Moreover, also bowel movement is not simulated. Taking into account these limitations, the ABL test should be used to complement a diary study and not to replace it completely. The ABL test follows the test method WSP 354.0 (08) and was published by EDANA, INDA and Worldwide Strategic Partners in 2008⁵⁰. The new EDANA recommended method is the WSP 354.1 (11)⁵¹.

The speed of absorption test consists on measuring the speed of absorption of a standard diaper under the application of a relevant pressure (e.g. 2-3.5 kPa) and a representative amount of liquid (e.g. 300 mL of synthetic urine to simulate overnight

49 Courtray Consulting 2012. Webpage: <http://www.courtrayconsulting.fr/courtray-consulting.htm>

50 Inda, Worldwide Strategic Partners, EDANA 2008. Standard Test Methods for the Non-wovens and related Industries.

Available online: <http://www.btraindia.com/downloads/inda.pdf>

51 <http://www.edana.org/discover-nonwovens/test-methods/abl-test-method>

conditions, when there is the highest need for good performance). However, no harmonized methods are yet available.

The standard ISO 11948⁵² "Urine-absorbing aids - Part 1: Whole-product testing" is instead not considered adequate since it prescribes testing without applied pressure. The absorption capacity under a given pressure would be considered more suitable (e.g. the test method MDT 10301).

For tampons, a specific test method exists that was developed by EDANA, i.e. WSP 350.1 (05)⁵³. The method specifies a test procedure for the in-vitro measurement of absorbency of menstrual tampons by the Syngina method. However, EDANA points out that this laboratory test is not intended to be used for predicting absorbency in-vivo. It is applicable for products with an absorbency of up to 25 grams. Further details can be obtained from the description of this test method. Based on the results of this test, the Code of Practice for Tampon⁵⁴ identifies 5 classes of absorbency, depending on the flow conditions:

- Class 1, <6 g,
- Class 2, 6-9 g,
- Class 3, 9-12 g,
- Class 4, 12-15 g,
- Class 5, 15-18 g.

The assessment and verification procedure described in the criterion addresses some practical issues related to the flexibility of the test, the representativeness of the sample of consumers and on the reliability of the results through independent assessment.

Skin dryness

Skin dryness generally refers to the capability of AHPs to keep liquids away from skin membranes, avoiding skin irritation.

One particularly relevant test method for diaper is the clinical skin hydration measurements using "trans-epidermal water loss" (TEWL) measurements⁵⁵. This method determines the skin dryness performance of a diaper, as it allows to measure skin dryness in an objective way taking into account for important properties as skin dryness, fluid management and breathability performance. According to stakeholders involved in this project, this method has been chosen as a standard to support advertising claims on skin dryness by the British Advertising regulatory agency. This method measures skin dryness in the diaper area of small children wearing a diaper overnight using commercially available Evaporimeters (e.g. Tewameter (Courage + Khazaka, Cologne, Germany), Dermalab (Cortex Technology, Hadsund, Denmark),

52 ISO 11948: 1996. Urine-absorbing aids - Part 1: Whole-product testing

53 EDANA 2002; Tampons Absorbency Test Method; http://www.ahpma.co.uk/docs/EDANA_Syngina2.pdf; accessed 27.04.2012

54 Code of Practice for Tampons. Available online: <http://www.edana.org/docs/default-source/default-document-library/tampons-code-of-practice-%28english%29.pdf?sfvrsn=0>

55 Fader, M. et al 2011. Development and preliminary testing of a standardized method for quantifying excess water in over-hydrated skin using evaporimetry. Available online: <http://discovery.ucl.ac.uk/1345495/>

Vapometer (Delphin, Kuopio, Finland). Stakeholders recommend that a skin hydration study with this method should include about 50 children per product and should be performed in a dermatological laboratory under standard conditions (21°C, 45% rel. humidity).

Diary studies are also considered a reliable method for determining the skin dryness performance of a diaper. However, compared to the TEWL method, results are based only on a subjective dryness assessment, which can be influenced by brand and aesthetics.

Another test method to assess skin dryness is the rewet method. It is a laboratory method, that can be used to estimate the skin dryness performance of a diaper, but only if the different products have comparable breathability and fit. For this method a diaper is loaded with a certain amount of synthetic urine and after a waiting time a pressure is applied onto a paper or collagen sheet put onto the inner liner of the diaper, simulating the child sitting down. This test method is patented by Procter & Gamble in the US (U.S. Patent No 6085579).

Corneometric testing methods also exist to determine skin dryness. Corneometric testing determines the dampness of the skin measured at a specific time after the AHP has been removed from the skin. The research lab 'dermatest' provides further details on the test method⁵⁶.

The assessment of skin dryness is considered of relevance for all the AHPs within the scope with the exception of tampons.

Fit and comfort

The product performance characteristic fit and comfort provides insights as to how well AHPs fit and allow the user to be comfortable while wearing them. According to stakeholder feedback, no appropriate test methods exist with the exception of consumer panel testing.

Additional performance characteristics

Some additional performance characteristics have been mentioned by some stakeholders like odour control and dermatological testing. However, these characteristics have not been included in the criterion above because not forming part of the "EDANA Guideline for the testing of baby diapers", which was largely used as reference to draft this criterion, or generally considered of less relevance compared to those previously described.

The standard EN 13725 has been indicated as method for determining the odour concentrations being released by products. Details can be found in the respective Standard⁵⁷.

It is common practice to carry out dermatological tests (on humans) of all materials contained in AHPs before use, often by both suppliers and AHP manufacturers. However, no common standards are available, according to stakeholder feedback.

⁵⁶ Dermatest 2012. Corneometry. Webpage: <http://www.dermatest.de/english/services/measuring-techniques/corneometry.html>

⁵⁷ <http://www.cen.eu/CEN/news/pressreleases/Pages/odours.aspx>

Research on relevant standards or testing procedures did not lead to any standard industry-wide definitions used to determine how a product must be tested or the results it needs to achieve, before such a claim can be made⁵⁸.

A specific test method for superabsorbent materials, i.e. WSP 241.2 (05), is reported in the Inda/EDANA report⁵⁹. The test determines the fluid retention capacity in saline solution by gravimetric measurement following centrifugation. It is based on the ISO Standard 17190-6:2001, Urine-absorbing aids for incontinence - Test methods for characterizing polymer-based absorbent materials - Part 6: Gravimetric determination of fluid retention capacity in saline solution after centrifugation.⁶⁰ An absorption under pressure test method also exists for superabsorbent materials, i.e. WSP 242.2 (05).

The evaluation of closure/fastening systems, based on the measurement of the tensile strength of tapes and elastics, has been also mentioned by some stakeholders.

⁵⁸ <http://www.dailymail.co.uk/femail/article-207747/Confusion-beauty-claims.html>

⁵⁹ Courtray Consulting 2012. Webpage: <http://www.courtrayconsulting.fr/courtray-consulting.htm>

⁵⁹ Inda, Worldwide Strategic Partners, EDANA 2008. Standard Test Methods for the Non-wovens and related Industries.

Available online: <http://www.btraindia.com/downloads/inda.pdf>

⁶⁰ ISO 17190-6:2001. Urine-absorbing aids for incontinence -- Test methods for characterizing polymer-based absorbent materials -- Part 6: Gravimetric determination of fluid retention capacity in saline solution after centrifugation.

4.6 Other issues considered

Other two issues of relevance for the criteria development process are:

1. The information appearing in the EU Ecolabel (to be discussed);
2. The consideration of social aspects.

Criterion 11: Information appearing on the EU Ecolabel

The use of the EU Ecolabel logo is protected in primary EU law. The logo should be visible and legible. The EU Ecolabel registration/license number must appear on the product, it must be legible and clearly visible.

The optional label with text box shall contain the following text:

1. The product is designed in order to reduce the impact from the consumption of resources
2. The use of substances of concern for human health and the environment is restricted;
3. The product satisfies performance and quality tests.

The guidelines for the use of the optional label with text box can be found in the "Guidelines for use of the Ecolabel logo" on the website:

http://ec.europa.eu/environment/ecolabel/documents/logo_guidelines.pdf

The following text should moreover appear on the packaging:

"For more information on why this product has been awarded the EU Ecolabel, please visit <http://ec.europa.eu/environment/ecolabel/>".

Assessment and verification

The applicant shall provide a sample of the product label, together with a declaration of compliance with this criterion

Rationale and technical feasibility

The Regulation (EC) No 66/2010 specifies that "for each product group, three key environmental characteristics [...] may be displayed in the optional label [...]". Based on the current set of criteria proposed, three possible sentences have been identified:

1. The product is designed in order to reduce the impact from the consumption of resources;
2. The use of substances of concern for human health and the environment is restricted;
3. The product satisfies performance and quality tests.

The following text should moreover appear on the packaging:

"For more information on why this product has been awarded the EU Ecolabel, please visit <http://ec.europa.eu/environment/ecolabel/>".

Verification should rely on declaration of compliance by the applicants and visual evidence of the packaging.

The requirement would produce potential benefits for consumers and for the image of the company.

Criterion 12: Social aspects

Applicants shall ensure that the fundamental principles and rights at work as described in the International Labour Organisation's (ILO) Core Labour Standards, the UN Global Compact and the OECD Guidelines for Multi-National Enterprises shall be observed by all production sites used to manufacture the licensed product(s).

For the purpose of verification the following ILO Core Labour Standards shall be referred to:

029 Forced Labour

087 Freedom of Association and Protection of the Right to Organise

098 Right to Organise and Collective Bargaining

100 Equal remuneration

105 Abolition of Forced Labour

111 Discrimination (Employment and Occupation)

138 Minimum Age Convention

155 Occupational safety and health

182 Elimination of the Worst Forms of Child Labour

These standards shall be communicated to production sites along the supply chain used to manufacture the final product. Exemptions from specific ILO Core Labour Standards shall apply where there are applicable national laws.

Assessment and verification

The applicant shall provide and shall make supplier to provide documentary evidence of compliance with the requirement. This shall be based on third party verification, including site visits by auditors, for all production sites in the supply chain for the licensed products.

The criterion shall be fulfilled since the date of application and subsequently during the license period if new production sites are introduced.

Rationale and technical feasibility

A requirement promoting the right of workers has the potential to produce social benefits while improving the image of companies.

The International Labour Organization (ILO) is a United Nations agency devoted to promoting social justice and internationally recognized human and labour rights. The ILO helps advance the creation of decent work and economic and working conditions for all⁶¹.

⁶¹ <http://www.ilo.org/global/about-the-ilo/lang--en/index.htm>

The International Labour Organization has maintained and developed a system of international labour standards⁶². International labour standards are legal instruments drawn up by the ILO's constituents (governments, employers and workers) and setting out basic principles and rights at work. They are either

- Conventions, which are legally binding international treaties that may be ratified by member states, or
- Recommendations, which serve as non-binding guidelines.

In many cases, a convention lays down the basic principles to be implemented by ratifying countries, while a related recommendation supplements the convention by providing more detailed guidelines on how it could be applied. Recommendations can also be autonomous, i.e. not linked to any convention.

When a convention comes into force, it creates a legal obligation for ratifying nations to apply its provisions. Conventions that have not been ratified by member states have the same legal force as do recommendations.

The list of International Labour Organization Conventions includes 190 standards, 8 of them identified as "fundamental" conventions because covering subjects that are considered as fundamental principles and rights at work:

- Forced Labour Convention, 1930 (No. 29)
- Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87)
- Right to Organise and Collective Bargaining Convention, 1949 (No. 98)
- Equal Remuneration Convention, 1951 (No. 100)
- Abolition of Forced Labour Convention, 1957 (No. 105)
- Discrimination (Employment and Occupation) Convention, 1958 (No. 111)
- Minimum Age Convention, 1973 (No. 138)
- Worst Forms of Child Labour Convention, 1999 (No. 182)

In 1995, the ILO launched a campaign to achieve universal ratification of these eight conventions. It has been estimated that 86% of the possible number of ratifications has been achieved.

According to stakeholders, the US has only ratified two of these: Convention 87 and Convention 98. Other countries (e.g., Brazil, China, Canada, India & Mexico) have chosen to ratify only some of the conventions. In some of those countries, the laws conflict with certain aspects of these Core Conventions.

The United States Council for International Business ("USCIB"), which represents businesses on the President's Committee on the ILO and the Tripartite Advisory Panel on International Labor Standards, is a leading authority on how the ILO Conventions conflict with United States law and practice. According to the USCIB, five of the ILO Core Conventions (Conventions 87, 98, 29, 138, and 100) have been

62 [http://www.ilo.org/global/standards/introduction-to-international-labour-standards/conventions-and-recommendations/lang--en/index.htm](http://www.ilo.org/global/standards/introduction-to-international-labour-standards/conventions-and-recommendations/lang-en/index.htm)

found to conflict directly with United States law and practice and would require significant and widespread changes to state and federal law if they were ratified.

Fundamental conventions are covered in the ILO's Declaration on Fundamental Principles and Rights at Work (1998)⁶³. This is an expression of commitment by governments, employers' and workers' organizations to uphold basic human values:

- Freedom of association and the effective recognition of the right to collective bargaining
- Elimination of all forms of forced or compulsory labour
- Effective abolition of child labour
- Elimination of discrimination in respect of employment and occupation

According to stakeholders, the United States and the other above mentioned countries have ratified the Declaration.

The proposed version of the criterion on social aspect has been discussed during the revision of the EU Ecolabel criteria for textiles and it is considered to be workable. The aim of the criterion is not to set mandatory rules that can have an impact on the legislation system of single countries, but rather to set guidelines to verify that labour standard requirements have been fulfilled by companies applying for the EU Ecolabel, independently from national laws that be in force and, depending on the country, may not provide a high level of protection for workers. Respect of these fundamental labour standards (e.g. no exploitation of child labour force) is not considered to go against national legislation. Moreover, an additional convention has been included: Occupational safety and health (No 155).

Verification should rely on reports of compliance from production sites and from suppliers. These should be compiled and provided to Competent Bodies. Third party certification should be accepted as evidence of compliance.

Since it may be difficult for the competent bodies to evaluate documentation or to evaluate findings from audits, one possibility to consider could even be to rely on recognised third-party assurance schemes, such as:

- Business Social Compliance Initiative (BSCI)
- Global Social Compliance Programme (GSCP)
- Ethical Trading Initiative (ETI)
- Fair Labor Association (FLA)
- Fair Wear Foundation (FWF)
- Social Accountability 8000 (SA8000)
- Worldwide Responsible Apparel Production (WRAP)
- Global Reporting Initiative (GRI)

Codes of Conduct included within these schemes specifically address human rights, labour rights, working agreements and salaries and occupational health and safety issues.

63 <http://www.ilo.org/declaration/lang--en/index.htm>

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4.7 Other issues not considered

Life Cycle Assessment

A life cycle approach is necessary to ensure that the environmental performance of a product is assessed consistently. By means of commonly used impact categories, the environmental performance of products can be determined over their entire life cycle and for a range of different environmental issues, hence allowing the avoidance of undesirable trade-offs.

The AHPs sector is familiar with LCA. Product Category Rules (PCR) have been developed for AHPs for two different schemes: Environdec (by EDANA) and the French BP X30-323. PCRs provide specific guidelines on how to carry out an LCA study for a particular group of products and how to calculate the environmental impacts. Following PCRs ensures that the life cycle performance of equivalent products is calculated under the same methodological assumptions and thus increases the level of comparability of the results.

The development of criteria based on life cycle indicators is currently limited within the EU Ecolabel scheme by:

The lack of solid and widely accepted rules (the Commission has developed a Product Environmental Footprint methodology⁶⁴ but conditions are not yet mature enough for its application to AHPs).

The lack of information for calculating a distribution of the life cycle impacts associated with statistical samples of products and the following definition of environmental benchmarks.

Moreover, a LCA study could represent a burden for SME since the cost of such a study could vary between EUR 20K and EUR 60K. The costs for the verification of an LCA can be estimated to be between EUR 5K and EUR 10K.

In order to provide an incentive for the improvement of the environmental performance of AHPs, manufacturers could commit on reducing the environmental burdens of their products, as required within the Carbon Reduction Label⁶⁵. However, this would not ensure that the environmental performance of the product is superior to that of other products on the market. Therefore, no criteria on the overall environmental performance of the product are proposed for the EU Ecolabel.

Energy use during the production of fluff pulp

During the production of fluff pulp, negative effects on the environment and on human health should be minimised. Requirements for energy consumption are prescribed in the EU Ecolabel criteria for copying and graphic paper (Commission Decision 2011/332/EU)⁶⁶ and have been discussed with stakeholders.

Energy requirements have been withdrawn to simplify the set of criteria and considering that

64 http://ec.europa.eu/environment/eussd/smgp/product_footprint.htm

65 Carbon Trust Certification 2012. Build your brand's reputation with the Carbon Reduction Label. Available online: <http://www.carbontrustcertification.com/page?pageid=a04D000000J8lklAF>

66 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:149:0012:0024:EN:PDF>

- Emission of CO₂ is an indirect indicator of consumption of fossil energy.
- There are controversial issues related to the criteria on energy set in Copying and Graphic Paper that would need to be discussed at the next revision of the paper products.

The last version of the requirement, as discussed with stakeholders, is reported below. In particular, it is considered that the factor 1.25 for deducing the internally generated electricity from co-generation can make sense considering:

- A ratio heat to power of 1.35;
- 35% for electricity conversion;
- 80% for heat conversion.

However, if requirements in this area have to be set, these should refer to primary energy, or total consumption of final energy and not to be split between electricity and fuel. Moreover, also renewability should be taken into account. These are issues to consider in the next revision of the paper products.

Electricity

The electricity consumption related to the pulp production shall be expressed in terms of points (P_E) as detailed below.

For each pulp i used, the related electricity consumption ($E_{pulp,i}$ expressed in kWh/ADT) shall be calculated as follows:

$$E_{pulp,i} = \text{Purchased electricity (+ Internally produced electricity – sold electricity)}$$

Points shall be calculated by dividing actual consumption figures by the reference values reported below.

Where different types of pulp are used, consumption figures and reference value shall be weighted according to the relative weight of each pulp type.

The number of points P_E shall be less than or equal to 1.5.

Fuel (heat)

The fuel consumption related to the pulp production shall be expressed in terms of points (P_F) as detailed below.

For each pulp i used, the related fuel consumption ($F_{pulp,i}$ expressed in kWh/ADT) shall be calculated as follows

$$F_{pulp,i} = \text{Purchased fuel (+ Internally produced fuel – sold fuel – 1.25 x internally produced electricity)}$$

$F_{pulp,i}$ (and its contribution to $P_{F, pulp}$) does not need to be calculated for mechanical pulp unless it is marketed as air dried mechanical pulp containing at least 90% dry matter.

The amount of fuel used to produce the sold heat shall be added to the term 'sold fuel' in the equation above.

Points shall be calculated by dividing actual consumption figures by the reference values reported below.

Where different types of pulp are used, consumption figures and reference value shall be weighted according to the relative weight of each pulp type.

The number of points P_F shall be less than or equal to 1.5.

Reference values according to the following table shall be taken into account.

Pulp grade	Fuel (kWh/ADT)	Electricity (kWh/ADT)
Chemical pulp	4000 (*)	800
CTMP	1000 (**)	2000

(*) For air dry market pulp (admp) containing at least 90% dry matter, this value may be upgraded by 25% for the drying energy

(**) This value is only applicable for admp

Assessment and verification:

The applicant shall provide detailed calculations showing compliance with this criterion, together with all related supporting documentation. Reported details shall therefore include the total electricity and fuel consumption.

The applicant shall calculate all energy inputs, divided into heat/fuels and electricity used during the production of pulp. Energy used in the transport of raw materials, as well as conversion and packaging, is not included in the energy consumption calculations.

Total heat energy includes all purchased fuels. It also includes heat energy recovered by incinerating liquors and wastes from on-site processes (e.g. wood waste, sawdust, liquors, waste paper, paper broke), as well as heat recovered from the internal generation of electricity — however, the applicant need only count 80% of the heat energy from such sources when calculating the total heat energy.

Electric energy means net imported electricity coming from the grid and internal generation of electricity measured as electric power. Electricity used for wastewater treatment need not be included.

Where steam is generated using electricity as the heat source, the heat value of the steam shall be calculated, then divided by 0.8 and added to the total fuel consumption.

5. Conclusion

This report describes the preliminary set of criteria suggested for the award of the EU Ecolabel for absorbent hygiene products (AHP). For the development of the criteria, key principles are followed which are in line with the philosophy of the EU Ecolabel.

A multi-criteria approach is adopted encompassing various dimensions of sustainability. The key focus is on the environmental performance of AHPs but also social implications related to the manufacture of AHPs could be considered (see Section 4.6). For all criteria proposed, financial implications are considered in order to avoid prohibitively high costs for AHP manufactures.

It is considered of great importance to ensure that the criteria developed for AHPs do not negatively influence the product performance. Consequently, a set of fitness-for-use criteria is included which incorporates specific performance test measures (see Section 4.5).

With regards to criteria aimed at the environmental performance of AHPs, LCA evidence suggests that the main focus should be on materials, both in terms of production and use in the final product. The proposed set of criteria (see Section 4.1) requires AHP manufacturers to closely collaborate with their suppliers. In particular, the presence of requirements on the use of materials in the products would be have been probably the most effective measure to select more eco-friendly products on the market. However, setting some requirements on product design is considered unfeasible at the moment because of the lack of data for setting environmental thresholds. Nevertheless, proposals covers all the main aspect related to materials: product description, fluff pulp, man-made fibres, cotton, plastics and synthetic polymers, substances added to the final product.

Another criterion aims at restricting the use of chemical substances of concern and as such reflects the legal requirements posed by the EU Ecolabel Regulation (see Section 4.6).

Potential for setting criteria on production and disposal of AHPs is considered limited. However environmental impacts associated with the production and the disposal of AHPs are smaller compared to the production of materials (see Section 4.3 and Section 4.4).

Reflecting the feedback received from stakeholders involved in this project, the development of criteria based on lifecycle indicators would be an important criteria area. However, at this stage of the project there are practical limitations to the development of such prescriptions (see Section 4.7).

Moreover, because of the relatively low contribution to the lifecycle impacts of the product, it was not considered relevant to introduce criteria for packaging.

It is expected that this set of criteria will assist in the reduction of negative impacts of consumption and production on the environment, on human health and natural resources from the use of AHPs. It can be assumed that consumers will value the efforts undertaken by manufacturers of AHPs to comply with these criteria by purchasing their products.

ANNEX 1: Table of Comments

Issue/Criteria	Comments	Action
Scope	The EU Ecolabel should be awarded to specific products (e.g. Maxi diaper - Size 2)	<p>Based on the feedback received by stakeholders, it is generally agreed that products with specific design and size (e.g. a size-4 pull-on diaper produced by the company X) should be awarded the EU Ecolabel. This option is also considered to allow some flexibility to producers.</p> <p>The other alternatives discussed were assigning the EU Ecolabel to:</p> <ul style="list-style-type: none"> • Products with the same design (e.g. all the pull-on diapers of the same product line produced by the company X). • Combination of products fulfilling a certain function (e.g. all the types of diapers produced by company X and used during the diapering period).
General	The aim of the EU Ecolabel is to target 10-20% of a certain product group. This must be reflected carefully in the individual criteria. If each criteria is set to reflect the performance of the top 10-20% products on the market, there will be probably only few products, if any at all, that can fulfill the full set of criteria.	Thresholds of each criterion will be defined to target as accurate as possible the 10-20% most environmentally friendly products.
Use of materials	<i>Thresholds on fluff pulp</i> Restrictions on fluff pulp are not considered appropriate. This is a renewable material and the increased use of SAP in place of fluff pulp could prolong the diapering period because of increased comfort.	<p>Restriction on fluff pulp content has been withdrawn in order to leave freedom of product design to manufacturers.</p> <p>No supporting documentation has been found that an increased use of SAP in place of fluff pulp could prolong the diapering period because of increased comfort.</p>
	<i>Weight/environmental thresholds</i>	Considering practical limitations for setting requirements in

	<ol style="list-style-type: none"> 1. The most reasonable solution is to not have any criteria for the use of materials. Materials are expensive and there is an inherent drive to use materials as efficiently as possible. Market trend is towards thinner and lighter products. 2. 50-80% of GHG emissions depend on the product weight. This is the most simple indicator for monitoring the environmental performance of this product. Alternatively, it could be required to provide data on weight and GWP without setting any thresholds. 	<p>this important area, the proposal has been withdrawn. This could be considered in the next revision process. The criterion has been replaced with a proposal of reporting the description of the product.</p>
<p>Fluff pulp</p>	<p><i>EU vs. USA</i></p> <p>No distinction between USA and EU should be made. Certified pulp in the USA is relatively limited but increasing. Significant increase can be achieved in 6-12 months. There are Nordic Swan licence holders that use certified pulp from the USA.</p>	<p>No distinction has been made.</p> <p>Nordic Swan set minimal thresholds on certified pulp sourcing at 20%.</p>
<p>- Sourcing</p>	<p><i>Sourcing – wording</i></p> <p>The criterion for Copying and Graphic Paper can be used as reference point for the wording to use for this requirement.</p> <p><i>Sourcing – chain of custody</i></p> <p>100% of the fibres should be covered by a chain of custody certification (e.g. the FSC controlled wood standards and PEFC)</p> <p><i>Sourcing – SFM certification</i></p> <ol style="list-style-type: none"> 1. 100% SFM certification should be required. Requirements should be at least in line with FSC and PEFC. 2. The EU Ecolabel should not allow more than 30% of uncertified material. If not possible now, 100% should be the target to respect by 2020 as required in the EU Biodiversity Strategy. 3. 50% certified pulp should be required in comparison with Copying and Graphic Paper. Credit systems are used for 	<p>Wording of the criterion has been based on that used in the EU Ecolabel for Copying and Graphic Paper and on that used in the most recent EU Ecolabel for Textiles.</p> <p>The current proposal is in line with the comment.</p> <p>Considering the information reported, is considered wise to set the threshold to 25%. This can be increased in the next revision.</p>

both FSC and PEFC so that customers can get from 0-100% certified pulp according to agreement with the suppliers.

4. The estimated proportion of total round wood production from certified forests in 2011-2012 was around 26%. This is considered to increase up to 28.3% in 2012-2013.
5. 90% of fluff pulp is produced in the USA. 96% of pulp is procured through certified fibre sourcing and the amount of fibres from certified forestland (SFI, PEFC, SFI) is 24%. By comparison, in Europe 61.6% of virgin wood fibres used by the industry is PEFC or SFC certified. The level of certified fibres in the US is 24% and it would be difficult to achieve a 50% level even in 2-5 years since the availability of certified wood is progressing slowly. 25% wood fibres should be certified as SFI, PEFC, FSC (to be increased at the next revision)
6. The threshold of certified fibres should not be raised above 20% because this is only one of the requirements that mutually contribute to identify the best 10-20% of the market in terms of environmental performance.

Sourcing – Certification schemes

1. SFI requirements are weaker than those of FSC and PEFC. SFI requires only 10% of wood from SMF.
2. 90% of the fluff pulp is produced in the US where SFI is the forest certification standard. SFI is endorsed by PEFC. SFI labelling rules are different from FSC and PEFC but it should be accepted.
3. The Canadian system for certified forest management should be also accepted
4. It would be preferable to avoid constraints that may favour

As done in the EU Ecolabel for Copying and Graphic Paper and on that used in the most recent EU Ecolabel for Textiles, FSC, PEFC and PEFC endorsed schemes are accepted.

	<p>one certification scheme rather than others.</p> <p><i>Sourcing – Legal sourcing</i></p> <ol style="list-style-type: none"> 1. The EU Timber Regulation applies from 3 March 2013 so that requirements for legal forestry are not needed since the trade into the EU of illegally harvested wood products is already illegal. 2. Pulp fibres that do not originate from sustainable managed forests should come from legal sources as an extra support to the EU Timber Regulation. 3. Further to that, additional guarantees are needed to ensure that pulp will not originate from other controversial sources beyond illegal sources. It would be convenient to further specify the list of controversial sources (perhaps in the user manual, as done for the EU Ecolabel for Wood Furniture). The list should also include requirements that are related to ethical and social aspects. <p>Sourcing – licence withdrawal</p> <p>A requirement could be also add for withdrawing the label when the sourcing company is found responsible for illegal practices.</p>	<p>As done in the EU Ecolabel for Copying and Graphic Paper and on that used in the most recent EU Ecolabel for Textiles, legal sourcing has been included in the proposal to address the issue also in extra-EU countries.</p> <p>This is not present in texts conventionally used and it should be automatic that licences are withdrawn when criteria are not respected</p>
<p>- Bleaching</p>	<p><i>Bleaching - TCF/ECF</i></p> <ol style="list-style-type: none"> 1. TCF pulp should be only required. 2. A very low amount of TCF fluff pulp exists. <p><i>Bleaching - AOX limit</i></p> <ol style="list-style-type: none"> 1. The limit 0.17 kg AOX/ADT seems to be high. If ECF bleaching is accepted, 0.15 kg/ADT should be the maximum allowed limit. 2. The limit should not be below 0.15 kg/ADT 3. Wood species used for fluff pulp are more difficult to bleach. 	<p>In order to keep a technology neutral approach, TCF is not proposed for this first set of criteria. This is also in alignment with what done in other environmental labels, for instance the EU Ecolabel for Copying and Graphic Paper.</p> <p>Based on the element provided, 0.17 kg AOX / ADT is proposed as limit value</p>

	<p>Emissions can be also above 0.2 kg/ADT. A limit of 0.17 kg/ADT would be consistent with the requirements set in the Copying and graphic paper criteria. Further decreases could be unfeasible in short time, even considering that production of fluff pulp is much lower than that of other pulps. There may also be limited chance to mix pulps in the manufacturing stage.</p> <p><i>Bleaching - credits</i></p> <p>A credit should be given to the AOX entering the pulp production plant with the incoming fresh water.</p> <p>Bleaching - wording</p> <p>Differently from the criteria for Copying and Graphic Paper, it is enough to write that "AOX shall only be measured in processes where chlorine compounds are used for the bleaching of the pulp". The following text should thus be deleted: "AOX need not be measured in the effluent from non-integrated pulp production or in the effluents from pulp production without bleaching or where the bleaching is performed with chlorine-free substances."</p>	<p>This is not a common practice also for other labels.</p> <p>Text has been corrected accordingly</p>
<p>- Optical brighteners and colouring agents</p>	<p><i>Optical brighteners and colouring agents - wording</i></p> <p>Referring to optical brighteners would be more correct than referring to visual whitening agents. Both pulp producers and applicants should provide a declaration of non-use. However, they are usually added to paper and not to the pulp.</p>	<p>Text has been corrected accordingly</p>
<p>- Emissions of COD and P to water and of S compounds and</p>	<p><i>Emissions of COD and P to water and of S compounds and NOx to air - thresholds</i></p> <ol style="list-style-type: none"> 1. Proposed thresholds are the same of the criteria for Copying and Graphic Paper. Emissions depend on the wood species used. Further reductions can be supported only if derogations are considered for local species, as done for P. This requirement is ambitious for US mills and 	<p>Based on the elements collected, proposed thresholds have been maintained.</p>

NOx to air

<p>alone it would be sufficient to select the best performing mills. The values should be kept without any further reductions.</p> <ol style="list-style-type: none">2. Compared to paper pulp, energy consumption for fluff pulp could be slightly higher but emissions to water and air would be the same.	
<p><i>Emissions of COD and P to water and of S compounds and NOx to air – Phosphorous emissions</i></p> <ol style="list-style-type: none">1. Rewording is proposed "P emissions can be reduced with natural P from wood raw material and incoming water"2. The requirement should be based on net discharge of P. In other words, the incoming P in wood and raw material should be subtracted. This can be comprise between 0.005-0.010 kg P/ADT.	<p>The criterion already takes into account for the incoming P. Rewording has been applied.</p>
<p><i>Emissions of COD and P to water and of S compounds and NOx to air – Pulps</i></p> <ol style="list-style-type: none">1. TMP/groundwood pulp should not be used as fluff pulp.2. Fluff pulps are never mixed so that it is not necessary to specify that "Where different types of pulp are used, measured emissions and reference value shall be weighted according to the relative weight of each pulp type"	<p>The criterion has been changed accordingly</p>
<p><i>Emissions of COD and P to water and of S compounds and NOx to air – A&V</i></p> <ol style="list-style-type: none">1. Continuous methods for NOx and S measurement should be added.2. A&V based on yearly averages, or 45 days for new plants/processes.	<p>The assessment and verification procedure was discussed with stakeholders and should take into account for all the main recommendations made in the last consultation.</p>

<p>- Emissions of CO₂</p>	<p><i>Emissions of CO₂ – limit value</i></p> <ol style="list-style-type: none"> 1. The limit value of 1100 kg per ton of pulp is very high and probably referring to both pulp and paper production. More sensible limit values could be: 150-200 kg / ADT for chemical fluff pulp; 900-1000 kg / ADT for CTMP fluff pulp. 2. Emissions are linked to the quantity of energy used. Fluff pulp can be partly considered as a paper grade pulp with an important drying step, since the pulp is actually dried beyond 90% and is closer to 95% dryness. This demands more fuel for the drying process and 150-200 kg/ADT would represent a too low threshold. It is recommended to keep the value of 1100 kg/ADT. 	<p>Compared to paper, fluff pulp production presents an important drying process (the moisture content of fluff pulp must be 95%) that requires energy and produces CO₂. Based on information received by stakeholders it is considered that a more ambitious threshold for fluff pulp could be sensibly set at 500 kg/ADT.</p>
	<p><i>Emissions of CO₂ – wording</i></p> <p>For new or re-built production plants, applicants have to make calculations for 8 weeks and then show the results after 12 months production. For campaigns, applicants have to calculate emissions for the production period from the fossil fuels used during the whole campaign.</p>	<p>The criterion has been changed accordingly</p>
<p>- Energy</p>	<p><i>Energy – Approach</i></p> <ol style="list-style-type: none"> 1. Heat and electricity consumption should be combined into one indicator. 7500 kWh/ADT as sum of fuel and electricity is proposed. 2. Energy consumption is closely related to CO₂ emissions. The presence of criteria for CO₂ and energy may be redundant. In addition, renewability of the energy source should be taken into account. 	<p>The energy requirements have been withdrawn to simplify the set of criteria considering that</p> <ul style="list-style-type: none"> • Emission of CO₂ is an indirect indicator of consumption of fossil energy. • There are controversial issues related to the criteria on energy set in Copying and Graphic Paper. <p>If requirements have to be set, these should refer to primary energy, or total consumption of final energy and not to be split between electricity and fuel. Moreover, also renewability should be taken into account. These are issues to consider in the next revision of the paper products.</p>

	<p><i>Energy – Thresholds</i></p> <p>Fluff pulp is dried to reach 5-6% moisture content, compared to paper grade pulp which contains 10% of moisture. Energy consumption for fluff pulp could be slightly higher.</p> <p><i>Energy – Pulp sources</i></p> <p>It has not been specified that the fuel value for CTMP refers to air dried market pulp. However, CTMP is a mechanical pulp. If this refers to TMP and ground wood pulp, this is not used as fluff.</p> <p><i>Energy – Calculations</i></p> <p>The 1.25 factor for deducing the internally generated electricity should be revised to take into account the actual efficiency measured in different boilers fed with different fuels.</p>	<p>If the proposal is kept, the same comments for CO2 apply.</p> <p>TMP has been removed from the requirements on emissions. According to the background information available, CTMP is relevant for fluff pulp.</p> <p>Based on in-house calculations, the 1.25 factor can make sense. Rewording is necessary if the proposal is kept. However, major discussion will be needed at the next revision of the paper products.</p>
<p>- Industrial best practices</p>	<p><i>Industrial best practices</i></p> <p>Emission limits are already based on BAT and these requirements are thus unnecessary to select the 10-20% environmentally best products on the market.</p>	<p>All the redundant requirements have been removed but the entire proposal will be withdrawn since the other criteria are considered to allow by themselves to select more eco-friendly products.</p> <p>The following measures have been withdrawn:</p> <ol style="list-style-type: none"> 1. Implementing an integrated waste management plan to optimize prevention, reuse, recycling, recovery, and final disposal of waste according to waste hierarchy. 2. Separating different waste fractions to allow reuse or recirculation of the single fractions. 3. Recycling fibres, wherever possible
<p>Man-made fibres</p>		
<p>- Sourcing</p>	<p><i>Sourcing – pulp</i></p> <p>The current requirements are below the standards set by the main certification schemes. The same requirements for fluff pulp should</p>	<p>Requirements have been aligned with textiles, where discussion on viscose has been made. Different thresholds can make sense because of different specificities among</p>

	<p>be applied. An Asian producer has introduced FSC certified fibres for nonwoven applications (http://www.pt-spv.com/in/products/viscose-staple-fiber/nonwoven-fibers.html).</p> <p><i>Sourcing – cotton</i></p> <p>Dissolving pulp made of cotton linters should also be made from 100% organic cotton. This does not compete with textile cotton. This requirement could reinforce the organic cotton market because it gives a good processing channel for organic cotton that does not reach textile quality levels.</p> <p><i>Sourcing –AV</i></p> <ol style="list-style-type: none"> 1. Because of confidentiality reasons, fibres manufacturers should not have to provide a list of pulp suppliers and their share to AHP producers. Documentation should be collected by the fibre producer and communicated directly to the CB. 2. Sourcing could change from one year to another and practical rules on how to handle this must be set. 	<p>different pulp grades. However, at the moment the same threshold (25%) is proposed for SFM-certified fibres in fluff pulp and man-made fibres.</p> <p>This requirement has been aligned with the criterion on cotton (see comments below).</p> <p>The wording should take into account the recommendation made.</p> <p>Practical rules on how to handle the sourcing issues from one year to another can be set in the user manual.</p>
<p>- Bleaching</p>	<p><i>Bleaching – TCF/ECF</i></p> <p>TCF fibres can be produced. Currently less than 15% of the viscose produce in the world is TCF (http://www.fibre2fashion.com/news/company-news/sniace/newsdetails.aspx?news_id=78094).</p> <p><i>Bleaching – AOX/OX</i></p> <p>It would be better to refer to AOX emissions than OX. These should be below 0.15 kg/ADT. If requirement of OX is to be kept reference should be made to fibre production rather than pulp production. OX should be better referred to as OCI in accordance with ISO 11480.</p>	<p>In order to keep a technology neutral approach, TCF is not proposed for this first set of criteria. This is also in alignment with what done in other environmental labels, for instance the revised EU Ecolabel for Textiles.</p> <p>Alignment with the EU Ecolabel for Textiles has been made, OX has been changed with OCI.</p>
<p>- Optical</p>		

brighteners						
	<p>- Production of fibres</p> <p><i>Production of fibres – emissions of S and Zn</i> It should be clarified why emissions of S and Zn are less strict than in the Nordic Swan</p> <p><i>Production of fibres – emissions of COD</i> If the main reason is to avoid emissions it would be better to have a criteria for COD emissions lower than 25 kg/ADT or still better TOC lower than 9 kg/ADT.</p> <p><i>Production of fibres – criterion on energy</i> Energy criteria as for fluff pulp would be preferred.</p>	<p>Alignment with the EU Ecolabel for Textiles has been made</p> <p>Alignment with the EU Ecolabel for Textiles has been made</p> <p>Alignment with the EU Ecolabel for Textiles has been made</p>				
- Industrial best practices	<p><i>Industrial best practices</i></p> <ol style="list-style-type: none"> 1. Criterion on best practices should be removed because not necessary to select the 10-20% environmentally best products on the market. 2. Distinction between pulp production and fibre production is recommended. For instance the use of fluidized bed incinerators refers to pulp production as well as the requirement for air emissions. 	<p>The entire proposal will be withdrawn since the other criteria are considered to allow by themselves to select more eco-friendly products.</p> <p>The following measures have been withdrawn:</p> <table border="1"> <thead> <tr> <th>Environmental area</th> <th>Measures</th> </tr> </thead> <tbody> <tr> <td>Water consumption and wastewater emissions</td> <td> <ol style="list-style-type: none"> 1. Removal of Na₂SO₄ from wastewater (spinning baths, in which the viscose solution is pressed through spinnerets) for coagulation of the fibres 2. Reduction of Zinc from wastewaters by alkaline precipitation followed by sulphide precipitation. 3. Use of anaerobic sulphate reduction techniques for sensitive waterbodies. If further </td> </tr> </tbody> </table>	Environmental area	Measures	Water consumption and wastewater emissions	<ol style="list-style-type: none"> 1. Removal of Na₂SO₄ from wastewater (spinning baths, in which the viscose solution is pressed through spinnerets) for coagulation of the fibres 2. Reduction of Zinc from wastewaters by alkaline precipitation followed by sulphide precipitation. 3. Use of anaerobic sulphate reduction techniques for sensitive waterbodies. If further
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		<p>desulphurization is necessary, anaerobic reduction to H₂S must be carried out.</p> <p>4. Use of separate effluent collection systems for</p> <ul style="list-style-type: none"> - Contaminated process effluent water - Potentially contaminated water from leaks and other sources, including cooling water and surface runoff from process plant areas, etc. - Uncontaminated water
	Waste management	<ol style="list-style-type: none"> 1. Use of fluidized bed incinerators to burn non-hazardous wastes with subsequent heat and energy recovery 2. Recycling of fibres, wherever possible
	Air emissions	<ol style="list-style-type: none"> 1. Condensation of exhaust air from spinning streets to recover CS₂ and backcycling into the process. (different technologies available). 2. Operation of spinning frames in houses in order to minimise CS₂ emissions, (spinning frames are the sources of CS₂ emissions). Housings have to be equipped with leak-proof sliding windows and have suction systems inside where excess CS₂ is

			<p>purged to a recovery facility.</p> <p>3. Application of exhaust air desulphurization processes based on catalytic oxidation with H₂SO₄ production.</p>
Cotton			
- Sourcing	<p><i>Cotton – Sourcing and traceability</i></p> <ol style="list-style-type: none"> 100% of organic cotton should be required. A certified absence of any form of pesticides is advisable from a toxicological point of view. Moreover, this would strengthen the market for organic cotton because cotton producers would see additional opportunities to produce and market organic cotton with lower staple length and/or organic comber noils. There is hardly any competition with textile grade cotton fibres. Organic cotton represents only few per cent of the market (less than 1% in 2007/2008). Even with dramatic increases (+30%/year), it will be well below 10% of total global production. 100% is too high. 	<p>Considering the information reported, 10% is the threshold proposed for organic cotton. This could be raised in next revisions. However, the balance should not be GMO in accordance with the internal discussion held in textiles.</p>	
- Bleaching	<p><i>Bleaching – TCF/ECF</i></p> <p>TCF cotton should be used since technically feasible and marketed (http://www.barnhardtcotton.net/technology/cotton-processing/).</p>	<p>In order to keep a technology neutral approach, TCF is not proposed for this first set of criteria. This is also in alignment with what done in other environmental labels, for instance the revised EU Ecolabel for Textiles.</p>	
- Optical brighteners			
- Industrial best practices	<p><i>Industrial best practices</i></p> <p>Criterion on best practices should be removed because not necessary to select the 10-20% environmentally best products on the market.</p>	<p>The entire proposal will be withdrawn since the other criteria are considered to allow by themselves to select more eco-friendly products.</p> <p>The following measures have been withdrawn:</p>	

	Environment al area	Measures
	Water consumption and wastewater emissions	<ol style="list-style-type: none"> 1. Implementing water-saving solutions such as monitoring of water flow in a facility, adjustment of processes in pretreatment to quality requirements in downstream processes and re-use of water. 2. Implementing a monitoring plan in order to avoid/ minimize any kind of surplus of applied chemicals and auxiliaries (e.g. by automated dosing and dispensing of chemicals) and to minimize consumption of complexing agents in hydrogen peroxide bleaching. 3. Implementing multi-step waste water treatment plants to decrease the emission of AOX.
	Waste management	<ol style="list-style-type: none"> 4. Implementing an integrated waste management plan to optimize prevention, reuse, recycling, recovery, and final disposal of waste according to waste hierarchy. 5. Separating different waste fractions to allow reuse or recirculation of the single fractions.
	Air emissions	<ol style="list-style-type: none"> 6. Proving that in the selection of auxiliaries and chemicals within the facility higher preferences are given to products with a low volatility and

			low smell intensity.
		Energy management	<p>7. Implementing measure to optimize energy efficiency (e.g. via segregation of hot and cold waste water streams prior to heat recovery and recovery of heat from the hot stream) and to reduce the consumption of fossil fuels.</p> <p>8. Applying on-site generation of electricity and heat in combined heat and power plants (CHP), which can save up to 30% of energy when compared to conventional technologies.</p>
Plastic materials and synthetic polymers	<p><i>Definitions</i></p> <p>A better definition of polymers is necessary.</p>	Definitions have been provided	
- Sourcing and production	<p><i>Sourcing and production</i></p> <ol style="list-style-type: none"> 1. A requirement on bio-plastics could be difficult to fulfil ensuring a proper function of the product at the same time. It would be better to rely on a criterion on GWP. 2. A possible alternative would be to require suppliers to declare that plastics perform better in terms of GWP (or energy demand) than the average profiles defined by Plastic Europe. 	The proposal has been withdrawn. A criterion on GWP for plastics has been introduced.	
- Heavy metals / Organotin compound	<p><i>Heavy metals / Organotin compounds</i></p> <ol style="list-style-type: none"> 1. Non-use of these substances should be ensured. The 0.1% limit is insufficient and still allows the use of these 	<p>Apart from mercury, restrictions on heavy metals have been kept, the threshold has been lowered to 0.01%.</p> <p>Restrictions on organotin substances have been put on hold</p>	

<p>ds</p>	<p>substances in concentrations that go beyond trace limits. In the Nordic Swan organotin compounds are limited to 0.01%.</p> <p>2. Organotin compounds are not intentionally used in the manufacture of AHP and trace levels does not constitute a safety threat to consumer.</p>	<p>since typical concentrations of these compounds seem to be far below trace limit levels and not representing a threat.</p> <p>Additional restrictions on additives intentionally used above 0.1% by weight have been restricted based on their H-statements.</p>
<p>- SAP</p>	<p><i>SAP – residual monomers</i></p> <p>1. The 1000 ppm limit value for residual monomers should be reduced at 400 ppm since this value is respected by several applicants for the Nordic Swan.</p> <p>2. 1000 ppm is recommended by industry as limit value for the residual monomers</p> <p><i>SAP – water soluble extracts</i></p> <p>5% threshold for water-soluble extracts would be difficult to achieve, with test duration at 16 hours and even after 1 hour with the EDANA test method. This would prevent the whole industry from obtaining the EU Ecolabel.</p> <p><i>SAP – acryl amide</i></p> <p>1. it must be clearly stated that acryl amide is not intentionally added.</p> <p>2. acryl amide should be limited below trace limits. Alternatively, it should be said that the substance has not to be present, intentionally or not.</p> <p><i>SAP – sodium polyacrilate</i></p> <p>Not all health aspects of sodium polyacrilate have been thoroughly investigated. The substance should be thus not referred to as an inherent safe material.</p>	<p>The threshold has been set at 1000 ppm, however, the requirement has been reinforced referring to criterion 7 on chemicals. Derogation from the requirement has been assigned to sodium polyacrilate.</p> <p>A 10% threshold has been preliminarily set. A different threshold proposal with supporting documentation is expected from industry</p> <p>A requirement on the non-use of acryl amide has been added.</p> <p>This has been clarified in the report</p>

<p>- Industrial best practices</p>	<p><i>Industrial best practices</i> Criterion on best practices should be removed because not necessary to select the 10-20% environmentally best products on the market.</p>	<p>The proposal will be considered for removal if the other requirements on plastic will be considered satisfactory.</p>
<p>Other materials</p>	<p><i>Adhesives - phthalates</i></p> <ol style="list-style-type: none"> 1. All phthalates should be restricted as in the Nordic Swan. 2. DIBP is used for this application. Please remove general reference to phthalates. 3. DINP has been found in the glue used in panty liners. <p><i>Adhesives – colophony resins</i> Refer to chemicals and CAS numbers. Only hazardous and unstable colophony resins should be specified.</p> <p><i>Adhesives - formaldehyde</i> Testing of formaldehyde is not relevant for hotmelt adhesives and this should be corrected.</p>	<p>Only reference to DINP and DIBP has been made</p> <p>Colophony resins of concern have been specified.</p> <p>The requirement has been changed accordingly.</p>
	<p><i>Inks and dyes</i></p> <ol style="list-style-type: none"> 1. The exemption for TiO₂ on the basis that its non-use will lead to non-aesthetic products should be removed because subjective. 2. Use of inks and dyes should be allowed if it is safe. Compliance with criterion on hazardous substances would be enough 	<p>Inks and dyes are allowed to be used under specific conditions. Reference to article on hazardous substances is given in the requirement.</p> <p>Aesthetic of the product is subjective but it is also an important factor of choice, especially for feminine hygiene products.</p>
	<p><i>Fragrances and lotions</i></p> <ol style="list-style-type: none"> 1. There is no robust scientific evidence but Scandinavian customers could be confused if these substances are allowed. 	<p>Based on the elements collected, the following proposal is considered to represent a solution taking the different views into account:</p> <ol style="list-style-type: none"> 1. A full ban of fragrances is proposed for product for

<ol style="list-style-type: none"> 2. A full ban of fragrances and lotions is welcome because these are not needed and because of the risk of causing allergies. This is particularly important for products for children. 3. Fragrances should be excluded in products intended for infants, babies and children under the age of twelve. The age could be raised until eighteen following the definition of child given by the UN Convention on the Rights of the Child. 4. The use of lotions in this product group should be avoided. 5. Use of substances should be allowed if it is safe. Compliance with criterion on hazardous substances would be enough 6. Lotions could be accepted if no derogations are granted. 	<p>children</p> <ol style="list-style-type: none"> 2. No restrictions are proposed for lotions 3. Manufacturers must declare the presence of any lotions and fragrances used 4. Reference to article on hazardous substances is explicitly made
<p><i>Chlorine and phthalates</i></p> <ol style="list-style-type: none"> 1. This is not a PVC application, please remove the wording PVC and phthalates. 2. Phthalates are never added intentionally. Nevertheless, contaminations below 100 ppm are possible. It would be needed to ensure a limitation of trace pollutants as these substances should not be present in products which are used daily. DINP has been found in the glue used in panty liners. Presence of DEHP has been also reported for some diapers (http://ehp.niehs.nih.gov/wp-content/uploads/120/7/ehp.1104052.pdf) 	<p>Wording has been corrected and DINP has been included within the requirements for adhesive materials.</p> <p>The referred source reports that DEHP was present in a diaper below 100 ppm, likely as trace element. No indication is provided on which part this is found. Moreover, the scope of the study does not seem to include a significant amount of products. DEHP, already restricted as SVHC under REACH, shall be handled under criterion 7.</p>
<p><i>Odour control substances</i></p> <p>The use of odour control substances in this product group should be avoided.</p>	<p>This is already covered with requirements on hazardous substances and on fragrances.</p>
<p><i>Nanosilver</i></p>	<p>A restriction on nanosilver has been added, as done also for</p>

	<p>The use of nanomaterials in this product group should be avoided. In particular, nanosilver should be prohibited since there are napkins that are advertised for containing this material (http://www.fohow.com/index.php/Products/detail/id/44/l/en/).</p>	<p>textiles.</p>
	<p><i>Biocides</i></p> <p>The use of biocides in this product group should be avoided. There are some documents referring to the use of these substances in diapers (http://www.mp2diaper.com/Diaper-101_ep_42-1.htmlhttp://www.awchamburg.org/AWCH_GettingSettled/AWCH_Child_Family/AWCH_Diapers.html).</p>	<p>The referred source does not seem to indicate that biocides are used in AHPs but that "TBT is also an ingredient used in biocides to kill infecting organisms".</p>
	<p><i>Nolyphenol substances</i></p> <p>The use of nolyphenol substances in this product group should be avoided. A study has reported the presence of 4-t-nonylphenol in diapers (http://ehp.niehs.nih.gov/wp-content/uploads/120/7/ehp.1104052.pdf)</p>	<p>The referred source reports that 4-t-nonylphenol was present in a diaper below 100 ppm, likely as trace element. No indication is provided on which part this is found. Moreover, the scope of the study does not seem to include a significant amount of products. The substance, already restricted under REACH as SVHC, shall be handled under criterion 7.</p>
Excluded or limited substances or mixtures	<p>This requirement would be complex if industry has to go back to several levels of the supply chain.</p> <p>Assessment and verification of the criterion could be enhanced by referring to the product and homogenous parts/materials of the products.</p>	<p>The version applied for Bed Mattresses has been preliminarily applied here. The final requirement could be influenced also by the work of the HTF on chemicals.</p>
Minimisation of the production waste	<ol style="list-style-type: none"> 1. Reference should be made to the thresholds set in the Nordic Swan, which are specific for each product and higher. 2. This criterion could be implemented using the schemes already operating such as ISO14001, EMAS and EPD. 	<p>Thresholds and wording has been revised accordingly</p>
End of Life	<p>In those countries where source segregated MSW collection is in place, there is an obligation for manufacturers to state on the packaging of the product the correct way of disposing post-</p>	<p>Such obligations are not considered applied in all countries and thus it could be still relevant to keep the requirement.</p>

	consumer waste.	
Fitness for use	<p><i>General comments</i></p> <ol style="list-style-type: none"> 1. Also technical tests should be requested. These are very useful to monitor the quality of the products. Producers can use these tests and compare them with results from market leading products 2. Only user test should be requested for assessing the performance of the products. The key parameter is the overall performance. A good rating in the user tests together with quality assurance processes should ensure a high performance of the product. 	<p>Thresholds have been set only for user tests. Technical tests have been requested as complementary information. Since the latter ones are performed in any case, no additional burdens to companies are foreseen.</p>
	<p><i>User tests – rating scale</i></p> <ol style="list-style-type: none"> 1. Wording and figures for the requirement on user testing must be revised. Users tend to go for rating 3 in a 5 graded scale. Testing is not feasible for each size of products. Premature and newborn can be difficult because outgrowing of the size. Tests should be done of the most sold sizes. Besides, when developing a new product, only one size is produced in the test runs and that is the only one that can be tested. 2. For overall performance, skin dryness and compatibility and fit and comfort, requiring that 90% of the consumers rate themselves as satisfied is highly demanding. A requirement of 80% would already ensure a high performance of the product. For leakage protection, requiring that leakage does not occur in 10% of diapers would not ensure a high performance of the product. Since this is one of the main factors of evaluation, threshold should be lowered to 5%. 	<p>For leakage protection the threshold has been lowered to 5%. The rating scale has been set from 1 to 10, 80% of the products must score at least 7.</p>

	<p><i>User tests – Test panel</i></p> <ol style="list-style-type: none"> 1. Test panel could be made of 20-30 persons and tested using a scale 1-10 (very bad, bad, middle, good and very good). Typical score is 6-8.5 and it is hard to see scores above 8.5. Testing should be as much independent as possible. 2. A sample of 100 consumers should be used. <p><i>User tests – structure</i></p> <p>Guidelines are for instance provided in AFNOR Q34-019. Skin dryness and compatibility need some better definition</p>	<p>One of the outcomes of the 2nd AHWG meeting was that 30 people would have represented a good compromise between costs and reliability of the test.</p> <p>The presented proposal is derived from EDANA's guidelines and interaction with stakeholders. This tries not to favour any specific scheme, however the AFNOR Q34-019 has been cited in the description of the criterion. Reference "compatibility" has been removed.</p>
	<p><i>Safety tests</i></p> <ol style="list-style-type: none"> 1. ISO 11737-1 on sterilization of medical devices is not applicable to the products within the scope and thus it should be excluded. 2. There is no need to perform additional safety tests since the products meet the General Product Safety Directive and the REACH Directive. A declaration from the manufacturer that he complies with the Good Manufacturing Practices (GMP) should guarantee the quality of the product. 	<p>The criterion has been modified accordingly with this comment</p>
<p>Information on the EU Ecolabel</p>	<p>A statement on the product's renewability could be added, such as "the product is designed to reduce the impact from the consumption of resources and to maximize the product's use of renewable materials"</p>	<p>According to the background information produced along the project, the main action to decrease the environmental impact of the product is to minimise its weight and to improve the sustainability of materials.</p>
<p>Social aspects</p>	<p>The applicant should have a system in place and describe for the competent body, but not supplying any reports. Not all countries have ratified ILO conventions. Some of these conventions are in conflict with national laws and regulations (e.g. in the USA, China, India, Brazil, Mexico). A revised proposal has been submitted.</p>	<p>A revised proposal has been drafted in accordance with what proposed for Textiles.</p>

Other comments	A horizontal task force for forestry aspects should be set-up.	This is an issue of relevance for EUEB
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