About Nordic Swan Ecolabelled

Textile floor coverings and carpets

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Nordic Ecolabelling

Content

Contact information

In 1989, the Nordic Council of Ministers decided to introduce a voluntary official ecolabel, the Nordic Swan Ecolabel. These organisations/companies operate the Nordic Ecolabelling system on behalf of their own country's government. For more information, see the websites:

Denmark
Ecolabelling Denmark
info@ecolabel.dk
www.svanemaerket.dk

Iceland
Ecolabelling Iceland
svanurinn@ust.is
www.svanurinn.is

Finland
Ecolabelling Finland
joutsen@ecolabel.fi
www.joutsenmerkki.fi

Norway
Ecolabelling Norway
info@svanemerket.no
www.svanemerket.no

Sweden
Ecolabelling Sweden
info@svanen.se
www.svanen.se

What is a Nordic Swan Ecolabelled Textile floor covering and carpet?

Nordic Swan Ecolabelled textile floor coverings and carpets have reduced environmental impact throughout the lifecycle. Among other things, through strict requirements for fibres and chemicals.

The requirements promote a more circular economy, reduce climate impact, save resources and must be suited for a long lifetime.

Textile floor coverings and carpets may cover a large proportion of the indoor surface area, e.g., in a home or office. This means that the materials the product contains are important for the indoor environment and for the risk of exposure to undesirable substances.

Nordic Swan Ecolabelled textile floor coverings and carpets:

- Are made from a high proportion of renewable and/or recycled materials.
- Meet strict environmental and health requirements for chemicals used in production.
- Meet either requirements for energy consumption or for energy efficient technology.
- Have low emissions to the air (for products with backing of other materials than textiles).
- Are quality tested to enable a long lifetime.
- Do not contain PVC.

Why choose the Nordic Swan Ecolabel?

- Textile floor coverings and carpets may use the Nordic Swan Ecolabel trademark for marketing. The Nordic Swan Ecolabel is a very well-known and well-reputed trademark in the Nordic region.
- The Nordic Swan Ecolabel is a simple way of communicating environmental work and commitment to customers.
- The Nordic Swan Ecolabel clarifies the most important environmental impacts and thus shows how a company can cut emissions, resource consumption and waste management.
- Environmentally suitable operations prepare textile floor coverings, carpets, floor rugs and floor mats for future environmental legislation.
- Nordic Ecolabelling can be seen as providing a business with guidance on the work of environmental improvements.

- The Nordic Swan Ecolabel not only covers environmental issues but also quality requirements, since the environment and quality often go hand in hand. This means that a Nordic Swan Ecolabel licence can also be seen as a mark of quality.

1 Summary

Nordic Ecolabelling sets requirement in all relevant areas of the life cycle, where there is good steerability. A Nordic Ecolabelled textile floor covering, carpet or floor mat:

- Has a high proportion of renewable and/or recycled materials.
- Meets stringent requirements on chemicals harmful to health and the environment.
- Has been manufactured energy efficiently.
- Products with backing of other materials than textiles are tested for low emissions to the air.
- Has good durability.

A Nordic Ecolabelled textile floor covering, carpet, floor rug or floor mat is completely free from PVC. This means that textile floor covering, carpet or floor mat which includes PVC, e.g., as backing or as a surface treatment, cannot be ecolabelled.

This is the first generation of the product group Textile floor coverings and carpets. This first generation of the product group is a combination of requirements from the product group Floor coverings (generation 6) and the product group Textiles, hides/skins, and leather (generation 5). This means that in some cases there are one or more alternatives requirements that can be fulfilled to cover the same requirement area.

Requirements on the proportion of renewable raw materials and recycled materials

Life cycle analyses[1] of floor coverings show that a floor with a high proportion of virgin fossil raw material(s) is worse from an environmental point of view than a floor which largely consists of renewable raw materials. This applies to the use of resources (finite resources), energy consumption and emissions with an impact on climate. Because society's demand for extraction of raw materials is generally on the rise, it is important to drive the industry towards the development of more resource-efficient material cycles. That is why, it is also important to consider end-of-life products and materials as raw materials for new products, i.e., recycled materials.

[1] Life Cycle Assessment of Flooring Materials, Dr Bowyer, J. Dovetail Partners Inc, 2009, Life cycle analysis of different cork floorings. Althaus H.-J. and Richter K. Swiss Federal Laboratories for Materials Testing and Research. 2001., Comparative Analysis of Flooring Materials, Ajla Aksamija, Ph.D. Perkins & Will, Research Journal, 2010.

For this reason, it is a fundamental requirement that a Nordic Ecolabelled textile floor covering, carpet, floor rug or floor mat has at least to consist of either 60% renewable raw materials or 70% recycled raw materials/reused textiles. Products that consist of both renewable and recycled raw material content shall fulfil a weighted formula. Renewable raw materials are weighted as slightly better than recycled raw materials from an environmental point of view.

Material requirements

The criteria contain specific requirements for different types of textile fibres, such as polyester, polyamide (nylon) and cotton. For wool requirements are also set for emissions from the wool washing process and a maximum permitted content of pesticides.

The criteria contain requirements for polymer materials and specific requirements for latex and polyurethane foam (PU foam).

Chemicals and the indoor environment

Alongside a high proportion of renewable and/or recycled raw materials, the requirement for non-toxic materials and chemicals is vital to ensure low risks of exposure of the indoor environment.

The section on chemical requirements covers requirements for the classification of chemical products, CMR substances and other non-desirable substances.

Today nanomaterials are found in a broad spectrum of consumer goods and products for professional use. Examples of applications include surface treatments on various types of goods for protection and a self-cleaning effect. However, knowledge of the exposure of people and the environment to nanomaterial is minimal[2]. For this reason, Nordic Ecolabelling takes a cautious and a restrictive approach.

Nordic Ecolabelling also sets emission requirement for the final product apart from the stringent chemical requirements on ingoing substances. The background to this is that emission measurements, emission requirements and indoor environment labelling and it could be an added value if a Nordic Ecolabelled product could demonstrate compliance with these systems. The emission requirement includes TVOC, SVOC and formaldehyde. Nordic Ecolabelling believes that this solution, together with the chemical requirements in the criteria, is sufficient to assure a sound indoor environment.

Energy and water consumption

The energy requirement consists firstly of the total amount that must be attained and secondly the highest permitted energy consumption for electricity and fuel. The combination gives manufacturers a certain amount of flexibility, while the requirement takes into account the climate change aspect, since the proportion of renewables carries the same weight as the respective energy figure.

[2] Kemikalier i varor - strategier & styrmedel för att minska risker med farliga ämnen i vardagen, Report no. 3/2011, Swedish Chemicals Agency.

It has been difficult to obtain information on energy consumption from manufacturers. Nor is such information specific to a Nordic Ecolabelled product as it is factory data, and a factory often manufactures several different types of products.

As an alternative to the above requirement, it is possible to document the requirement concerning energy and water consumption includes implementation of a minimum of BAT practices to reduce energy and water consumption. This means that the production must be water- and energy-efficient and thus deliver reduced CO2 emissions.

Quality

The product must achieve a certain level of durability. This requirement is differentiated, with requirement levels for private use and public environments, which require a higher level of durability.

2 Environmental impact of Textile floor coverings and carpets

2.1 Motives for Nordic Ecolabelling

Nordic Swan Ecolabelled textile floor coverings and carpets have reduced environmental impact throughout the lifecycle. Among other things, through strict requirements for fibres and chemicals.

The requirements promote a more circular economy, reduce climate impact, save resources and must be suited for a long lifetime.

Textile floor coverings and carpets may cover a large proportion of the indoor surface area, e.g. in a home or office. This means that the materials the product contains are important for the indoor environment and for the risk of exposure to undesirable substances.

Nordic Swan Ecolabelled textile floor coverings and carpets:

- Are made from a high proportion of renewable and/or recycled materials.
- Meet strict environmental and health requirements for chemicals used in production.
- Meet either requirements for energy consumption or for energy efficient technology.
- Have low emissions to the air (for products with backing of other materials than textiles).
- Are quality tested to enable a long lifetime.
- Do not contain PVC.

2.2 MECO analysis

The relevant environmental impacts found in the life cycle of textile floor coverings and carpets are set out in the qualitative MECO below. A MECO describes the key areas that have impact on the environment and health throughout the life cycle of the product – including consumption of materials/resources (M), energy (E), chemicals (C) and other impact areas (O).

The functional unit in the MECO analysis is 1 m^2 textile flooring covering/carpet for the average lifetime of the product. The MECO analysis are mainly qualitative and describe the important environmental impacts of the different types of products.

Introduction

The MECO analysis is based on wall-to-wall carpets.

There are different types of textile flooring. The most common are tufted floors, followed by woven and then needle felt floors. They have different manufacturing techniques and looks and are best suited for different environments. The fibre itself can be natural or synthetic or a mixture of these, see table below.

Table: Overview of different textile fibres. The fibres commonly used in the manufacture of textile carpets are marked in bold.

Natural fibre		**Artificial fibre (man-made)**	
Animalistic fibre	**Vegetable fibre**	**Regenerated fibre (from wood or bamboo)**	**Synthetic fibre**
wool (sheep) cashmere (goat) Mohair (goat) Angora (goat/rabbit) Camel, alpaca (camel family) Silk (silk worm)	Cotton Flax Rami / nettle Hemp Jute Sisal Bamboo Coconut	Viscose Modal Lyocell Cupro	**Polyamide (Nylon)** **Polyester** **Polyacrylic** **Polypropylene** **Polyurethane**

Carpets often has a backing of PVC, PP, rubber or other plastic materials.

Tufted carpet production can be divided into three processes: tufting, dyeing and backing. In the tufting process, a tufting machine with many needles is used to attach the pile to the backing fabric. The product is then dyed unless the yarn was dyed beforehand. The backing fabric is then coated with glue/adhesive and foam or a secondary "backing" is applied. At the same time, a finishing treatment of the carpet is often carried out. The major energy items in the production of textile flooring are tufting (electricity), dyeing (electricity and heat), the backing coating (electricity and heat) and cutting (electricity).

Woven carpets can be either flat woven or pile woven. Carpets made of sisal are often flat-woven. Woven pile carpets, where the base fabric and pile are produced in the same process, belong to the expensive end. Knotting is a very labour-intensive and therefore expensive method, which today is mostly only used for real carpets. Each knot is made by hand and a carpet has from 50,000 to

1,000,000 knots/m2. The knot density determines the carpet's quality[3]. The yarn used in weaving is usually already dyed.

Environmental impact from fibre production

There are many LCA studies conducted on textiles of varying quality and scope. In general, it can be said that a fibre has different outcomes depending on the environmental load that is analysed and it is difficult to single out a fibre that is environmentally best in all load areas, see table below.

Table: The environmental impact of different fibres. Source: "The role and business case for existing and emerging fibres in sustainable clothing", Dept. of Environmental, Food and Rural Affairs, UK, April 2010:

Reduced environmental impact	Energy use	Water consumption	Greenhouse gases	Discharge of wastewater	Land use
↓	Acrylic Nylon Polyester Regenerated fibres Cotton Wool Natural bast fibres	Cotton Silk Nylon Regenerated cellulose Acrylic Hemp Wool Natural bast fibres Polyester	Nylon Polyester Regenerated cellulose Cotton Natural bast fibres Wool	Wool Regenerated cellulose Nylon Polyester	Wool Ramie Cotton Flax Hemp Regenerated cellulose Jute

Some general conclusions are that:

- Synthetic fibres have a higher energy consumption than natural fibre.
- Natural fibres and polyester have low water consumption compared to other fibres.
- Emission of greenhouse gases is strongly associated with energy use. The synthetic fibres have an even higher climate impact as they often have a fossil origin/fossil raw material.
- Discharge of dyes, finishing chemicals, residual content of pesticides and the amount of organic matter are relevant parameters when discharging wastewater. Here, it is the natural fibres and especially wool that have a high environmental impact due to the raw wool's high content of lanolin.
- The last parameter, Use of land is only relevant for natural fibres, regenerated cellulosic fibres and polymers from renewable raw materials. The parameter is complex and only few data are available. Here, wool has received the highest environmental impact, which is not entirely correct as wool is often a by-product from meat production.

[3] http://www.taeppeland.dk/da/Taepper/VaegtilVaeg/Information.aspx?itm=Fremstilling

Materials/resources

Carpets contain many different types of material, many of which, especially for the synthetic carpets, rely on fossil raw materials such as oil. The back can consist of many different materials. Here you can find both polyurethane-based, polyolefin-based, polyester textile backing, bitumen-based backing, PVC backing and glass fleece can be included in the backing. In addition, it is possible to use recycled backing materials.

Energy

When looking at the total production energy incl. energy for the production of nylon (polyamide), it appears that the production of synthetic carpets is relatively energy intensive. A large part of the energy consumption goes to nylon production, which is stated in EcoInvent at 116 MJ/kg. Synthetic fibres such as polyamide can be recycled and if recycled synthetic fibres (post-consumer) are used, it is possible to reduce part of the energy consumption to around 74 MJ/kg according to EcoInvent. Processing the recycled polyamide also requires energy.

Backside materials such as PVC, polyolefins and polyurethane require energy to produce. Here, it will be of great importance if there is a change to recycled materials, materials with less energy consumption or a reduced amount of material.

Chemicals/emissions

Synthetic fibres:

In the production of various synthetic fibres, environmentally hazardous chemicals may have been used, including antimony trioxide in the manufacture of polyester. In addition, production can lead to the release of problematic compounds such as NO_x and VOC into the air. During the production of both polyamide 6 and polyamide 66, nitrogen dioxide (N_2O) is released. Nitrogen dioxide, also known as laughing gas, is a greenhouse gas with a Global Warming potential (GWP100) of 310 and thus contributes greatly to the greenhouse effect[4].

Wool production:

For wool carpets, part of the environmental impact lies in wool production. In order to avoid parasites in the wool, the animals may be exposed to environmentally and health-damaging chemicals such as organophostats and pyrethoids as parasiticides. At the same time, wool contains a lot of fat, such as lanolin, and when washing the wool, these substances end up in the wastewater. Decomposition of these substances requires oxygen and the discharge of wastewater from wool washing can therefore raise the COD content of the wastewater (content of oxygen-consuming substances). When wastewater with a high COD content (chemical oxygen consumption) is discharged into the aquatic environment, the decomposition can lead to a lack of oxygen in the water and harm animal and plant life.

[4] Nr. 667: Denmark's National Inventory Report 2008Emission Inventories 1990-2006, DMU 2008

Production of carpets

In the production phase, chemicals are used for dyeing, gluing and possibly flame retardants and anti-dirt impregnation of the pile side, as well as chemicals for treatment against bacteria, dust mites and mould. These are relevant both with regard to the working environment and environmental impact in the production itself, but also subsequently in the use phase in relation to the consumer. In addition, phthalates may be included as softeners in any PVC in the back.

A latex glue is often used for the back. Latex glue can contain chloroprene, which is carcinogenic. When installing carpets, there is a difference in the amount of glue used for rolls and tiles respectively. The MEKA analysis shows that carpet rolls require 10 times as much glue for installation. The increased amount of material in the carpet tile itself means that the amount of glue can be reduced, from approx. 0.6 kg/m2 to 0.06 kg/m^2.

Other

Carpets can act as sound dampeners, which can be an advantage in public spaces and office environments. However, carpets can also be more difficult to clean optimally and thus there is a risk that it contributes negatively to the overall indoor climate.

Wool production in the form of sheep herding can lead to problems with overgrazing by e.g., hillsides and the resulting risk of erosion. There may therefore be relevance for sustainable sheep farming. At the same time, animal welfare is relevant, mulesing (removal of part of the sheep's fur on the back) is still used as, among other things, Australian sheep breeders use mulesing to prevent mites and flies from entering the sheep's fur[5].

2.3 RPS analysis

Nordic Ecolabelling sets requirements concerning the topics and processes in the life cycle that have a high environmental impact – also called hotspots. An RPS tool is used to identify where ecolabelling can have the greatest effect. R represents the environmental relevance; P is the potential to reduce the environmental impact and S is the steerability on how compliance with a requirement can be documented and followed up.

Therefore, it makes sense for the criteria to contain requirements in areas in the life cycle that have been found to have a high overall RPS, since there is potential to achieve positive environmental gains.

2.3.1 RPS analysis for carpets with synthetic fibres

Materials/resources

The English carpet manufacturer Interfacefloor, which produces nylon types, has had an LCA[6] carried out, which shows that raw materials for nylon and the production of nylon yarn have the greatest influence on the product's life cycle. The production of nylon accounts for almost half of the load from the entire life

[5] http://www.okoliv.dk/dyrevelfaerd/okologisk-uld-er-god-dyrevelfaerd/ Visited 9/10 2012
[6] Just the facts about backings, InterfaceFLOR

cycle of the carpet. Their strategy is therefore to focus on the following areas in their environmental work:

- to reduce the amount of nylon yarn
- use recycled nylon yarn
- seek bio-based alternatives to nylon yarn

These 3 points show there is potential for environmental improvement for synthetic carpets in relation to material/resource consumption.

Energy

There is potential in ensuring energy-efficient nylon production and energy-efficient carpet production, as well as choosing a backing with the least energy consumption and other environmental impact.

The database Ecoinvent shows a high energy consumption for nylon per m2 carpet. There will therefore be a potential in making demands on the energy consumption both for the nylon production and the production of the carpet itself.

It is the experience of Nordic Ecolabelling that it can be difficult to obtain energy figures for specific plastic productions. Controllability can therefore be low for an energy requirement that also includes nylon production. Due to the low potential and the low controllability, the energy requirement will only include the energy consumption during carpet production.

Chemicals/emissions

For wastewater containing pigment residues or latex from carpet backings, there is potential to ensure the best possible reduction of these substances before final discharge. Here, the possibility of precipitation/flocculation and combustion of the resulting sludge is a possible alternative to chemical oxidation. In the case of azo dyes, anaerobic treatment of foulard liquor before a subsequent aerobic treatment is also effective for colour removal.

It has the potential to ensure a good indoor climate during the carpet's use phase. In carpet production, chemical products are used both for dyeing, gluing and possibly flame retardants and anti-dirt impregnation of the pile side, as well as chemicals for treatment against bacteria, dust mites and mould. Here it is important to ensure that, as far as possible, no problematic substances are used.

In addition, a potential is seen in ensuring that anti-bacterial and nano-surface treatments are not used on the carpet. The documentation for this as well as for other chemical products for the carpets are tests, declarations and safety data sheets from subcontractors. Chemical suppliers are used to providing environmental and health documentation, so the controllability is assessed to be reasonably high here.

Summary

Overall, it is assessed that there is a high RPS for environmental labelling of synthetic carpets. The potential for environmental improvements for synthetic carpets lies in increased use of recycled or renewable raw materials, material selection that results in low energy consumption in floor production and ensuring a floor with high quality and thus a long lifespan. It is assessed that there is good controllability of these parameters in relation to environmental labelling. In addition, there is a high RPS to ensure a good indoor climate during the use phase during emission tests and requirements for high cleaning friendliness.

2.3.2 RPS analysis for carpets with wool

Energy and sustainable raw materials

Although the total energy consumption for the production of wool carpets will probably be lower than the energy consumption for synthetic carpets, there is still a potential in setting energy requirements for the carpet production of the wool carpet itself. At the same time, the controllability is considered to be high. In addition, there will be a potential to replace materials in the back with recycled materials, materials with less energy consumption or reduced material quantity in the back. The material composition and the quantity of materials chosen will therefore have a great impact on the total energy consumption for the production of the carpet.

For wool production itself, the greatest potential is seen in ensuring sustainable wool production. If it is not possible to require organic wool due to low supply (especially for carpet production), it is still relevant to set specific requirements for wool production. See assessment of RPS for this under "chemicals/emissions".

Chemicals/emissions

Detergents are used during the actual wool yarn production, possibly biocides and wastewater is discharged with an increased content of organic material, which must be broken down in the aquatic environment. LCA analysis on wool carpets have been shown to have a very high environmental impact for the parameters eutrophication and human toxicity. Implementation of circuits with the removal of dirt and recovery of grease makes it possible to save water and energy when cleaning wool (for coarse and fine wool it has been shown to be possible to achieve net water consumption figures of 2 - 4 litres/kg greasy wool). Furthermore, a valuable by-product is produced (25 - 30% of the fat estimated to be present in the washed wool), while at the same time a significant reduction in the amount of organic substances discharged to the wastewater treatment plant is achieved[7].

There will be a potential for this content to be reduced as much as possible. Nordic Ecolabelling has good experience in setting requirements for COD in wastewater, so it is assessed that there is good controllability here.

To avoid parasites in the wool, the animals may be exposed to environmentally and health-damaging chemicals. There is thus a potential here in avoiding wool

[7] http://www.mst.dk/NR/rdonlyres/B6EF1329-664E-4846-B5F6-1DF28F3A50AF/0/TextileDAendelig.pdf

treated with OC pesticides as an ectoparasitic agent. In order to avoid that the animals are exposed to a number of problematic substances, tests can be required to demonstrate that very low limit values for these substances are complied with. The low requirement levels will in practice mean that the use of these substances is prohibited. From Swan labelling of tea straws, there is experience that this requirement can also be managed with a requirement for traceability back to the wool farmer. This is therefore considered to be an overall high RPS.

There is also potential here in the choice of wastewater treatment technique, as well as potential for reducing dyes as described under the potential for synthetic carpets.

Waste

Carpet production itself gives rise to various types of production waste, in the form of yarn and bobbin waste, colour waste and carpet waste. There is potential in recycling these waste fractions instead of incinerating or landfilling them. Recycling can either take place internally in carpet production or at another company.

Sheep herding

Wool production in the form of sheep herding can lead to problems with overgrazing by e.g., hillsides and the resulting risk of erosion. There may therefore be relevance for sustainable sheep farming. At the same time, animal welfare is relevant, mulesing (removal of part of the sheep's fur on the back) is still used as, among other things, Australian sheep farmers use to prevent mites and flies from getting into the sheep's fur.

Summary

Overall, it is assessed that there is a high RPS for environmental labelling of wool carpets. The potential for environmental improvements for wool carpets lies in a minimized environmental burden from the production of wool yarn. As with the synthetic carpet, potential is also seen for the use of a high proportion of recycled or renewable raw materials, material selection that results in low energy consumption in floor production, as well as ensuring a floor with high quality and thus a long lifespan. It is assessed that there is good controllability of these parameters in relation to environmental labelling. In addition, there is a high RPS to ensure a good indoor climate during the use phase during emission tests and requirements for high ease of cleaning.

2.4 Circular economy

It is important to place an emphasis on increasing the lifetime of products, and on ensuring that the textile fibres are free from specific problematic substances. This way, the products will be a hazardous substance free resource that allows for their recycle or re-use.

The recycled feedstock for textile fibre production often comes from materials other than textiles, such as PET bottles. Wool and cotton can also be recycled by shredding the textile and spinning the fibres again.

The recycling can be either mechanical or chemical. Chemical recycling are in development and may potentially bring benefits, such as improved quality. The recycling of textile fibres into new textile fibres remains limited globally due to technical barriers and low prices for virgin fibre, combined with high recycling costs and obstacles to trade in recovered textiles. For polyester and regenerated cellulose, however, there are already commercial fibre-to-fibre.

For specific fibre types there is well advanced use of recycled materials for the production of new textiles. This is particularly for polyamide (nylon) and polyester, where the technology (mechanical or chemical), availability and quality make it possible to turn recycled materials into new fibres – not necessarily fibre-to-fibre, but instead using other recycled materials. An analysis conducted as part of a project for the Nordic Council of Ministers shows an environmental effect from the use of recycled materials for the fibre types studied.

Ecolabels such as the Nordic Swan can be used as a tool to stimulate a circular economy. They are a particularly good tool for ensuring that products are produced using the least harmful chemicals, making it more desirable to recycle the product or its fibres after its final use.

The Nordic Swan Ecolabel sets quality requirement for products e.g., in the form of durability or colour fastness to light. Ensuring the high quality of the product makes a long use stage more likely. The greatest potential for reducing the environmental impact of products is linked with extending their use. This reduces the need to purchase and produce new products.

3 Other labels

Type 1 ecolabels, such as the Nordic Swan Ecolabel, the EU Ecolabel, Blue Angel and GOTS assess the entire life cycle of the product and target requirements at the stages in the life cycle that have relevance and potential. These labels are based on the ISO 14024 standard and set requirements regarding the relevant environmental parameters for the product. Other labels are raw material labels, such as the organic label, plus there are labelling schemes for social and ethical conditions, such as the Fair-Trade label. There are also health labels that focus on the chemical content of the finished product, such as the OEKO-TEX standard 100.

EU Ecolabel

The EU Ecolabel has criteria documents for textiles, however these criteria do not cover textile floor coverings.

Blue Angel

The German ecolabel Blue Angel has criteria documents for textile floor coverings (criteria document: RAL-UZ 128) and for textiles (criteria document: RAL-UZ 154).

Danish Indeklima label

The Danish Indeklima label acts as a guarantee that emissions from construction materials do not exceed set health-based limit values. The label focuses on emissions of the following: individual VOCs (volatile organic compounds), carcinogenic substances, particles and fibres. The test includes chemical analysis of individual compounds and air assessment using sensors. The result is given as a time value related to indoor climate. The time value expresses the time it takes from the product being fitted until emissions of the individual compounds have reached an unacceptable concentration.

GUT

In 1990 European carpet manufacturers founded an association for environmentally friendly carpets (Gemeinschaft umweltfreundlicher Teppichboden) – GUT, in Germany. The purpose of GUT is to improve the environmental and consumer protection aspects throughout the life cycle of the carpet (from production to fitting, use and re-use).

Individual carpets can be granted a licence. There is a ban on particular substances and limit values for individual substances. In addition, requirements are set on emission testing with limit values in the form of LCI[8] values for a long list of substances. The list includes groups such as TVOC, SVOC, carcinogenic substances, aldehydes (e.g., formaldehyde), and individual substances with LCI values.

4 Justification of the requirements

This section presents the requirements, explains the background to them and the chosen requirement levels. The appendices referred to are those that appear in the criteria document “Nordic Swan Ecolabelling of Textile floor coverings and carpets".

4.1 Definition of the product group

Product types that are covered are textile floor coverings, carpets, floor rugs and floor mats. Both loose and wall-to-wall products are included.

The products must be for indoor use and be intended to be placed on the floor.

The upper side (which faces upwards from the floor) of the product must primarily consist of textile fibres.

[8] LCI=Lowest Concentrations of Interest. EU-LCI Definition: Health-based values used to evaluate emissions after 28 days from a single product. Presentation on 17 December 2012, Eurofins. http://standards.nsf.org/apps/group_public/download.php/19938/LCI%20summary%20by%20Reinhard%20Oppl%202012-12-18.pdf

4.2 Definitions

Recycled material/fibres	Recycled material is defined in the requirement according to ISO 14021, which applies the following two categories: “Pre-consumer/commercial” is defined as material that is recovered from the waste stream during a manufacturing process. Materials that are reworked or reground, or waste that has been produced in a process, and can be recycled within the same manufacturing process that generated it, are not considered to be pre-consumer recovered material. Nordic Ecolabelling considers reworked, reground or scrap material that cannot be recycled directly in the same process, but requires reprocessing (e.g., in the form of sorting, remelting, and granulating) before it can be recycled, to be pre-consumer/commercial material. This is irrespective of whether the processing is done in-house or externally. “Post-consumer/commercial” is defined as material generated by households or commercial, industrial, or institutional facilities in their role as end-users of a product that can no longer be used for its intended purpose. This includes materials from the distribution chain.
Nanomaterials/-particles	Nanomaterials/-particles are defined according to the EU Commission Recommendation on the Definition of Nanomaterial (2022/C 229/01): 'Nanomaterial' means a natural, incidental or manufactured material consisting of solid particles that are present, either on their own or as identifiable constituent particles in aggregates or agglomerates, and where 50 % or more of these particles in the number-based size distribution fulfil at least one of the following conditions: (a) one or more external dimensions of the particle are in the size range 1 nm to 100 nm; (b) the particle has an elongated shape, such as a rod, fibre or tube, where two external dimensions are smaller than 1 nm and the other dimension is larger than 100 nm; (c) the particle has a plate-like shape, where one external dimension is smaller than 1 nm and the other dimensions are larger than 100 nm.
Ingoing substances	All substances in the chemical product regardless of amount, including additives (e.g., preservatives and stabilizers) in the raw materials. Substances known to be released from ingoing substances (e.g., formaldehyde, arylamine, in situ-generated preservatives) are also regarded as ingoing substances.
Impurities	Residuals, pollutants, contaminants etc. from production, incl. production of raw materials, that remain in the chemical product in concentrations less than 100 ppm (0.0100 w%). Impurities in the raw materials exceeding concentrations of 1000 ppm (0.1000 w%) are always regarded as ingoing substances, regardless of the concentration in the chemical product. Examples of impurities are residues of the following: residues or reagents incl. residues of monomers, catalysts, by-products, scavengers, and detergents for production equipment and carry-over from other or previous production lines.
Additive in polymers	Chemical products added to improve the performance, functionality, and ageing properties of the polymer. Examples of additives are plasticisers, flame retardants, antioxidants, light/heat/thermal stabilisers, pigments, antistatic agents, and acid scavengers.

4.3 Description of the product and the production chain

The product, material composition, manufacturing process, suppliers, production chain etc. must be described to aid the assessment of which requirements need to be met.

O1 Description of the product, material composition and limits

The applicant must submit the following information for each product:

- State product type (e.g., wall-to-wall carpet, floor mat), trade name/ item number, if the product is for consumer or professional market.
- Overview of materials (e.g., polyester, cotton, natural latex etc.) and the composition of the product. Including the following information for each material:

a) Trade name/item number and material type.

b) Supplier/manufacturer of the material.

c) State if material is recycled* or renewable/bio-based.

d) % by weight of the material in the product.

e) State if material has undergone finishing such as printing, impregnating or coating.

A material type that is present with a total amount of maximum 5% by weight of the product is exempt from the requirements.

* *See definition in section 0.*

✉ Overview of the materials, which must include the information required above.

Background to requirement

It is important that this information is entered correctly, as it determines which requirements are relevant for the licence in question.

A material (e.g., polyester or latex) that are present with a total amount of no more than 5% by weight of the product are exempt from the requirements. As the requirements are comprehensive, going all the way back to the raw material supplier and require documentation of e.g., the chemicals used in the manufacturing processes, it possible for small amounts of materials to be exempt from the requirements, simplifying the application process.

O2 Description of the production chain and the manufacturing processes

The production and supply chain can be described using a flow chart, for example as shown in Appendix 1.

Manufacturing processes must be described. For each process the following information must be submitted:

- The manufacturing processes performed, e.g., textile fibre production, textile dyeing or polyurethane foam production
- The company name of the supplier who perform the process
- Production site (full address and country)

✉ Submit a description of the production chain and the manufacturing processes (preferably in a flow chart), and state which suppliers perform each process. See the example in Appendix 1.

✉ Submit an overview of manufacturing processes with information on the type of process, the company name, production location and contact person for each process performed. See the example in Appendix 1.

Background to requirement

To gain an overview of the production chain of the applied product, the applicant is required to provide information concerning production site, overview of manufacturing processes and suppliers. This is important to be able to assess which requirements in the criteria must be documented for each product.

4.4 Raw materials in general

O3 Renewable and/or recycled raw materials

The product must meet one of the following three requirements. The product shall consist of:

a) Minimum 60% by weight of renewable raw materials*

or

b) Minimum 70% by weight recycled materials** and/or re-used textiles***

or

c) Products that consist of both renewable and recycled material/re-used textiles shall comply with the following formula:

(7/6) × X + Y ≥ 70 % by weight

X = Percentage by weight of renewable raw materials****

Y = Percentage by weight of recycled materials/re-used textiles****

Non-organic fillers in the product may be exempted from the calculation of the weight percentage of the flooring where these are in principle available to an unlimited extent in nature*****.

** Renewable raw material is defined as a raw material that is continually and at a relatively fast pace reproduced in nature.*

*** Recycled material is defined in line with ISO 14021, see definition in section 0.*

**** Re-used textiles are defined here as post-consumer materials or pre-consumer, where it can be documented that the material is a residual material or waste from another business. Fabrics (not made-up) are only counted as reused textiles, if it can be documented that more than two years have elapsed since the fabric was originally produced. For a further definition, see ISO 14021. See also requirement O5 regarding re-used textiles.*

***** Recycled renewable materials or re-used textiles do not count as both renewable and recycled raw material/re-used textiles.*

****** This is the case for the fillers normally used in products such as kaolin, calcium carbonate, calcium magnesium carbonate, calcium sulphate, silicates and aluminium trihydrate (ATH). Nordic Ecolabelling reserves the right to assess whether a filler can be considered as being in such abundance that it may be considered as unlimited. Pigment does not count as fillers, but as additives.*

✉ State the % by weight of raw materials in the product that are renewable or recycled, respectively.

✉ For alternative c), calculations showing that the requirement is fulfilled.

Background to requirement

The purpose of the requirement is to reduce the total environmental impact of the product from a life cycle perspective. A product manufacturer can thus focus on a high proportion of renewable raw materials or focus on recycled materials or a combination of these.

The requirement can be fulfilled in three ways. The requirement for renewable and recycled raw materials can be met by products whose main raw ingredients are renewable. The requirement can also be met by products having a high proportion of recycled materials. Also, products with a combination of renewable and recycled raw materials can fulfil the requirement through alternative c).

If a product consists of recycled renewable raw materials, these raw materials cannot be double counted, and therefore only be rewarded inside of one category. Renewable raw materials are weighted as slightly better than recycled raw materials from an environmental point of view, and this is mirrored in the relative levels of requirement. The percentage levels have been estimated based on both knowledge on product compositions as well as review comments on the proposed criteria document for generation 6 of the Nordic Swan Ecolabel criteria for Floor coverings. The percentage levels are considered strict, but achievable for environmentally more sound products. The requirement also gives the opportunity to discount the filler in the product from the percentage calculation. However, the prerequisite is that the filler is found in large amounts in nature and therefore can be considered unlimited. This is the case for the fillers normally used, such as kaolin[9], calcium carbonate, calcium magnesium carbonate, calcium sulphate, silicates and aluminium trihydrate. Pigments are not counted as a filler but as an additive.

A textile carpet tile typically consists of approximately 10% yarn. The proportion of yarn (% of flooring by weight) varies with yarn height and yarn density. As much as 70% to 85% by weight of the backing and the intermediate layer (primary backing) consists of different materials including filler. There are several different types of backing material on the market, some of the most common being bitumen, PVC or polyester, including polyethylene terephthalate (PET).

Advancements are being made in area of recycled materials all the time and the possibility of using recycled feedstock may therefore change over time.

Recycled polyester:

The main source of recycled feedstock for polyester fibre is currently rPET from used water bottles. PET may be recycled both mechanically and chemically[10]. An LCA conducted for the Nordic Council of Ministers[11] describes the environmental effects of chemical recycling of PET. The analysis shows that chemical recycling is better than incineration of PET, in terms of the following impact categories: climate change, water consumption and total energy consumption, but is worse

[9] Kaolin is a white, very plastic clay which largely consists of aluminium silicate.
[10] Ragaert, K. Mechanical and Chemical Recycling of Solid Plastic Waste, 2017 Waste Management publication.
[11] Nordic Council of Ministers (2016). Gaining benefits from discarded textiles: LCA of different treatment pathways.

than incineration when it comes to eutrophication and photochemical ozone creation potential. Several other studies confirm this result.

Right now, there is a development in chemical recycling and here is a potential to be able to completely change the PET economy, so that all forms of PET in the future can be recycled and fibre-to-fibre[12].

Recycled polyamide:

Polyamide (PA, nylon) can be recycled via the mechanical or chemical processing of nylon waste, as happens, for example, in the carpet industry. A comparative LCA study of virgin nylon and recycled nylon for carpet manufacturing, conducted for Shaw Carpets (2010) and reviewed by LBP-GaBi University of Stuttgart, highlights significant environmental benefits from the use of recycled nylon. There are, however, still only a limited number of recycled nylon suppliers. Econyl is one of the leading suppliers, with its nylon 6 for textile production, which uses a chemical process with 100% pre- and post-consumer recycled content[13]. The split is around 50% pre- and 50% post-consumer[14]. There are several examples of textile brands that use Econyl in their polyamide products. An EPD for Econyl declares that ECONYL® polymer is free from substances that are harmful to health and the environment due to being carcinogenic, mutagenic or reprotoxic, allergenic, PBT or vPvB[15].

Bio-based polymers:

There are several examples of bio-based polyester on the market, including Virent's BioFormPX paraxylene[16] and Ecodear® PET[17]. However, not all the mentioned bio-based polyester products meet the requirement here for at least 90% biomass in the polymer. It is not clear which biomass is used for these particular fibres but starch and sugar from sugar cane, sugar beet and maize are often used for the production of bio-based polymers. Starch currently accounts for 80% of the feedstock for biopolymers[18]. Castor oil, or oils such as soya or palm oil tend to be used to produce bio-based polyamide.

O4 Chlorinated plastics

Chlorinated plastics such as PVC (polyvinyl chloride) and PVDC (polyvinylidene chloride) must not be included in Nordic Swan Ecolabelled product.

✉ Declaration from the product manufacturer that the product is free from chlorinated plastics. Appendix 2 can be used.

[12] Chemical Recycling, Making Fiber-to-Fiber Recycling a Reality for Polyester Textiles, GreenBlue 2018 hentet fra https://greenblue.org/work/chemical-recycling/
[13] http://www.econyl.com/textile-yarn/
[14] https://www.bipiz.org/en/advanced-search/aquafil-econyl-or-how-to-produce-nylon-6-from-100-regenerated-materials.html
[15] ENVIRONMENTAL PRODUCT DECLARATION for ECONYL® POLYMER, Aquafil 2013 and updated 2017.
[16] http://www.virent.com/news/virent-bioformpx-paraxylene-used-to-produce-worlds-first-100-plant-based-polyester-shirts/ accessed 20.02.2019.
[17] https://www.toray.com/products/fibers/fib_0131.html accessed 20.02.2019.
[18] https://aboutbiosynthetics.org/feedstock-to-fashion/ accessed 20.02.2019.

Background to requirement

The environmental impact of PVC is associated primarily with emissions of harmful organic chemicals from the entire production chain, potential use of harmful additives endocrine disrupters such as phthalates and plasticizers and challenges associated with its waste management during production and at its end of life.

In later years developments improvements in of the environmental performance of PVC production in Europa includes replacements of heavy metal-based stabilisers like lead (Pb) and cadmium (Cd) which reduces the risk of spreading harmful chemicals when recycling PVC. Soft PVC has addition of plasticizers, where there has been a shift from phthalates to plasticizers that are less harmful to health.

Modern incineration plants in Europe have effective incineration and the emissions of polyaromatic hydrocarbons (PAH), benzo-a -pyrene, dioxins and furans haves been significantly reduced[19]. Nevertheless, not all the Nordic countries allow incineration of used PVC due to the amount of air pollution control products needed for neutralization, and the resulting solid waste generated during this process. Denmark has a waste legislation which states that all PVC must be sorted for material recycling if not then sent to landfill[20], while plastics must not be landfilled in Sweden.

4.5 Re-design of re-used textiles

Nordic Ecolabelling wishes to promote the re-use of textile. However, to prevent the spread of substances that are harmful to health and the environment, the reused textile used must meet the requirements below. Other newly produced elements of the product must meet the relevant requirements in the criteria.

If the re-used material or the finished product is subject to additional processing with chemical products (e.g. dyes, printing, finishing, etc.), the requirements in sections 4.7 and 4.8 regarding the relevant chemicals must be fulfilled and documented. Reused textiles that are not further processed using chemicals do not need to meet the requirements concerning chemicals used in textile production.

O5 Re-design of re-used textiles

Re-used textile* may be used for re-design** of the whole or part of the product if the following are met:

- the material shall not come from workwear and other textiles used in the chemical and oil industry.
- the materials must not contain plastisol print (e.g., PVC, polyvinylchloride), for example in print or coatings.
- before re-design, textiles from the health care sector have been washed at an industrial laundry in a wash, where microorganisms are inactivated. The washing method must either comply with EN 14065:

[19] Vallette, Jim & Murtagh, Connie & Dedeo, Michel & Stamm, Rebecca. (2018). Chlorine and Building Materials A Global Inventory of Production Technologies, Markets, and Pollution Phase 1: Africa, The Americas, and Europe. 2018.
[20] Kortlægning af PVC i Danmark 2018. Miljøprojekt nr. 2049. Miljø- og Fødevareministeriet, Miljøstyrelsen. November 2018.

Textiles - Laundry-treated textiles - Control systems for biocontamination or equivalent national certification standard approved by Nordic Ecolabelling***.

Further processing of the textile:

If further processing is carried out with chemical products (e.g., dyeing, printing, finishing, etc.), the requirements in section 4.7 and 4.8 for relevant chemicals must be complied with.

** Re-used textiles are defined here as post-consumer materials or pre-consumer, where it can be documented that the material is a residual material or waste from another business. Fabrics (not made-up) are only counted as re-used textiles, if it can be documented that more than two years have elapsed since the fabric was originally produced. For a further definition, see ISO 14021.*

*** Re-design is defined here as changing the original appearance, function, or content of the product. Direct reuse without re-design is not covered here.*

**** Examples on equivalent national industry standards: DK: DS 2451-8 Infection control in the health care sector - Part 8: Requirements for laundering and handling of textiles for multiple use. Norway: Norwegian Laundries' Quality Supervision industry standard «Infection control for laundries that process textiles for health care institutions».*

✉ Documentation showing that the textile being used is reused.

✉ Textiles from the health care sector: Declaration on that the textile has been washed in an industrial laundry in a microbiological wash in accordance with the requirement.

✉ Declaration that reused material from the mentioned industries has not been used, and that the material does not contain PVC, for example in plastisol print, coatings.

Background to requirement

The aim of the requirement is to promote reuse of used textile products. There is also an environmental gain associated with the use of textile residues/waste which cannot otherwise be used in the production system that generated it. Increased reuse is important in stimulating a circular economy for textiles. This maintains the value of the material at a high level, as it saves on resources, energy, and chemical load by not having to produce new textiles[21].

There is generally no traceability for reused textiles with regard to the chemicals used in the original production, and so the recycled material may contain harmful chemicals. The Swedish Chemicals Agency has identified 2,400 substances that are used in textile production. Of these, 10% are considered to pose a potential health risk for humans by being carcinogenic, allergenic, endocrine disruptors and so on[22]. Even post-consumer textiles that have been washed several times have been found to contain harmful chemicals[23]. The requirement therefore contains a limitation on the product types for which reused material may be used. These limitations have been set, based on how the

[21] Ellen MacArthur Foundation, A new textiles economy: Redesigning fashion's future, (2017, http://www.ellenmacarthurfoundation.org/publications).
[22] Swedish Chemicals Agency (2014). Chemicals in Textiles – risks to human health and the environment. Report from a government assignment. Report 6/14.
[23] Nordic Council of Ministers (2016). Gaining benefits from discarded textiles: LCA of different treatment pathways.

product is normally used and thus how the user is exposed to any harmful chemicals.

4.6 Textile fibres and polymers

The requirements in this section cover textile fibres and polymers that is present with a total amount of maximum 5% by weight of the product is exempt from the requirements in section 4.6. However, the limit is 15% by weight for requirement O6.

If a textile fibre is certified with the Nordic Swan Ecolabel for Textile, hide/skins, and leather or EU Ecolabel for Textile products, it is exempted from requirements O6-O13 and O16. For the Nordic Swan Ecolabel in addition requirements O18 and O19 are exempted.

O6 Flax, bamboo and other bast fibres

When growing flax and other bast fibres (hemp, jute, coconut, etc.) the only pesticides which may be used are those permitted under the European Pesticides Regulation (1107/2009/EC).

The production of flax and other bast fibres with water retting is only per-mitted if the effluent from the process is treated such that the chemical oxygen demand (COD) or the total amount of organically bound carbon (TOC) is reduced to at least:

- 75% for hemp
- 95% for flax and other bast fibres

Chemical oxygen demand (COD) must be analysed under ISO 6060 or another comparable method. The requirements for analysis laboratory and test methods for COD/TOC are stated in Appendix 3.

Analysis of PCOD or BOD can also be used to verify whether a correlation with COD can be demonstrated.

✉ Declaration that only approved pesticides are used, Appendix 4 can be used by the fibre supplier.

✉ Where water retting is used: Analysis report from the producer of the bast fibre showing that the requirement is met, or a valid EU Ecolabel certificate may be used as documentation.

Background to requirement

The use of natural fibres in textiles has the advantage that it does not draw directly on fossil resources. It remains relevant, however, to consider whether these natural fibres are sustainably cultivated with minimum damage to the environment. It is, for example, important to ensure that there has been no use of harmful pesticides that could lead to a loss of biodiversity.

Pesticides may only be used for the cultivation of flax (linen) and other bast fibres if those pesticides are permitted according to Regulation (EC) No 1107/2009. The requirement is documented with the European Flax Standard certificate or equivalent. European Flax Standard is a certification scheme for flax grown in Europe. The flax is thus grown in accordance with EU 1107/2009. It is not uncommon for flax from Europe to be sold to countries in Asia for use in textiles and several Asian productions have a certificate for the European Flax Standard.

Water retting is prohibited unless the wastewater is cleaned to reduce the content of organic material and so comply with the requirement levels. Either biological or chemical retting is necessary to separate the fibres from the inner stem and the outer shell. This is done by exposing the stem or other bast fibre to moisture and heat. Water retting is the most effective method, but there are other methods such as placing the fibres in a tank and adding enzymes. Emissions of retting wastewater with a high content of organic material to the aquatic environment can result in a lack of oxygen during degradation, which can damage the aquatic animal and plant life. Water retting is used not only for bast fibres but also for sisal fibres[24]. The requirement is unchanged since the current level remains relevant. The EU Ecolabel for textile products has an equivalent requirement concerning COD emissions from water retting. It also includes a requirement that flax and other bast fibres shall be rented under ambient conditions and without thermal energy inputs. Nordic Ecolabelling has chosen not to set this requirement, but instead to focus on pesticide use during fibre cultivation. Requirements for water retting are not covered by the European Flax Standard.

O7 Cotton and other natural seed fibres of cellulose

Cotton and other natural seed fibres of cellulose (including kapok) must be one of the following or a combination (where the different types of certified cotton must add up to 100%) of:

- recycled*
- organically cultivated**
- cultivated according to standard BCI (Better Cotton Initiative)
- cultivated according to standard CmiA (Cotton made in Africa)
- cultivated according to standard Fairtrade for cotton

The proportions of the different types of certified cotton must add up to 100% and all documentation shall reference the Control Body or certifier of the different standards.

* *See definition in section 4.2.*

** *Organic cotton means cotton fibre that is certified as organic or transitioning to organic according to a standard approved in the IFOAM Family of Standards, such as Regulation (EU) 2018/848, USDA National Organic Program (NOP), APEDA's National Programme for Organic Production (NPOP), China Organic Standard GB/T19630. Also approved are GOTS, OCS 100, OCS blended (shares that are not organic must meet other relevant requirements in this criteria) and DEMETER and certification as "transitioning to organic cultivation". The certification body must have the accreditation required for the standard, such as ISO 17065, NOP or IFOAM.*

✉ Recycled fibres: Fulfilment of the requirement is documented for recycled fibre with either a) and/or b) below:

a) Certificate showing that the raw material is 100% recycled (post- and/or pre-consumer) with Global Recycled Standard certificate 4.0 (or later versions), Recycled Claim Standard (RCS) or other equivalent certification approved by Nordic Ecolabelling.

[24] Buch, Lignocellulosic Composite Materials, Springer International Publishing 2018.

b) Present documentation demonstrating that the recycled fibre was purchased as 100% recycled (post- and / or pre-consumer) and state the supplier.

☒ Organic cotton: Valid certificate showing that the cotton in the Nordic Swan Ecolabelled product was organically cultivated in line with the standards in the requirement. If the supplier is the holder of GOTS certification, the requirement must be documented with a transaction certificate showing that the goods supplied are GOT certified.

☒ BCI, CmiA or Fairtrade cotton: Documentation showing that the cotton is grown within one of the three standards BCI, CmiA or Fairtrade cotton. All documentation shall reference the Control Body or certifier of the different forms of cotton and be documented:

- on an annual basis for purchased cotton with transaction records and/or invoices, or
- on a final product basis (by weight) measured at spinning and/or fabrication.

Background to requirement

Cultivation of cotton is linked to serious health and environmental problems caused using pesticides, fertilisers, irrigation water and monocultures[25,26,27]. Pesticides for cotton cultivation accounted for 5.7% of global pesticide sales and 16.1% of insecticide sales in 2014[28]. The environmental impacts of cotton production vary between countries and production systems. Production ranges from highly mechanised in Australia, Brazil and the US to smallholder farms or a mixture of scales in for example India, China, and African countries.

Integrated pest management (IPM) and organic cultivation:

Integrated pest management (IPM)[29] and agro-ecological[30] practises can reduce pesticide use. IPM means that growers must consider all available pest control techniques, for example biological control, crop rotation and resistant varieties, and pesticides must be the last choice. Training of farmers and farm workers and use of protective equipment are also important.

In organic farming IPM is required along with other practises that promote soil health and biodiversity, and synthetic pesticides and fertilisers are prohibited[31].

[25] Pesticide Action Network UK (2018) Is cotton conquering its chemical addiction? A review of pesticide use in global cotton production. https://issuu.com/pan-uk/docs/cottons_chemical_addiction_-_update?e=28041656/62705601
[26] European Commission, Joint Research Centre (2013) Revision of the European Ecolabel and Green Public Procurement (GPP) Criteria for Textile Products – Technical report and criteria proposal, Working document, Institute for Prospective Technological Studies (IPTS).
[27] Kooistra K, Termorshuizen A, Pyburn R (2006) The sustainability of cotton – consequences for man and the environment. Wageningen University & Research, report no. 223.
[28] Pesticide Action Network UK (2018) Is cotton conquering its chemical addiction? A review of pesticide use in global cotton production. https://issuu.com/pan-uk/docs/cottons_chemical_addiction_-_update?e=28041656/62705601
[29] https://www.fao.org/pest-and-pesticide-management/ipm/principles-and-practices/en/
[30] https://www.fao.org/agroecology/overview/en/
[31] Nordic Swan Ecolabel: Organic farming (accessed 02.09.2022) https://www.nordic-ecolabel.org/nordic-swan-ecolabel/environmental-aspects/sustainable-raw-materials-and-biodiversity/organic-farming/

IPM is required by law in some countries, for example in all the EU. Voluntary private certification schemes and national programs promoting IPM also exist. The sustainability standards Fairtrade, CmiA and BCI encourage IPM and prohibit certain hazardous pesticides, including those on the Stockholm Convention and Rotterdam Convention lists and those classified by WHO as 1a and 1b.

The share of the total area of cotton harvested globally in 2019 was for BCI 12.6 %, CmiA 4.2%, organic 1.1% and Fairtrade 0.1%[32]. Because the supply of organic cotton is low and it is more expensive, many textile producers prefer conventional cotton to be more competitive.

Recycled cotton fibre:

This is cotton fibre that is recovered from used clothing and textiles from consumers or industrial waste (post- or pre-consumer textile waste). Industrial textile waste may be surplus material from the production of yarns, textiles, and textile products, for example selvedge from weaving and fabric remnants from factory cutting rooms. The textiles are stripped and pulled into fibres, which are then carded and spun into new yarn. Recycled cotton may also be blended with virgin fibres to improve yarn strength[33].

O8 Wool and other keratin fibres

Any wool and other keratin fibres used must originate from sheep, camels, alpaca, or goats, and must meet either a), b) or c):

a) certified organic wool*

b) recycled wool**

c) conventional wool with documentation that the requirement below concerning pesticide content in the raw wool is fulfilled. In addition mulesing is not allowed.

- Pesticide content in conventional wool:
  - The total content of the following substances may not exceed 0.5 ppm: γ-hexachlorocyclohexane (lindane), α-hexachlorocyclohexane, ß-hexachlorocyclohexane, δ-hexachlorocyclohexane, aldrin, dieldrin, endrin, p,p'-DDT and p,p'-DDD.
  - The total content of the following substances may not exceed 2 ppm: diazinon, propetamphos, chlorfenvinphos, dichlorfenthion, chlorpyriphos, fenchlorphos, dicyclanil, diflubenzuron and triflumuron.
  - The requirement to test for pesticide residues does not apply if documentation can show which farmers produced at least 75% by weight of the wool or keratin fibres, and those farmers can confirm that the substances named in the requirement have not been used in the areas or on the animals in question.

[32] International Trade Centre (ITC), International Institute for Sustainable Development (IISD), Research Institute of Organic Agriculture (FiBL), State Secretariat for Economic Affairs (SECO) (2021) State of Sustainable Markets 2021. https://standardsmap.org/en/trends

[33] Wikipedia - Cotton recycling, https://en.wikipedia.org/wiki/Cotton recycling (accessed 26.08.2019).

Test method: The tests must be performed in accordance with IWTO Draft Test Method 59: Method for the Determination of Chemical Residues on Greasy Wool or equivalent.

The analysis must be performed on raw wool before wet processing and the test report must be submitted with the application. Thereafter, the applicant must have a procedure in place for annual testing in line with the requirement and for ensuring compliance with the requirement. Nordic Ecolabelling must be informed if the requirement is not fulfilled.

** Definition of organic wool: Wool fibre that is certified as organic or transitioning to organic according to a standard approved in the IFOAM Family of Standards, such as Regulation (EU) 2018/848, USDA National Organic Program (NOP), APEDA's National Programme for Organic Production (NPOP), China Organic Standard GB/T19630. Also approved are GOTS and DEMETER and certification as "transitioning to organic cultivation". The certification body must have the accreditation required for the standard, such as ISO 17065, NOP or IFOAM.*

*** See definition in section 0.*

✉ **Organic wool:** Valid certificate showing that the wool in the Nordic Swan Ecolabelled product was organically cultivated in line with the standards in the requirement. If the supplier is the holder of GOTS certification, the requirement must be documented with a transaction certificate showing that the goods supplied are GOTS certified.

✉ **Recycled fibre:** Fulfilment of the requirement is documented for recycled fibre with either a) or b) below:

a) Global Recycled Standard certificate 4.0 (or later versions) or Recycled Claim Standard (RCS) certificate showing that the raw material is recycled, or other equivalent certification approved by Nordic Ecolabelling.

b) Present documentation demonstrating that the recycled fibre was purchased as recycled and state the supplier.

✉ **Conventional wool:** Declaration from the wool supplier that no mulesing has been used. Appendix 4 can be used.

✉ **Conventional wool:** Test report showing that the pesticide requirement has been fulfilled, plus a written procedure showing how an annual test is performed in line with the pesticide requirement, along with annual in-house checks of compliance with the requirement. Test results are to be archived and kept available for inspection by Nordic Ecolabelling. An alternative to the pesticide test is a confirmation from the farmers that the stated substances are not used, plus an overview of the proportion of wool concerned.

Background to requirement

The requirement only accepts wool fibre from sheep and other keratin fibres from camels, alpaca, and goats. Angora wool from rabbits is not accepted, for example.

Wastewater from washing wool (scouring) often contains large quantities of pesticides that are used to treat sheep. Pesticide residues can have a significant environmental impact if discharged into the aquatic environment. At the same time, pesticides such as organochlorine compounds, which are known to be toxic, non-readily degradable and bio accumulative, may also harm the environment

while active in the wool. Despite a ban, this type of pesticide is still used[34]. Wool scouring firms and exporters of wool have the greatest scope to control the use of pesticides for ectoparasites by issuing absolute requirements to the wool producers (farmers). This requirement can therefore be documented by at least 75% of the wool farmers declaring that they do not use the above-mentioned pesticides. Organic wool automatically meets the requirement. According to the International Wool Textile Organization (IWTO), in 2015 less than 1% of global sheep farming was organic[35]. Since wool at the same time accounted for only 1% of the total fibre production (figures from 2017), the total amount of organic wool is not that extensive. The judgement has therefore been made that only accepting organic wool would be too tough a requirement.

Test method IWTO DTM-59: 2009; Method for the Determination of Chemical Residues on Greasy Wool[36]. This method tests for the presence of four groups of pesticide residues: organochlorine compounds, organophosphates, synthetic pyrethroids and insect growth regulators.

O9 COD emissions from wool scouring plants

Emissions of COD (chemical oxygen demand) from wool scouring plants must not exceed (expressed as a 6-month average):

- 45 g/kg for fine wool (merino wool or wool fibre that is 25 microns or thinner)
- 25 g/kg for coarse wool

Wastewater that is sent to municipal or other regional treatment works is exempted.

Measurement of PCOD (particulate chemical oxygen demand), TOC (total oxygen demand) or BOD (bio-chemical oxygen demand) may also be used, if a correlation to COD is evident.

Test method: Test according to ISO 6060.

✉ Test report from the wool scouring plant showing that the requirement is fulfilled. Alternatively, a valid GOTS or EU Ecolabel certificate may be used as documentation.

Background to requirement

The requirement has been harmonised with requirements set by both the EU Ecolabel and GOTS.

The requirement is split into differentiated requirement levels for fine and coarse wool. Dirt, grease, and suint that are washed out before the wool can be further processed can pollute wastewater discharged into the environment. COD indicates the amount of oxygen consumed through complete oxidation of the organic material under aerobic conditions. The higher the COD emissions, the more oxygen consumption the discharge will cause and the greater the risk of oxygen deficiency in the aquatic environment. This potential environmental impact can be significantly reduced by removing dirt, grease, and suint from the

[34] Ravindran, J. et al., Organochlorine pesticides, their toxic effects on living organisms and their fate in the environment, Interdiscip Toxicol. 2016 Dec; 9(3-4): 90-100.
[35] International Wool Textile Organization (IWTO), “Wool Production.” Accessed 07.09.2017: http://www.iwto.org/wool-production
[36] https://www.iwto.org/sites/default/files/images/iwto_news/image/INDEX-Red%20Book%202015.pdf accessed 13.05.2019.

wool, with the resource-efficient bonus of maximising their value as by-products. Removing dirt and grease from the wool also helps to minimise energy consumption and the need for detergents in the wool scouring plant[37].

O10 pH value and temperature of wastewater from wool scouring

The pH value of the wastewater released to the surface water must be 6-9 (unless the pH value in the recipient lies outside this interval), and the temperature must be lower than 40°C (unless the temperature in the recipient is higher).

✉ Test reports from the wool scouring plant showing measurements of the wastewater's pH and temperature. Alternatively, a valid GOTS certificate may be used as documentation.

Background to requirement

The requirement has been set so that the discharge of wastewater into surface water does not interfere with the aquatic environment by changing the pH or temperature to a large extent locally, thereby disturbing the natural balance of the aquatic environment. If national legislation sets requirements in this area, this must also be complied with. However, the requirement in these criteria must still be documented.

O11 Polyamide

Polyamide must meet either a), b) or c):

a) The annual average emissions to air of nitrous oxide (N_2O) from the manufacture of monomers must not exceed 10 g/kg manufactured polyamide 6 or 50 g/kg manufactured polyamide 6.6.

Test method: ISO 11564 or equivalent method.

The requirements for analysis laboratory are stated in Appendix 3.

b) Minimum 20 % by weight of the polyamide fibres must comprise of recycled material*.

The traceability of the recycled raw material must be documented with either 1 or 2 below:

1. Global Recycled Standard certificate or Recycled Claim Standard certificate showing that the raw material is recycled, or other equivalent certification approved by Nordic Ecolabelling.

2. By stating the producer of the recycled raw material and documenting that the feedstock used in the raw material is 100% recycled material.

c) A valid certificate for EU Ecolabel (Commission's decision from 2014) or Blue Angel (DE-UZ 154, 2017).

***** *See definition in section 4.2.*

✉ a) Detailed information and/or test report from the manufacturer of the polyamide fibre, showing that the requirement is fulfilled on an annual basis by the manufacturing unit.

✉ b) Certificate from an independent certifier of the supply chain (e.g., Global Recycled Standard or Recycled Claim Standard) **or** Documentation from the

[37] Revision of the EU Green Public Procurement (GPP) Criteria for Textile Products and Services, Technical report with final criteria, JRC 2017.

producer, showing that the feedstock used in the raw material is 100% recycled material. **And** calculation showing that minimum 20 wt% of the polyamide fibres are recycled.

✉ c) A valid certificate for EU Ecolabel (Commission's decision from 2014) or Blue Angel (DE-UZ 154, 2017).

Background to requirement

The two commercial polyamide products are polyamide 6.6 and polyamide 6. Polyamide 6.6 is created through the polymerisation of adipic acid and hexamethylenediamine, while polyamide 6 (Nylon 6) is created through the polymerisation of melted ε-caprolactam.

Nitrogen dioxide (N_2O) is a greenhouse gas that is 270 times more potent than carbon dioxide. Nitrogen dioxide also depletes the ozone layer. The two greatest industrial sources of N_2O are the production of nitric acid (HNO_3) and adipic acid. Adipic acid is created in a two-stage process where HNO3 is used in the second stage and is the cause of the N_2O emissions. Adipic acid is primarily used in the production of polyamide. Emissions of N_2O have been reduced in recent years through thermal and catalytic cracking, especially in the production of adipic acid.

Polyamide (PA, nylon) can be recycled via the mechanical or chemical processing of nylon waste, A comparative LCA study of virgin nylon and recycled nylon for carpet manufacturing, conducted for Shaw Carpets (2010) and reviewed by LBP-GaBi University of Stuttgart, highlights significant environmental benefits from the use of recycled nylon. There are, however, still only a limited number of recycled nylon suppliers.

A valid certificate for textile from EU Ecolabel (2014) or Blue Angel (2017) can also be used as documentation for this requirement.

O12 Polyurethane

Polyurethane must meet either a) or b):

a) When manufacturing polyurethanes, isocyanate compounds must only be used in closed processes where recommended/prescribed safety equipment is worn.

   Halogenated flame retardants must not be used.

b) The polyurethane fibres must comprise of recycled material*.

   The traceability of the recycled raw material must be documented with either 1 or 2 below:

   1. Global Recycled Standard certificate or Recycled Claim Standard certificate showing that the raw material is recycled, or other equivalent certification approved by Nordic Ecolabelling.
   2. By stating the producer of the recycled raw material and documenting that the feedstock used in the raw material is 100% recycled material.

* *See definition in section 0.*

✉ a) Declaration that the requirement is fulfilled. Appendix 4 can be used.

✉ b) Certificate from an independent certifier of the supply chain (e.g., Global Recycled Standard or Recycled Claim Standard) **or** Documentation from the

producer, showing that the feedstock used in the raw material is 100% recycled material.

Background to requirement

Polyurethane is a material with extensive applications. The most common of these include insulation, wadding and paints and adhesives/binders. Polyurethane is formed through polyaddition between isocyanates and a di- or polyfunctional alcohol (polyol). Isocyanates are suspected of being carcinogenic. Toluene-based isocyanates are also extremely toxic if inhaled, as well as being suspected allergens and harmful to aquatic organisms.

Pre-hardened urethane plastic is considered not to be harmful, but due to the risk of unreacted isocyanates, it is important to protect employees' health through the correct personal protective equipment, proper ventilation and good general safety procedures.

Polyurethane causes considerable formation of toxic gases in a fire, which is why some form of flame retardant is commonly added, either a phosphorus-based or halogenated substance. Pigment is often added to avoid a polyurethane coating yellowing on exposure to sunlight.

O13 Polyester

Polyester must meet either a) or b):

a) The amount of antimony in polyester fibre measured as an annual average shall not exceed 260 ppm.

   Antimony shall be tested using the following method: Direct determination by atomic absorption spectrometry. The test shall be executed on raw fibre prior to wet treatment.

   Requirements for analysis laboratories are given in Appendix 3.

b) The polyester fibres must comprise of recycled material*.

   The traceability of the recycled raw material must be documented with either 1 or 2 below:

   1. Global Recycled Standard certificate or Recycled Claim Standard certificate showing that the raw material is recycled, or other equivalent certification approved by Nordic Ecolabelling.
   2. By stating the producer of the recycled raw material and documenting that the feedstock used in the raw material is 100% recycled material.

* *See definition in section 0.*

✉ a) A declaration from the polyester manufacturer that antimony is not used, or a test report showing that the antimony requirement is fulfilled. Appendix 4 can be used.

✉ b) Certificate from an independent certifier of the supply chain (e.g., Global Recycled Standard or Recycled Claim Standard) **or** Documentation from the producer, showing that the feedstock used in the raw material is 100% recycled material.

Background to requirement

In a textile context, polyester is associated with PET, a synthetic polymer made from terephthalic acid (or dimethyl terephthalate) and monoethylene glycol.

These are raw materials made accessible by cracking crude oil. The raw materials are therefore derived from non-renewable sources and considered little toxic however readily available chemicals. The fibre production does not contribute to any hazardous by-products and the production takes place in closed processes giving rise to low emissions.

Production of PET-fibres is often done with the catalyst (di)antimony trioxide (Sb_2O_3). Antimony trioxide is primarily used as a flame retardant in plastics and textiles as well as catalyst in PET-production and in pigments. Nordic Ecolabel requires a maximum of residual antinomy catalyst in polyester as antimony compounds are harmful substances giving rise to the classification Carc. Cat. 2 (according to CLP 1272/2008). Antimony trioxide has also been risk assessed as an existing substance in EU 2008 (SE)[38]. Polyester contains usually antimony in concentrations of 150-350 ppm (mg/kg)[39]. During the criteria development phase of EU Ecolabel during the years 2001-2002, it was found, through information from "Best Available Technology" (BAT) and from the PET-fibre industry that 260 ppm was an appropriate best level concentration of antimony in polyester for EU Ecolabel products of "antimony free" ambitions. There is an ongoing development towards alternative catalysts for polyester/PET-production, however Nordic Ecolabelling does not have information of any greater success regarding such catalyst product development and will therefore evaluate the case until next revision.

The main source of recycled feedstock for polyester fibre is currently rPET from used water bottles. PET may be recycled both mechanically and chemically[40].

Right now, there is a development in chemical recycling and here is a potential to be able to completely change the PET economy, so that all forms of PET in the future can be recycled and fibre-to-fibre[41].

O14 Additives in polymer materials

Additives* in polymer materials shall comply with requirement O23.

The requirement applies to additives irrespective of whether the material is manufactured of virgin or recycled raw materials.

Polymer materials are rubber materials (elastomers), thermosetting and thermoplastics irrespective of shape (thread-shaped fibres or layers/sheets).

** See definition in section 4.2.*

✉ A declaration from the material's manufacturer in accordance with Appendix 5.

Background to requirement

The requirement is set in order to limit hazardous chemical additives in virgin or recycled polymer materials. The requirement is harmonized with other of Nordic Ecolabel relevant product groups, for instance the product group of Furniture

[38] European Union, Risk Assessment Report Diantimony Trioxide, Swedish Chemicals Inspectorate, draft 2008.
[39] Miljøstyrelsen, Miljøprojekt nr. 892, 2004, Antimon - forbrug, spredning og risiko.
[40] Ragaert, K. Mechanical and Chemical Recycling of Solid Plastic Waste, 2017 Waste Management publication.
[41] Chemical Recycling, Making Fiber-to-Fiber Recycling a Reality for Polyester Textiles, GreenBlue 2018 hentet fra https://greenblue.org/work/chemical-recycling/

and Fitments (generation 4), where a similar additive requirement in plastics has been functioning well.

Additives are chemical substances which have been added to a material to obtain different characteristics such as pliancy, heat stability, impact resistance, etc. With plastic as an example, plastic is the comprehensive term for a large group of materials. Plastic consists of one or several polymers which have been mixed with additives.

O15 Substances in recycled polymer materials

Recycled polymer materials shall not contain the following substances:

- halogenated flame retardants
- cadmium
- lead
- mercury
- chromium VI
- arsenic

Impurities of these substances up to 100 ppm are allowed.

Exemption to the requirement:

- Material from PET bottles original approved for food contact.
- Fibres from chemically recycled polymers, if it can otherwise be documented that the process ensures, that the requirement limits are complied with.
- Fibres, where it can be documented that they originate from type I eco-labelled products.

✉ Documentation from the manufacturer of recycled plastic showing that the requirement is met. For example, documentation regarding the origin of the plastic or a laboratory test document. Oeko-Tex standard 100 class II certificate for the Nordic Swan Ecolabelled product can also be used for documentation.

✉ When using chemically recycled polymers documentation showing that the recycling process ensures that the requirement is complied with.

✉ When using the exemption for material from PET bottles, this must be documented by the fibre supplier.

✉ When using an exemption for fibres from earlier type I ecolabelled textiles, this must be documented by the fibre supplier.

Background to requirement

When setting the requirement manufacturers that use recycled plastic were consulted[42]. The report "Hazardous substances in plastic materials", prepared for the Norwegian Climate- and Pollution Directorate (KLIF) in 2013, was also reviewed during the formulation of the requirement[43]. The purpose of the requirement is to block substances of concern - that commonly occur in recycled raw materials which are typically used in textile floor manufacturing (typically

[42] Conversation with Ege Tæpper and Scandinavian Business Seating, September 2014. Results from studies done by Nordic Ecolabelling in connection with the revision the criteria for compost bins in 2014 is also used.
[43] Hazardous substances in plastic materials, TA 3017, COWI and Danish Technological Institute, for KLIF, 2013.

consisting of plastic- or rubber backing). The most common types of plastics used in a flooring context are PET and polyester.

Based on communication with floor- and furniture manufacturers and suppliers of re-cycled plastic it was found that testing in the industry for additives/substances occurrence in recycled plastic is done in different manners. Some manufacturers base their evaluation on questionnaires/declarations from their suppliers and follow up with chemical analysis where they assess it probable that plastics contain undesirable substances. Some manufacturers of recycled plastic have their own XRF (X-ray fluorescence spectrometer) equipment with which recycled plastic can be tested in order to fulfil certain requirements (where a detection level of 100 ppm is achievable).

In mechanical recycling processes, all the chemical substances remain in the material and may be transferred to the new textile fibre[44]. In chemical recycling processes such as pyrolysis and gasification - the plastic as well as most of their additives and any contaminants are converted into basic chemicals. For other recycling processes such as depolymerization, where the chemical structures are preserved, it can not necessarily be ensured that no harmful additives and contaminants from the incoming plastic waste are included. It is possible to conduct a spot test for the most relevant substances over a set interval, but since the recycled feedstock may come from multiple sources and can therefore vary a great deal, it is not possible to implement the testing required to identify all the potential "old additives".

Recycled fibre from PET bottles may also contain small amounts of undesirable substances such as antimony and heavy metals, which are derived from labels, adhesives, printing inks and waste from the transport and sorting of the plastic. However, measurements have established that the levels fall well below the limits set for heavy metals in packaging materials in California's Toxics in Packaging Prevention Act of 2006[45].

O16 Treatment and coating of fibre and yarn

None of the substances below may occur in any of the preparations/products/ formulations used in the treatment of fibres:

- alkylphenol ethoxylates (APEO)
- linear alkylbenzene sulphonates (LAS)
- dihydrogenated tallow dimethyl ammonium chloride (DHTDMAC)
- distearyl dimethyl ammonium chloride (DSDMAC)
- ditallow dimethyl ammonium chloride (DTDMAC)
- ethylenediaminetetraacetic acid (EDTA)
- diethylenetriamine pentaacetate (DTPA)

Other chemicals/chemical products which are used in the factory, e.g., for the cleaning of production equipment are not included.

✉ Declaration from the fibre manufacturer that the requirement is fulfilled. Appendix 4 can be used.

[44] Nordic Council of Ministers (2016). Gaining benefits from discarded textiles: LCA of different treatment pathways.
[45] M. Whitt, Survey of heavy metal contamination in recycled polyethylene terephthalate used for food packaging, Journal of Plastic Film & Sheeting 2012.

Background to requirement

The chemicals in the requirement have properties that are harmful to health and the environment.

O17 Emissions to water from production of foam plastic/foam rubber

Emissions of oxygen demanding substances to water from the production of foam plastic/foam rubber must be reduced by 90% measured as COD or TOC. The reduction may be achieved through on-site or off-site treatment. In the case of off-site treatment, the average treatment level of the effluent treatment plant may be used.

Chemical oxygen demand (COD) must be analysed under ISO 6060. The requirements for analysis laboratory and test methods are stated in Appendix 3.

✉ Description of how the effluent from foam plastic production is treated and how COD emissions are measured and monitored.

✉ Test report showing that the limit value for chemical oxygen demand (COD) is fulfilled.

Background to requirement

Foam rubber may be used as the backing on the product. There are several different types of backing material for carpets. Since there are environmental problems associated with the production of foam rubber in the form of latex and polyurethane, it is relevant to set requirements concerning these. Nordic Ecolabelling requires emissions of oxygen demanding substances from the production of latex to be low.

O18 Synthetic latex (SBR) and natural latex

Synthetic latex (SBR) must meet a), b) and c) below.

Natural latex must meet a) and c) below.

The impurity limit of 100 ppm does not apply in this requirement.

The requirements for analysis laboratory are stated in Appendix 3.

a) The content of the polycyclic aromatic hydrocarbons (PAHs) below must not exceed 0.2 mg/kg of latex in total.

Substance name	CAS-no
Benzo[A]Pyrene	50-32-8
Benzo[E]Pyrene	192-97-2
Benzo[A]Anthracene	56-55-3
Dibenzo[A,H]Anthracene	53-70-3
Benzo[B]Fluoranthene	205-99-2
Benzo[J]Fluoranthene	205-82-3
Benzo[K]Fluoranthene	207-08-9
Chrysene	218-01-9

Must be tested in accordance with ISO 18287 or ZEK 01.2-08 (GC/MS).

b) The content of 1,3-butadiene must be less than 1 mg/kg latex.

Test method: Butadiene can be determined according to EN 13130-4 or similar method.

c) The concentration of N-nitrosamines* must not exceed 0.0005 mg/m^3, measured by the climate chamber test conducted in accordance with the standard ISO 16000-9.

**n-nitrosodimethylamine (NDMA), n-nitrosodiethylamine (NDEA), n-nitrosomethylethylamine (NMEA), n-nitrosodiisopropylamine (NDIPA), n-nitrosodi-n-propylamine (NDPA), n-nitrosodi-n-butylamine (NDBA), n-nitrosopyrrolidine (NPYR), n-nitrosopiperidine (NPIP), n-nitrosomorpholine (NMOR).*

✉ Test results and test reports according to the requirement.

Background to requirement

Polycyclic aromatic hydrocarbons (PAHs):

There are more than 100 PAH compounds. Several of the PAHs are carcinogenic and classed as Carc.1B and genotoxic. The PAHs usually originate from two types of additives, which are plasticising and process oils (extender oils) and carbon black, which is found in rubber and plastic products, and which is known to contain PAHs. Plasticising and process oil is a mineral oil product which originates from crude oil (petrogenic PAHs), while carbon black is a product that is produced by incomplete incineration or thermal degradation processes for heavy oils such as coal tar (primarily pyrogenic PAHs). Carbon black is used as a dye, amongst other things.

The eight PAHs in the table are restricted in REACH and must thus not exceed 1 mg/kg of each. Clothes, shoes, and gloves are some of the consumer products covered by this REACH limitation[46]. The criteria requirement goes further than REACH, as it sets a maximum level of PAHs of 0.2 mg/kg of latex in total.

1,3-butadiene:

Several synthetic latex materials contain substances that are harmful to health and the environment, including substances that are (suspected) carcinogens, such as 1,3 butadiene, CAS no. 106-99-0, in SBR rubber, which has the following classification: H340: May cause genetic defects and H350: May cause cancer. Butadiene functions as a monomer in the production of latex and the requirement aims to ensure that work is conducted to achieve the lowest possible monomer content in the final product.

Nitrosamines:

Substances that are harmful to health, such as nitrosamines, can be formed during the vulcanisation process. Latex is an elastomer which, on vulcanisation, can be changed so that the material is virtually insoluble in a solvent at boiling point.

O19 Polyurethane foam (PU foam)

Tin in its organic form (tin bonded to a carbon atom) is not permitted.

CFC, HCFC, HFC (hydrofluorocarbons) or methylene chloride must not be used as a foaming agent.

Isocyanate compounds may only be used in closed processes were recommended/ prescribed safety equipment is worn.

[46] Guideline on the scope of restriction entry 50 of Annex XVII to REACH: Polycyclic aromatic hydrocarbons in articles supplied to the general public, European Chemical Agency 2018.

✉ Declaration from the foam manufacturer/supplier about which blowing agent has been used. Appendix 6 can be used.

Background to requirement

Historically, CFC, HCFC and HFC have been used in the production of PU foam, and it is generally known that these substances are harmful to the environment, especially as greenhouse gases and as ozone depleting substances. The requirement prohibits the use of CFC, HCFC, HFC (hydrofluorocarbons) and methylene chloride that are used as blowing agents or auxiliaries for these. Many producers of PU foam have replaced CFC and HCFC with carbon dioxide but ensuring that they are not used is still considered relevant.

Blowing agents are only relevant for PU foam, as the production of latex foam does not require blowing agents. Expanded polystyrene uses water or pentane as a blowing agent.

4.7 Chemicals

The chemical requirements cover all chemicals and chemical products added to the product materials or used in the manufacture of the product, including surface treatments. Here, manufacture is defined as all manufacturing/treatment conducted by the manufacturer, but also by its suppliers of raw materials or constituent products.

The requirements relate to areas such as adhesives, impregnation, pigments, bleaching chemicals, and so on. The requirements also apply to chemicals in the constituent parts of the product, such as latex materials.

There are also specific chemical requirements for dyes and pigments in section 4.8, in addition to the general chemical requirements in this section 4.7.

O20 Overview of chemicals

All chemical products shall be stated and documented with a safety data sheet. A collective list or separate lists shall be drawn up for each production process and/or supplier.

The following information shall be submitted for each chemical product:

- trade name
- the function of the chemical
- the process step in which the chemical product is used
- the supplier/producer using the chemical product

✉ List of chemicals for every production process and/or supplier.

✉ Safety data sheet for every chemical product, in line with Annex II of REACH 1907/2006.

Background to requirement

To gain an overview of which chemicals are used in the various processes in the production, the criteria require the submission of a list of all the chemicals used.

O21 Classification of chemical products

Chemical products shall not be classified as any of the hazard categories set out in the table below.

CLP Regulation 1272/2008		
Hazard class	**Hazard category**	**Hazard code**
Toxic to aquatic life	Aquatic Acute 1 Aquatic Chronic 1 Aquatic Chronic 2	H400 H410 H411
Hazardous to the ozone layer	Ozone	H420
Carcinogenicity*	Carc 1A or 1B Carc 2	H350 H351
Germ cell mutagenicity*	Muta. 1A or 1B Muta. 2	H340 H341
Reproductive toxicity*	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362
Acute toxicity	Acute Tox 1 or 2 Acute Tox 3	H300, H310, H330 H301, 311, 331
Specific target organ toxicity with single or repeated exposure	STOT SE 1 STOT RE 1	H370 H372

**Including all combinations of stated exposure route and stated specific effect. For example, H350 also covers the classification H350i.*

Note that responsibility for correct classification lies with the manufacturer.

Exceptions:

- Adhesive products that contain isocyanates are exempted from the classification prohibition H351. Isocyanates in the production of polyurethane are regulated in O12.
- Adhesive products with formaldehyde are exempted from the classification prohibition H350 and H341. Formaldehyde emission from the product is regulated in O33.
- Exception is made for titanium dioxide (TiO_2) classified Carc. 2 H351 which is added in powder form during the production of the product if the following is met: It must be added in closed systems, in suspended form or by a method that promotes a "low-dusting" working environment, for example by using protective equipment that significantly reduces dust or completely removes dust from raw materials (e.g., extraction, personal protective equipment and clear safety instructions).

✉ Declaration from the chemical manufacturer/supplier that the requirement is fulfilled. Appendix 7 can be used.

✉ Exception for TiO_2: Description of how TiO_2 in powder form is handled during production of the product.

Background to requirement

Nordic Ecolabelling strives to ensure that the health and environmental effects of the chemical products are as small as possible. Chemical products that are carcinogenic, mutagenic, reprotoxic, very toxic, toxic or harmful to the environment must not be used in the manufacture of Nordic Swan Ecolabelled products.

The term chemical products include e.g., adhesives, dyes, pigments, surface treatments and impregnation agents used in the manufacture of the product. Here, manufacture is defined as all manufacturing/treatment conducted by the manufacturer, or that the manufacturer has ordered from a supplier.

It is necessary to have an exception for adhesives containing isocyanate classified as H351 and/or formaldehyde classified as H350 and H341. These substances are essential ingredients in adhesives and therefore also the reason for the exception.

There is also an exception for titanium dioxide classified H351 if requirements that protect the workers are met. TiO_2 was recently classified in the EU as a carcinogen by inhalation, category 2. The classification is for TiO_2 as a powder.

O22 CMR substances

Chemical products shall not contain any ingoing substances* that have any of the classifications in the table below.

** See the definition of ingoing substances and impurities in section 0.*

CLP Regulation 1272/2008		
Hazard class	**Hazard category**	**Hazard code**
Carcinogenicity*	Carc. 1A or 1B	H350
Germ cell mutagenicity*	Muta. 1A or 1B	H340
Reproductive toxicity*	Repr. 1A or 1B	H360

** Including all combinations of stated exposure route and stated specific effect. For example, H350 also covers the classification H350i.*

- **Exemption:** Adhesive products that contain formaldehyde are exempted from the requirement. Formaldehyde emission from the product is regulated in O33.

✉ Declaration from the chemical manufacturer/supplier, that the requirement is fulfilled. Appendix 5 can be used.

Background to requirement

The requirement excludes all constituent CMR substances. Ingoing substances are defined as all substances, whatever their concentration, in a used chemical (e.g., pigment or bleaching agent) or blend of chemicals (e.g., printing paste, coating), including additives (e.g., preservatives and stabilisers). Known products released from ingoing substances (e.g., formaldehyde, arylamine and in-situ generated preservatives) are also considered to be constituent. Impurities are defined as residual substances from production, including raw material production, that are present in a chemical product in concentrations of ≤100 ppm (≤0.0100 weight%, ≤100 mg/kg).

It is necessary to have an exemption for adhesive products with formaldehyde (H350 and H341) since it is an essential ingredient in adhesives. Formaldehyde emission from the product is regulated in O33.

O23 Prohibited substances

The following substances shall not be additives in materials or an ingoing substance* in chemical products:

- Substances on the Candidate List (https://echa.europa.eu/candidate-list-table). Siloxanes D4, D5 and D6 have their own documentation requirement, see requirement O24.

- Substances that are PBT (Persistent, Bioaccumulative, and Toxic) or vPvB (very Persistent and very Bioaccumulative) as set out in the criteria of REACH Annex XIII.
- Substances considered to be potential endocrine disruptors in category 1 or 2 on the EU's priority list of substances that are to be investigated further for endocrine disruptive effects. See following link: http://ec.europa.eu/environment/chemicals/endocrine/pdf/final_report_2007.pdf (Annex L, page 238 onwards).
- Halogenated flame retardants (e.g., short chain chlorinated paraffins).
- Per- and polyfluoroalkyl substances (PFASs), e.g., PFOA and PFOS.
- Heavy metals in dyes and pigments**.
- Phthalates.
- Chlorinated solvents and carriers, including chlorotoluenes, chlorophenols and chlorobenzenes.
- Chlorinated organic bleaching agents.
- Alkylphenol ethoxylates (APEO) and other alkylphenol derivatives.
- Printing paste may not contain more than 5% VOC (volatile organic compounds with a steam pressure exceeding 0.01 kPa at 20°C).

** See the definition of ingoing substances and impurities in section 0.*

*** Heavy metals are the metals listed here: Metal impurities in dyes and pigments up to the amounts set out in ETAD, Annex 2 "Heavy metal limits for dyes": antimony (50 ppm), arsenic (50 ppm), cadmium (20 ppm), chromium (100 ppm), lead (100 ppm), mercury (4 ppm), zinc (1500 ppm), copper (250 ppm), nickel (200 ppm), tin (250 ppm), barium (100 ppm), cobalt (500 ppm), iron (2500 ppm), manganese (1000 ppm), selenium (20 ppm) and silver (100 ppm).*

Exemptions from the requirement are granted for:

1) copper, chromium and nickel in metal complex dyes, see requirement O28.

2) iron used for colour depigmenting before printing.

✉ Declaration from the chemical manufacturer/supplier that the requirement is fulfilled. Appendix 5 can be used.

Background to requirement

Candidate List and Substances of Very High Concern (SVHC):

Substances of Very High Concern (SVHC) is a term describing substances that fulfil the criteria in Article 57 of the REACH regulation, which are defined as: substances that are CMR (category 1A and 1B under the CLP Regulation), PBT substances, vPvB substances (see section below) and substances that have endocrine disruptive properties or are environmentally harmful without meeting the criteria for PBT or vPvB. SVHC may be included on the Candidate List with a view to later inclusion on the Authorisation List. This means that the substance becomes regulated (ban, phasing out or some other form of restriction). Due to these undesirable properties, substances on the Candidate List cannot be Nordic Swan Ecolabelled. Other SVHC substances are dealt with through a ban on PBT and vPvB substances and through requirements concerning classification and a ban on endocrine disruptive substances.

PBT and vPvB:

PBT (Persistent, Bioaccumulative and Toxic) and vPvB (very Persistent and very Bioaccumulative) are organic compounds defined in Annex XIII of REACH (Regulation (EC) No 1907/2006). Nordic Ecolabelling generally does not want such substances to be included in the products.

Potential endocrine disruptors:

Potential endocrine disruptors are substances that may affect the hormone balance in humans and animals. Hormones control a number of vital processes in the body and are particularly important for development and growth in humans, animals and plants. Changes in the hormone balance can have unwanted effects and here there is an extra focus on hormones that affect sexual development and reproduction. Several studies have shown effects on animals that have been traced to changes in hormone balance. Emissions to the aquatic environment are one of the greatest sources for the spread of endocrine disruptors[47].

Flame retardants:

Flame retardants come in several different types, for example, brominated flame retardants, chlorinated or phosphorous flame retardants. Flame retardants are suspected of contributing to a number of unwanted health effects. Several of the substances are suspected of causing birth defects, cancer, and endocrine disrupting effects. The flame retardants HBCDD, short chain chloro-paraffins, TCEP, boric acid (and certain salts thereof), boron oxide and certain borax compounds (sodium tetraborate decahydrate and sodium tetraborate pentahydrate) are on the EU candidate list under REACH.

Many brominated flame retardants (BFR) are persistent and bio accumulative chemicals that can now be found dispersed in nature. Polybrominated diphenylethers (PBDE) are one of the most common groups of BFR and they have been used as flame retardants on a wide range of materials, including textiles. There are, for instance, examples of hexabromocyclododecane (HBCDD) and tetrabromobisphenol A (TBBPA) being used on fabrics for cars. The focus on phasing out brominated flame retardants has led to the use of alternatives such as phosphorus and nitrogen-based flame retardants.

Per- and polyfluoroalkylsubstances (PFASs), e.g., PFOA and PFOS:

Fluorosurfactants and other per- and polyfluoroalkyl substances (PFASs) constitute a group of substances that have harmful properties. Certain per- and polyfluorinated compounds can degrade to the very stable PFOS (perfluorooctane sulphonate) and PFOA (perfluorooctanoic acid) and similar substances. These substances are extremely persistent and are easily absorbed by the body[48]. The substances are found all over the globe, from the large oceans to the Arctic. PFOS have also been found in birds and fish and in their eggs. The substances in this

[47] Miljøstatus i Norge (2008): Hormonforstyrrende Stoffer. http://www.miljostatus.no/Tema/Kjemikalier/Noen-farlige-kjemikalier/Hormonforstyrrende-stoffer/#D (dated 26.02.2009)

[48] Borg, D., Tissue Distribution Studies And Risk Assessment Of Perfluoroalkylated And Polyfluoroalkylated Substances (PFASS), Doctoral Thesis, Institute Of Environmental Medicine (IMM) Karolinska Institute, Stockholm, Sweden 2013 http://publications.ki.se/xmlui/bitstream/handle/10616/41507/Thesis_Daniel_Borg.pdf?sequence=1

group impact on the biological processes of the body and are suspected to be endocrine disruptors, carcinogenic and to have a negative impact on the human immune system[49]. PFOA, APFO (ammonium pentadecene fluoro octanoate) and certain fluoride acids are on the Candidate List due to their reprotoxicity, as well as PBT. There are new research results showing that shorter chains (2-6 carbon atoms) have been discovered in nature[50].

Heavy metals:

Heavy metals such as cadmium, lead and mercury may be found as impurities in certain dyes and pigments used for textiles. These metals can accumulate in the body over time and are highly toxic with irreversible effects, including damage to the nervous system (lead and mercury) or kidneys (cadmium). Cadmium is also known to cause cancer. Cadmium is classified as carcinogenic, mutagenic, reprotoxic, toxic and toxic for aquatic organisms. Chromium is allergenic, carcinogenic, and toxic for aquatic organisms. The use of cadmium, mercury and lead has become very limited in textiles, but controlling for them remains relevant[51].

Phthalates:

The requirement excludes the presence of phthalates on the Candidate List and other phthalates. A number of phthalates, including the phthalates on the Candidate List in REACH, are considered problematic. The phthalates on the Candidate List, for example, interfere with reproduction and are classified as reprotoxic. When the phthalates are used as softeners in plastic products, the phthalates are not bound in the material, and so will slowly be released during use of the product[52]. Phthalates are often used as a softener in polyvinyl chloride (PVC). In the carpet industry, they are used in the print on products, as a softener in PVC, and in some dyes.

Chlorinated solvents, including chlorotoluenes, chlorophenols and chlorobenzenes:

Chlorinated solvents – such as trichloroethane (TCE) – are used by producers to dissolve other substances during manufacture and to clean textiles. TCE is an ozone depleting substance that is persistent in the environment. It is also known to affect the central nervous system, liver, and kidneys. Since 2008, the EU has severely restricted the use of TCE. Chlorinated carriers may be used for the colouring of synthetic fibre and fabric or blends of polyester and wool.

Chlorobenzenes are persistent and bio accumulative chemicals that have been used as solvents and biocides in the production of dyes and as auxiliary chemicals. The effect of exposure depends on the type of chlorobenzene; however,

[49] E.g., Heilmann, C. et al, Persistente fluorbindelser reducerer immunfunktionen, Ugeskr Læger 177/7, 30.3.2015 OSPAR 2005: Hazardous Substances Series, Perfluorooctane Sulphonate (PFOS), OSPAR Commission, 2005 (2006 Update), MST, 2005b: Miljøprojekt nr. 1013, 2005, More Environmentally Friendly Alternatives to PFOS-compounds and PFOA, Danish Environmental Protection Agency, 2005.
[50] Perkola, Noora, Fate of artificial sweeteners and perfluoroalkyl acids in aquatic environment, Doctoral dissertation Department of Environmental Sciences, Faculty of Biological and Environmental Sciences, University of Helsinki, Finland 12.12.2014, https://helda.helsinki.fi/bitstream/handle/10138/136494/fateofar.pdf?sequence=1
[51] Investigation of chemical substances in consumer products, Danish Environmental Protection Agency 2011.
[52] Guidance to businesses on phthalates, Danish Environmental Protection Agency 2013.

they tend to affect the liver, thyroid, and central nervous system. Hexachlorobenzene (HCB) is the most toxic and persistent chemical in this group, as well as being an endocrine disruptor.

Chlorophenols are a group of substances that are often used as biocides in a wide range of products. Pentachlorophenol (PCP) and its derivatives are, for example, used as biocides in the textile industry. PCP is highly toxic to humans and can affect the body's organs. It is also highly toxic for aquatic organisms. The EU prohibited the manufacture of products that contained PCP in 1991 and now also severely restricts the sale and use of all goods that contain the chemical.

Imported products containing PCP are the most significant remaining sources of potential PCP emissions and exposure. It may, for example, be present in leather and textiles to protect against mould. Chlorophenols may also be present as impurities from the raw materials used in the production of dyes. Furthermore, PCP and tetrachlorophenol (TeCP) may be used as preservatives in printing paste for textiles[53].

Alkylphenols ethoxylates and other alkylphenol derivatives:

Alkylphenol ethoxylates (APEO) and/or alkylphenol derivatives (APD) are a group of non-readily degradable surfactants that are proven endocrine disruptors. The alkylphenol compounds most often used in textiles are nonylphenols (NP) and octylphenols and their ethoxylates, particularly nonylphenol ethoxylates. The textile industry uses NPs in its washing and dyeing processes. They are toxic for aquatic organisms, persistent in the environment and can accumulate in body tissue and be biomagnified (increase in concentration through the food chain). Their similarity to natural oestrogen hormones can disrupt the sexual development of some organisms[54].

VOC (volatile organic compounds):

Volatile organic compounds are undesirable, because they tend to be harmful to health, poorly degradable in an aquatic environment and have a negative impact on the ozone layer. Printing paste often contains volatile organic compounds, which is why there are requirements limiting the use of such substances.

O24 Chemicals that contain silicone

D4 (CAS no. 556-67-2), D5 (CAS no. 541-02-6) and D6 (CAS no. 540-97-6) shall only be present in the form of residues from the raw material production, and each shall only be present in amounts up to 1000 ppm in the silicone raw material (the chemical).

✉ Test from the chemical manufacturer showing that the requirement is met.

Background to requirement

Siloxanes D4, D5 and D6 are included on the Candidate List of Substances of Very High Concern in REACH, and so these substances are prohibited through

[53] Roadmap to zero https://www.roadmaptozero.com/fileadmin/layout/media/downloads/en/Chlorophenols.pdf accessed 02.08.2019.
[54] Eleven hazardous chemicals which should be eliminated, https://www.greenpeace.org/archive-international/en/campaigns/detox/fashion/about/eleven-flagship-hazardous-chemicals/ accessed 02.08.2019.

requirement O23. However, a specific requirement has been included for these siloxanes to make it clear that documentation is required to confirm that the content is below the stated limit value in any silicone used. This is considered relevant because much of the production may take place in countries that are not covered by REACH.

It is possible to find chemicals containing silicone in use throughout the production chain, for example as softeners.

O25 VOC in adhesives

Adhesives must not contain more than 3% by weight volatile organic compounds (VOC).

✉ Declaration from the manufacturer/supplier of the chemical product, in accordance with Appendix 5. In addition, safety data sheets in line with Annex II of REACH 1907/2006.

Background to requirement

Adhesives are used for e.g., latex adhesive in carpets or other adhesives to keep the product together. There are thus various types of adhesives in use. Volatile organic compounds (VOC) are undesirable because they tend to be harmful to health, poorly degradable in an aquatic environment and have a negative impact on the ozone layer.

O26 Antibacterial substances and biocides

The following substances must not be added to fibres or to the finished product for the purpose of achieving a disinfectant or antibacterial treatment or a disinfectant or antibacterial surface:

- Antibacterial substances (including silver ions, nano silver and nano copper)

and/or

- Biocides in the form of pure active substances or as biocidal products.

Naturally occurring antibacterial effects in materials are not subject to the prohibition.

✉ Declaration from the product manufacturer that the requirement has been fulfilled. Appendix 2 can be used.

Background to requirement

Biocidal products and antibacterial products are not desirable in Nordic Swan Ecolabelled products, and the requirement excludes both chemical and physical treatments. Frequent use of antibacterial substances in ordinary consumer products may contribute to increased resistance in bacteria and the eradication of necessary bacteria, and Nordic Ecolabelling does not wish to contribute to this. These substances are increasingly being added to consumer products – everything from textiles to kitchen equipment. One of the substances often being added is nano silver. Nano silver is harmful for the aquatic environment[55]. Particular attention is being paid to nanometals such as nano silver and nano copper since they occur in many products.

[55] Silverläckan, En rapport om silver i sportkläder 2018, Svenskt Vatten file:///C:/Users/hbb/Downloads/Silverrapport%20Svenskt%20Vatten%2020181022C.pdf

These nanomaterials are added to achieve an antibacterial effect. There has been particular concern that emissions of nano silver into wastewater and other dispersal could eliminate desirable bacteria and cause resistance in bacteria. Another example of antibacterial substances that must not be used are organotin compounds and chlorophenols, which are used, for example, during the transport and storage of textiles.

Preservatives used in chemical raw materials ("in can" preservatives), for example in adhesives or surface treatments, are not subject to this prohibition. Here, the purpose of the biocide is to preserve the chemical product during storage. Naturally occurring antibacterial effects in materials (for example bamboo) are also not subject to the prohibition.

O27 Nanomaterials/-particles

Nanomaterials/-particles* must not be added or be present in the product.

Pigments and polymer dispersions are exempt from the requirement.

** Nanomaterials/-particles are defined according to the EU Commission Recommendation on the Definition of Nanomaterial (2022/C 229/01), see definition in section 0.*

✉ The product manufacturer must declare that the requirement is fulfilled in line with Appendix 2.

✉ Declaration in line with Appendix 5 from the manufacturer/supplier of the chemical product.

Background to requirement

Nanomaterials are a diverse group of materials under the size of 100 nm. Due to their small size and large surface area nanoparticles are often more reactive and may have other properties compared to larger particles of the same material. Further, different sizes, shapes, surface modifications and coatings can also change their physical and chemical properties. Nanoparticles can cross biological membranes and thus be taken up by cells and organs. One of the main concerns are linked to free nanoparticles, as some of these – when inhaled – can reach deep into the lungs, where the uptake into the blood is more likely.

There is concern among public authorities, scientists, environmental organisations, and others about the insufficient knowledge regarding the potential detrimental effects on health and the environment. Nordic Ecolabelling takes these concerns seriously and applies the precautionary principle to exclude potentially hazardous nanomaterials from products.

The requirement has the following exceptions:

Pigments

Pigments are finely ground, insoluble particles that are used to give products a specific colour. There are no substitutes that can fulfil pigments' function as colourants in paints, ink, textile dye, masterbatch etc. and many pigments consist partly or entirely of nanoparticles. Thus, nano-sized pigments are

exempted. Although clear evidence-based conclusions of the safety of nano-pigments cannot be drawn[56].

Pigments impart colour by selective absorption and scattering of light. Paint pigments consist of particles of individual crystals up to aggregates of multiple crystals[57]. It is generally more efficient to use pigments with smaller particles than larger ones to obtain the same colour.

Polymer dispersions

Polymer dispersions are also exempted from the requirement. The European Commission's report[58] to accompany the second Regulatory Review on Nanomaterials from 2012[59] states that solid nanomaterials in the dispersant in a liquid phase (colloid) are to be considered nanomaterials in accordance with the European Commission's recommendation. Nano emulsions consist of liquid nano-objects suspended in a liquid phase and are therefore not covered by the definition as the term particle as defined in the Commission Recommendation is intended to cover only solid nano-objects.

4.8 Dyes and pigments

The requirements in this chapter relate to the dyeing of yarn and fibres by the product manufacturers and their suppliers.

O28 Metal complex dyes

Metal complex dyes are only permitted for the dyeing of wool, wool blend fibres, polyamide and polyamide/regenerated cellulose blend fibres.

Emissions to water from treatment must not exceed:

- 5 mg/kg fibre for copper (Cu)*
- 3 mg/kg fibre for chromium (Cr)
- 5 mg/kg fibre for nickel (Ni)

Emissions of Cu and Ni are to be analysed in line with ISO 8288 and emissions of Cr are to be analysed in line with EN 1233 or equivalent methods. The requirements for analysis laboratory are stated in Appendix 3.

* Metal complex dyes based on copper that make up a maximum of 5% by weight of the dye is also accepted.

✉ Declaration from the dyehouse where metal complex dyes are used and test reports showing fulfilment of the requirement on emission from wastewater treatment. For Metal complex dyes based on copper also documentation (e.g., safety data sheets or declaration) for max. 5 wt% copper in the dye can be used. Appendix 8 can be used.

[56] Hynes J, Novotný T, Nic M, Kocurkova L, Prichystalová R, Brzicová T, Bernatikova S (2018) Literature study on the uses and risks of nanomaterials as pigments in the European Union. European Chemicals Agency.
[57] Coatings Handbook; Thomas Brock, Michael Groteklaes, Peter Mischke; 2000.
[58] European Commission, COMMISSION STAFF WORKING PAPER, Types and uses of nanomaterials, including safety aspects, Accompanying the [..] second regulatory review of nanomaterials, SWD(2012) 288 final.
[59] Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee, Second Regulatory Review on Nanomaterials, COM(2012) 572 final

Background to requirement

The use of metal complex dyes is only permitted for the dyeing of wool, wool blends, polyamide and polyamide/regenerated cellulose blend fibres, but with the requirement for low concentrations after treatment. It is difficult to avoid the use of metal complex dyes for these materials, particularly when striving for dark colours, and according to the industry they cannot be replaced with other dyes[60]. Metal complex dyes are problematic because they contain toxic heavy metals. There is therefore also a requirement that if metal complex dyes are used, the effluent must be treated. The required test method is ISO 17294-2. It is, however, possible to document the requirement via methods that are equivalent to ISO 17294-2.

Because of its high fixation ratio and colour fastness, copper in metal complex dyes is acceptable in small quantities (max. 5 weight% in the dye) as an alternative to testing emissions in wastewater.

O29 Azo dyes

Azo dyes that may release any of the aromatic amines stated in the table below must not be used.

Azo dyes	CAS no.
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
p-chloraniline	106-47-8
2,4-diaminoanisole	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’-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
4-aminoazobenzene	60-09-3
o-anisidine	90-04-0
2,4-xylidine	95-68-1
2,6-xylidine	87-62-7

Azo dyes are to be analysed in line with EN 14362-1 and EN 14362-3. The requirements for analysis laboratory are stated in Appendix 3.

✉ Declaration from the dye manufacturer that these dyes are not used and/or a test report showing fulfilment of the requirement. Appendix 8 can be used.

[60] The EU Ecolabel’s background document for Textile, 2007

Background to requirement

The use of azo dyes that release various amines is prohibited in the EU under Directive 2002/61/EC but may still be used outside the EU. The amines released from azo dyes may be carcinogenic, allergenic, irritating, and toxic. The German labelling scheme for carpets, GUT, as well as a ban in place against these azo dyes.

O30 Allergenic dyes

The allergenic dyes listed in the table below must not be used.

Generic Name	CAS no.
Disperse Blue 1	2475-45-8
Disperse Blue 3	2475-46-9
Disperse Blue 7	3179-90-6
Disperse Blue 26	3860-63-7
Disperse Blue 35	12222-75-2
Disperse Blue 102	12222-97-8
Disperse Blue 106	12223-01-7
Disperse Blue 124	61951-51-7
Disperse Brown 1	23355-64-8
Disperse Orange 1	2581-69-3
Disperse Orange 3	730-40-5
Disperse Orange 37	12223-33-5
Disperse Orange 76	
Disperse Orange 149	85136-74-9
Disperse Red 1	2872-52-8
Disperse Red 11	2872-48-2
Disperse Red 17	3179-89-3
Disperse Yellow 1	119-15-3
Disperse Yellow 3	2832-40-8
Disperse Yellow 9	6373-73-5
Disperse Yellow 23	6250-23-3
Disperse Yellow 39	12236-29-2
Disperse Yellow 49	54824-37-2

✉ Declaration from the dyeworks that these dyes are not used and/or a test report showing fulfilment of the requirement. Appendix 8 can be used.

Background to requirement

Allergenic dyes are prohibited by GUT, and the criteria for the Nordic Ecolabelling of Textiles prohibits dyes classified as allergens (H334 and/or H317). A floor covering such as carpet has a major effect on the indoor climate, and it is therefore important to ensure that allergenic dyes are not used.

4.9 Energy and water consumption

O31 Energy consumption for Nordic Swan Ecolabelled product

Products with backing of other materials than textiles must fulfil requirement O31.

Other products must fulfil either requirement O31 or O32.

Energy consumption is calculated as an annual average.

Only the energy used in the final manufacturing of the product shall be included in the energy consumption calculation.

For energy, the chosen unit is kWh/m2, but this can be converted as follows: 1 kWh = 3.6 MJ.

An energy calculation is to be made, and the total must amount to at least:

$$E = \frac{A}{20} + (5 - \frac{B}{3}) + (5 - \frac{C}{7})$$

E shall be at least 8.5.

The following applies for the individual energy components:

Environmental parameters	Requirement/limit value
A = Proportion of renewable fuel* (%)	—
B = Electricity consumption (kWh/m^2)	Maximum 15 kWh/m^2
C = Fuel consumption (kWh/m^2)	Maximum 35 kWh/m^2

Energy consumption relates to electricity purchased from an external supplier.

If the manufacturer has surplus energy and sells this in the form of electricity, steam or heat, the amount sold is deducted from the fuel consumption figure. Only fuel that is actually consumed in the manufacture of the products is to be included in the calculation.

The energy content of different fuels can be found in Appendix 9.

** Purchases of green electricity do not count as renewable fuel.*

☒ Enclose the calculation of E as set out above.

☒ State which types of fuel have been used in the manufacture of the product over the past year, and which fuels are renewable. State how much electricity has been used and how much product (m^2) has been produced over the past year. Appendix 10 can be used.

Background to requirement

The energy requirement comprises two parts. One part contains requirements/limit values for the use of electricity and fuel. The other sets out a certain sum total that must be achieved in the energy formula. The energy requirement promotes low energy consumption in terms of electricity and fuel, plus a high proportion of renewable fuels. The formulation provides a certain amount of flexibility for the product manufacturer. If the preconditions for reducing electricity consumption are poor, it is possible to prioritise initiatives for low fuel consumption instead. The proportion of renewable fuel affects the total energy outcome just as much as electricity and fuel consumption. A low proportion of renewable energy can thus to some extent be compensated for through low overall energy consumption.

Renewable fuel is defined as non-fossil fuels. Peat is not considered to be renewable. With regard to electricity, no account is taken of how the electricity is produced, or whether it carries an ecolabel or traceability label. It is only the number of kilowatt hours that affects the outcome.

The formula is designed such that a maximum total “E” is achieved as follows:

$$E = \frac{A}{20} + (5 - \frac{B}{3}) + (5 - \frac{C}{7})$$

Each term/subcomponent may be a maximum of 5. The figure 5 is not actually important. The important thing is that each subcomponent contributes equally to the total E, making them all equally significant. The less energy used during manufacture, the higher the figure achieved within each set of brackets. In the same way, a high proportion of renewable fuel contributes a term that is close to 5. This means that the lower energy consumption and the higher the proportion of renewable fuel, the higher the sum total E.

Specific requirements concerning maximum electricity consumption and maximum fuel consumption are set out, expressed in kWh per square metre manufactured product. If energy consumption amounts to the maximum (15 kWh/m2), the term/subcomponent will be zero and contribute nothing to the sum total E. The maximum fuel consumption is set at 35 kWh/m2. If 35 kWh fuel is used to produce one square metre of product, the contribution from the last term will, by analogy, also be zero.

For energy, Nordic Ecolabelling has chosen the unit kWh/m2, but this can be converted to MJ/m2 (1 kWh = 3.6 MJ). Appendix 9 of the criteria document lists the heating values, i.e., energy content, of different fuels. A licence applicant may also use its own specific fuel values.

O32 Implementation of BAT for energy and water consumption

Either requirement O31 or O32 must be fulfilled.

The applicant shall demonstrate that the energy used for e.g., washing, drying, bleaching, and curing associated with dyeing, printing and finishing the product is measured and compared with BAT levels or own figures from before implementing efficiency techniques.

This shall be done as a part of an energy management system or a system for the management of CO2 emissions. The requirement may be documented per process.

The applicant shall demonstrate that the water consumption associated with wet processes such as dyeing, printing, and finishing the product is measured.

There shall also be documentation for that the production facilities have implemented a minimum of BAT water and energy efficiency techniques or measures for in-house production of solar energy, see the table and the extra information about BAT themes below. This applies to the total production volume for the individual production facility.

BAT themes	Production volume	
	<10 tonnes per day	>10 tonnes per day
1. General energy management	Two techniques	Three techniques
2. Washing and rinsing	One technique	Two techniques
3. Drying and curing using stretchers	One technique	Two techniques

BAT themes
General techniques • Measuring how much is consumed and where • Process monitoring and automatic control systems for flow control, filling volumes, temperatures, and timings • Insulating pipes, valves, and flanges • Frequency-controlled electric motors and pumps • Closed design of machines to reduce evaporation losses • Reuse of water and liquids in batch processes • Combining multiple wet treatments into one process • Heat recovery, e.g., from washing, steam condensate, exhaust air from processes, exhaust gases from combustion • Solar thermal panels, solar photovoltaic panels, or a heat recovery system for used hot water, installed within the operation, and generating energy amounting to 30% of what the process requires
Washing and rinsing • Using cooling water as process water • Replacing overflow tanks with drainage/inlet tanks • Using “intelligent” rinsing technologies with water flow control and counter flow • Installing a heat exchanger
Drying and curing using stretchers • Optimising air circulation • Insulating the premises • Installing effective burner systems • Installing heat recovery systems

☒ The applicant must compile and submit reports from energy management systems for the individual dyeing, printing, and finishing facilities. ISO 50001 or equivalent systems for energy management or management of CO2 emissions are accepted as documentation of the energy management system.

☒ The applicant must compile and submit measurements of water consumption for the individual dyeing, printing, and finishing facilities.

☒ The applicant must submit an overview of the dyeing, printing, and finishing facilities, stating the production volume per day for each process.

☒ For each implementation of a BAT technique or process using solar energy produced in-house, the applicant must submit images of the facility, technical descriptions of the individual technologies and assessments of the energy savings achieved, along with a statement of the process and operation in which the technology has been implemented.

Background to requirement

The individual production facility must implement a minimum of BAT techniques for water and energy efficiency. BAT techniques are taken from the Reference Document on Best Available Techniques for the Textiles Industry, European Commission July 2003[61] and compared with the requirements for BAT techniques in the EU Ecolabel criteria for textile products from 2014.

[61] Reference Document on Best Available Techniques for the Textiles Industry, European Commission July 2003.

4.10 Quality

O33 Emissions from the product

Products with backing of other materials than textiles must fulfil requirement O33. Other products must fulfil either requirement O33 or O34.

The product is to be tested in accordance with ISO 16000-3/-6/-9/-10 or an equivalent method. Sampling is to be carried out by an accredited third-party.

Emissions from Nordic Swan Ecolabelled product shall not exceed the levels in the table below.

Substances or groups of substances	Limit value after 28 days in µg/m3 *
TVOC (C6-C16)	160
SVOC (C16-C23)	30
Formaldehyde	30

* *Conversion between µg/m²h and µg/m³, plus requirements for analysis laboratory described in Appendix 3.*

Other analysis methods can be accepted if they are judged to be equivalent by an independent and competent body.

✉ Analysis report showing that the limits in the table above are met. It should be clearly stated which test standard that is used, which laboratory that has performed the analysis and that the laboratory is accredited by an independent third party, see Appendix 3. A valid certificate from relevant indoor climate labels can also be used as documentation if an independent expert confirms that the label fulfils the requirements.

Background to requirement

The requirement ensures a minimum of selected emissions from the product. Such a requirement on emissions provides a security for the end user. This requirement may be important for manufacturers who want to have a high profile on health, particularly for vulnerable consumer groups as asthmatics, allergy sufferers and children.

Requirements emission limit values are based on the consideration of other well-known labelling systems and indoor environmental labels (GUT, Blaue Angel, EU Ecolabel, M1), as well as other input.

The decline in the use of VOCs has led to increased use of SVOCs.

The requirement sets a limit for TVOC and not individual VOCs. The main reason for this is that common international limits for individual VOCs do not exist. There is an ongoing effort to develop international levels, LCI values (LCI = Lowest Concentration of Interest), but no time frame has been set for the conclusion of the task. The next revision of the criteria may consider changing emission requirement to be more in line with EU recommendations on setting requirements for individual VOCs via LCI values if the values have been internationally standardized. Such an approach will better ensure that levels of harmful VOCs is strictly enough.

Nordic Ecolabelling has chosen not to set requirements for ammonia and odour. It is only the M1 scheme that tests for ammonia. Also, BREEAM NOR does not require ammonia test if the manufacturer of the construction product confirms that ammonia is not relevant in the product nor that the product does contain

substances that may cleave to ammonia. Odour is tested in the M1, DIM and GUT schemes. As of today, odour tests are not directly comparable according to Eurofins[62]. However, standard ISO 16000-28 is dealing with odour testing. It may thus be relevant in the next revision to consider expanding the requirement with an odour limit value if odour tests have become more comparable.

O34 Formaldehyde emissions from the product

Products with backing of other materials than textiles must fulfil requirement O33. Other products must fulfil either requirement O33 or O34.

The amount of free and partly hydrolysable formaldehyde in the final product shall not exceed 16 ppm.

Test method: The content of formaldehyde shall be tested in accordance with standard EN ISO 14184-1.

✉ Test report showing that the requirement is fulfilled or a certificate from Oeko-Tex 100 class I Baby or GOTS can also be used as documentation.

Background to requirement

Formaldehyde is classified as hazardous to health, due to being carcinogenic and irritating to the eyes, throat, and skin. Formaldehyde residues in textiles can often originate from finishing with anti-crease agents. A certificate for Oeko-Tex 100 class I Baby (>16 mg/kg) and for GOTS (>16 mg/kg) may be used as documentation, even though Oeko-Tex uses the test standard Japanese Law 112. Oeko-Tex, GOTS and the EU-Ecolabel accept higher formaldehyde emissions for certain types of textiles. The EU-Ecolabel has a requirement level of max. 16 ppm for products aimed at children under 3 years old and products in direct contact with the skin. For garments with limited skin contact and home furnishings, the EU-Ecolabel has a limit of max. 75 ppm. Oeko-Tex 100 has requirement levels of 16, 75, 150 and 300 ppm, depending on the exposure scenario.

O35 Cleaning quality

Wall-to-wall products are to be tested for cleaning in accordance with the standard INSTA 800 Appendix D1, Method A Carpet Tester or Method B STEPP Tester, and BM Dust Detector. The results shall meet the requirements for dust level 5 as given in Table D.1 of INSTA 800.

Prior to testing, the floor shall have a dust index of 0.0 before being smudged with a test smudge. See Appendix 3 for complete requirements for testing.

✉ Test report showing that the requirement is fulfilled.

Background to requirement

The requirement has been set to ensure that the product can be cleaned thoroughly, in order to ensure a good indoor climate. INSTA 800 is a Scandinavian standard/system for assessing the cleaning quality in a room. The cleaning quality is checked by measuring both before and after cleaning. INSTA 800 measurements include dust deposits in the carpet before and after vacuuming. the measurements are then converted into a dust index that ranges from 1 to 5, with 5 being the best possible result.

The standard can also be used on new carpets assuming that there are set reference levels explaining how the carpet shall be contaminated before testing is

[62] Correspondence with Eurofins, November 2013.

performed. In Appendix 3 of the criteria a reference level of 30% dust index is set before cleaning test is carried out. How carpets shall be contaminated before testing is also specified. This in order to assure reproductible measurements / tests. Sampling and evaluation should be based on the measurements described in D.1 to INSTA 800.

O36 Durability

Products with backing of other materials than textiles must fulfil requirement O36. Other products must fulfil either requirement O36 or O37-O41.

The product must achieve at least the following classes, see also table below:

- User class 33 for products intended for professional/public use.
- User class 22+ for other products intended for private use.

The product is to be tested and classified in accordance with the standards EN 14041 and EN ISO 10874.

The product is to be classified in accordance with EN 1307 (textile flooring with pile), alternatively EN 15114 (textile flooring without pile) or EN 1470 (needle-pile carpets).

If the flooring has been tested according to a test method other than what is specified above, this may be acceptable if the test methods are comparable in the opinion of an independent third party.

Area of use	Class of use	Intensity of use
Private use/Domestic	21	Moderate/light
	22	General/average
	22+	General
	23	Hard
Professional/public use/offices and commercial premises	31	Moderate
	32	General
	33	Hard
	34	Very hard

The requirements for testing institutes are stated in Appendix 3.

✉ Test report from an independent testing institute that the requirement is fulfilled.

Background to requirement

The durability of the product has a major impact on resource consumption and the service life of the product. It is in principle impossible to put an exact figure on the service life of a specific material, since the service life depends on a number of disparate factors. There is also no unequivocal definition of how worn a product has to be for its service life to be declared at an end. In doorways, aisles, at the bottom of stairs and at a workstation, the material wears many times faster than in a corner where no foot traffic occurs, for example.

A basic rule is that durability should be adapted to the environment in which the product is intended to be used. The product should have generally good wear resistance, since the use of rooms in the home may change over the lifetime of the product. There are currently testing methods and product standards harmonised across Europe. Product manufacturers place their products in different usage classes with the help of the various testing methods. The usage classes give the user a quick overview of the product's durability and suitability for different

environments. The usage classes are divided into Domestic, Commercial and Light Industrial, with 3-4 intensity levels in each class.

The durability requirement is specific, with class 22+ for domestic and class 33 for commercial premises and differentiates between private and public environments.

O37 Dimensional changes during washing and drying

Either requirement O36 or O37-O41 must be fulfilled.

The requirement does not apply to products that is not intended for removal and washing or products with backing of materials other than textile fibres.

Dimensional changes after washing and drying shall not exceed:

- ± 2% for woven products of wool blend and synthetic fibres
- ± 3% for woven products not covered by the categories above.
- ± 5% for knitwear products

Test method:

The tests should be carried out in accordance with EN ISO 6330 "Textiles – Domestic washing and drying procedures for textile testing", combined with ISO 5077 "Textiles – Determination of dimensional change in washing and drying".

For professional textiles intended for industrial laundry, the standard ISO 15797 Textiles – "Industrial washing and finishing procedures for testing of workwear", combined with EN ISO 5077.

✉ Test report showing that the requirement is fulfilled.

Background to requirement

The requirement has been set to ensure the high quality of the Nordic Swan Ecolabelled product.

O38 Colour fastness to light

Either requirement O36 or O37-O41 must be fulfilled.

The requirement does not apply to white products.

Colour fastness to light must be tested according to EN ISO 105 B02 or equivalent and meet level 5.

Level 4 is permitted if the product is both lightly dyed (standard depth <1/12 in accordance with 105 A06) and consists of blends with more than 20% wool or other keratin fibres, or of blends with more than 20% linen or other bast fibres.

✉ Test report showing that the requirement is fulfilled.

Background to requirement

The requirement has been set in order to ensure that a dyed or printed products can resist colour changes (fading) due to the influence of light, so that the product retains its desired colour over a long period of time. The requirement thus helps to ensure that the textile has a long life.

Fade resistance expresses how quickly the colour disappears under the influence of light. A high degree of fade resistance is desirable, and this can primarily be achieved by using the appropriate choice of dye, while the actual dyeing process also has an influence. The requirement refers to the EN ISO 105 B02 standard: "Textiles – Testing of colour fastness – Part B02: Colour fastness to artificial

light: xenon blue as light source". The artificial light represents daylight. In the standard ISO 105 B02 the scale goes from 1-8 where 8 is best. Oeko-Tex 100 do not set requirements to colour fastness to light.

The requirement does not apply to white products.

O39 Colour fastness to wash and dry cleaning

Either requirement O36 or O37-O41 must be fulfilled.

The requirement does not apply to white products, products that are neither dyed nor printed or products that is not intended for removal and washing or dry cleaning.

Colour fastness to either wash or dry cleaning shall meet the following conditions as a minimum:

- For colour change: level 3-4
- For discolouration: level 3-4

Test method for wash: The tests shall be performed in accordance with ISO 105 C06 (a single wash at the temperature stated on the product), or equivalent.

Test method for dry cleaning: The test must be carried out in accordance with ISO 105 D01

✉ Test report showing that the requirement is fulfilled.

Background to requirement

The requirement is set to ensure high quality and long lifetime for the products. The requirement includes products that according to the care label can be washed or dry cleaned. The requirement therefore refers to both the standard ISO 105 D01 and ISO 105 C06. The level is 3-4, as the Nordic Ecolabelling experience that a mandatory requirement of 3-4 for all coloured textiles is a strict requirement. The GOTS standard also tests according to ISO 105-C06 and sets the same requirements level for textiles according to care label can be washed.

The Oeko-Tex 100 standard tests to ISO 105-E01. ISO 105 Part E01 describes methods for determining how resistant the colour is to all forms of exposure to water, but not washing.

O40 Colour fastness to rubbing (wet)

Either requirement O36 or O37-O41 must be fulfilled.

The requirement does not apply to white products or products that are neither dyed nor printed.

Colour fastness to wet rubbing shall be at least level 3-4.

Test method: Tests shall be performed in accordance with ISO 105 X12 or equivalent.

✉ Test report showing that the requirement is fulfilled.

Background to requirement

The requirement has been set to ensure that the dye is well fixed in the product. If the colour fastness to wet rubbing is good, the other characteristics, such as wash resistance and durability, will automatically also be good, since wet rubbing in accordance with ISO 105 X12 is a standardised method of checking the fixing of the dye on the product. The scale is described in ISO 105-A03.

This requirement is relevant in relation to the textile's durability, and to ensure that the dye does not cause cross-staining when the product is used. A GOTS or Oeko-Tex certificate cannot be used as documentation of the requirement, as these schemes have lower levels.

O41 Colour fastness to rubbing (dry)

Either requirement O36 or O37-O41 must be fulfilled.

The requirement does not apply to white products or products that are neither dyed nor printed.

Colour fastness to dry rubbing shall be at least level 4.

Test method: Tests shall be performed in accordance with ISO 105 X12 or equivalent.

✉ Test report showing that the requirement is fulfilled.

Background to requirement

The requirement has been set to ensure that the dye is well fixed in the product. If the colour fastness to dry rubbing is good, the other characteristics, such as wash resistance and durability, will automatically also be good, since dry rubbing in accordance with ISO 105 X12 is a standardised method of checking the fixing of the dye on the product. The requirement refers to EN ISO 105-X12 "Textiles – Testing of colour fastness – Part X12: Colour fastness to rubbing". The scale is described in ISO 105-A03.

EURATEX (the European Apparel and Textile Confederation) also recommends level 4. Oeko-Tex 100 sets the same requirements for colour fastness to dry rubbing.

4.11 Product information

O42 Product information for wall-to-wall products

The following product information is to be enclosed with the Nordic Swan Ecolabelled wall-to-wall product:

- Recommended cleaning method including cleaning products. If there are suitable Nordic Swan Ecolabelled cleaning products, these are to be recommended.
- The product's areas of use are to be stated. See classes in requirement O36.
- If product is to be glued to the subfloor: Which adhesive is recommended. If there are suitable Nordic Swan Ecolabelled adhesives, these are to be recommended. Recommended methods for laying the wall-to-wall product are also to be provided.

✉ Enclose a copy of the product information given to customers.

Background

The requirement is set to give the customer information and good opportunities to keep the product in good condition for a long time.

5 Licence maintenance

The purpose of the licence maintenance is to ensure that fundamental quality assurance is dealt with appropriately.

O43 Customer complaints

The licensee must guarantee that the quality of the Nordic Swan Ecolabelled product or service does not deteriorate during the validity period of the licence. Therefore, the licensee must keep an archive over customer complaints.

Note that the original routine must be in one Nordic language or in English.

✉ Upload your company's routine for handling and archiving customer complaints.

Background

Nordic Ecolabelling requires that your company has implemented a customer complaint handling system. To document your company's customer complaint handling, you must upload your company's routine describing these activities. The routine should be dated and signed and will normally be part of your company's quality management system.

If your company does not have a routine for customer complaint handling, it is possible to upload a description of how your company perform these activities. During the on-site visit, Nordic Ecolabelling will check that the customer complaint handling is implemented in your company as described. The customer complaints archive will also be checked during the visit.

O44 Traceability

The licensee must be able to trace the Nordic Swan Ecolabelled products in the production. A manufactured / sold product should be able to trace back to the occasion (time and date) and the location (specific factory) and, in relevant cases, also which machine / production line where it was produced. In addition, it should be possible to connect the product with the actual raw material used.

You can upload your company's routine or a description of the actions to ensure traceability in your company.

✉ Please upload your routine or a description.

Background

Nordic Ecolabelling requires that your company has implemented a traceability system. To document your company's product traceability, you must upload your company's routine describing these activities. The routine should be dated and signed and will normally be part of your company's quality management system.

If your company does not have a routine for product traceability, it is possible to upload a description of how your company perform these activities. During the on-site visit, Nordic Ecolabelling will check that the product traceability is implemented in your company as described.

Criteria version history

Nordic Ecolabelling adopted version 1.1 of the criteria for Textile floor coverings and carpets on March 22, 2023. The criteria are valid until 1 May 2026.

Nordic Ecolabelling decided on January 7, 2025, to prolong the validity of the criteria until October 31, 2026. The new version is called 1.1.