

European Commission Green Public Procurement
(GPP) Training Toolkit
- Module 3: Purchasing Recommendations



Copying and Graphic Paper

Background Product Report

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Introduction

This background product report forms part of the European Commission's **GPP Training Toolkit Module 3**, which presents recommended GPP purchasing criteria for 11 priority product and service groups.

This document complements the [Product Sheet on Copying and Graphic Paper](#), by providing more in-depth information on why the purchasing recommendations included within the Product Sheet have been set. The Product Sheets themselves contain only the information that is strictly necessary for contracting authorities to incorporate environmental considerations in their tender procedures.

Where possible, the criteria presented in Module 3 will mirror the criteria underlying the **European Ecolabel**. Where the European Ecolabel does not cover a product/service group, other criteria sources (such as further eco-labels or national guidance) may be used.

For each product/service group two sets of criteria are presented:

- **Core criteria** – these are designed to be used by any European contracting authority. They address the most significant environmental impacts, and are designed to be used with minimum additional verification effort or cost increases.
- **Comprehensive criteria** – these are intended for use by authorities who wish to purchase the best environmental products available on the market, and may require additional administrative effort or imply a slight cost increase as compared to the purchase of other products fulfilling the same function



Abbreviations

AOX	Organic chlorine compounds
APEO	Alkylphenolethoxylate
BREF	Best Available Technique Reference Document
CSA	Canadian Standards Association
EC	European Commission
ECF	elementary chlorine free
EDTA	Ethylenediaminetetraacetic acid
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FLEGT	Forest Law Enforcement, Governance and Trade Action Plan
FSC	Forest stewardship Council
GPP	Green public procurement
IPPC	Integrated Prevention and Pollution Control
ISO	International Standards Organization
OBA	Optical brightening agent
PEFC	Pan European Forest Council
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
SFI	Sustainable Forestry Initiative
TCF	totally chlorine free
UK	United Kingdom
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
UV	Ultraviolet
VPA	Voluntary Partnership Agreement



1 Scope

These recommendations cover the purchase of **copying and graphic paper**. This encompasses unprinted paper for writing, printing and copying purposes (up to 170g/m²) sold in sheets or reels.

Finished paper products such as writing pads, drawing books, calendars, manuals, etc. have not been included. However, contracting authorities may find useful criteria for these products under the Blue Angel ecolabel scheme.

2 Key environmental impacts

On the basis of the Best Available Technique Reference Document (BREF),¹ developed by the European IPPC Bureau within the framework of the IPPC Directive (96/61/EC), on best available technologies for paper production and the main paper ecolabels, the most important environmental impacts relating to pulp and paper production are the following:

2.1. Forest destruction and loss of biodiversity

In 2006, the total European paper and board consumption was close to 90 million tonnes. Office paper represented 4% of the volume, while all papers for printing and writing uses represented around one third of the total European paper and board consumption. The other two thirds included packaging, followed by newsprint and tissue and also other applications².

Annually 500,000,000 m³ of wood is used by the paper industry world-wide (15% of total logging) from which almost 40% is used for coated and uncoated paper. Paper consumption in Europe increased by 120% between 1983 and 2005 with an average yearly rise of 2.5% in the last 10 years³. The wood used for paper production can either come from tree plantations or forests with fully functioning ecosystems.

Industrial logging in virgin or primary forests (in Amazonia, Indonesia, Russia, Canada etc.) and the substitution of functioning ecosystems with tree plantations leads to a loss of biodiversity and makes it increasingly difficult to guarantee that wood derives from legal forestry activities.

Illegal logging takes place when timber is harvested in violation of national forestry laws. The clandestine nature of illegal logging makes its scale and value difficult to estimate in relation to the global trade in forest products, but strong evidence suggests that it is a substantial and growing problem. The World Bank's 1999 review of its global forest policy observed: "In many countries, illegal logging is similar in size to legal production. In others,

¹ <http://eippcb.jrc.es/pages/FActivities.htm>.

² CEPI (Confederation of European Paper Industries). Facts and figures. Paper consumption. <http://www.cepi.org/content/default.asp?pageid=101#>. Visited on 01/06/2007.

³ *ibid*



it exceeds legal logging by a substantial margin."⁴ Furthermore, global loss of forested areas amounts to approx. 13 million ha per year, almost half of which are primary forests in the tropics (FAO 2005)⁵. But it is not just a tropical country problem; countries of the former Soviet Union are facing problems regulating their forests. Russia, for example, is thought to have rates of illegal logging at around 25%⁶.

Fast-wood plantations are neither inherently good nor inherently bad⁷. They can generate negative environmental impacts compared to natural, indigenous forests, such as a loss of biodiversity, disruption of local water cycles, loss of soil productivity and increased risk of pests and diseases, however such effects can be balanced if careful and intelligent assessment of the social, environmental and economic consequences is carried out and if they are well-designed and managed, and do not replace natural forests⁸. All the major sustainable forest management certification schemes allow the certification of plantations (provided they meet certain requirements, e.g. the FSC only allows certification of plantations in areas converted from natural forests before November 1994).

In order to reduce these impacts, there are two solutions:

- 1) Produce/use paper from virgin fibre stemming from legally harvested woods and from sustainably managed forests.

The certification of sustainable forest management (such as the FSC, PEFC, CSA, or SFI)⁹ guarantees both legality and the respect of environmental and social standards in forest exploitation, although the standards and verification systems differ between the various certification schemes.

To guarantee that wood is legally harvested, the European Union has also established a licensing system in the framework of its Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan designed to identify the legality of the production of imported products, the FLEGT license. In order to obtain the license, Voluntary Partnership Agreements (VPAs) have to be signed between timber-producing countries and the EU. Timber products, which have been legally produced in VPA partner countries, will be licensed with a FLEGT license for the legality of production by a third-party, and only licensed products from these partner countries will be allowed access to the EU^{10 11}. As yet

⁴ Timber Trade Federation. <http://www.forestsforever.org.uk>

⁵ The Global Forest Resources Assessment 2005. FAO. 2005.

⁶ Timber Trade Federation. <http://www.forestsforever.org.uk>

⁷ Christian Cossalter and Charlie Pye-Smith. *Fast-wood forestry. Myths and realities*. CIFOR, the Centre for international forestry research. 2003:
http://www.cifor.cgiar.org/Publications/pdf_files/books/forestperspective.pdf,

⁸ Arborvitae, the IUCN/WWF Forest Conservation Newsletter n°31. September 2006. Article: Forest plantations threatening or saving natural forests?

⁹ FSC (Forest Stewardship Council), PEFC (Programme for the Endorsement of Forest Certification schemes) CSA (Canadian Standards Association) and SFI (Sustainable Forestry Initiative).

¹⁰ Article 4, paragraph 1 of the Council Regulation (EC) No 2173/2005 of 20 December 2005 on the establishment of a FLEGT licensing scheme for imports of timber into the European Community.

¹¹ This system is similar in effect to other systems already in place in several international agreements, including, amongst others, the Convention on International Trade in Endangered Species (CITES) and the Kimberley Process on conflict diamonds, which feature license or permit systems, and tracking mechanisms, designed to exclude particular categories of products from international markets. The regulation to implement the FLEGT licensing system was adopted by the EU Council in December 2005.



no FLEGT license exists as the voluntary partnership agreements are currently under negotiation¹².

The legal origin of wood can also be demonstrated through a tracing system being in place. These voluntary systems may be 3rd party certified, often as part of ISO 9000 and/or ISO 14000 or EMAS management system.

The legality and sustainability of wood fibres is important as, in the EU, approximately 25% of pulpwood and 15% of market pulp is imported¹³.

2) Produce/use paper from recovered paper

In order to produce recycled paper, paper based on virgin fibre needs to be produced. Both types of paper are part of the same production chain. In fact, it is possible to recycle high-quality paper, such as graphic paper, several times for either the same, or lower quality uses, reducing the need for virgin fibre.

Both types of paper need to be purchased, as the amount of recycled paper cannot cover the total paper demand in Europe, and as there would not be recycled paper without having paper made from virgin fibres. The key issue is recyclability, not the recycled origin of fibres.

2.2. Water and energy consumption during production

Detailed information on the Best Available Techniques in the Pulp and Paper industry and the associated emission and consumption levels during production are available in the above-mentioned BREF report for the Pulp and Paper industry. The water and energy consumption levels can vary widely depending on the grade/type of paper produced, the different techniques applied and depending on whether pulp and paper are produced in the same plant (integrated plant) or if the pulp for paper production is bought on the market (non-integrated plant). According to the BREF and other studies¹⁴, production processes for paper based (totally or mainly) on post-consumer¹⁵ recovered paper fibres (recycled paper) use much less energy and water than those for paper based (totally or mainly) on virgin fibre:

- The water consumption for the production of recycled or non-recycled graphic paper is about 10-15 m³/t in plants working with best available techniques according to the BREF. In addition to this, for paper made out of fresh pulp the water consumption for pulp production has to be included, which is about 15-55 m³/t depending on the kind of pulp produced and the bleaching technique used. Water consumption for the production of

¹² More information at:

http://ec.europa.eu/development/policies/9interventionareas/environment/forest/flegt_en.cfm

¹³ Annual Statistics 2005. European Pulp and Paper Industry. Confederation of European Paper Industries (CEPI). 2005.

¹⁴ Quantitative impacts are estimated based on different studies and related to average figures for craft and paper based (totally or mainly) on post-consumer recovered paper fibres (recycled paper) (“Ökobilanzen für graphische Papiere”, UBA 2000, “Ökologischer Vergleich von Büropapieren in Abhängigkeit vom Faserrohstoff”, IFEU 2006 and “Integrated Pollution Prevention and Control (IPPC) Reference Document on Best Available Techniques in the Pulp and Paper Industry”, European Commission 2001.).

¹⁵ Post-consumer recycled fibres refers to paper that has been reprocessed. This may come from consumers, offices, printing houses, bookbinders, or similar. Broke (waste from the paper making process) is not classified as recycled fibre.



non-recycled paper therefore sums up to about: 25- 70 m³/t, compared with recycled paper (including the preparation of recovered paper pulp): 10- 15 m³/t.

- Energy consumption for the production of paper based (totally or mainly) on virgin fibre is 5,000-10,700 kWh/t, compared to a consumption for the production of recycled paper of 1,700-5,500 kWh/t.

Pulp and paper industries in the EU have substantially improved their technology, developing and using, in many cases, best available technologies in order to minimise their environmental impacts. For example, paper mills that produce paper based on virgin fibre produce almost half their primary energy consumption from biomass. These changes have been taking place both in wood fibre and recycled fibre mills. However, the production process of paper based (totally or mainly) on virgin fibre is still characterised by a higher water and energy consumption (in the pulp production phase), but in many cases a lower fossil CO₂ emission.

2.3. Chlorine and chlorine substances

Chlorine or chlorine compounds as well as other chemicals (such as ozone or hydrogen peroxide) can be used in the bleaching process in order to, among other things, obtain a final product with a high whiteness level.

All papers, including paper based (totally or mainly) on virgin fibre, can be purchased with different whiteness levels. Traditionally when paper production allowed the use of elementary chlorine for bleaching, office paper used to be very white directly from the process and by the use of optical brighteners.

However, chlorine compounds used in the bleaching process can react with existing organic substances in water, creating organic chlorine compounds (AOX). These halogenated organic compounds (dioxins, chlorinated phenols) may be toxic and are poorly degradable in the aquatic environment.

In order to avoid the emission to the environment of such compounds, the bleaching process should be totally chlorine free (TCF) or elementary chlorine free (ECF) with the strict control of AOX levels after deperation.

2.4. Optical brightening agents

The choice for a certain paper type is often based on three characteristics: whiteness, brightness and shade.

Whiteness is the measurement of light reflectance across all wavelengths of light comprising the full visible spectrum (outdoor daylight) and therefore it is the one that best correlates with your visual perception of the paper. CIE Whiteness (ISO Standard 11475) is the most commonly used whiteness index. Papers that reflect a higher percentage of blue light tend to measure the highest, while those reflecting a higher percentage of yellow light tend to yield lower values. The normal maximum whiteness level would be 100, but higher values can be obtained if papers have added optical brightening agents (OBAs). The function of an OBA is to reflect ultraviolet (UV) light from the light source as visible light in the blue spectral region giving measurements in excess of 100.

Brightness is a measurement of light reflectance of the specific wavelength of blue light. Simply put – brightness represents a more narrow measurement of light reflectance than



whiteness. The beginning brightness range for a base paper pulp is from 0-100 calculated normally with the ISO Standard 2469. During the papermaking process, OBAs are frequently added to increase a paper's whiteness as well as brightness.

Shade is a measurement of the colour of paper. It is an important characteristic within the definition of a paper's whiteness and it is measured with the most universally accepted system of colour measurement, the CIE LAB model. It is commonly accepted that there are four groups of white shades: true white, cream white (yellowish), blue white (bluish) and red white (reddish).

If you want to ensure the reader's comfort it is better to select a true white or cream white paper to minimise eyestrain¹⁶. That is to say, papers that do not reflect more blue than normal in light – in other words papers with ISO brightness and CIE whiteness not exceeding the value 100 and therefore, papers with limited or no OBA content.

Lower brightness/whiteness levels might also represent a lower need for strong bleaching of pulp and paper surface treatment, reducing related environmental impacts in the paper production process. OBAs have impacts on human health and the environment, especially aquatic, as they are difficult to break down, both in water purification systems and biologically in aquatic systems. They may cause allergic reactions to people and are toxic to aquatic life as they are not biodegradable.

2.5. Other chemical substances

Chemical substances that may be used in paper production can also have negative effects on health and the environment. For example:

Some of the synthetic polymers that could be used in pulp and paper production are classified as carcinogenic, mutagenic, teratogenic, or toxic and may cause adverse effects on the aquatic environment.

Colorants and dyes can contain heavy metals such as mercury, lead, cadmium or hexavalent chromium compounds as constituents. These may cause severe health problems by bioaccumulation and biomagnification¹⁷. Problems do not only occur during the handling of these substances but also when they are discharged into the environment with waste water, or in the form of incineration ashes, etc.

EDTA (ethylenediaminetetraacetic acid) is a very strong complexing agent. Complexing agents are reactive composts that can re-mobilise heavy metals in river sediments when they are discharged into the aquatic environment. While this is true for all complexing agents, EDTA is of particular concern because it is very poorly biodegradable and has stronger complexing properties than other substances.

APEOs (Alkylphenolethoxylates) are transformed in the environment into metabolites that are more toxic than the original surfactant, and both APEOs and metabolites are suspected to

¹⁶ Three Key Paper Properties: Whiteness, Brightness and Shade. Xerox Corporation. 2005.

¹⁷ Bioaccumulation occurs when an organism absorbs a toxic substance at a rate greater than that at which the substance is excreted or degraded biologically. Biomagnification is the increase in concentration of a substance that occurs in a food chain as a consequence of: food chain energetics and low (or non-existent) rate of excretion/degradation of the substance. Although sometimes used interchangeably with 'bioaccumulation,' an important distinction is drawn between the two: bioaccumulation occurs within an organism, and biomagnification occurs across trophic (food chain) levels.



have hormone-mimicking, estrogenic effects affecting the reproductivity of male organisms, and have high bioaccumulation factors.

2.6. Reducing the key impacts

The table below summarises the main environmental impacts related to copying and graphic paper as described above, and indicates the focus of measures to address these impacts.

Table 1. Key environmental impacts – Copying and Graphic Paper		
Impact		GPP Approach
<ul style="list-style-type: none"> • Forest destruction and potential loss of biodiversity • Emissions to air and water during pulp and paper production • Energy and water consumption during production • Chemical consumption during production • Waste generation during production such as rejects and sludge 	<p>→</p> <p>→</p>	<ul style="list-style-type: none"> • Procurement of paper based on post-consumer recovered paper fibres (recycled paper) or paper from legally and sustainably harvested wood • Procurement of paper produced through processes characterised by low energy consumption and emissions • Avoidance of certain substances in paper production and bleaching



3 Relevant European environmental policy and legislation

In general terms, there is little European legislation that relates directly to paper as such. However, there are several regulations that affect the production sector (the following list is not exhaustive):

- The Integrated Prevention and Pollution Control (IPPC) legislation¹⁸
- The Large Combustion Plant Directive 2001/80/EC¹⁹ or the Waste Incineration Directive 2000/76/EC²⁰ that regulate air emissions
- Directive 2003/87/EC²¹ establishing a scheme for greenhouse gas emission allowance trading within the Community
- The Water Framework Directive 2000/60/EC²² for emissions to water
- Directive 2002/61/EC²³ amending Directive 76/769/EEC relating to restrictions on the marketing and use of certain dangerous substances and preparations
- Commission Regulation No 2032/2003²⁴ concerning the placing of biocidal products on the market
- The REACH regulation²⁵ for the approval of new chemicals
- Directive 75/442/CEE²⁶ on waste and its amendments

This legislation is the key relevant legislation for pulp and paper factories in Europe.

In addition to these, it is necessary to mention the FLEGT (Forest Law Enforcement Governance and Trade) action plan adopted by the EU in 2003. The Action Plan outlines a series of measures to address illegal logging both in the countries concerned and within the EU as a timber importer. As mentioned before, in relation to procurement the Plan has defined a timber licensing system to guarantee the legality of certain imported timber

¹⁸ Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control.

¹⁹ Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants.

²⁰ Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste.

²¹ Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC (Text with EEA relevance).

²² Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

²³ Directive 2002/61/EC of the European Parliament and of the Council of 19 July 2002 amending for the nineteenth time Council Directive 76/769/EEC relating to restrictions on the marketing and use of certain dangerous substances and preparations (azocolourants).

²⁴ Commission Regulation No 2032/2003 of 4 November 2003 on the second phase of the 10-year work programme referred to in Article 16(2) of Directive 98/8/EC of the European Parliament and of the Council concerning the placing of biocidal products on the market, and amending Regulation (EC) No 1896/2000.

²⁵ Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

²⁶ Council Directive 75/442/EEC of 15 July 1975 on waste.



products. In order to obtain the license, Voluntary Partnership Agreements (VPAs) have to be signed between timber-producing countries and the EU. Timber products, which have been legally produced in VPA partner countries, will be licensed with a FLEGT license for the legality of production by a third-party, and only licensed products from these partner countries will be allowed access to the EU^{27 28}.

²⁷ Article 4, paragraph 1 of the Council Regulation (EC) No 2173/2005 of 20 December 2005 on the establishment of a FLEGT licensing scheme for imports of timber into the European Community.

²⁸ This system is similar in effect to other systems already in place in several international agreements, including, amongst others, the Convention on International Trade in Endangered Species (CITES) and the Kimberley Process on conflict diamonds, which feature licence or permit systems, and tracking mechanisms, designed to exclude particular categories of products from international markets. The regulation to implement the FLEGT licensing system was adopted by the EU Council in December 2005; further details will be agreed during 2007. The licensing system is built up through a series of bilateral agreements with major timber-producing and -exporting partner countries. More information at: http://ec.europa.eu/development/policies/9interventionareas/environment/forest/flegt_en.cfm



4 Ecolabels and other criteria sources

4.1. European Ecolabel and other ecolabels

There are a number of Type I²⁹ ecolabels for office paper such as the European Ecolabel, Nordic Swan, Milieukeur, Blue Angel, Good Green Buy, Czech Ecolabel, Hungarian Ecolabel, Austrian Umweltzeichen and others. In the European market, the most usual ones are the Blue Angel for 100% post-consumer recovered paper fibres (recycled paper); and the European Ecolabel and Nordic Swan for both recycled paper and paper based (totally or mainly) on virgin fibre. The recommended criteria are based on these ecolabels.

Because the production of recycled paper and paper based on virgin fibre is different, the criteria of the various ecolabels are not the same. As highlighted in Section 2, the production of paper based on virgin fibre is characterised by a high water and energy consumption and emissions to air and water. The European and Nordic Swan ecolabel criteria focus on these aspects, as well as on the use of chemical products. On the other hand, the Blue Angel criteria for paper based on post-consumer recovered paper fibres concentrate on the use of chemical products in pulp and paper manufacture and on technical performance. Annex 1 presents a comparison of the criteria of these three ecolabels.

Apart from these ecolabels, office paper can also be marked with the logos of the FSC or PEFC sustainable forest management systems. These, depending on what they state, can certify that paper is made of 100% recycled fibres or that it contains a minimum percentage of certified sustainable wood fibres. However they do not deal with any other environmental aspects relating to paper production.

4.2. GPP Guidance on office paper products

In some countries, environmental criteria and guidance for the procurement of office paper is available, generally based on the ecolabels described above.

4.2.1 United Kingdom

In the United Kingdom, the White Paper Waste Strategy 2000 calls on all central Government bodies to use recycled paper³⁰.

Furthermore “Quick Wins” (criteria) are defined for the most important product groups³¹.

Product type	The 2007 ‘Quick Win’ Specification
<i>Copying paper</i>	100% recycled content.

²⁹ The International Standards Organization (ISO) has categorised the different kind of product labels on the market. “Type 1” labels are those where the underlying criteria are set by an independent body and which are monitored by a certification and auditing process. As such they are a highly transparent, reliable and independent information source for procurers.

³⁰ See: <http://www.sustainable-development.gov.uk/government/estates/green-guide/paper.htm>

³¹ 2007 Minimum Environmental Standards. <http://www.sustainable-development.gov.uk/publications/pdf/QuickWins2007vr3.pdf>



<i>Paper for printed publications</i>	50% recycled content with a best-in-class standard of 75%. All Departments are expected to move towards 75% and achieve full compliance by October 2009.
<i>Envelopes</i>	100% recycled content for general use 60% recycled content for mailing system envelopes (i.e. for automated envelope stuffing). Any virgin pulp used to come from trees that were legally harvested and preferably grown in sustainably managed forests.

In addition to the “quick wins”, the United Kingdom has a policy on legal and sustainable timber procurement that requires all timber and timber products to be from legal sources as a minimum requirement and preferably from sustainable sources. It also specifies that recycled timber products should be preferred over virgin sources³².

4.2.2 Germany

In Germany the study “Ökobilanzen für graphische Papiere” carried out by the Umweltbundesamt (Federal Environment Agency) demonstrated the lower environmental impact of recycled paper. As a result, the Ministry for the Environment recommends the use of 100% recycled paper. A survey carried out in 2002 by Forsa³³ shows that 90% of the regional and central public administrations which participated in the survey use recycled paper, and 24% use exclusively recycled paper.

Recommendations for procurement of recycled paper are given on the national website www.beschaffung-info.de and are based on the criteria of the Blue Angel.

4.2.3 Spain

In Spain, the National Urban Waste Plan (approved 7th January, 2000) includes as one action “the promotion of the use of recycled materials, especially paper and plastics, by public Authorities”. Certain autonomous regional Governments (e.g. Catalonia) are purchasing over 85% recycled paper.

4.2.4 Austria

EcoBuy Vienna (an initiative of the City of Vienna) developed two sample portfolios to assist users in the ecological evaluation of printing and office paper³⁴.

The sample portfolio “Environmentally Friendly Printing Paper” sets the binding guidelines for offset printing. The other one, called “Environmentally Friendly Office Paper”, contains guidelines for paper used in office printers, copiers etc.

The portfolios provide various criteria to select paper based on standardised datasheets (known as “Paper Profiles”³⁵), which include information on the environmental burden of the

³² See: <http://www.proforest.net/cpet>

³³ Forsa: Verwendung von Recyclingpapier in der öffentlichen Verwaltung. Ergebnisse einer schriftlichen Befragung von Bundes- und Landesbehörden. Berlin, 2002

³⁴ See: <https://www.wien.gv.at/umweltschutz/oekokauf/pdf/bueropapiere-engl.pdf>

³⁵ See: <http://www.paperprofile.com>



pulp and papermaking process.

This approach only focuses on water and air emissions and pulp fibre origin (virgin fibre or recovered paper) and does not consider the presence or absence of toxic or hazardous substances.

4.2.5 France

The French central government has published an official guidebook on environmental public procurement of graphic and copying paper³⁶. The guidebook states that 3 different products can be considered as ecological in relation to paper:

- a) Paper based (totally or mainly) on post-consumer recovered paper fibres (recycled paper).
- b) European or Nordic Swan ecolabelled paper.
- c) Paper based on virgin fibre produced according to sustainable forestry management rules.

Types a) and b) are also promoted through the Advice Notice on energy savings in which State authorities are urged to buy either recycled or ecolabelled paper³⁷. The Advice Notice on public procurement of wood and wood-based products promotes type c)³⁸.

4.2.6 EKU-tool

The Swedish instrument for ecologically sustainable procurement (the EKU-tool) provides criteria for paper procurement based on the Nordic Swan ecolabel³⁹.

5 Verification issues

In Europe, many paper companies have sought to reduce their environmental impacts by establishing environmental management systems in their factories and certifying their products with one or several ecolabels.

The market availability of certified paper based (totally or mainly) on virgin fibre and on recovered paper varies between European countries but in all countries both types of paper can be found at competitive prices⁴⁰.

Ecolabel criteria normally comprise on the one hand the product specific criteria and, on the other hand, the assessment or verification methods aimed at checking compliance with these criteria. The supporting documents may consist of declarations by the producer or by the supplier, technical and/or product safety sheets; calculation formulas, laboratory tests results etc.

³⁶ See: <http://www.ecologie.gouv.fr/IMG/pdf/05-064.pdf>

³⁷ See: http://www.ecoresponsabilite.ecologie.gouv.fr/IMG/Circulaire_n_5_102_SG_du_28_septembre_2005.pdf

³⁸ See: <http://www.ecologie.gouv.fr/IMG/pdf/050405.pdf>

³⁹ See: http://www.msr.se/en/green_procurement/criteria

⁴⁰ See a study on the different prices of paper based (totally or mainly) on post-consume recovered paper fibres (recycled paper) in several Member States http://www.iclei-europe.org/fileadmin/user_upload/Procurement/LEAP2/Local_market_research_final_report.pdf.pdf



Where criteria are based on ecolabels, the easiest way to prove compliance will be through the possession of the relevant ecolabel. However, even if the paper is not ecolabelled, the contracting authority needs to allow bidders to present other supporting documents as means of proof.



6 Life-cycle costing considerations

According to the European Commission study “Costs and Benefits of Green Public Procurement in Europe”⁴¹, if only procurement prices are taken into account the purchasing costs of green (including 100% recycled and eco-certified copying paper) and non-green copying paper are very similar. Out of the four countries subject of the study, in Germany, ‘green’ versions of copying paper are significantly cheaper (23%) than non-green copying paper. In Spain and Sweden ‘green’ copying paper is slightly more expensive with a relative price difference of 3.5 to 4%. In the Czech Republic the average prices are nearly the same (0.2% difference).

In conclusion, the variations between prices are, to a greater extent, due to differences between different brands and economies of scale through purchased amounts, than due to differences between green or non-green products.

⁴¹ *Study on costs/benefits of Green public procurement in Europe*, Öko-Institut & ICLEI 2007, available at: http://ec.europa.eu/environment/gpp/index_en.htm



7 Recommended criteria

As all aspects are considered equally important it is recommended to use the criteria of the different ecolabels to define environmental criteria for paper under the **Comprehensive** approach. The full European Ecolabel criteria can be used. It is not suggested to list the complete criteria themselves, but rather to simply refer to the criteria in the tender. Should contracting authorities prefer to list the full set of criteria, they can find these in Annex 2.

For the **Core** criteria, it is recommended to use more straightforward, easy-to-check criteria.

Taking into account differences between national policies regarding the definition of “green” paper, it is proposed to define criteria for paper based on recovered fibres as well as criteria for paper made from fibres coming from legally and/or sustainably harvested wood:

- a) **Recycled paper** (based on recovered fibres) – the focus of the Blue Angel ecolabel
 - The **Core** criteria propose the purchase of 100% recycled paper, which is at least Elementary Chlorine Free (ECF), and with an appropriate level of whiteness.
 - The **Comprehensive** criteria recommend, in addition, to refer to the full set of criteria from either the European Ecolabel, Nordic Swan or Blue Angel.
- b) **Paper made from fibres coming from legally and/or sustainably harvested wood** – the focus of the European Ecolabel and the Nordic Swan
 - The **Core** criteria propose that paper must be made from fibres coming from legal sources that is at least Elementary Chlorine Free (ECF). Additional points are awarded for paper for which a certain percentage of virgin fibre is certified as stemming from sustainable sources.
 - The **Comprehensive** criteria refer to the full set of criteria from either the European Ecolabel or Nordic Swan in the award phase.



8 Information Sources

8.1. European legislation

- **Commission Decision** of 4 September 2002 establishing revised ecological criteria for the award of the Community ecolabel to copying and graphic paper and amending Decision 1999/554/EC (2002/741/EC): <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002D0741:EN:HTML>
- **Commission Regulation No 2032/2003** of 4 November 2003 on the second phase of the 10-year work programme referred to in Article 16(2) of Directive 98/8/EC of the European Parliament and of the Council concerning the placing of biocidal products on the market, and amending Regulation (EC) No 1896/2000: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:307:0001:0096:EN:PDF>
- **Directive 2002/61/EC** of the European Parliament and of the Council of 19 July 2002 amending for the nineteenth time Council Directive 76/769/EEC relating to restrictions on the marketing and use of certain dangerous substances and preparations (azocolourants): <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:243:0015:0018:EN:PDF>

8.2. Websites from the European Commission

- <http://europa.eu.int/comm/environment/gpp>
- <http://ec.europa.eu/environment/forests/flegt.htm>

8.3. Ecolabels and other criteria sources

- **Blue Angel criteria.** Basic Criteria for Award of the Environmental Label for Recycled Paper RAL-UZ 14: http://www.blauer-engel.de/englisch/vergabe/download_uz_e/e-UZ-014.pdf
- **Nordic Swan criteria.** Ecolabelling of Copy and Printing Paper Version 3.0: <http://www.svanen.nu/Eng/criteria/kriterie.asp?pgn=44>
- **Other ecolabels:** http://ec.europa.eu/environment/ecolabel/other/index_en.htm

8.4. Studies and other information sources

- **FSC** (Forest Stewardship Council): <http://www.fsc.org/en/>
- FSC chain of custody standard for companies supplying and manufacturing FSC-certified products. FSC-STD-40-004 (version 1-0): http://www.fsc.org/keepout/en/content_areas/77/134/files/FSC_STD_40_004_V1_0_EN_CoC_for_Suppliers_and_Manufacturers.pdf



- FSC on-product labelling requirements. FSC-STD-40-201 (version 2.0):
http://www.fsc.org/keepout/en/content_areas/77/134/files/FSC_STD_40_201_V2_0_EN_FSC_on_product_labelling_requirements.pdf
- PEFC (Programme for the Endorsement of Forest Certification):
<http://www.pefc.org/internet/html>
- PEFC Chain of Custody of Forest Based Products – Requirements. Normative Document. Annex 4:
http://www.pefc.org/internet/html/documentation/4_1311_400/4_1208_165/5_1177_452.htm
- PEFC Logo Use Rules. Normative Document. Annex 5:
http://www.pefc.org/internet/html/documentation/4_1311_400/4_1208_165/5_1177_453.htm
- CSA (Canadian Standards Association): <http://www.csa-international.org>
- UK timber procurement website:
<http://www.defra.gov.uk/environment/internat/forests/timber.htm>; <http://www.illegal-logging.info/>; and <http://www.proforest.net/cpet>
- Danish Environment Ministry timber procurement website:
<http://www.skovognatur.dk/Emne/Skov/Miljoe/Indkoeb/>
- Dutch Environment Ministry: <http://www.vrom.nl/pagina.html?id=23992>
- French timber procurement regulation and guidance:
<http://www.ecologie.gouv.fr/IMG/pdf/050405.pdf>
- Study on costs/benefits of Green public procurement in Europe, Öko-Institut & ICLEI 2007, available at: http://ec.europa.eu/environment/gpp/index_en.htm
- Integrated Pollution Prevention and Control (IPPC) - Reference Document on Best Available Techniques in the Pulp and Paper Industry (BREF report):
<http://eippcb.jrc.es/pages/FActivities.htm>



9 Annex I – Comparison of ecolabel criteria

Note: The text with a grey background marks the differences between the European and Nordic Swan ecolabels

General area	European Ecolabel criteria	Nordic Swan criteria	Blue Angel criteria
Fibres	<p>Fibres may be wood fibres, or recycled fibres from recovered paper, or other cellulose fibres.⁴²</p> <p>At least 10% of virgin wood fibres should be proven to come from sustainably managed certified forests</p> <p>The remaining virgin wood fibres shall come from forests that are managed so as to implement the principles and measures aimed at ensuring sustainable forest management.</p> <p>The origin of all virgin fibres used shall be indicated.</p>	<p>1) 20% of the fibre raw material in the paper must come from certified forestry operations, or</p> <p>2) at least 75% of the fibre raw material in the paper must be recycled fibre, wood shavings or sawdust or</p> <p>3) a combination of 1) and 2).</p>	100% post-consumer recovered paper
Emissions to water and air			
CO ₂	≤ 1100kg/T	≤ 1100kg/T	

⁴² Cellulose is the basic compound to produce paper. It normally comes from wood but it can also be produced from other vegetal plants such as cotton (as it was traditionally made), hay, etc.



Electricity consumption (P _E)	< 1.5 points ⁴³	< 1.75 points	
Fuel consumption (P _F)	< 1.5 points	≤ 1.5 points	

⁴³ Energy consumption and S, NO_x, COD emissions are limited in both the European and the Nordic Swan ecolabels through a points system. Those points are calculated in a different way for each parameter. In the case of electricity the calculation of P_E shall be made as follows:

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

$$E_{pulp, i} = \text{Internally produced electricity} + \text{purchased electricity} - \text{sold electricity}$$

This value shall be divided by the reference value for that pulp type (E_{reference, pulp}) given in the table below. These quotients shall be weighted according to the proportion of each pulp used (p_i with respect to moist paper) and summed together to give the number of points for the electricity consumption in the pulp production (P_{E, pulp}).

Thus:

$$P_{E, pulp} = \sum (p_i \times E_{pulp, i} / E_{reference, pulp})$$

Calculation for paper production: Similarly, the electricity consumption related to the paper production (E_{paper}) shall be calculated and divided by the reference value for that paper type (E_{reference, paper}) given in the table below, as follows:

$$E_{paper} = \text{Internally produced electricity} + \text{purchased electricity} - \text{sold electricity}$$

$$P_{E, paper} = E_{paper} / E_{reference, paper}$$

Overall calculation of points P_E: An overall weighted reference value for pulp (E_{weighted reference, pulp}), shall be calculated as follows:

$$E_{weighted\ reference, pulp} = \sum (p_i \times E_{reference, pulp})$$

Finally, the points for pulp and paper production shall be combined to give the overall number of points (P_E) as follows:

$$P_E = P_{E, pulp} \times E_{weighted\ reference, pulp} / (E_{weighted\ reference, pulp} + E_{reference, paper}) + P_{E, paper} \times E_{reference, paper} / (E_{weighted\ reference, pulp} + E_{reference, paper})$$



Emissions to air of sulphur (S), nitrogen oxides (NOx) and phosphorus (P) and Chemical oxygen demand (COD) in water (expressed as P _{COD} , P _S , P _P , P _{NOx})	P _{COD} , P _S , or P _{NOx} ≤ 1.5 points P total (= P _{COD} + P _S + P _{NOx}) ≤ 3.0 points	P _{COD} , P _S , P _P , P _{NOx} ≤ 1.5 points P total (= P _{COD} +P _S +P _P + P _{NOx}) ≤ 4.0 points	
AOX (Absorbable organic halogens)	≤ 0.25 kg/ADT (Air Dried Tonne)	≤ 0.25 kg/ADT	
Hazardous chemical substances			
Chlorine	Minimum Elementary Chlorine Free (ECF)	Minimum ECF	Compulsory Totally Chlorine Free (TCF)
APEOs (Alkylphenoethoxy lates)	Banned	Banned	
Residual monomers ⁴⁴	Shall not be classified as R45, R46, R49, R50/53, R51/53, R52/53, R60, R61 ≤100 ppm ⁴⁵	≤ 100 ppm	
Acrylamide	≤1000 ppm	≤ 700 ppm	

⁴⁴ Polymerisation rarely proceeds to completion and inevitably some amount of unreacted monomer remains in the polymer. This is what is known as a residual monomer. In paper production, when paper pulp is converted into paper, polymerisation occurs and, as mentioned before, some of the chemical substances present in pulp or added for paper production (such as coatings, retention aids, dry strength agents, water treatment chemicals, etc.) don't polymerise, remaining as residual monomers.

⁴⁵ It is a measure of concentration used to denote low concentrations of chemical elements. Parts per million ("ppm") denotes one particle of a given substance for every 999,999 other particles.



<p>Surfactants</p>	<p>Quantities of at least 100 g/ADT have to be readily biodegradable.</p> <p>Quantities of less than 100 g/ADT, have to be either readily biodegradable or ultimately biodegradable</p>	<p>Quantities of at least 100 g/ADT have to be readily biodegradable.</p> <p>Quantities of less than 100 g/ADT, have to be either readily biodegradable or ultimately biodegradable</p>	
<p>Dyes or pigments</p>	<p>Shall not be classified (or combinations thereof) as R50, R51, R52, R53</p> <p>Shall not be based on lead, copper, chromium, nickel or aluminium</p>	<p>Dyes for printing and dyeing shall contain a maximum of 2% by weight of substances classified as environmentally hazardous in accordance with EU Directive 67/548/EEC with the risk phrases R50+R53, R51+R53 or R52+R53.</p> <p>Dyes (trade products) classified as environmentally harmful in accordance with EU Directive 99/45/EC shall not be used.</p> <p>Dye stuffs or pigments in dyes (applies both to the dyeing of pulp and printing inks) must not be based on heavy metals, aluminium or copper (e.g. aluminium in silver colours, copper in gold colours) with the exception of copper in phthalocyanine pigment.</p> <p>Phthalates shall not be used.</p>	<p>Colorants (pigments or dyes) containing mercury, lead, cadmium or hexavalent chromium compounds as constituents must not be used.</p>



Azo dyes

No azo dyes shall be used that may shed the following amines:

- 4-aminobiphenyl (92-67-1)
- Benzidine (92-87-5)
- 4-chloro-o-toluidine (95-69-2)
- 2-naphthylamine (91-59-8)
- o-aminoazotoluene (97-56-3)
- 2-amino-4-nitrotoluene (99-55-8)
- 4-chloroaniline (106-47-8)
- 2,4-diaminoanisol (615-05-4)
- 4,4'-diaminodiphenylmethane (101-77-9)
- 3,3'-dichlorobenzidine (91-94-1)
- 3, 3'-dimethoxybenzidine (119-90-4)
- 3, 3'-dimethylbenzidine (119-93-7)
- 3,3'-dimethyl-4,4'-diaminodiphenylmethane (838-88-0)
- p-cresidine (120-71-8)
- 4,4'-methylene-bis-(2-chloroaniline) (101-14-4)
- 4,4'-oxydianiline (101-80-4)
- 4,4'-thiodianiline (139-65-1)
- o-toluidine (95-53-4)
- 2,4-diaminotoluene (95-80-7)
- 2,4,5-trimethylaniline (137-17-7)
- o-anisidine (90-04-0)
- 4-aminoazobenzene (60-09-3)

No azo dyes shall be used that may shed the following amines:

- 4-aminobiphenyl (92-67-1)
- Benzidine (92-87-5)
- 4-chloro-o-toluidine (95-69-2)
- 2-naphthylamine (91-59-8)
- o-aminoazotoluene (97-56-3)
- 2-amino-4-nitrotoluene (99-55-8)
- 2,4-diaminoanisol (615-05-4)
- 3,3'-dichlorobenzidine (91-94-1)
- 3, 3'-dimethoxybenzidine (119-90-4)
- 3, 3'-dimethylbenzidine (119-93-7)
- 3,3'-dimethyl-4,4'-diaminodiphenylmethane (838-88-0)
- p-cresidine (120-71-8)
- 4,4'-methylene-bis-(2-chloroaniline) (101-14-4)
- 4,4'-oxydianiline (101-80-4)
- 4,4'-thiodianiline (139-65-1)
- o-toluidine (95-53-4)
- 2,4-diaminotoluene (95-80-7)
- 2,4,5-trimethylaniline (137-17-7)
- o-anisidine (90-04-0)
- 4-aminoazobenzene (60-09-3)

Azo dyes or pigments, which may release one of the amines listed in Directive 2002/61/EC must not be used as colorants. These are:

- biphenyl-4-ylamine
- 4-aminobiphenyl
- xenylamine
- benzidine
- 4-chloro-o-toluidine
- 2-naphthylamine
- o-aminoazotoluene
- 4-amino-2',3'-dimethylazobenzene
- 4-o-tolylazo-o-toluidine
- 5-nitro-o-toluidine
- 4-chloroaniline
- 4-methoxy-m-phenylenediamine
- 4,4'-methylenedianiline
- 4,4'-diaminodiphenylmethane
- 3,3'-dichlorobenzidine
- 3,3'-dichlorobiphenyl-4,4'-ylenediamine
- 3,3'-dimethoxybenzidine o-dianisidine
- 3,3'-dimethylbenzidine
- 4,4'-bi-o-toluidine
- 4,4'-methylenedi-o-toluidine
- 6-methoxy-m-toluidine p-cresidine
- 4,4'-methylene-bis-(2-chloro-aniline)
- 2,2'-dichloro-4,4'-methylene-dianiline
- 4,4'-oxydianiline
- 4,4'-thiodianiline
- o-toluidine



Biocides	Are not potentially bio-accumulative	Are not potentially bio- accumulative	Only those substances may be used as biocides in the manufacture of products which are listed as so-called „existing“ substances in Annex II to Commission Regulation (EC) No. 2032/2003
Ionic impurities in dye stuffs	The levels of ionic impurities in the dye stuffs used shall not exceed the following: Ag 100 ppm; As 50 ppm; Ba 100 ppm; Cd 20 ppm; Co 500 ppm; Cr 100 ppm; Cu 250 ppm; Fe 2500 ppm; Hg 4 ppm; Mn 1000 ppm; Ni 200 ppm; Pb 100 ppm; Se 20 ppm; Sb 50 ppm; Sn 250 ppm; Zn 1500 ppm.	<p>Impurities of Pb, Hg, Cr and Cd in dyes (applies to the dying of pulp and printing inks) must not exceed a total content of 100 ppm.</p> <p>The following limit values apply in the case of individual substances in direct dyes: Pb 100 ppm, Hg 4 ppm, Cd 20 ppm and Cr 100 ppm.</p> <p>The following limit values apply in the case of individual substances in pigment dyes: Pb 100 ppm, Hg 25 ppm, Cd 50 ppm and Cr 100 ppm.</p>	Colorants (pigments or dyes) containing mercury, lead, cadmium or hexavalent chromium compounds as constituents must not be used.
Foam inhibitors		95 % by weight of active components in foam inhibitors are either readily or ultimately biodegradable, or that none of the ingoing active components in foam inhibitors are classified as harmful to the environment.	



Wet strength agents		Contain a maximum total of 0.01% by weight of chlororganic compounds classified as environmentally harmful or harmful to health in accordance with EU Directive 67/548/EEC.	
Complexing agents		A plan for the reduced use of EDTA/DTPA shall also be submitted.	EDTA/DTPA shall not be used
Formaldehyde			≤ 0.5 mg/dm ²
Pentachlorophenol			≤ 0.15 mg/kg
Glyoxal-containing auxiliaries			Banned
Optical brighteners			Banned
Manufacturing auxiliaries			Manufacturing auxiliaries may be used which are listed in the 36th Recommendation of BfR ⁴⁶ (German Federal Institute for Risk Assessment). The maximum quantities or concentrations, as specified in this Recommendation, must not be exceeded.

⁴⁶ See: http://bfr.zadi.de/SEARCH/BASIS/kse1/all/blob_dt/DDD/360DEUTSCH.pdf



		<p>Adhesives shall not contain alkyl phenol ethoxylates, phthalates, halogenated solvents or ethylene glycol ethers classified as harmful to health in accordance with EU Directive 67/548/EEC with the risk phrases R60 or R61</p>	<p>No colorants, surface-finishing agents, auxiliaries and coating materials may be used, which are classified in accordance to Annex I of Directive 67/548/EEC and which according to Annex VI of the same Directive, require labelling with the Risk Phrases:</p> <p>R40, R43, R45, R46, R49, R60, R61, R62, R63, R68</p>
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Technical specifications

Emission of VOCs:

Recycled paper designed for use on electrophotographic printers or copiers (“Copying paper”) must be tested with regard to its emission potential for the emission of volatile organic substances (TVOC and SVOC and DIPN). Analysis shall be done by direct thermal desorption on three different batches of manufactured paper in accordance with the Testing Guideline in Annex 4 to the Award Criteria RAL-UZ 14. The TDS values (total dissolved solvents) determined by this method indicate the emission potential. They must not exceed the following limits:

TVOC 60 µg/g of paper ()

TSVOC 80 µg/g of paper

DIPN 6 µg/g of paper.

Serviceability:

Continuous papers: EN 12858:1999

Copying papers: DIN EN 12281:2003

Office papers and boards: DIN 19307:1997



10 Annex II – Ecolabel criteria

10.1. European Ecolabel & Nordic Swan

As indicated above, the criteria for the European Ecolabel and Nordic Swan differ slightly. The list provided below aims to harmonise these two criteria sets, so that contracting authorities (if they so wish) can insert the full set of criteria, and at the same time recognize both ecolabels as proof of compliance. On the other hand, contracting authorities wishing to insert the full set of relevant criteria of either ecolabel can download the criteria documents directly from the following links:

- ec.europa.eu/environment/ecolabel/product/pg_copyingpaper_en.htm
- www.svanen.nu/Eng/criteria/kriterie.asp?pgn=44

Wood fibres

- 1 *At least 10% of the wood fibres for pulp production shall come from forests that are certified as being managed so as to implement the principles and measures aimed at ensuring sustainable forest management (not applicable if 100% recycled fibres are used).*
- 2 *The remaining (non-certified) wood fibres from forests shall come from legal sources*

Bleaching process

- 3 *The paper must be Elementary Chlorine Free (ECF)*

Emissions to air and water

- 4 *Emission values shall be calculated according to the formula and methodologies listed in the European Ecolabel⁴⁷ or the Nordic Swan ecolabel⁴⁸ allowing equivalent tests methods when such are required.*
- 5 *Total emissions of COD (Chemical Oxygen Demand), Sulphur and NO_x (nitrogen oxides) expressed as points*
 $P_{COD}, P_S, \text{ or } P_{NO_x} \leq 1.5 \text{ points}$
 $P_{total} (= P_{COD} + P_S + P_{NO_x}) \leq 3.0 \text{ points}$
- 6 *The AOX emissions shall not exceed 0.25kg/ADT (Air dried tonne).*
- 7 *The emissions of carbon dioxide from non-renewable sources shall not exceed 1000 kg per tonne of paper produced. For non-integrated mills (where all pulps used are purchased market pulps) the emissions shall not exceed 1100 kg per tonne.*
- 8 *The electricity consumption related to the pulp and the paper expressed in points shall be $PE < 1.75 \text{ points}$*
- 9 *The fuel consumption related to the pulp and the paper production expressed in points shall be $P_F < 1.5 \text{ points}$*

⁴⁷ http://ec.europa.eu/environment/ecolabel/product/pg_copyingpaper_en.htm

⁴⁸ <http://www.svanen.nu/Eng/criteria/kriterie.asp?pgn=44>



Hazardous chemical substances

- 10 *APEOs: Alkylphenol ethoxylates (APEOs) or other alkylphenol derivatives shall not be added.*
- 11 *Residual monomers: The total quantity of residual monomers (excluding acrylamide) that are assigned or may be assigned any of the following risk phrases (or combinations thereof) in coatings, retention aids, strengtheners, water repellents or chemicals used in internal and external water treatment shall not exceed 100 ppm (calculated on the basis of their solid content): R45, R46, R49, R50/53, R51/53, R52/53, R60, R61*
- 12 *Acrylamide: Acrylamide shall not be present in concentrations higher than 1000 ppm (calculated on the basis of their solid content).*
- 13 *Surfactants: Where surfactants are used in quantities of at least 100 g/ADT (summed over all the surfactants used in all the different formulations used in de-inking return fibres), each surfactant shall be readily biodegradable. Where such surfactants are used in quantities of less than 100 g/ADT, each surfactant shall be either readily biodegradable or ultimately biodegradable, according to the test methods and pass levels outlined by the European Ecolabel⁴⁷ or the Nordic Swan ecolabel⁴⁸ or equivalent*
- 14 *Biocides: The active components in biocides or biostatic agents shall not be potentially bio-accumulative according to the test methods and pass levels outlined by the European Ecolabel⁴⁷ or the Nordic Swan ecolabel⁴⁸.*
- 15 *Azo dyes: No azo dyes shall be used that may cleave to any of the following aromatic amines:*

4-aminobiphenyl	(92-67-1)
Benzidine	(92-87-5)
4-chloro-o-toluidine	(95-69-2)
2-naphthylamine	(91-59-8)
o-aminoazotoluene	(97-56-3)
2-amino-4-nitrotoluene	(99-55-8)
2,4-diaminoanisole	(615-05-4)
3,3'-dichlorobenzidine	(91-94-1)
3, 3'-dimethoxybenzidine	(119-90-4)
3, 3'-dimethylbenzidine	(119-93-7)
3,3'-dimethyl-4,4'-diaminodiphenylmethane	(838-88-0)
p-cresidine	(120-71-8)
4,4'-methylene-bis-(2-chloroaniline)	(101-14-4)
4,4'-oxydianiline	(101-80-4)
4,4'-thiodianiline	(139-65-1)
o-toluidine	(95-53-4)
2,4-diaminotoluene	(95-80-7)
2,4,5-trimethylaniline	(137-17-7)
o-anisidine	(90-04-0)
4-aminoazobenzene	(60-09-3)



- 16 *Dye stuffs: Dyes shall not be used that contains more than a total of 2 % by weight of substances that are assigned the risk phases R50+53, R51+53 or R52+53.*
- 17 *Metal complex dye stuffs or pigments: Dyes or pigments shall not be used that are based on lead, copper, chromium, nickel or aluminium. Copper phthalocyanine dyes or pigments may, however, be used.*
- 18 *Ionic impurities in dye stuffs: Impurities of Pb, Hg, Cr and Cd in dyes (applies to the dying of pulp and printing inks) must not exceed a total content of 100 ppm.*



10.2. Blue Angel⁴⁹

Hazardous chemical substances

- 1 *The content of formaldehyde in the final product must not exceed 0.5 mg/dm³ in accordance with DIN EN 1541:2001⁵⁰ or equivalent.*
- 2 *The content of pentachlorophenol in the final product must not exceed 0.15 mg/kg in accordance with DIN EN ISO 15320:2004 or equivalent.*
- 3 *The use of glyoxal-containing auxiliaries is not permitted.*
- 4 *Addition of optical brighteners shall not be permitted.*
- 5 *Waste paper treatment shall be done without the use of chlorine, halogenated bleaching agents and poorly biodegradable complexing agents, such as e.g. ethylenediaminetetraacetic acids (EDTAs) and diethylenetriaminepentaacetic acids (DTPAs).*
- 6 *Only biocides which are listed as so-called „existing“ substances in Annex II to Commission Regulation (EC) No. 2032/2003 shall be used.*
- 7 *Recycled paper designed for use on electrophotographic printers or copiers (“Copying paper”) must be tested with regard to its emission potential for the emission of volatile organic substances (TVOC and SVOC and DIPN). Analysis shall be done by direct thermal desorption on three different batches of manufactured paper in accordance with the Testing Guideline in Annex 4 of the Award Criteria RAL-UZ 14. The TDS values (total dissolved solvents) determined by this method indicate the emission potential. They must not exceed the following limits:*
- 8 *TVOC: 60 micrograms per gram of paper (µg/g)*
- 9 *TSVOC: 80 micrograms per gram of paper*
- 10 *DIPN: 6 micrograms per gram of paper.*

Colorants

- 11 *If colorants are used the following requirements shall be met:*
 - *Azo dyes or pigments which may release one of the amines listed in Directive 2002/61/EEC must not be used as colorants.*
 - *Colorants (pigments or dyes) containing mercury, lead, cadmium or hexavalent chromium compounds as constituents must not be used.*
- 12 *No colorants, surface-finishing agents, auxiliaries and coating materials are used, which are classified in accordance with Annex I to Directive 67/548/EEC (“Publication of the List of Dangerous Substances and Preparations“, including all adaptation directives) and which according to Annex VI to that Directive 67/548/EEC require labelling with any of the following Risk Phrases:*
 - *R 40 (limited evidence of carcinogenic effect)*
 - *R 43 (may cause sensitisation by skin contact)*
 - *R 45 (may cause cancer),*

⁴⁹ Available from: www.blauer-engel.de/englisch/vergabe/download_uz_e/e-uz-14.pdf, or for printing and publications paper at: www.blauer-engel.de/englisch/vergabe/download_uz_e/e-UZ-072.pdf

⁵⁰ The water extract shall be prepared according to DIN EN 645



- *R 46 (may cause heritable genetic damage)*
- *R 49 (may cause cancer by inhalation)*
- *R 60 (may impair fertility)*
- *R 61 (may cause harm to the unborn child)*
- *R 62 (possible risk of impaired fertility)*
- *R 63 (possible risk of harm to the unborn child)*
- *R 68 (possible risk of irreversible damage),*