

About Nordic Swan Ecolabelled **Furniture and fitments**



Version 5.0 • date – date

Consultation proposal

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This document is a translation of an original in Norwegian. In case of dispute, the original document should be taken as authoritative.

Addresses

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:

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1 Environmental impact of furniture and fitments

The main environmental impact of furniture relates to the materials used to make the furniture, such as wood, plastic, metal and textiles^{1,2,3}. Relevant environmental impacts are linked to resource use, energy consumption and carbon footprint, biodiversity and chemicals of concern. The environmental impacts during production of the actual furniture are linked to emissions of substances that are harmful to health and the environment in connection with processing the materials, gluing and surface treatment processes, and production and packaging waste. Apart from the actual materials and production process, including chemicals that are used in the furniture, there are other aspects that have effects on the environmental impact. Good quality and a longer product life have direct positive effects on the environmental impact and protect society from exposure to adverse environmental conditions related to production of new furniture. Ensuring there is possible to recycle the furniture at the end of its useful life also minimises negative impacts on the environment when the product has become worn out.

The environmental impacts related to materials, production, energy and carbon, the use phase and circular economy are described in more detail in Chapters 1.1 to 1.5. These chapters describe the relevant environmental aspects related to furniture and fitments. Chapter 1.6 addresses the potential for improvements and the extent to which Nordic Ecolabelling can promote this. These three aspects (Relevance, Potential and Steerability (RPS)) are the fundamental tool in Nordic Ecolabelling's criteria development processes to determine what requirements to impose.

1.1 Materials

As explained above, the environmental impact of furniture is greatly affected by the materials used to produce it. The materials and additives themselves have varying environmental properties, e.g. how they are produced, energy consumption during production and what substances they contain. The materials will also affect which environmental impacts occur during the production of the actual item of furniture (e.g. emissions from lacquering/varnishing), the performance of the furniture during use (e.g. emissions from adhesives and varnish) and problems that furniture creates as waste. The choice of materials therefore affects the environmental impacts at all the life-cycle stages of the furniture.

Depending on the design and type of furniture, the amount of different materials and the quantity of materials in furniture can vary greatly. The technical report from the revision of the EU Ecolabel criteria for furniture¹ shows that wood is the most common material in furniture (56%), followed by metal (12%) and plastics (6%). This is much in line with the figures given in the background document for Version 4 of the Nordic Swan Ecolabel's criteria for furniture, which are based on the figures from the Swedish furniture industry; 70% wood materials, 15%

¹ Shane Donatello, Hans Moons and Oliver Wolf (JRC): Revision of EU Ecolabel criteria for furniture products, final technical report, 2017

² Shane Donatello, Miguel Gama Caldas, Oliver Wolf Revision of the EU Green Public Procurement (GPP) criteria for Furniture, 2017, technical report final version

³ Background document, Version 4 Furniture and fitments, Nordic Ecolabelling 2011

padding materials (mostly polyurethane foam and polyester), 10% metals and 5% other materials (plastics, textiles, glass, etc.). This varies considerably, however, from untreated wood furniture, which can consist almost entirely of solid wood, to complex upholstered furniture and office chairs which can consist of multiple different materials.

Each material can minimise negative environmental impacts in the production process, but it is also relevant to match the environmental impact of different materials against one another. Various factors will also determine a choice of material, depending on the type of furniture being produced. For example, while a shelf can be made of 100% wood, a height adjustable desk has to contain metal in order for it to function as intended. It can be difficult therefore to look at the environmental impacts related to materials without looking at the intended use and purpose of the furniture. Nevertheless, it is possible to make some general considerations about material choices.

An in-depth review carried out through studies and life cycle analyses during the previous revision for furniture shows the following general findings⁴:

- Wood has the lowest environmental impact compared with other materials such as plastic, steel and concrete.
- The total energy consumption (energy consumed in all processes associated with the production of the product) of wood is low compared with plastic and metal. The reason for this is that plastic and metal production are energy-intensive processes.
- The total energy consumed in the production of wood products is closely related to the energy expended in drying the wood.
- The incineration of wood for energy production can be regarded as CO₂ neutral.
- The use of other materials (even in small quantities) in the production of wooden furniture (such as metals, plastics, glue, varnish etc.) dramatically increases the environmental impact of furniture.

The Danish Environmental Protection Agency has published a study that looks at the environmental impact of wood and wooden furniture from an LCA perspective⁵. This study confirms the conclusions drawn above and also notes that the environmental impact of furniture can be reduced significantly if production waste and materials are recycled and/or incinerated to produce energy.

A study of different materials conducted by Bath University⁶ shows that metal (aluminium, steel and stainless steel) is more energy and carbon intensive than renewable raw materials like wood, HPL and MDF. Compared with other materials, aluminium's footprint is very large, but stainless steel and steel have a smaller footprint than plastic. The study also shows that energy consumption and carbon emissions vary depending on the type of plastic. Several studies show

⁴ Nordic Ecolabelling's background document for Version 4 of the criteria for furniture and fitments, 2011

⁵ The Danish Environmental Protection Agency, 2001.
<http://www.mst.dk/Udgivelser/Publikationer/2001/11/87-7944-909-3.htm>

⁶ Prof. Geoff Hammond & Craig Jones, Inventory of Carbon & Energy (ICE), Version 2.0. Sustainable Energy Research Team (SERT). Department of Mechanical Engineering. University of Bath, UK, 2011

that using recycled materials, especially metal and plastic, significantly reduces adverse impacts on the environment^{6,7,8}.

Since materials and the chemicals they contain greatly affect the environmental impact of an item of furniture, it is relevant for Nordic Ecolabelling to examine which requirements can be imposed on the production of the constituent materials in the product, chemicals used and requirements that promote the use of renewable and/or recycled materials.

The main materials most commonly used in the manufacture of furniture are wood and wood-based materials, plastic, metal, padding materials and textiles. A short description of the environmental impacts of each is given here.

Wood and wood-based materials

Wood and wood-based materials, like panels, have a high content of renewable materials. That is positive from an environmental perspective, but it is important to ensure that wood raw materials are sourced in a sustainable way. The many benefits that sustainably managed forests deliver to society include wood for materials and energy, protection against global warming, homes and livelihoods for local communities and indigenous peoples, support of biodiversity and protection of water and soil from pollution and erosion. Recycled materials can be used to minimise adverse environmental effects related to the extraction of virgin raw materials.

Chemicals, e.g. adhesives, are also used in the production of wood-based panels (including paper-based panels and boards). Surface treatment using varnishes or paints is also a relevant environmental aspect. Using chemicals with a low content of substances that are harmful to health and the environment will affect the environmental impact during production and during product use e.g. emissions.

Metal

The production of metal, including mining, is associated with significant environmental impacts relating to raw material extraction, large quantities of waste, energy consumption and emissions from production.⁹ Ethical issues such as child labour and working conditions may also present challenges.

The use of recycled materials reduces environmental impacts significantly in all areas.¹⁰ The surface treatment of metal uses numerous chemicals associated with adverse health and environmental effects and therefore also has significant

⁷ Shane Donatello, Hans Moons and Oliver Wolf (JRC): Revision of EU Ecolabel criteria for furniture products, final technical report, 2017

⁸ 13 SHAHZAD AHMAD * et al. ISSN: 2250–3676, INTERNATIONAL JOURNAL OF ENGINEERING SCIENCE & ADVANCED TECHNOLOGY Volume-2, Issue-4, 871 – 875, IJESAT, July-Aug 2012

⁹ 12 Environmental challenges of anthropogenic metals flows and cycles. van der Voet, E., Salminen, R., Eckelman, M., Norgate, T., Mudd, G., Hisschier, R., ... de Koning, A.. Environmental challenges of anthropogenic metals flows and cycles. United Nations Environment Programme. 2013

¹⁰ 13 SHAHZAD AHMAD * et al. ISSN: 2250–3676, INTERNATIONAL JOURNAL OF ENGINEERING SCIENCE & ADVANCED TECHNOLOGY Volume-2, Issue-4, 871 – 875, IJESAT, July-Aug 2012

environmental impacts.¹¹ The process also produces emissions and hazardous waste that must be managed and disposed of in the proper way.

Plastic

Plastics may be fossil-based or bio-based. The plastics used in furniture today are mainly fossil-based. Environmental impacts relating to extraction of fossil raw materials are therefore relevant for plastic as a material. Chemicals which may be harmful to health and the environment are added during the manufacture of plastic to give it different properties. Additives may include antioxidants, flame retardants and plasticisers such as phthalates. Dyes and colourants may also be added. The Danish Environmental Protection Agency has conducted an inventory of chemical substance use within the Danish plastics industry. Of the 1,300 chemical substances, 300 have been identified as chemicals of potential concern due to their effects on the environment and/or health.¹²

Padding materials

The term “padding materials” is used to describe a number of different materials, for example, polyurethane (PUR) foam and latex. These are the most commonly used padding materials today. Polyester or padding made of renewable materials, such as down and feathers, are also used. Production of PUR foam may present potential health and safety hazards due to the use of isocyanates which are classified as CMR (Carcinogenic, Mutagenic and Reprotoxic) and/or allergenic. Padding materials can also produce emissions of VOCs, formaldehyde and other harmful substances. The use of chemicals such as antibacterial additives or flame retardants that are classified as harmful to health and the environment is also relevant to padding materials. The use of natural filling materials may present ethical issues relating to animal welfare.

Textiles

The textile industry is one of the world’s largest industries and also one of its most polluting and resource-consuming industries. The LCA-study “Advancing life cycle assessment of textile products to include textile chemicals”, which includes the environmental impacts of chemicals, states that the greatest environmental impact from textiles is associated with the actual production of the textile. The main impacts come from the use and discharge of hazardous chemicals and the use of water and energy during the textile production process¹³. The Swedish Chemicals Agency has identified 2,450 different chemicals that are used during the textile production process. Of these, 1,150 are identified as hazardous and 368 are functional chemicals, such as dyes, hydrophobic finishing and antibacterial finishing chemicals. These chemicals are incorporated into textiles and may therefore pose a possible risk to users and the environment during the use phase.

Fibre production is also associated with significant environmental challenges. Huge amounts of water are required for all cotton farming and conventional

¹¹ Shane Donatello, Hans Moons and Oliver Wolf (JRC): Revision of EU Ecolabel criteria for furniture products, final technical report, 2017

¹² “Øget videnberedskab om kemiske stoffer i plastindustrien” (Mapping of chemical substances in the Danish Plastics Industry), Working report from the Danish Environmental Protection Agency, No. 5 2008

¹³ Advancing life cycle assessment of textile products to include textile chemicals, CHALMERS UNIVERSITY OF TECHNOLOGY 2016

cotton production involves high inputs of chemicals. Environmental impacts and carbon footprint are the same for synthetic fibres as for plastics, since they are based on fossil resources and energy is required to produce polymers. Use of recovered and recycled material will reduce the negative environmental impacts of fibre production. Textile wet processes (bleaching, dyeing and finishing) are often a particularly heavy burden on the environment as they involve a high consumption of water, chemicals and often energy.

1.2 Production

The environmental impacts during production of the actual furniture are largely linked to emissions of substances that are harmful to health and the environment in connection with processing the materials (e.g. sanding of wood), gluing and surface treatment processes, and production and packaging waste. In the case of wood-based waste, the energy is generally used for heating the production facilities. Textile waste, padding materials and packaging can account for large amounts of waste produced by furniture manufacturers. However, an analysis conducted by Statistics Norway (SSB)¹⁴ of waste from different industries shows that the furniture industry has relatively little waste compared with other industries. Large volumes of the waste are recycled.

1.3 Energy and carbon

All stages of the life cycle involve energy, including greenhouse gas emissions. Since the composition of materials in furniture/fitments varies so much, it is also difficult to draw general conclusions. However, it can generally be said, that the primary production of metals, plastic materials, wood-based panels and the production of raw materials for certain types of adhesive are particularly energy-intensive processes. The energy consumed by furniture manufacturers is less than the energy consumed in the production of the constituent materials, and transport also has a smaller impact. In particular, the significance of energy consumption relating to transport and raw materials varies. For furniture with a relatively high content of metals and plastics, the greatest energy consumption relates to the production of the raw materials¹⁵. Less than 5% relates to transport. The energy intensity of the materials has greater significance than the energy consumed in transport and production. A life cycle assessment of an item of wooden furniture, by comparison, shows that the energy used to transport raw materials and distribute the furniture accounts for approximately 10% of the energy consumed over the life of the furniture.

There are a number of ways to reduce energy consumption and carbon emissions linked to furniture and fitments. Use of renewable and recycled materials helps reduce energy and carbon footprints. When using renewable raw materials, it is important that they come from sustainable sources. This is important for biological diversity and the climate. Wood raw materials should not be taken from areas that are needed to counter climate change. Recovering and reusing some types of materials, such as aluminium (Al), will greatly help reduce carbon

¹⁴ <https://www.ssb.no/322374/avfall-fra-industrien.naeringer.1000-tonn>

¹⁵ Background document Version 4, Nordic Ecolabelling

footprints¹⁶. Conscious choice of design and materials is therefore also a parameter that impacts this.

Focusing on good quality to extend useful life and on design that allows for reuse and replacement of materials will also have a positive impact on energy use and carbon emissions. Obviously, the furniture manufacturer also has opportunities to reduce energy consumption and be environmentally conscious when choosing energy sources and work on reducing transport and improving the efficiency of vehicles in and out of the factory. However, the greatest impact of the finished furniture on energy consumption and carbon emissions is the production of the constituent materials.

1.4 Environmental impact during use

The environmental impact of furniture during use is first and foremost an indoor climate problem. A long useful life is also important. See Chapter 1.5 for details. Wooden surfaces, varnishes, glue, textiles, etc. may release various substances, such as formaldehyde and volatile organic compounds that may cause discomfort or harm the health of sensitive individuals. Here too, the choice of materials and input factors will influence the emissions that are produced and the potential problems they create.

1.5 Circular economy

Besides production and materials, other aspects also have effects on the environmental impact. From a circular economy perspective, it is important to look at the design of the furniture in relation to the potential for reuse and replacement of parts, sorting the different materials for recycling at end-of-life, as well as quality and useful life. A longer useful life has direct positive effects on the environmental impact and protects society from exposure to adverse environmental conditions related to production of new furniture. Good quality furniture and fitments can be used for many years. Use of chemicals is a factor more indirectly related to the circular economy. For example, it is not appropriate to use or recycle materials that contain substances that are harmful to health or the environment.

1.6 What requirements can Nordic Ecolabelling make?

As explained above, Nordic Ecolabelling uses the term Relevance, Potential and Steerability (RPS) to assess what types of products to develop environmental criteria for and what specific requirements to impose. The possibility for Nordic Ecolabelling of imposing requirements for the different parameters that affect the environmental impact of an item of furniture/fitment varies. The potential and steerability for key areas as materials, energy and carbon, chemicals, circular economy are described below.

Materials

Forestry has a significant bearing on the environmental impacts of wood-based products, and it is important that the renewable raw materials are extracted in a sustainable way in order to reduce the environmental impacts resulting from the

¹⁶ Prof. Geoff Hammond & Craig Jones, Inventory of Carbon & Energy (ICE), Version 2.0. Sustainable Energy Research Team (SERT). Department of Mechanical Engineering. University of Bath, UK, 2011

cultivation of the raw materials. On this field there is sustainable forestry certification schemes, such as FSC and PEFC with their Chain of Custody systems that Nordic Ecolabelling can lean on. However, it is more difficult to impose requirements for the extraction of raw materials for metal and plastic production, even if this life cycle stage is important to the environmental impact. For example, there are considerable environmental pressures tied to the extraction of bauxite for aluminium production. There are currently no good certification and traceability systems in place for mining. Other ways to reduce the impact of plastics and metals on the environment is to use recycled raw materials and this is where Nordic Ecolabelling can set requirements. Recycled raw materials can also be used in the wood industry to reduce negative environmental impacts.

Chemicals

Nordic Ecolabelling has good experience of setting requirements for chemicals in the production of materials and products. Nordic Ecolabelling generally focuses on restricting the use of chemicals that are harmful to health and the environment as much as possible. Our experience, both in this product group and in other relevant product groups, including floors, construction panels, chemical building products (adhesives, putties, exterior paints and similar products) and interior paints, lacquers and varnishes, shows that Nordic Ecolabelling can set requirements that prohibit and restrict a variety of harmful substances. Nordic Ecolabelling can also set requirements for emissions of substances that are harmful to health. This will mainly be related to the use phase of the furniture. For this, Nordic Ecolabelling can base requirements on standards for measurement of emissions and criteria for emissions.

Energy and carbon

It is difficult to set energy and carbon requirements for the actual production of many of the materials. In order to identify the best production processes, it is necessary to have a comprehensive database of primary data from the specific process, which Nordic Ecolabelling does not have for many materials at this time. This is particularly applicable to production of metal and plastic. Indirectly, however, requirements are imposed on energy consumed in for example the production of metals and plastics by requiring the use of recycled materials. Nordic Ecolabelling imposes absolute requirements on energy consumption in the production of wood-based panels and paper-based panels, such as HPL. This has been made possible by the availability of data in connection with the development of criteria for construction panels. The criteria place several indirect environmental requirements, such as sustainable extraction of wood raw materials and a ban on the use of tree species which grow in areas that are important for countering climate change. Quality standards that guarantee long life and requirements for e.g. replacement parts are also indirect climate requirements.

Because the amount of energy used in the actual production of the furniture (composition of the product) is small compared with production of the constituent materials, Nordic Ecolabelling has chosen not to set requirements here as there is limited potential for making a difference. Transport also accounts for a small proportion of the energy used related to production of furniture, and it is therefore also less relevant to set requirements for this. Moreover, Nordic

Ecolabelling has extremely limited means of controlling and influencing transport.

Circular economy

Circular economy has been one of the areas of focus in this revision. Good quality is important and can contribute to the long useful life of products. This is where Nordic Ecolabelling can set criteria for compliance with quality standards. In this context, it is important to point out that the term “useful life” is a relative concept. A UK study¹⁷ shows that the typical useful life of office furniture in the UK is 9-12 years, but that the furniture is actually designed and produced for a much longer useful life. Although Nordic Ecolabelling is not able to influence consumer behaviour, it can promote a long lifespan for furniture by ensuring they have a good quality. Furthermore, requirements can be set for other circular processes, e.g. to promote design that allows for recycling and access to replacement parts, offering significant potential to reduce waste and extend the service life of furniture.

Nordic Ecolabelling knows of several projects and enterprises that work with various circular economy business models for the furniture industry. These include for instance renovation of old furniture and leasing of office furniture. In these criteria, Nordic Ecolabelling focuses on the product itself, while circular economy business models are service businesses. They are therefore not covered by these criteria. Under certain conditions, however, it is possible to use reused materials in a Nordic Swan Ecolabelled item of furniture. For example, it is not appropriate to recycle materials that contain substances that are harmful to health or the environment.

1.7 UN’s Sustainable Development Goals

On an overall level the Nordic Swan Ecolabel contributes to goal 12, “Ensure sustainable consumption and production patterns”. The Nordic Swan Ecolabel strives to reduce the environmental impact of production and consumption. This ensures sustainable production, control of the supply chain and provides end users with sustainable products. Nordic Swan Ecolabelled products are manufactured all over the world. Wherever the Nordic Swan Ecolabelled product is made, the strict environmental requirements for production go beyond legislation. This promotes more environmentally-friendly production methods – in developing countries too.

The criteria for furniture and fitments contribute to goal 12 by setting:

- Requirements for certified, sustainable wood raw materials and traceability, energy requirements for wood-based panels and requirements for use of recycled metals and plastics that contribute to the sustainable management and efficient use of natural resources.
- Quality standards, user information requirements, warranties as well as designs aimed at long useful life and which enable furniture parts to be replaced also contribute to optimum utilisation of resources.

¹⁷ Bartlett, 2009. "Reuse of office furniture – incorporation into the 'Quick Wins' criteria: A study of the market potential for reused and remanufactured office furniture in the UK".

- Restrictions on chemicals that are harmful to health and the environment, which are present in the constituent materials and are used in the manufacture of furniture and fitments, reduce the spread of substances of concern and promote the potential of material reuse in the future.
- Restrictions on chemicals that are harmful to health and the environment and requirements for emissions for padding and other relevant materials also contribute to a healthy indoor climate.

Even if Nordic Ecolabelling mainly contributes to goal 12, target 3.9 is also mentioned here. Target 3.9 addresses the reduction of harmful effects caused by chemicals and the reduction of pollution and contamination. Comprehensive and demanding criteria for chemicals, e.g. a ban on chemicals that are classified as harmful to the environment, carcinogenic, mutagenic and toxic for reproduction, requirements for zero emissions from metal coating processes, and other requirements governing emissions from the constituent materials and chemicals, for example VOC emissions from adhesives and in padding materials contribute to this.

2 Justification of the requirements

This chapter presents proposals for new and revised requirements, and explains the background to the requirements, the chosen requirement levels and any changes since Version 4.

2.1 Product group definition

Furniture, fitments and doors for indoor use can be awarded the Nordic Swan Ecolabel.

The term furniture refers to seating (chairs, sofas, etc.), furniture for sleeping (beds, sofa beds, mattresses, etc.) and storage furniture (cupboards, bookshelves, etc.) and desks/tables. Fitments include

- kitchen and bathroom fittings (including shower walls)
- countertops
- wardrobes, including coat racks/hat shelves and similar
- boards and partitions, e.g. in an office space (freestanding or fixed), including soundproof fabric-wrapped walls/panels (acoustic panels for walls/ceilings must be labelled in accordance with the criteria for the Nordic Swan Ecolabelling of construction panels)

Applications may also be made for product systems, e.g. kitchen and wardrobe solutions of which there are numerous variations.

The products must consist of materials that are included in the criteria. Materials encompassed by the criteria are solid wood (including bamboo, willow and cork), wood-based and paper-based panels, laminate, metal, plastic/rubber, padding materials (like latex foam, polyurethane foam, down and feathers), paper, linoleum, glass, agglomerated stone, textiles, hide and leather, and materials for soundproofing.

Relevant products in addition to those specified above may be included in the product group upon request if they can be considered to be furniture/fitment products. This applies only to products made of materials for which requirements are imposed in the criteria. Nordic Ecolabelling will determine which new products may be included in the product group.

What may not be Nordic Swan Ecolabelled

Products not primarily intended for use as furniture/fitments may not be Nordic Swan Ecolabelled. The following are examples of products that may not be Nordic Swan Ecolabelled under the criteria for furniture:

- Building products (e.g. walls, stairs, mouldings, windows, floors, construction panels)
- Sanitary ware, such as toilets, shower cabins, baths and washbasins
- Lamps
- Bathroom accessories, such as soap dispensers, paper towel holders, towel racks, toilet paper holders and similar
- Office supplies, including rubbish bins
- Furniture intended for outdoor use
- Carpets, cushions* and textiles
- Toys (products that fall within the scope of the Directive 2009/48/EC on the safety of toys)
- Mirror glass that is not part of another piece of furniture/fitment
- Aids, such as raised toilet seats, armrests, backrests and similar
- Interior items, such as picture frames, candlesticks and hooks

** Cushions and pillows must be labelled in accordance with the criteria for textiles. However, pillows can be ecolabelled under the criteria for furniture and fitments if they are a part of an overall furniture licence, for example together with beds or sofas, and if the padding material is of the same type and is a type for which requirements are imposed in the criteria.*

Separate criteria exist for outdoor furniture, floors, construction panels, windows, textiles and toys and can be obtained by contacting one of the secretariats or downloaded from one of our websites.

Nordic Ecolabelling determines whether a product can be labelled. If there is any doubt about which criteria a product may be ecolabelled under, Nordic Ecolabelling determines the licence application criteria for the product.

The entire product must be approved for it to be marketed as Nordic Swan Ecolabelled. For example, a bed can only be marketed as Nordic Swan Ecolabelled if both the mattress, frame and headboard are covered by the licence, and for a kitchen to be marketed as a kitchen, the licence must include at least a countertop. Otherwise, the parts must be marketed as kitchen fixtures.

Background to the product group definition

The product group definition has been changed and clarified. More examples of what is meant by furniture and fitments have been given, and a list has been drawn up of what is not eligible for the Nordic Swan Ecolabel, as fitments is a term that does not have a distinct definition. This has been done to minimise

discussion and uncertainty about what can be labelled. However, this is not an exhaustive list. If there is uncertainty about whether a product is eligible to bear the label or not, Nordic Ecolabelling determines whether a licence application can be made for the product and which criteria document can serve for the application.

The product group has been extended to include whiteboards and blackboards. Interest has been shown for this, and they are made of materials for which requirements are imposed in the criteria. There is also relevant quality testing.

It is specified that countertops may now be Nordic Swan Ecolabelled under the criteria for furniture, in addition to the criteria for construction panels. The criteria for furniture and construction panels will not be exactly alike as they were not revised at the same time. However, following changes in this revision, the requirements are more similar in the two criteria, e.g. energy requirements for production of panels. As the criteria for furniture/fitments have now been revised, the requirements in these criteria will naturally be the most up-to-date in some areas.

Lamps are no longer eligible to bear the Nordic Swan Ecolabel. The reasons being that it is felt that a more comprehensive set of requirements is needed for wires and for energy and light efficiency. As there is little interest in acquiring the Nordic Swan Ecolabel for lamps, this has not been prioritised in this revision.

The criteria for furniture have also been extended to include more materials; paper, down and feathers, and other renewable raw materials as residual products used as padding materials. Nordic Ecolabelling generally approves of the use of renewable raw materials. Nordic Ecolabelling also wants to extend the criteria with agglomerated stone and natural stone. These are materials that are chiefly used in the manufacture of countertops and these materials have become increasingly popular in recent years. Agglomerated stone and natural stone are materials included in EU Ecolabel's work on revised criteria for hard coverings and the requirements will be based mainly on these. However, Nordic Ecolabelling has proposed stricter requirements for the working environment than what is included in the draft new requirements in the EU Ecolabel¹⁸.

Nordic Ecolabelling wants to emphasise that if there is interest in extending the list of materials, this might be possible. Several parameters will be used to evaluate any further materials. These include interest in and use of the material in question, the circular profile and environmental impact of the material, and what opportunities Nordic Ecolabelling has to produce a good set of requirements for the material. Nordic Ecolabelling determines which materials are to be included in the criteria.

It has also been specified in the product group definition that the labelled product must contain materials encompassed by the criteria. The product must not contain more than 5% by weight of materials for which requirements are not specified. The previous limit was 10% by weight in total, with a 5% by weight limit for some materials. In other words, requirements have been raised to the same level as in the EU's Ecolabel Criteria for furniture. Materials encompassed by the criteria are solid wood (including bamboo, willow and cork), wood-based

¹⁸ https://susproc.jrc.ec.europa.eu/Hard_coverings/documents.html

and paper-based panels, laminate, metal, plastic/rubber, padding materials (latex foam, polyurethane foam, down and feathers), paper, linoleum, glass, engineered stone, textiles, hide and leather, and materials for soundproofing.

Experience of the product group has shown that the use of the Nordic Swan Ecolabel/logo in marketing of products can lead to misunderstanding. The regulations for marketing for this product group are the same as for other product groups in Nordic Ecolabelling. Nevertheless, it should be noted that the Nordic Swan Ecolabel/logo must only be used in connection with a product that is covered by a valid licence. It must be made particularly clear that the Nordic Swan Ecolabel/logo cannot be used in connection with a product if only parts of the product are Nordic Swan Ecolabelled. For example, if a Nordic Swan Ecolabelled mattress is displayed with a bed and headboard that are not Nordic Swan Ecolabelled, the Nordic Swan Ecolabel may not be shown unless it is clearly stated that only the mattress is Nordic Swan Ecolabelled. Or for example, kitchens that are assembled in numerous variations, including many different types of countertops. The Nordic Swan Ecolabel/logo must not be used unless all the kitchen components are covered by a licence. A kitchen may only be marketed as a kitchen if the manufacturer's licence includes at least a countertop, otherwise the products must be marketed as kitchen fixtures.

2.2 Definitions

ADt	Air dry tonne (ADt) is dry solid content of pulp and paper. ADt for pulp is 90%, while ADt for paper means a solid content of 94%.
COD	Chemical oxygen demand. A measurement of the quantity of oxygen that is consumed during the chemical breakdown of organic material.
Ingoing substances in chemical products	All substances in the chemical product, including additives (e.g. preservatives and stabilisers) in the raw materials. Substances known to be released from ingoing substances (e.g. formaldehyde, arylamine, in-situ generated preservatives) are also considered as ingoing substances.
Impurities in chemical products	<p>Residuals, pollutants, contaminants etc. from production, incl. production of raw materials that remain in the raw material or in chemical product in concentrations less than 100 ppm (0,0100 w-%, 100 mg/kg) in the chemical product.</p> <p>Impurities in the raw materials exceeding concentrations of 1,0 % / 0,10 % are always regarded as ingoing substances, regardless of the concentration in the chemical product.</p> <p>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.</p>

Recycled material	Recycled material is defined according to ISO 14021 in the categories of pre-consumer and post-consumer and includes both mechanical and chemical recycling.
Pre-consumer recycled material	<p>“Pre-consumer” is defined as material that is reclaimed from the waste stream during a manufacturing process. Production waste (scrap, rework, regrind) that can be returned directly to the same process in which it was generated is not counted as recycled pre-consumer material.</p> <p>Nordic Ecolabelling defines rework, regrind or scrap, that cannot be reused directly in the same process, but requires a reprocessing (e.g. sorting, reclamation and granulation) before it can be reused, to be pre-consumer material. This is regardless of whether it is produced in-house or externally.</p>
Post-consumer recycled material	“Post-consumer” 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.
Recovered/recycled fibre	Defined according to ISO 14021. Includes both mechanical and chemical recycling.
Nanomaterial	A nanomaterial is a natural, incidental or purposely manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for 50% or more of the particles in number or size distribution, one or more external dimensions is in the size range 1–100 nm.
Organic	Fibre (such as cotton and wool) that is certified as organic or is in transition to organic in compliance with a standard endorsed by 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. The Global Organic Textile Standard (GOTS) and the Demeter Biodynamic Farm Standard are also accepted and are certified as “in transition to organic production”. The certification body must have a valid and recognised accreditation for the standard it certifies against, for example, ISO 17065, NOP or IFOAM.

2.3 Product and material composition

Table 1 provides an overview of the requirements that must be met for the various parts/materials in an item of furniture and states who must document the requirements.

When manufacturing many kinds of products with different compositions, the materials used in the products can be approved according to a specific list of materials. Material compositions must meet the requirements specified in the criteria and compliance with all requirements must be ensured for each product.

If materials that are licensed in accordance with other criteria set by Nordic Ecolabelling are used, for example, textiles or construction panels, it is not necessary to document the individual requirements that cover this. The name of the product, manufacturer and licence number must be stated.

In the case of kitchen fitments/bathroom fitments, requirements are not set for parts that are not a fixed feature. This applies to optional products, such as knobs, handles, drawer fittings, hangers, rods and so on.

Table 1: Overview of the requirements

Material	Level	Requirement	Relevant	Who should document?
Product description and production process	General	O1	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer
Percentage of renewable / recycled / recycled material in the product	General	O2	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer and subcontractors
PVC	General	O3	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer
Quality requirements and surface resistance	General	O4-O5	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer
Product Requirements - Circular Economy	General	O6-O8	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer
Biocides in transport	General	O9	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer
Standby energy consumption - electronic furniture	General	O10	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer
Lamps as part of a piece of furniture	General	O11	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer
Chemicals	General A number of these requirements also apply to the production of constituent materials. The requirements are then stated again under the respective chapter for the material in question.	O12-O18	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer/subcontractor/chemical manufacturer. The requirements apply to chemicals added to the product or used in the production / composition of the finished furniture at the production site of the furniture or at the subcontractor if this is not done by the furniture manufacturer himself.
Solid wood, willow, bamboo and cork	General	O19-O20	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer or supplier
	More than 10% by weight	O21	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer and supplier
Wood-based panels	General (more than 5 % by weight)	O22-O29	Yes <input type="checkbox"/> No <input type="checkbox"/>	Supplier - manufacturer of wood-based panels and chemical manufacturer / supplier
	More than 10% by weight	O30-O31	Yes <input type="checkbox"/> No <input type="checkbox"/>	Supplier - manufacturer of wood-based panels

Paper	General (more than 5 % by weight)	O32-O40	Yes <input type="checkbox"/> No <input type="checkbox"/>	Supplier – Pulp and paper manufacturer and Chemical manufacturer / supplier
Laminate	General	O41-O47	Yes <input type="checkbox"/> No <input type="checkbox"/>	Supplier - laminate manufacturer and chemical manufacturer / supplier
	More than 10% by weight	O48	Yes <input type="checkbox"/> No <input type="checkbox"/>	Supplier - laminate manufacturer
	More than 30% by weight	O49-O51	Yes <input type="checkbox"/> No <input type="checkbox"/>	Supplier - manufacturer of kraft paper
Surface treatment of wood, wood-based panels and laminate	General	O52-O57	Yes <input type="checkbox"/> No <input type="checkbox"/>	Supplier of surface treatment and manufacturer / supplier of chemicals for surface treatment
	More than 5% by weight	O58-O60	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer, supplier of surface treatment and supplier of chemicals for surface treatment
Metal	General	O61	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer and supplier of surface treatment
	Surface treatment - metallization	O62	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer and supplier of surface treatment
	Other surface treatment	O63-O69	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer, supplier of surface treatment, supplier of chemicals for surface treatment
	More than 30% by weight - Recycled metal	O70	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer and suppliers of metal
Plastic and rubber	General	O71-O73	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer or supplier of plastic / rubber
	Chemicals	O74-080	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer and supplier / manufacturer of plastic / rubber. Chemical manufacturer / supplier.
	More than 10% by weight – Recycled plastic	O81	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer and supplier of recycled plastics
Textile	General	O82-O85	Yes <input type="checkbox"/> No <input type="checkbox"/>	Textile manufacturer and suppliers for this
	Exterior covers on e.g. mattresses, chairs, sofas - chemical requirements and fiber requirements	O86-O97	Yes <input type="checkbox"/> No <input type="checkbox"/>	Textile manufacturer and chemical manufacturer / supplier
	Quality requirements seating furniture	O98-O104	Yes <input type="checkbox"/> No <input type="checkbox"/>	Textile Manufacturer / Supplier
	Other textile parts	O105-O110	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer or textile manufacturer
Padding materials	Materials	O111-115	Yes <input type="checkbox"/> No <input type="checkbox"/>	Supplier or manufacturer of the relevant padding material
	Chemicals	O116-117	Yes <input type="checkbox"/> No <input type="checkbox"/>	Manufacturer of padding material
	Emissions	O118-O119	Yes <input type="checkbox"/> No <input type="checkbox"/>	Manufacturer of padding material
Leather and hide	General	O120-O122	Yes <input type="checkbox"/> No <input type="checkbox"/>	Manufacturer of leather / hide
	Exterior cover of furniture	O123-O126	Yes <input type="checkbox"/> No <input type="checkbox"/>	Manufacturer of leather / hide and chemical manufacturer / supplier
	Quality requirements	O127-O130	Yes <input type="checkbox"/> No <input type="checkbox"/>	Manufacturer of leather / hide
Sound absorption materials	Fiber products such as e.g. polyester must meet the relevant requirements in the chapter for padding materials or textiles		Yes <input type="checkbox"/> No <input type="checkbox"/>	
	Mineral raw materials, more than 5% by weight	O131	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer

Glass	Glass	O132-O133	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer and manufacturer / supplier of glass
Linoleum	More than 5% by weight	O134	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer
Natural stone and agglomerated stone	General	O135 + EUs requirement in hard coverings	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer and manufacturer of natural stone / agglomerated stone
Other requirements	Regulatory requirements	O136-O142	Yes <input type="checkbox"/> No <input type="checkbox"/>	Furniture manufacturer

O1 Description of product and production process

Applicants must provide the following information about the product and the production process:

- The type of furniture it is, including information about which market the product is intended for (like home, public, office or several markets)
- Description of the composition of the furniture/fitment into different materials and small parts. Small parts include screws, bolts, plugs, brackets, buttons, zips, etc.
- Drawing/picture of the product
- Suppliers of the various materials
- Weight (kg) of the separate materials with the following exception:
 - Small parts do not need to be weighed.
 - The weight calculation does not need to include the electric motor in height adjustable desks and adjustable beds
- Description e.g. a flowchart, of the production process, including which subcontractors perform which stages of the process, e.g. the surface treatment of wood or metal.
- The furniture/fitments must be made of materials for which requirements are imposed in the criteria.
- Materials for which requirements are not imposed may not account for more than 5% by weight.

Detailed description of the points above. Product data sheets can be sent in as part of the documentation. Use a flowchart to describe the production process.

Background to requirements

The material composition and production processes of an item of furniture provide important information for determining whether the furniture is eligible for the Nordic Swan Ecolabel, the requirements that must be met by the furniture, and who (e.g. subcontractors) must document the requirements.

2.4 Product requirements

Nordic Ecolabelling sets a number of principal requirements for products relating to the materials contained in the furniture/fitment, quality, consumer information and circular economy related requirements, such as warranties.

2.4.1 Materials

There are two principal requirements for materials in furniture/fitments. A ban on the use of PVC and the requirement that the product must include a certain content of renewable, recycled and/or reused materials. It should be noted that

more requirements for product materials are set later on in the document. See the respective chapter for the different types of materials. There are also requirements for chemicals in the recycled material and/or traceability.

O2 Renewable and/or recycled and/or reused materials in the product

- Office chairs must contain a minimum of 50% renewable, recycled* and/or reused** materials by weight.
- Other products must contain a minimum of 70% renewable, recycled and/or reused materials by weight.

Mattresses are exempt from the requirement.

Calculation of the content of renewable/recycled/reused material:

- a) Small parts such as screws, bolts, plugs, brackets, buttons, zips etc. are exempt from the requirement to be weighed and must not be included in the calculation of weight.
- b) For wood-based panels and paper-based panels, the entire panel is classed as renewable even if it contains glue.
- c) Textiles are classed as renewable/recycled if at least 75% of the textile fibres are renewable (e.g. cotton, wool, flax)/recycled.
- d) For metals, the smelter must declare the percentage of recycled materials used in production. An annual average for the smelter is accepted. The supply chain must be stated and there must be traceability all through the supply chain, from the smelter to the finished product, so that the percentage of recycled materials is guaranteed along the entire supply chain. Information about recycled materials must be shown on the invoice or be documented with a declaration from the supplier about the percentage of recycled materials.

The supplier can confirm the percentage of recycled materials in its products by providing an overview of the quantity of recycled materials purchased and the quantity sold. There must be an agreement between the supplier and the manufacturer of the Nordic Ecolabelled production that the recycled material is sold to the Nordic Ecolabelled production.
- e) For plastics, manufacturers of recycled raw materials must be stated. Description and documentation from manufacturers of recycled raw materials showing that the plastic is recycled in compliance with the requirement's definition or has Global Recycled Standard certification showing that the raw materials are recycled or EuCertPlast certification, or other equivalent certification approved by Nordic Ecolabelling.
- f) The requirement for other recycled materials, e.g. textiles or padding materials, is a description of the materials and documentation showing that the materials are recycled in compliance with the definition given in ISO14021, e.g. traceability and specification of source or Global Recycled Standard certification.
- g) For synthetic textile fibres the recycled plastic must not originate from facilities that are EFSA*** or FDA**** approved, or are marketed as compliant with these.

**recycled material is defined according to ISO 14021 in the categories of pre-consumer and post-consumer, see definitions for details.*

***Reused material is defined as material that is used again in a new product without further processing, e.g. direct reutilisation of a part made of solid wood or plastic. It does not refer to second-hand furniture.*

****EFSA: in compliance with the European Commission Regulation (EC) No. 282/2008 of 27 March 2008 on recycled plastic materials and articles intended to come into contact with foods.*

*****FDA: in compliance with Code of Federal Regulations Title 21: Food and Drugs, PART 177—INDIRECT FOOD ADDITIVES: POLYMERS*

Description of which materials are renewable and/or recycled and/or reused and their quantities.

Metals:

1. The percentage of recycled metal in the metal part must be stated.
2. A declaration from the smelter of the percentage of recycled metal used in its production (on an annual basis).
3. Supply chain traceability must be documented, e.g. as a flowchart. The percentage of recycled metal in the supply chain must be documented, e.g. with information on the invoice or a declaration from the supplier. The percentage of recycled content for Al can be documented with the certification Hydro Circal.

Plastics:

1. Manufacturers of recycled raw materials must be stated.
2. Documentation from manufacturers of recycled raw materials showing that the plastic has been recycled in compliance with the definition of the requirement.

or

1. certification in compliance with Global Recycled Standard, EuCertPlast or other equivalent certification approved by Nordic Ecolabelling showing that the raw material has been recycled.

Other recycled materials:

1. Documentation showing that the material has been recycled in compliance with ISO14021.
2. Recycled synthetic textile fibres: A declaration from manufacturers of recycled raw materials stating that the raw material is not EFSA or FDA approved.

Background

The environmental impacts of furniture and fitments, as described in Chapter 1, depend to a large extent on the constituent materials, and the use of renewable and recycled materials minimises environmental effects. Nordic Ecolabelling therefore sets a general requirement that the furniture/fitment must contain a minimum of 70% renewable raw materials and/or recycled and/or reused materials by weight. The requirement for office chairs is 50% by weight. Nordic Ecolabelling hopes that this will encourage manufacturers to make smart choices of materials for their products that help reduce the adverse impacts of the product on the environment and also promote a circular economy approach.

Furniture and fitments is a product group made up of many different types of products serving different purposes and needs. To some extent, this narrows the options for choice of types of materials that can be used. For instance, a table or shelf can be made of 100% renewable material (wood) but can also be made of 100% metal. A wooden shelf automatically meets the requirement while recycled

materials must be used for a metal shelf. In the case of products that are made up of several materials, such as an office chair or a desk with height adjustability, non-renewable materials, like plastic and/or metal, must be used. Nordic Ecolabelling has limited opportunity to set criteria for extraction of metal and fossil raw materials. But by setting criteria for recycled content in products, Nordic Ecolabelling can promote labelling of products with less impact on the environment and climate change. It should be noted that there are also requirements for the content of recycled metal and plastic later on in this document. The requirements must be met if the product contains more than 30% metal by weight and more than 10% plastic by weight. In some cases, this means that the overall requirement O2 regulates the content of recycled metal and plastic in the product, while in other cases, this is regulated by the respective requirements for recycled metal and plastic.

The requirements set the limits at 50% for office chairs and 70% for other products. The composition of modern office chairs is often complex with multiple small parts and different types of materials, e.g. an office chair could contain steel, Al and different types of plastics. This complicates the options and there will also be requirements for quality, which can pose a challenge, especially in the case of plastic. The requirement set in Version 4 concerning the percentage of recycled plastic content was changed during the life of the criteria as it was very hard to find recycled plastic of good enough quality for those products. With the limit set at 50% by weight for office chairs, a large amount of the plastic and metal content will still have to be recycled.

It is emphasised that the whole of the wood-based panel is to be included in the calculation of recycled/renewable content, i.e. the adhesive in the panel must not be excluded from the calculation. This makes the calculation less complicated and it is not necessary to obtain detailed information about the exact amount of adhesive in the panel from subcontractors. Textiles are classed as renewable/recycled if at least 75% of the textile fibre in the textiles is renewable/recycled.

Mattresses are exempt from the calculation. Mattresses contain a lot of padding materials. Today, the most common padding materials used in mattresses are non-renewable. It is also difficult to use recycled padding materials that are guaranteed not to contain halogenated flame retardants. Mattresses can also contain some metal if there are springs in the mattress which can be made of recycled material. However, this does not apply to all mattresses. The textile fibres used in a mattress can be renewable but are often synthetic or a blend of renewable and synthetic. Nordic Ecolabelling has therefore decided to exempt mattresses from this requirement. Although mattresses are exempt, requirements for materials contained in mattresses will generally be strict, as requirements will also be set for fibres (e.g. cotton or polyester) contained in mattress covers. This will represent a significant tightening of current criteria, see Chapter 2.13 on textiles.

Nordic Ecolabelling is aware that the requirement may entail, for example, change of suppliers and/or modifications to the material composition of licensed products. Nordic Ecolabelling is also aware that the availability of recycled materials, traceability and quality, chiefly for metals and plastics, may present a challenge. However, Nordic Ecolabelling considers this to be an important requirement that will help reduce impacts on the environment and carbon

emissions from the production and consumption of furniture and fitments and foster smart material and design choices that will secure this. For further background information about recycled metals and plastics, see the respective chapter for metals and plastics later on in this document.

O3 PVC

The product must not contain* chlorinated polymers/plastics, such as PVC.

* *PVC used in power cables for height-adjustable tables and adjustable beds is exempt from the requirement.*

- A declaration from the manufacturer that the product does not contain PVC.

Background

The requirement that prohibits the use of halogenated polymers remains unchanged from the previous version of the criteria. But in order to make it clear that chlorinated plastics are prohibited, it is now a separate requirement and not part of a requirement for plastics. Power cables remain exempt and it is clearly stated that this exemption applies to power cables for height-adjustable tables and adjustable beds.

A ban on PVC is a requirement that Nordic Ecolabelling includes in many criteria. The environmental impact of PVC is associated primarily with waste management, the use of additives and dioxin emissions, for example in the manufacture and incineration of PVC. The mercury method is still used for the production of chlorine¹⁹. The latest membrane cell technology is considered to be the most environmentally-sound means of production, but the membranes are coated with PFAS and this represents a potential source of PFAS contamination to the environment²⁰. The stabilisers that are used in the production process may be based on lead, metal mixtures (such as barium-zinc and calcium-zinc), tin or cadmium. Plasticisers such as phthalates are frequently added to PVC and have adverse health and environmental effects. So-called imitation leather can be coated with plasticised PVC²¹.

2.4.2 Quality

O4 Performance properties

The requirement applies to seating, tables, beds, storage furniture, screen walls, acoustic panels and whiteboards and blackboards.

The product must meet the requirements of the relevant standard stated in the table below. Other relevant standards might be accepted if the testing institute is able to provide documentation to show that the chosen test is equivalent and will give approximately the same results.

Testing must be performed by an independent testing institute. More information on requirements for analysis laboratories/testing institute can be found in Appendix 1.

¹⁹ 4 Best Available Techniques (BAT), Reference Document for the Production of Chlor-alkali, 2014

²⁰ Chlorine and Building Materials: A Global Inventory of Production Technologies, Markets, and Pollution, Phase 1: Africa, The Americas, and Europe

²¹ The Danish Environmental Protection Agency, Green Tips for Furniture:

<https://mst.dk/kemi/kemikalier/saerligt-for-borgere-om-kemikalier/groenne-tips/hjemmet/moebler-uden-pvc-og-phthalater/> (downloaded 10 October 2019)

End-use environment	Type of furniture	Standards
Home environment	Seating	EN 12520:2015 Furniture - Strength, durability and safety - Requirements for domestic seating EN 1728:2012 Furniture - Seating - Test methods for the determination of strength and durability EN 1022:2018 Furniture - Seating - Determination of stability
	Tables	EN 12521:2015 Furniture - Strength, durability and safety - Requirements for domestic tables EN 1730:2012 Furniture - Tables - Test methods for the determination of stability, strength and durability
	Storage furniture, kitchens and bathrooms	EN 14749:2016 Furniture - Domestic and kitchen storage units and kitchen worktops - Safety requirements and test methods ISO 7170:2005 Furniture - Storage units - Determination of strength and durability EN 14072:2003 Glass in furniture (section 1.7) - Test methods
	Furniture for sleeping and mattresses	EN 1725:1998 Domestic furniture - Beds and mattresses - Safety requirements and test methods EN 1957:2012 Domestic furniture - Beds and mattresses - Test methods for the determination of functional characteristics and assessment criteria EN 1022:2018 Furniture - Seating - Determination of stability
	Bunk beds/high beds	EN 747-1:2012+A1:2015 Furniture - Bunk beds for domestic use - Part 1: Safety, strength and durability requirements EN 747-2:2012+A1:2015 Furniture - Bunk beds for domestic use - Part 2: Test methods
	Children's high chairs* (ages 6-36 months)	EN 14988:2017 Children's high chairs - Requirements and test methods. Part 1: safety requirements
Public setting	Seating	EN 16139:2013 Furniture - Strength, durability and safety - Requirements for non-domestic seating EN 1728:2012 Furniture - Seating - Test methods for the determination of strength and durability EN 1022:2018 Furniture - Seating - Determination of stability EN 1335-1:2000 Office furniture - Office work chair - Part 1: Dimensions - Determination of dimensions EN 1335-2:2018 Office furniture - Office work chair - Part 2: Safety requirements
	Tables	EN 15372:2016 Furniture - Strength, durability and safety - Requirements for non-domestic tables EN 1730:2012 Furniture - Tables - Test methods for the determination of stability, strength and durability
	Storage furniture	EN 16121:2013+A1:2017 Non-domestic storage furniture - Requirements for safety, strength, durability and stability
	Kitchen and bathroom	EN 14749:2016 Furniture - Domestic and kitchen storage units and kitchen worktops - Safety requirements and test methods
	Furniture for sleeping and mattresses	EN 1725:1998 Domestic furniture - Beds and mattresses - Safety requirements and test methods EN 1957:2012 Domestic furniture - Beds and mattresses - Test methods for the determination of functional characteristics and assessment criteria EN 1022:2018 Furniture - Seating - Determination of stability
	Bunk beds/high beds	EN 747-1:2012+A1:2015 Furniture - Bunk beds for domestic use - Part 1: Safety, strength and durability requirements EN 747-2:2012+A1:2015 Furniture - Bunk beds for domestic use - Part 2: Test methods
Schools/institutions	Chairs and tables for educational institutions	EN 1729-1:2015 Furniture - Chairs and tables for educational institutions - Part 1: Functional dimensions EN 1729-2:2012+A1:2015 Furniture - Chairs and tables for educational institutions - Part 2: Safety requirements and test methods

	Storage furniture	Must meet standards for non-domestic use: EN 16121:2013+A1:2017 Non-domestic storage furniture - Requirements for safety, strength, durability and stability
	Whiteboards, blackboards	EN 14434:2010: Writing boards for educational institutions - Ergonomic, technical and safety requirements and their test methods
Offices	Work chairs	EN 1335-2:2018 Office furniture - Office work chair - Part 2: Safety requirements EN 12529:1998 Castors and wheels - Castors for furniture - Castors for swivel chairs - Requirements
	Work tables (sitting)	EN 527-2:2016: Office furniture - Work tables - Part 2: Safety, strength and durability requirements
	Work tables (standing)	EN 527-2:2016: Office furniture - Work tables - Part 2: Safety, strength and durability requirements
	Storage furniture	EN 14073-2:2004 Office furniture - Cabinets and shelves - Part 2: Safety requirements EN 14073-3:2004 Office furniture - Cabinets and shelves - Part 3: Test methods for the determination of stability and strength of the structure EN 14074:2004 Office furniture - Tables and desks and storage furniture - Test methods for the determination of strength and durability of moving parts ISO 7170:2005 Furniture — Storage units — Determination of strength and durability
	Screens	EN 1023-2:2000 Screens - Part 2: Mechanical safety requirements
	Sound absorption	EN ISO 354:2003 Acoustics - Measurement of sound absorption in a reverberation room ISO 20189:2018: Acoustics — Screens, furniture and single objects intended for interior use — Rating of sound absorption and sound reduction of elements based on laboratory measurements EN ISO 11654:1997 Acoustics - Sound absorbers for use in buildings - Rating of sound absorption
	Table screens	Work table partitions EN 1023-2:2000 Screens - Part 2: Mechanical safety requirements
	Boards	EN 14334:2010 Writing boards for educational institutions - Ergonomic, technical and safety requirements and their test methods

**the requirements apply irrespective of whether the children's chairs are for domestic or non-domestic use.*

- Information stating what purpose/end use the furniture has been tested for and what standard and testing institute were used. A test report showing compliance with the requirement. A statement, where relevant, of how national standards relate to EN or ISO requirement levels.

Background

The requirement has been updated to refer to the most recently updated standards. It has also been extended to include requirements for sound absorbers, screens, table screens and boards for offices/schools. It is important that a Nordic Swan Ecolabelled product is of good quality and is safe to use. This is to contribute to a longer service life for the furniture.

O5 Wear resistance of surfaces

Surfaces that are varnished, painted or have a foil, melamine or laminate finish must meet the following requirements for wear resistance. The requirements do not apply to interior doors nor to surfaces that are untreated, are treated with soap, wax or oil, or are covered with linoleum.

Seating	Frame	Requirement level 1
	Seat, back and armrests	Requirement level 2
Storage units	Frame and internal surfaces, including drawer bottoms	Requirement level 1
	Exterior horizontal surfaces	Requirement level 2
Tables	Frame	Requirement level 1
	Tables	Requirement level 4
	Tabletops intended for use in high-traffic public settings (restaurants, cafés, schools, etc.)	Requirement level 5
Kitchen and bathroom fitments	Internal surfaces, including drawer bottoms, excluding shelves and bases	Requirement level 1
	External surfaces, shelves and bases	Requirement level 3
	Worktops	Requirement level 6

The following levels are referred to in the requirement:

Requirement category			Requirement levels					
Test		Test method	1	2	3	4	5	6
Water	1)	EN 12720:2009+A1:2013	6 h	16 h	16 h	24 h	24 h	24 h
Grease	1)	EN 12720:2009+A1:2013	24 h	24 h	24 h	24 h	24 h	24 h
Grease + scratches	1)	SS 83 91 22	-	-	-	24 h + 3 N	24 h + 5 N	24 h + 5 N
Scratches	2)	SS 83 91 17	-	3 N	3 N	3 N	5 N	5 N
	3)	or EN 15186, method A	-	1.5 N	1.5 N	1.5 N	3 N	3 N
Alcohol	1)	EN 12720:2009+A1:2013	-	-	-	1 h	1 h	1 h
Coffee	1)	EN 12720:2009+A1:2013	-	1 h*	1 h	1 h	1 h	1 h
Heat, dryness	1)	EN 12720:2009+A1:2013	-	-	-	70°C	70°C	180°C
Heat, moisture	1)	EN 12720:2009+A1:2013	-	-	-	-	-	85°C
Heat on edge	1)	NS 8061	-	-	-	-	-	85°C
Water on edge	1)	SS 83 91 20	-	-	1 h**	-	-	1 h
Sweat, acid and alkaline	1)	EN 12720:2009+A1:2013	-	1 h***	-	-	-	-

1) = A result of at least 4 is a pass score in the assessment.

2) = Maximum scratch width 0.5 mm. Penetration of the varnish layer is not acceptable.

3) = Maximum scratch width 0.3 mm

For laminates, requirements and tests in accordance with SS-EN 438-2, -3 are also accepted. It must then include clauses 10, 16, 20, 25 and 26 with the same liquids according to the table above and humid heat according to SS-EN 12721: 2009. For requirements category 1–5, level VGS is accepted. For requirement category 6 level HGS is required as well as testing of edge on finished panel.

For melamine coated panels, requirements and testing according to SS-EN 14322: 2017 with liquids as specified in the table above are also accepted.

* = Applies to storage units – external horizontal surfaces

** = Applies to doors and drawer fronts on kitchen and bathroom fitments

*** = *Applies to armrests on seating.*

- ☒ A test report showing that relevant requirement levels have been met. It must be clearly stated which method/standard was used, the laboratory that conducted the analysis, and that the analysis laboratory is an independent third party. Other analysis methods than those stated in the requirement may be used, provided that the correlation between test methods can be verified by an independent third party.

Background

The requirement was also included in the previous version of the criteria under performance properties and concerned the strength, safety and stability of the furniture and the durability (wear resistance) of the surface. To make the requirement more explicit, the requirement concerning the durability (wear resistance) of the surface has been made into a separate requirement and the term “surface resistance” is used instead. Surface resistance is the term used in the test standards referred to in the requirement and is also the term that Möbelfakta (the Swedish furniture industry’s reference and labelling system) uses. The different requirement levels are taken from the requirement specifications laid down by Möbelfakta. The intent of the requirement is to ensure that surfaces that are varnished or have a foil, melamine or laminate finish are of a high quality and have good wear resistance. Furniture with marks or scratches might otherwise be discarded before it is worn out.

The requirement has changed and now also includes requirements for seating frames, storage units and tables, and for all external horizontal surfaces on storage units, not just those that are <1,250 mm off the floor. A change has been made for kitchen and bathroom fitments so that the requirement applies to all external surfaces, not just horizontal surfaces. All these requirements exist already in Möbelfakta and are considered relevant for ensuring that all treated surfaces have adequate wear resistance.

The requirement has not been raised in any other respect. However, the following inaccuracies have been corrected with regard to which requirement levels are set and which tests should be performed:

- The previous version of the criteria required external surfaces, shelves and bases in storage units to meet requirement level 3. The only difference between requirement levels 2 and 3 is that level 3 must also meet requirements for testing edges of furniture in contact with water. This is only relevant for storage units used in kitchens and bathrooms. The requirement level for other storage units has therefore changed from 3 to 2.
- For requirement levels 5 and 6 in the previous version of the criteria it said the test for grease + scratches is 24 h + 3 N. It should say 24 h + 5 N.
- For requirement level 4 in the previous version of the criteria it said the test for scratches is 5 N. It should say 3 N.
- For requirement level 6, the test for edges of furniture in contact with water had been omitted. This requirement level is for kitchen and bathroom worktops where testing is relevant and it has therefore been added.

It has also been added that a scratch test can be performed using an alternative test method, EN 15186, and what the surface must withstand for each respective requirement level when using this method.

2.4.3 Other product requirements

06 Dismantling and separation

The furniture must be designed so that different components and constituent materials can be easily separated from each other with ordinary hand tools to simplify repair, renovation and recycling. For example, fabrics on seat furniture or exterior covers on mattresses should be easy to remove for changing or washing and a wooden table top should be easily detached from a metal base.

The requirement does not cover the constituent components inside a material, e.g. wood fibre and adhesives in construction panels, laminate and linoleum that are glued to a substrate.

- ☒ A declaration from the furniture manufacturer that the piece of furniture can be dismantled and a description of how constituent materials can be separated from one another.

Background

The requirement is new. However, a previous requirement stipulated that it must be possible to separate metal from other materials in furniture. Nordic Ecolabelling now wants to make the requirement that it must be possible to disassemble the furniture and to separate all the different types of constituent materials from one another without any difficulty. This is to enable easier repair and renovation of furniture and increase the likelihood of the constituent materials being recycled or reused because they can easily be dismantled. Repairing or renovating furniture instead of discarding it saves both material and energy, which are otherwise needed to produce a new piece of furniture to replace the old one. The manufacture of the materials used to make furniture is the most environmentally harmful phase of the life cycle.

This requirement does not apply to laminate and linoleum that are glued to a wood-based panel substrate. The reason for this exemption is that gluing is the only means of securing the material to the substrate. Nor does the requirement apply to a material's constituent components, e.g. wood fibre and adhesive in a wood-based panel.

07 Warranty

The product must have at least a 5-year warranty*. The warranty is valid from the date of product purchase and shall be communicated to the customer.

In addition, the following specific warranty requirements apply:

- Functional parts/moving parts such as drawer rails, hinges and wheels for kitchen, bathroom and wardrobe fittings shall have a warranty period of at least 25 years.

Please note that there is a separate requirement for fixed wardrobes for public spaces.

- Stools and fronts (cabinet doors and drawer fronts) for kitchens and bathrooms must have a warranty period of at least 10 years.
- Fixed furniture such as wardrobe solutions, cupboards and shelves for schools/kindergartens and other public spaces must have a warranty period of at least 10 years.

- Office furniture such as desks and office chairs must have a warranty period of at least 10 years. The warranty period for office chairs should apply for normal use (minimum 8 hours/day).
- Beds and mattresses must have a warranty period of at least 10 years for frame or spring breakage.
- Electric motor for height adjustable tables and beds must have a warranty period of at least 10 years.

** Warranty period means that if the product proves to be defective or not functioning under normal use, the manufacturer shall within a reasonable time provide a replacement product, repair or replace parts/materials that are missing or not functioning properly. Spare parts that are important for the function of the product must be offered within the warranty period of the product and/or the individual part.*

- ☒ Description of warranty times and how this is communicated to the customer.

Background

Furniture with a short useful life places a burden on the environment as it wears out quickly and needs replacing with new furniture. Nordic Ecolabelling therefore wishes to make a requirement that all Nordic Ecolabelled products have a warranty period to ensure that the product maintains a certain quality and promote circular thinking in production. There is an overall and general warranty requirement of 5 years for the entire product. In addition to this, specific warranty requirements are set for selected furniture types and parts. Websites to a number of different manufacturers has been investigated about warranty, and there is a relatively large difference in what kind of warranty that is given and their length. This varies both within the same furniture category and between different types of furniture. Nordic Ecolabelling has tried to set the level of requirements at a strict but achievable level based on the investigations that have been carried out. It is pointed out that warranty does not have to mean that the entire product is replaced, but that repairs and/or replacement of broken parts are offered.

O8 Product information

The following product information must be included with the furniture or be available to download from the website of the manufacturer or retailer:

- Cleaning, care and maintenance instructions for the furniture with specific instructions for the different materials.
- Illustrated assembly instructions if the furniture or fitment is designed for assembly.
- Information about the materials used in the furniture and how these can best be taken care of / recycled when the furniture reaches the end of its service life.
- Specify which standards the product has been tested for.

- ☒ Product information written for the customers.

Background

The requirement has changed, as the clause containing a recommendation about lamps as light fittings, which was in the previous version of the criteria, has been deleted. It is no longer possible for just light fittings to be Nordic Swan Ecolabelled and there are no Nordic Swan Ecolabelled low-energy lamps that would be recommended under the requirement.

Everything else in the requirement is still relevant and are therefore not changed.

O9 Biocides during transport

Biocides in the form of pure active substances or as biocide products may not be used during transport of the finished furniture. See also O83 for textiles.

- A declaration from the furniture manufacturer that biocides have not been used during transport.

Background

Biocides can be used during transport of the furniture. In Version 4, there was a ban on dimethyl fumarate in the criteria for ingoing substances in the chemicals. However, substances that are added during transport were not included in this requirement. It has therefore been removed from the chemical requirements and added as a separate requirement. Dimethyl fumarate (DMF) is a mould and fungus killing agent which was found a few years ago in upholstered furniture, such as sofas and armchairs imported from China²². The agent was used during transport of the furniture and was not directly added to the products. The agent can cause serious allergic reactions. It is not approved for use as a biocide in the EU/EEA.

O10 Standby energy consumption - electronic furniture

Electronic furniture e.g. height adjustable tables and beds shall have a standby energy consumption of max. 0.5W measured according to EN 50564: 2011 or equivalent.

- Test report according to EN 50564: 2011 showing that the requirement is fulfilled.

Background

Electronic furniture such as height adjustable tables and beds are often in standby mode around the clock. Therefore, a requirement for maximum standby consumption is set to ensure a low energy consumption. Standby consumption requirements for household products are set in the Ecodesign Directive, but this does not include electric motors in the relevant products. However, the requirement for household products is 0.5W. Standby consumption is also something that public procurement have on the agenda, with the same level of requirement for maximum energy requirement and measurement method²³.

2.4.4 Lamps as a furniture feature

The requirement applies to lamps that are built-in or recessed into furniture, e.g. in a cabinet or drawers. Free-standing lamps cannot be labelled.

O11 Lamps

Lamps can form part of a piece of furniture, e.g. in a cabinet or drawers. If furniture contains a lamp/lamps, the following applies:

²² https://tema.miljodirektoratet.no/no/Nyheter/Nyheter/Old-klif/2009/Januar_2009/Allergifremkallende_stoff_funnet_i_mobler_og_sko/

²³ <https://sparenergi.dk/offentlig-og-erhverv/indkoeb-og-adfaerd/indkoebansbefalinger/haeve-saenkeborde> (tilgjængelig 31.01.2020)

- LED bulbs must be used.
 - It must be possible to change the bulb.
- ☒ Description of the location of the lamp in the product. A declaration from the manufacturer that LED bulbs are used and that the bulbs can be changed.

Background

The requirement concerning the use of LED bulbs is to ensure that any lamps that are built-in or recessed into furniture use minimal energy. They also have a long useful life. The ability to change the bulbs also extends the useful life of the furniture/fitment.

2.5 Chemicals

Nordic Ecolabelling sets requirements for chemicals that are used during the manufacture of the constituent materials, for the manufacture/assembly of the furniture and for surface treatment. The requirements for chemicals are not all found in one chapter, but will be specified in the chapter for each individual material, e.g. chemicals that are relevant in the manufacture of wood-based panels will be specified in the chapter for wood-based panels and chemicals used in the production of laminates will be specified in the chapter on laminates. An exception to this is the requirements for the surface treatment of wood, wood-based panels and laminate, which are placed together in one chapter.

Much of the production process takes place at the subcontractors these days, but the furniture manufacturers often do some stages of the process, such as assembling the finished piece of furniture, themselves. There are some furniture manufacturers that do more of the production themselves. The criteria for chemicals must be met regardless of whether the chemicals are used at the subcontractors' or the furniture manufacturers' facilities. The chapters that apply to subcontractors of different materials and to the furniture manufacturer or the subcontractor that assembles/produces the finished piece of furniture are given below.

The requirements for chemicals can be found in the following chapters:

- Chemicals used by the furniture manufacturer in its production/assembly of the furniture/fitment, Chapter 2.5.1
- Chemicals used by subcontractors that produce/assemble the finished piece of furniture, Chapter 2.5.1
- Chemicals for wood-based panels, Chapter 2.7
- Chemicals for paper, Chapter 2.8
- Chemicals for laminate, Chapter 2.9
- Chemicals for surface treatment of wood, wood-based panels and laminate, Chapter 2.10
- Chemicals for surface treatment of metal, Chapters 2.11.1 and 2.11.2
- Chemicals for plastics and rubber, Chapter 2.12
- Chemicals for textiles, Chapter 2.13
- Chemicals for padding materials, Chapter 2.14
- Chemicals for hide and leather, Chapter 2.15

The following definitions apply to all the criteria for chemicals unless otherwise stated: The requirements in the criteria document apply to all ingoing substances in the chemical product, but not to impurities unless otherwise stated in the specific requirement. Ingoing substances and impurities are defined below.

Ingoing substances: All substances in the chemical product, including additives (e.g. preservatives and stabilisers) in the raw materials. Substances known to be released from ingoing substances (e.g. formaldehyde, arylamine, in-situ generated preservatives) are also considered as ingoing substances.

Impurities: Residuals, pollutants, contaminants etc. from production, incl. production of raw materials that remain in the raw material or in chemical product in concentrations less than 100 ppm (0,0100 w-%, 100 mg/kg) in the chemical product. Impurities in the raw materials exceeding concentrations of 1,0 % / 0,10 % 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.

2.5.1 Chemicals used by furniture manufacturers and subcontractors

The requirements in this chapter apply to chemicals that are added to the furniture/fitment or are used in the production/assembly of the furniture/fitment at the production site of the furniture/fitment or at the subcontractor's facility. A subcontractor can assemble parts of or the entire piece of furniture. Any chemicals used here, e.g. adhesives, must meet the requirements stated in this chapter.

If the furniture/fitment manufacturer itself performs much of the production process, and/or adds chemicals or carries out some of the chemical treatment, e.g. coating, the criteria for chemicals in the respective chapter for the relevant material must be met.

O12 Antibacterial substances

Chemical products and nanomaterials* with antibacterial or disinfectant properties must not be added to the finished item of furniture or fitment.

The term antibacterial means chemical products that prevent or inhibit growth of microorganisms, such as bacteria or fungi. Silver ions, silver nanoparticles, gold nanoparticles and copper nanoparticles are classed as antibacterial agents.

** In accordance with the definition of a nanomaterial adopted by the European Commission on 18 October 2011 (2011/696/EU), see definitions.*

- A declaration from the manufacturer of the furniture/fitment or the subcontractor showing that no chemical products and nanomaterial with antibacterial or disinfectant properties have been used on the surface of the finished furniture/fitment.

Background

New requirement. In the chemical requirements of the previous version of the criteria, neither the application of biocide products to the surface of a finished item of furniture nor the use of chemicals containing nanoparticles was allowed. There is now a separate requirement that use of antibacterial agents and

nanoparticles on the finished item of furniture is not allowed. Based on the precautionary principle, Nordic Ecolabelling wants to adopt a restrictive stance on the use of nanoparticles.

Products treated with antibacterial agents are often marketed as preventing bacteria formation, growth and odours. Antibacterial finishing is not usually needed and many of these agents must be used with caution, since they may be hazardous to human health and the environment. Antibacterial substances are a type of biocide. Increased use of biocides can lead to bacteria becoming resistant to agents that are necessary for hygiene and health in other contexts.

O13 Classification of chemical products

Chemical products must not have any of the classifications in the table below.

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

¹ Including all combinations of stated exposure route and stated specific effect. For example, H350 also covers the classification H350i.

*An exemption applies to adhesives containing isocyanates classified with H351 and adhesives containing formaldehyde classified with H350. Formaldehyde is regulated in a separate requirement.

Note that responsibility for correct classification lies with the manufacturer.

- A declaration from the chemical manufacturer or supplier.
- A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

Background

The requirement concerning the classification of chemical products used during the manufacture of furniture/fitments has not been changed, except that classification H362 has been added. This is a classification that did not exist when the criteria were previously revised. Nordic Ecolabelling is generally committed to restricting the use of chemicals that are harmful to health and the environment, and the classification requirement prohibits the products of highest concern. An exemption applies to adhesives containing isocyanates with H351 classification and adhesives containing formaldehyde with H350 classification.

The furniture manufacturers use adhesives for different purposes. This also means that they use different types of adhesives and two-component adhesives can contain isocyanates and formaldehyde. It is difficult to avoid these adhesives, which is why an exception is made. Formaldehyde content in adhesives is also regulated in a separate requirement.

O14 Classification of ingoing substances

Ingoing substances* in the chemical product must not have any of the classifications in the table below:

CLP Regulation 1272/2008		
Hazard class	Hazard class and category	Hazard code
Carcinogenic** ¹	Carc. 1A or 1B Carc 2	H350 H351
Germ cell mutagenic ¹	Mut. 1A or 1B Mut. 2	H340 H341
Toxic for reproduction ¹	Repr. 1A or 1B Repr 2 Lact	H360 H361 H362

¹Including all combinations of stated exposure route and stated specific effect. For example, H350 also covers the classification H350i.

* For definition of ingoing substances, see Definitions.

**An exemption applies to adhesives containing isocyanates classified with H351 and adhesives containing formaldehyde classified with H350. Formaldehyde is regulated in a separate requirement.

- A declaration from the chemical manufacturer or supplier.
- A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

Background

The requirement has been made into a separate requirement and a ban on Category 2 substances has also been added. Nordic Ecolabelling would like to restrict the use of substances that are carcinogenic, mutagenic and toxic for reproduction (CMR) to the greatest extent possible. In other words, this requirement represents a further restriction on the classification requirement since it applies to ingoing substances in the chemical product.

Formaldehyde is exempted from the requirement where the formaldehyde appears in the form of impurities in newly produced polymers. The reason for this is that, in Nordic Ecolabelling's experience, newly produced polymers may contain impurities in the form of formaldehyde. Products must not, however, have actively added formaldehyde or formaldehyde-releasing substances.

O15 Prohibited substances

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

* For definition of ingoing substances and impurities, see Definitions.

- Substances on the Candidate List**
- Substances that have been evaluated in the EU to be PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative)***

- Substances considered to be potential endocrine disruptors in category 1 or 2 on the EU's priority list of substances for further evaluation of their role in endocrine disruption****
- Halogenated organic compounds with the following exceptions:
 - Bronopol (Cas. No. 52-51-7) may be present in the chemical product at a level of not more than 0.05% by weight
 - Mixture (3:1) of CMIT/MIT (5 chloro-2-methyl-4-isothiazolin-3-one Cas. No. 247-500-7; 2-methyl-4-isothiazolin-3-one Cas. No. 220-239-6) may be present in the chemical product at a level of not more than 0.0015% by weight
 - IPBC (Iodopropynyl butylcarbamate) may be present in the chemical product at a level of not more than 0.20% by weight
- Isothiazolinones may be present in the chemical product at a level of not more than 0.05% by weight
- Butylhydroxytoluene (BHT, CAS nr. 128-37-0)

An exemption is given for BHT in UV-curing lacquers and paints in amounts up to 0.3% (3000 ppm) in the finished product (lacquer or paint). If BHT is given a harmonized official classification so that the substance does not meet the requirements of the criteria document, the exemption will no longer be valid.

- Aziridine and polyaziridines
- Bisphenol A, S and F
- Alkylphenols, alkylphenol ethoxylates and other alkylphenol derivatives*****
- Phthalates
- Pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds
- Volatile aromatic hydrocarbons (VAH). They are permitted in the chemical product as an impurity at a level of not more than 1% by weight

**See definition of ingoing substances under Definitions.*

***The Candidate List is available on the ECHA website:
<http://echa.europa.eu/candidate-list-table>*

****PBT and vPvB in accordance with the criteria in Annex XIII of REACH*

*****Substances with endocrine disrupting effects categories 1 or 2, see the following link:
http://ec.europa.eu/environment/chemicals/endocrine/strategy/being_en.htm
(Annex L, page 238 onwards)*

******Alkylphenol derivatives are defined as substances that release alkylphenols when they break down.*

- A declaration from the manufacturer/supplier of the chemical product.
- A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

Background

Substances on the Candidate List, PBT, vPvB and endocrine disruptors

The ban on substances on the Candidate List, substances that are PBT (Persistent, Bioaccumulative and Toxic) and vPvB (very Persistent and very Bioaccumulative) and the ban on substances that are considered to be potential endocrine disruptors in category 1 or 2 on the EU's priority list of substances for further evaluation of their role in endocrine disruption are new in this revision.

The Candidate List contains substances of very high concern, so-called SVHC substances. SVHCs (Substances of Very High Concern) meet one or more of these criteria:

- Very harmful to health: carcinogenic, mutagenic, Toxic for reproduction (CMR substances, category 1A and 1B), set out in REACH, Article 57 a, b, c
- Very harmful to the environment: persistent, bio-accumulative and toxic (PBT) or very persistent and very bio-accumulative (vPvB), set out in REACH, Article 57 d, e
- Serious effects to human health or the environment on another basis than the groups above, but that give equivalent cause for concern (e.g. endocrine disruptors and inhaled allergens), set out in REACH, Article 57 f

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). Nordic Ecolabelling prohibits Candidate List substances due to their hazardous properties. Other SVHC substances are addressed via bans on the use of PBT and vPvB substances, and requirements for classification of and ban of endocrine disruptors.

PBT (Persistent, Bioaccumulative and Toxic) and vPvB (very Persistent and very Bioaccumulative) are organic substances that are defined in Annex XIII of REACH and are generally undesirable in Nordic Swan Ecolabelled products.

Potential endocrine disruptors are compounds that can negatively affect the hormonal 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 adverse effects, with a particular focus on hormones that affect sexual development and reproduction. Nordic Ecolabelling prohibits the use of substances that are considered to be potential endocrine disruptors, category 1 (there is evidence of a change in endocrine activity in at least one animal species) or category 2 (there is evidence of biological activity related to changes in the hormone balance), in line with the EU's original report on "Endocrine disruptors"²⁴ or subsequent studies²⁵.

Halogenated organic compounds

Halogenated organic compounds that contain halogenated compounds such as chlorine, bromine, fluorine or iodine must not be present in ecolabelled furniture and fitments. This includes halogenated flame retardants, chloroparaffins,

²⁴ DG Environment (2002): Towards the establishment of a priority list of substances for further evaluation of their role in endocrine disruption. FINAL REPORT. European Commission DG ENV / BKH Consulting Engineers with TNO Nutrition and Food Research. 21 June 2000

²⁵ 8 DG Environment. (2002): Endocrine disruptors: Study on gathering information on 435 substances with insufficient data. http://ec.europa.eu/environment/endocrine/documents/bkh_report.pdf#page=1, European Commission / DG ENV / WRc-NSF. (2002): Study on the scientific evaluation of 12 substances in the context of endocrine disrupter priority list of actions, http://ec.europa.eu/environment/chemicals/endocrine/pdf/wrc_report.pdf#page=29 DHI water and environment. (2007): Study on enhancing the Endocrine disruptor priority list with a focus on low production volume chemicals. DG Environment. http://ec.europa.eu/environment/chemicals/endocrine/pdf/final_report_2007.pdf

perfluoroalkyl compounds and certain organic bleaching chemicals. It should be noted that PFOA (perfluorooctanoic acid and salts/esters thereof) and PFOS (perfluorooctane sulphonate acid and compounds thereof), which appeared earlier as a separate item, are halogenated organic compounds. These can be used, for example, in paints and varnishes and in agents for waterproofing textiles and leather, which could be relevant to furniture/fitments. Halogenated organic compounds have different properties that are not desirable in Nordic Swan Ecolabelled products. They are harmful to human health and the environment, highly toxic to aquatic organisms, carcinogenic or harmful to health in other ways. The halogenated organic compounds do not break down readily in the environment, which increases the risk of harmful effects from the substances.

The preservatives bronopol, IPBC and CMIT/MIT with specific threshold limit values are exempt from the ban on halogenated compounds. There is also a restriction on isothiazolinone content (described in a separate section). The exemption is the same as in Version 4 for bronopol, isothiazolinones and CMIT/MIT, while IPBC is new to the list. IPBC is a fungicide that is now widely used, primarily in paint products. It is classified as harmful to the environment and allergenic. The threshold limit values are the same as in Nordic Ecolabelling's criteria for chemical building products. Water-based paints and adhesives used in the manufacture of furniture may contain the preservative bronopol and it is difficult to find substitutes. A limited amount of bronopol is therefore permitted although it is classified as a substance of concern and harmful to the environment. Isothiazolinones are used as a preservative in paints, lacquers and many other products, where they act as fungicides, biocides and algal growth inhibitors. They are toxic to aquatic organisms and can cause varying degrees of allergic reactions. It has proved difficult to avoid the use of these preservatives in water-based products, which is what Nordic Ecolabelling's criteria for chemicals indirectly promote. Preservatives also play an important role in ensuring the shelf-life of the products before they are used. Alternative preservatives to isothiazolinones include formaldehyde and/or formaldehyde-releasing substances, which are carcinogenic. In this respect, isothiazolinone and CMIT/MIT are better, even if they also exhibit hazardous properties. To limit the use of these substances as much as possible, the amount of the substances is restricted. Restrictions on the amounts are the same as in the Nordic Swan Ecolabelling of interior paints and varnishes.

The previous exemption for adhesives with polychloroprene no longer applies, as Nordic Ecolabelling is aware that alternatives to such adhesives are available and are used.

BHT

Butylhydroxytoluene (BHT CAS 128-37-0) is new to the list of prohibited substances. BHT does not have an official harmonized classification and is not on the EU list of suspected endocrine disruptors that Nordic Ecolabelling refers to in another section of this requirement. However, BHT is on the Sin-list due to potential endocrine disrupting properties and on the CoRAP-list due to suspicion of endocrine disrupting effect, possible CMR and sensitizing properties. Nordic Ecolabelling places BHT on the list of prohibited substances due to the suspicion of very adverse health effects, but introduces an exception for UV-curing paints and adhesives. BHT has an important function in such products and can be difficult to replace. Nordic Ecolabelling does not want to prohibit the use of UV-curing

lacquers and paints as they have other positive properties such as low VOC content. Therefore, an exemption of up to 0.3% (3000 ppm) is allowed in the finished product. The limit is based on contact with the industry. If BHT receives a harmonized official classification that is not allowed in these criteria, then the exemption is no longer valid. Nordic Ecolabelling has limited knowledge and information about how widespread BHT is in chemical products used in the furniture industry as we have not previously asked specifically about this in our criteria and would like to receive information about this in the consultation.

Alkylphenols, alkylphenol ethoxylates and/or alkylphenol derivatives

Alkylphenol ethoxylates (APEO) and/or alkylphenol derivatives (APD) are a group of non-readily degradable surfactants that are proven endocrine disruptors. APEOs may be present in binding, dispersing and thickening agents, siccatives, foam inhibitors, pigment pastes, wax, etc. Raw materials containing APEOs can be replaced with APEO-free alternatives based on alkyl sulfates, alkyl ether sulfates and alcohol ethoxylates. These are readily biodegradable but also have harmful properties, being toxic to aquatic organisms and some may be bioaccumulative. However, there is an environmental gain to be made by substitution since they break down rapidly and the degradation product, nonylphenol, with its endocrine-disrupting effects is avoided.

Bisphenol A, S and F

Bisphenol A, CAS No. 80-05-7, is used as a monomer in, inter alia, the following relevant areas and products: Various plastic and epoxy mixes, various building parts, paint, varnish, glue (binding agents, hardeners) and polyol in the production of polyurethane. Bisphenol A can be released into the environment from the production process. Bisphenol A (BPA) is on the Candidate List of substances that may have serious effects on human health and the environment and the goal is to eliminate emissions by 2020.²⁶ BPA is identified as damaging to the eyes, irritating to the respiratory tract, skin sensitizing and may also affect reproductive performance. The substance may be endocrine disrupting and is toxic to aquatic organisms. Bisphenol F and S can be used as substitutes for bisphenol A. A screening programme conducted to determine the occurrence of environmental toxins in surface water, sediment and biota in Norway found bisphenols A, F and S in the samples that were taken²⁷. These are substances with the same properties as bisphenol A²⁶.

Phthalates

The ban on phthalates has not been changed. Many phthalates are harmful to the environment and human health and should not be used in eco-labelled products for a variety of reasons. Some phthalates are on the EU's priority list of substances for further evaluation of their role in endocrine disruption, and some have already been identified as endocrine disruptors. Some phthalate compounds are also on the Candidate List. All are there because they are classified as toxic for reproduction. Some are also regulated in Annex XVII of REACH, and many phthalates are on the Danish Environmental Protection Agency's "List of

²⁶ <https://tema.miljodirektoratet.no/no/Tema/Kjemikalier/Miljogifter/Bisfenol-A/>

²⁷ Screening programme 2013: New bisphenols, organic peroxides, fluorinated siloxanes, organic UV filters and selected PBT substances, The Norwegian Environment Agency, Report M-176/2014

Undesirable Substances” and on the Norwegian Environment Agency’s “List of Priority Substances”.

For precautionary reasons, Nordic Ecolabelling has decided to continue to exclude phthalates as a group, since this group contains many different phthalates with various properties.

Aziridine and polyaziridines

Aziridine and polyaziridines is classified H350 (carcinogenic) and H340 (mutagenic) and are thus covered by the ban on CMR substances. They are nevertheless on the list of banned substances to make it clear that they are banned. The substances were also on the list in Generation 4 of the criteria.

Volatile aromatic hydrocarbons (VAH)

The restriction on VAHs has not been changed. Volatile aromatic hydrocarbons (VAH) are volatile organic compounds where one or more benzene rings are contained within the molecule, e.g. toluene, benzene and xylene. VAHs are very stable and have a specific impact on the environment and human health, including damage to DNA²⁸. Exposure to these products should be minimised. For this reason, no more than 1% by weight is permitted in the chemical product.

Pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds

Nordic Ecolabelling restricts heavy metals because they are toxic to humans and other organisms, both on land and in the aquatic environment. Mercury, cadmium and lead are toxic to the human nervous system, kidneys and other organs, and the metals can accumulate in living organisms. Chromium (VI) is classified as very toxic, CMR and harmful to the environment.

O16 Nanomaterials

The chemical product must not have nanomaterials* as ingoing substances**. Exemptions are made for:

- Pigments***
- Naturally occurring inorganic fillers****
- Synthetic amorphous silica
- Polymer dispersions

**In accordance with the definition of a nanomaterial adopted by the European Commission on 18 October 2011 (2011/696/EU), see definitions.*

***See definition of ingoing substances under Definitions.*

**** Nano-titanium dioxide is not classed as a pigment and is thus not covered by the requirement.*

***** This applies to fillers covered by Annex V item 7 of REACH *****This applies to traditional synthetic amorphous silica.*

- A declaration from the chemical manufacturer that the chemical product does not contain any nanomaterial.

²⁸ Environ Health Perspect. 2002 June; 110 (Suppl 3): 451-488.

Background

There is still great uncertainty as to how nanoparticles affect human health and the environment²⁹. Based on the precautionary principle, Nordic Ecolabelling wants to take a restrictive approach to the use of nanoparticles in Nordic Ecolabelled products. Many nanoparticles may also have an antibacterial effect. Nordic Ecolabelling therefore wants to limit their use because of the danger of bacterial resistance. Nordic Ecolabelling uses the EU's definition of nanoparticles.³⁰ Here, there is also a requirement that raw materials covered by the EU definition are stated on the product data sheet, so that this information is available to the chemical manufacturer.

According to a report from 2012, the use of nano in furniture is still quite limited and most widely used in different coatings.³¹ Product development is being conducted in this area, however. It is therefore relevant to lay down the requirement for the product group. This requirement means that nanomaterials produced more recently with the intention of containing nanoparticles cannot be included. Such nanoparticles include fullerenes, carbon nanotubes and nano metals. Nanomaterials that are not considered problematic are used in furniture, however. Hence, the requirement contains the following limitation:

Polymer emulsions are not considered to be a nanomaterial. It is stated in the EU Commission's 2012 follow-up report on the Second Regulatory Review on Nanomaterials that solid nanomaterials dispersed in a liquid phase (colloid) must be considered as nanomaterials in accordance with the EU Commission's recommendation. On the other hand, nano emulsions are not covered by the definition. Polymers/monomers can occur in different phases and sizes, and so it has been decided to explicitly state that polymers are exempted from this nano requirement.

Many pigments used to paint furniture are, by definition, nanoparticles. They are considered not to pose risks to end users of furniture and are exempt from the requirement as they are necessary to give colour and there is no substitute available that can serve the same purpose.

Synthetic amorphous silica is a conventional ingredient in various chemical building products which can be reused in the manufacture of furniture. Synthetic amorphous silica is exempt from the requirement concerning nanomaterials.

Naturally occurring inorganic fillers. It can be difficult to state the particle size of inorganic fillers from raw material suppliers. Naturally occurring inorganic fillers, such as chalk, marble and lime, are exempt from registration in accordance with Annex V, § 7 of REACH, as long as these fillers have only been physically processed (ground, screened, etc.) and not chemically modified.

²⁹ European Council, Recommendation 2017 (2013), Provisional version, Nanotechnology: balancing benefits and risks to public health and the environment

³⁰ European Recommendation of 18 October 2011 for the definition of nanomaterial, <https://eur-lex.europa.eu/legal-content/SV/TXT/PDF/?uri=CELEX:32011H0696&from=EN>

³¹ F.A. van Broekhuizen, Nano in Furniture - State of the art 2012, IVAM UvA BV, <http://www.efbww.org/pdfs/Nano.pdf>

O17 VOCs in adhesives

VOCs (volatile organic compounds) may not account for more than 3% by weight of the adhesive.

- A declaration from the adhesive producer that the requirement has been met.

Background

Volatile organic compounds (VOC) are defined here as follows: Any organic compound having an initial boiling point less than or equal to 250°C measured at a standard pressure of 101.3 kPa (the same definition that appears in the VOC Directive 2004/42/EC). Volatile organic compounds are of particular concern due to their inherent properties. They can be absorbed through the lungs and skin and cause damage to various organs. Prolonged exposure to certain organic solvents can cause chronic damage to the brain and nervous system, while other organic solvents can cause cancer or reproductive damage.³²

O18 Free formaldehyde

The content of free formaldehyde in the chemical product must not exceed 0.02% by weight (200 ppm) measured in the finished product.

The content of free formaldehyde in adhesive products mixed with a hardener must not exceed 0.2% by weight (2,000 ppm) in the ready-to-use mixture before curing.

- A declaration from the manufacturer/supplier of the chemical product.

Background

Formaldehyde is a toxic and allergenic substance (H317) that has carcinogenic effects (H351) and should therefore be avoided as far as possible. Formaldehyde is exempted where it appears in the form of impurities in newly produced polymers and in adhesives where it is difficult to avoid this. The purpose of the requirement is to restrict the content of formaldehyde in products in order to limit formaldehyde emissions.

Most of the formaldehyde present in adhesives occurs as free formaldehyde. However, formaldehyde can also originate from the components in the adhesive (such as preservatives). Adhesives emit formaldehyde during both polymerisation and the hardening phase. Free formaldehyde reacts when the adhesive is applied to wood or other components, and when the adhesive has hardened/dried, formaldehyde can be released through degradation processes. It is possible to control and set requirements for the amount of free formaldehyde in the glue, in the mixture or in dried glue, but not for what actually occurs when the adhesive is applied to a surface. This is chiefly because neither the adhesive manufacturer nor Nordic Ecolabelling are able to control or influence the choice of wood /material to which the adhesive is applied.

The requirement applies to a finished mixture of adhesive and hardener (two-component), immediately after mixing, because the requirement will then be more precise and the total amount of formaldehyde emissions will be lower. Adhesives that meet this requirement will have lower emissions of formaldehyde in the finished hardened product. Nordic Ecolabelling does not want to request a specific test for this, because that would be too extensive and costly for each

³² <http://www.epa.gov/iaq/voc.html>

chemical product. Nordic Ecolabelling wants to be able to ask for a test if there is any uncertainty about the declaration.

2.6 Wood, willow, cork and bamboo

The requirements in Chapter 2.6 apply to:

- wood (solid wood)
- willow
- cork
- bamboo

An exemption applies to furniture parts made of reused solid wood, willow, cork or bamboo from requirements O20 and O21.

2.6.1 Requirements that apply irrespective of quantity in the product

O19 Chemicals in reused parts

Please specify previous application area for reused parts.

Reused parts made of solid wood, willow, cork or bamboo must be untreated.

- A specification of what the reused part has been used for and a declaration that it is untreated. Nordic Ecolabelling may request additional documentation if there is any doubt about compliance with the requirement.

Background

The requirement is made to provide a degree of control over what types of reused materials are being used and to prevent the use of materials containing substances of concern. The requirement that the wood must be untreated narrows the opportunities for using such wood. However, Nordic Ecolabelling has decided to be restrictive as it is difficult to know what types of chemicals are used. The requirement makes no distinction between timber used for interior applications and timber used for outdoor applications. However, since it must be untreated, pressure-treated timber, creosote, etc. cannot be used.

O20 Tree species that may not be used

Tree species listed on Nordic Ecolabelling's list of prohibited tree species* are not permitted to be used in Nordic Ecolabelled furniture and fitments.

**The list of prohibited tree species is located on the website: www.nordic-ecolabel.org/wood/*

- A declaration from the applicant/manufacturer/supplier stating that no tree species in the list of prohibited tree species are used.

Background

Nordic Ecolabelling has set a requirement that prohibits the use of several tree species. It should be noted that the list of prohibited tree species is currently being revised and that the requirement will be updated with the latest rewording of the requirement when it has been approved and adopted. The background for the current list is given here.

The list of protected species is based on tree species that are relevant to the Nordic Swan Ecolabel's criteria, i.e. tree species that have the potential to be

included in Nordic Swan Ecolabelled products. The scientific name and the most common trade names are given for the listed tree species. The list is not comprehensive, as there may be more scientific names or trade names for the tree species than those on the list. From a precautionary principle, closely related/similar tree species are included on the list.

Criteria for inclusion of the tree species on the list:

- IUCN Red List, categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU) and relevant species as Near Threatened (NT)
- Tree species listed by CITES, Appendices I, II and III.
- Unsustainable forestry practices, such as felling of trees in HCVF, IFL areas in countries/regions with high levels of corruption.

2.6.2 Requirement for furniture/fitments containing $\geq 10\%$ wood, willow, bamboo, cork by weight

O21 Traceability and certification

The requirement applies to furniture/fitments whose content of wood/willow/bamboo/cork exceeds 10% by weight.

Species name

Applicant/manufacturer/supplier must state the name (species name) of the wood raw materials/willow/bamboo/cork that are used in the Nordic Swan Ecolabelled furniture/fitment.

Chain of custody certification

The applicant/manufacturer of the furniture/fitment or the applicant's/manufacturer's subcontractors of wood raw materials/willow/bamboo/cork must have FSC/PEFC chain of custody certification.

As an exception from the above, a subcontractor (e.g. a carpentry workshop) of the applicant that does not have CoC certification may also be approved. This is subject to a guarantee from the subcontractor that the wood raw materials are purchased from a CoC certified supplier of wood that can prove that the wood raw materials comply with Nordic Swan Ecolabelled requirements.

Certified wood raw materials, willow, bamboo and cork

At least 70% of the wood raw materials, willow, bamboo and cork used in the Nordic Swan Ecolabelled product must be certified as sourced from sustainably managed forests in compliance with the principles and criteria of the FSC and/or PEFC.

The remaining proportion of wood raw material must be covered by the FSC/PEFC control schemes.

If the furniture manufacturer has FSC/PEFC chain of custody certification, certified wood raw materials (FSC and PEFC credits) must be allocated from the manufacturer's chain of custody account to the Nordic Swan Ecolabelled product.

- The names (species names) of the wood raw materials, willow, bamboo and cork that are used.
- The applicant/furniture manufacturer or supplier must provide valid FSC/PEFC CoC certification that includes all wood raw materials, willow, bamboo and cork used in the Nordic Swan Ecolabelled furniture/fitment.
- If a furniture manufacturer has chain of custody certification: A manufacturer that has FSC/PEFC chain of custody certification must present documentation

showing that the certified percentage requirement has been met through the applicant's/manufacturer's chain of custody account.

- ☒ If a supplier has chain of custody certification, the furniture manufacturer must provide proof of purchase of certified wood raw materials. This must be specified on the invoice with a certified percentage claim.
- ☒ If an applicant does not have a subcontractor with chain of custody certification, the subcontractor must present invoices for the wood raw materials in question from a supplier of wood with chain of custody certification and that supplier's CoC certificate which must correspond exactly with the invoices. Volumes of purchased certified wood raw materials must be stated on the invoices. An applicant must have a contract with the subcontractor that sets out how it guarantees that the certified wood specified on the invoice is delivered to the applicant. It must also be stated in the contract that the subcontractor is required to inform the applicant if their supplier of wood is changed. Nordic Ecolabelling may request further information.

Background

Nordic Ecolabelling's forestry requirement focuses on sustainable forestry and the traceability of the wood raw materials. The requirement also includes willow, bamboo and cork. These materials are used in furniture, although they are not very common. There is, for example, FSC certified bamboo.

The many benefits that sustainably managed forests deliver to society include wood for materials and energy, protection against global warming, homes and livelihoods for local communities and indigenous peoples, support of biodiversity and protection of water and soil from pollution and erosion. By setting a requirement that wood raw materials must originate from certified, sustainably-managed forests, Nordic Ecolabelling is supporting the move towards more sustainable forestry practices.

Nordic Ecolabelling requires a declaration of the species of wood contained in the Nordic Swan Ecolabelled product. This makes it possible to check the validity of Chain of Custody certificates in the supply chain. The requirement for CoC certification improves the traceability of materials in the supply chain within the guidelines and control systems of the FSC and PEFC. The company's CoC certification proves how certified wood is kept separate from other wood during production, administration and storage and is inspected annually by independent certification bodies. Under this requirement, CoC certification must be held by either the applicant/manufacturer or the supplier of wood raw materials. Nordic Ecolabelling considers it is too strict to require the applicant/furniture manufacturer to hold CoC certification. If the applicant/furniture manufacturer has CoC certification and is able to label the finished product with the FSC/PEFC logo, there is a requirement for certified wood raw materials to be allocated from the CoC account for the Nordic Swan Ecolabelled product. This ensures that FSC/PEFC credits are used for the Nordic Swan Ecolabelled production and that the credits are removed from the CoC account and are not sold twice. This will stimulate increased demand for certified wood raw materials because more certified wood raw materials must be purchased if the manufacturer wants to label other products, and not just the Nordic Ecolabelled products, with the FSC/PEFC logo. It also means that a Nordic Swan Ecolabelled product can have both the Nordic Swan Ecolabel logo and the FSC/PEFC logo. However, there is no requirement for the applicant/furniture manufacturer to have CoC certification. If CoC certification is held by the supplier, the applicant/furniture manufacturer must have documentary evidence of purchase of certified raw material in the

form of a percentage claim on the invoice, i.e. it must be stated on the invoice that a minimum of 70% certified wood raw material has been purchased. It also allows for exceptions to this to be made for furniture. This is because the furniture industry often has small, local suppliers that have good control of the wood raw materials that they purchase, even if they do not have chain of custody certification. In such cases, it should be possible to document that wood raw materials are purchased from certified areas.

The requirement has increased the minimum percentage to 70% for all wood species. Previously, this requirement only applied to pine, fir, birch and tropical wood. Tropical wood is now largely covered by the requirement concerning protected tree species. Public sector tenders often require a certification percentage of 70%. The remaining percentage of wood raw materials must be FSC Controlled Wood or wood from PEFC Controlled Sources. The minimum requirement set by FSC and PEFC for the use of their logos on products is also 70%.

2.7 Panels made of wood, willow and bamboo

The requirements in Chapter 2.7 apply to wood-based panels such as chipboard, fibreboard (including MDF and HDF panels), OSB (Oriented Strand Board), veneer (plywood and parallel-laminated veneer panels) and solid wood panels (corresponding to non-load bearing laminated wood panels or DIY panels). The requirements also cover equivalent products made of willow and bamboo.

O22 Eco-labelled construction panels

Is the panel Nordic Swan Ecolabelled? If the answer is Yes, you can skip the requirements in Chapter 2.7

Name, manufacturer and licence number of the panel.

2.7.1 Requirement applies if the panel accounts for more than 5% of the product by weight

O23 Chemicals in wood-based panels with recycled materials

Recycled materials in wood-based panels must meet the requirements of the European Panel Federation's (EPF) Standard for delivery conditions of recycled wood, 2002.

This means that the materials must not come from

- Treated wood: wood that contains halogenated organic compounds or heavy metals as a result of treatment with wood preservatives.
- Wood that exceeds the threshold limit values in the table below:

Substance/compound	Limit value (mg/kg recycled wood)
Arsenic (As)	25
Cadmium (Cd)	50
Chromium (Cr)	25
Copper (Cu)	40
Lead (Pb)	90
Mercury (Hg)	25
Fluorine (F)	100
Chlorine (Cl)	1000
Pentachlorophenol (PCP)	5

Creosote (Benzo(a)pyrene) 0.5

The requirement does not apply to sawdust, wood chips and similar materials that come straight from the wood-processing industry where the wood is virgin/untreated.

- ☒ For wood-based panels: Certification of compliance with the EFP's Standard for delivery conditions of recycled wood, 2002, or subsequent versions, and any equivalent documentation/test report showing compliance with the requirements of the standard.

Background

The requirement is made to provide a degree of control over what types of recycled materials are being used and to tighten controls to prevent the use of materials containing substances of concern. The requirement concerning wood-based panels is the same as the requirement made in the EU Ecolabel criteria for furniture. Compliance with this standard is relatively good in the EU but it is important to ensure that production outside the EU also complies with the requirements of the standard. Requirements are imposed on the content of a number of heavy metals and creosote.

O24 Tree species that may not be used

The requirement only applies to virgin wood fibre and therefore does not apply to fibre defined as recycled material.

The requirement applies to all panels containing wood, willow, bamboo or fiber products thereof.

Tree species listed on Nordic Ecolabelling's list of prohibited tree species* are not permitted to be used in Nordic Ecolabelled furniture and fitments.

*The list of prohibited tree species is located on the website: www.nordic-ecolabel.org/wood/

- ☒ A declaration from the applicant/manufacturer/supplier stating that no tree species in the list of prohibited tree species are used.

Background

See background to O20.

O25 Classification of chemical products

Chemical products used in the production of wood-based panels must not have any of the classifications in the table below.

CLP Regulation 1272/2008		
Hazard class	Hazard category	Hazard code
Hazardous to the aquatic environment	Aquatic Acute 1	H400
	Aquatic Chronic 1	H410
	Aquatic Chronic 2	H411
	Ozone	H420
Carcinogenicity* ¹	Carc 1A or 1B	H350
	Carc 2	H351
Germ cell mutagenicity ¹	Muta. 1A or 1B	H340
	Muta. 2	H341
Toxic for reproduction ¹	Repr. 1A or 1B	H360
	Repr. 2	H361
	Lact.	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

¹ Including all combinations of stated exposure route and stated specific effect. For example, H350 also covers the classification H350i.

*An exemption applies to adhesives containing isocyanates classified with H351 and adhesives containing formaldehyde classified with H350. Formaldehyde is regulated in a separate requirement.

Note that responsibility for correct classification lies with the manufacturer.

- A declaration from the chemical manufacturer or supplier.
- A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

O26 Classification of ingoing substances

Ingoing substances* in the chemical products used in the production of wood-based panels must not have any of the classifications in the table below:

CLP Regulation 1272/2008		
Hazard class	Hazard class and category	Hazard code
Carcinogenic**1	Carc. 1A or 1B Carc 2	H350 H351
Germ cell mutagenic ¹	Mut. 1A or 1B Mut. 2	H340 H341
Toxic for reproduction ¹	Repr. 1A or 1B Repr 2 Lact	H360 H361 H362

¹ Including all combinations of stated exposure route and stated specific effect. For example, H350 also covers the classification H350i.

* For definition of ingoing substances, see definitions.

**An exemption applies to adhesives containing isocyanates classified with H351 and adhesives containing formaldehyde classified with H350. Formaldehyde is regulated in a separate requirement.

- A declaration from the chemical manufacturer or supplier.
- A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

O27 Prohibited substances

The following substances shall not be an ingoing substance* in chemical products used in the production of wood-based panels:

* For definition of ingoing substances and impurities, see Definitions.

- Substances on the Candidate List**
- Substances that have been evaluated in the EU to be PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative)***
- Substances considered to be potential endocrine disruptors in category 1 or 2 on the EU's priority list of substances for further evaluation of their role in endocrine disruption****
- Halogenated organic compounds with the following exceptions:
 - Bronopol (Cas. No. 52-51-7) may be present in the chemical product at a level of not more than 0.05% by weight

- Mixture (3:1) of CMIT/MIT (5 chloro-2-methyl-4-isothiazolin-3-one Cas. No. 247-500-7; 2-methyl-4-isothiazolin-3-one Cas. No. 220-239-6) may be present in the chemical product at a level of not more than 0.0015% by weight
- IPBC (Iodopropynyl butylcarbamate) may be present in the chemical product at a level of not more than 0.20% by weight
- Isothiazolinones may be present in the chemical product at a level of not more than 0.05% by weight
- Butylhydroxytoluene (BHT, CAS nr. 128-37-0)
- Aziridine and polyaziridines
- Bisphenol A, S and F
- Alkylphenols, alkylphenol ethoxylates and other alkylphenol derivatives*****
- Phthalates
- Pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds
- Volatile aromatic hydrocarbons (VAH). They are permitted in the chemical product as an impurity at a level of not more than 1% by weight

*See definition of ingoing substances under Definitions.

**The Candidate List is available on the ECHA website:
<http://echa.europa.eu/candidate-list-table>

***PBT and vPvB in accordance with the criteria in Annex XIII of REACH

****Substances with endocrine disrupting effects categories 1 or 2, see the following link:
http://ec.europa.eu/environment/chemicals/endocrine/strategy/being_en.htm
(Annex L, page 238 onwards)

*****Alkylphenol derivatives are defined as substances that release alkylphenols when they break down.

- A declaration from the manufacturer/supplier of the chemical product.
- A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006.

O28 VOCs in adhesives

VOCs (volatile organic compounds) may not account for more than 3% by weight of the adhesive.

- A declaration from the adhesive producer that the requirement has been met.

Background

For background to the chemical requirements O25-O28, reference is made to the background given in chapter 2.5.

O29 Formaldehyde

Wood-based panels that contain formaldehyde-based adhesive must meet one of the following requirements (a or b):

- a) According to the test method of the ISO 12460-5 standard, the content of free formaldehyde must not exceed an average of 5 mg formaldehyde/100 g dry product for MDF and HDF panels and 4 mg/100 g dry product for all other types of panels.

The requirement applies to wood-based panels with a moisture content of H = 6.5%. If the moisture content of the panels is between 3% and

10%, the test results must be multiplied by F factor, calculated using the following formulas:

For chipboard: $F = -0.133 H + 1.86$

For MDF and HDF: $F = -0.121 H + 1.78$

- b) According to the test method of the ISO 717-1 standard, emissions of formaldehyde must not exceed an average of 0.09 mg/m³ air for MDF and HDF panels and 0.07 mg/m³ air for other types of panels.

Option b) in the requirement can also be documented using the ASTM E 1333 and JIS A 1460 test methods. The correlation between the threshold limit values that must be met in accordance with the test method of the EN 717-1 standard and the other test methods is:

Type of panel	EN 717-1 (23°C/45% RH)	ASTM E 1333 (25°C/50% RH)	ASTM E 1333 (25°C/50% RH)	JIS A 1460
MDF and HDF	0.09 mg/m ³	0.06 ppm	0.07 mg/m ³	0.66 mg/L
Other panels	0.07 mg/m ³	0.08 ppm	0.10 mg/m ³	0.53 mg/L

- ☒ Analysis report, including measurement methods, measurement results and measurement frequency. It must be clearly stated which method/standard was used, the laboratory that conducted the analysis, and that the analysis laboratory is an independent third party. Other analysis methods than those stated in the requirement may be used, provided that the correlation between test methods can be verified by an independent third party.

Background

Adhesives containing formaldehyde are often used in the manufacture of wood-based panels. Action has been taken to reduce emissions of formaldehyde from the panels as a finished product. Formaldehyde is a toxic, sensitising and carcinogenic substance and Nordic Ecolabelling wants to restrict its use to the greatest extent possible from an occupational health and safety point of view and because of the dangers it poses to users of the furniture and to the indoor climate.

The EU's classification system for emissions of formaldehyde from wood-based panels is defined in the harmonised EN 13986 standard. The threshold limit values of the E1 emission class, currently the lowest, are 0.124 mg/m³ as measured by EN 717-1.

The Nordic Swan Ecolabel has requirements in place for emissions of formaldehyde from wood-based panels in many of the product groups, including Construction and façade panels, Floor coverings, and Small houses, apartment buildings and buildings for schools and pre-schools. The requirement in this version of the criteria for furniture has been harmonised with the requirement in Construction and façade panels Version 6. This means that the threshold limit value for MDF and HDF has been tightened from 0.124 mg/m³ to 0.09 mg/m³ as measured by EN 717-1 and that an E1 certificate is thus no longer accepted as documentation for the requirement. Version 6 of the criteria for Construction and facade panels was published in 2015 and there are several Nordic Swan Ecolabelled MDF panels that meet the 0.09 mg/m³ threshold limit. The 0.07 mg/m³ threshold limit value for other panels is still considered to be strict and has not been tightened.

2.7.2 Requirement where the panel makes up more than 10% by weight of the product

O30 Traceability and certification of wood raw materials in panels

The requirement applies only to virgin tree species, not tree species defined as recycled materials.

Species name

Applicant/manufacturer/supplier must state the name (species name) of the wood raw materials/willow/bamboo that is used in the panel.

Chain of custody certification

The manufacturer/supplier of the panel must have Chain of Custody certification under the FSC/PEFC schemes.

Certified wood raw materials, willow and bamboo

A minimum of 70% by weight of the wood raw materials, willow and bamboo (virgin/recycled material) used in the panel must origin from forestry certified under the FSC and/or PEFC schemes, or be recycled materials.*

The remaining proportion of wood raw material must be covered by the FSC/PEFC control schemes or be recycled material.

The requirement must be documented as purchased amount of wood on an annual basis.

* *Recycled material is defined according to ISO 14021 in the categories of pre-consumer and post-consumer, see definitions.*

Nordic Ecolabelling includes by-products from primary wood processing industries (sawdust, wood chips, shavings, bark etc.) or residues from forestry operations (bark, branches, roots, etc.) in its definition of recycled material.

- The manufacturer/supplier of the panel must state the name (species name) of the wood raw materials used in the construction panel.
- Valid FSC/PEFC Chain of Custody certification from the manufacturer/supplier of panels. Manufacturers that only use recycled materials are exempt from this requirement.
- Documentation from the furniture manufacturer, e.g. invoices, showing that the certified percentage requirement or the recycled material requirement has been met.

Background

See the background to O21.

O31 Energy requirements for wood-based panels

The following applies to energy consumption in the manufacture of:

- **Chipboard:** No more than 7 MJ/kg per panel may be used in the production of the panel (excluding any surface treatment).
- **Wood fibre/veneer and laminated panels:** No more than 11 MJ/kg per panel may be used in the production of the panel (excluding any surface treatment).

The following applies for the calculation of energy:

- a) Energy consumption is calculated as an annual average for the operations as a whole or for the production line that is relevant for Nordic Swan Ecolabelled furniture/fitments.

- b) Energy consumption calculated as MJ/kg per panel must include the primary panel production and production of the main raw materials contained in the panel. Main raw materials are raw materials that account for more than 2% by weight of the finished panel (e.g. wood fibre and adhesive).
 - c) System boundary for calculation: The calculation should not include the energy consumption for extraction of raw materials. For the panel production, the energy calculation must be based on data from raw material handling up to and including the finished panel product, prior to any surface treatment. This means the calculation does not include timber cultivation and felling, but includes drying the wood, conveyor belt operation at the sawmill and production line, and the actual panel production. Transport at all stages and the energy consumed in the surface treatment process should not be included. The calculation must include lamination of the panel.
 - d) For production of chemicals, such as adhesives, the energy calculation must be based on data from production of both the adhesive and the constituent raw materials. The energy content of the raw material must not be included. In the absence of specific energy data for the adhesive, a value of 15 MJ/kg for adhesive (ready-to-use solution) can be used.
 - e) If multiple subcontractors are used for the same type of raw material, basing the calculation on the most frequently used supplier is allowed.
 - f) Where fuel energy is concerned, energy from purchased fuel, internally-produced fuel and energy from waste products must be included. Internally-produced energy and excess energy that is sold off should be stated, but do not count as consumed energy in the calculation. Internally-produced energy refers to energy (electricity and heat) not purchased from an external supplier. Internally-produced fuel sources and residual products are not counted as internally-produced energy.
- A calculation showing compliance with the requirement. The calculation must contain information about the quantity of panels produced, electricity and fuel consumed, and which fuel sources have been used.

Background

The requirement is the same as in the criteria for the Nordic Swan Ecolabelling of construction panels and has thus been changed. In order to reduce CO₂ emissions and limit global warming, it is important to reduce energy consumption. The main objective of the Nordic Swan Ecolabel's energy requirement is to help improve energy efficiencies. The requirement therefore applies to energy consumed per kg per panel (MJ/kg per panel). Because the panels are produced in varying thicknesses, using MJ/m² as a parameter in an energy requirement for the production of panels does not enable comparison. Further background information can be found in the background document for Nordic Swan Ecolabelled Construction panels.

2.8 Paper

Paper is a new material in the criteria. Paper can form part of the furniture, e.g. paper braids/cords on chairs. Paper is a renewable material, which Nordic Ecolabelling is positive towards. There are other specific requirements for paper included in laminates such as HPL, see chapter 2.9 Laminate.

The requirements apply if paper accounts for more than 5% of the product by weight.

2.8.1 Wood raw material in the paper

O32 Tree species that may not be used

Tree species listed on Nordic Ecolabelling's list of prohibited tree species* are not permitted to be used in Nordic Ecolabelled furniture and fitments.

*The list of prohibited tree species is located on the website: www.nordic-ecolabel.org/wood/

- A declaration from the applicant/manufacturer/supplier stating that no tree species in the list of prohibited tree species are used.

Background

See background to O20.

O33 Traceability and certification of wood raw materials in panels

Species name

The supplier/producer of the paper must state the name (species name) of the wood raw materials that is used in the paper

Chain of custody certification

The manufacturer/supplier of the paper must have Chain of Custody certification under the FSC/PEFC schemes.

Certified wood raw materials

A minimum of 70% by weight of the wood raw materials (virgin/recycled material) used in the paper must origin from forestry certified under the FSC and/or PEFC schemes or be recycled materials.*

The remaining proportion of wood raw material must be covered by the FSC/PEFC control schemes or be recycled material.

The requirement must be documented as purchased amount of wood on an annual basis.

* *Recycled material is defined according to ISO 14021 in the categories of pre-consumer and post-consumer, see definitions.*

Nordic Ecolabelling includes by-products from primary wood processing industries (sawdust, wood chips, shavings, bark etc.) or residues from forestry operations (bark, branches, roots, etc.) in its definition of recycled material.

- The manufacturer/supplier of the paper must state the name (species name) of the wood raw materials used in the construction panel.
- Valid FSC/PEFC Chain of Custody certification from the manufacturer/supplier of the paper. Manufacturers that only use recycled materials are exempt from this requirement.
- Documentation showing that the quantity of certified wood raw material or recycled material is met. This should be specified in e.g. invoices or delivery note.

Background

See the background to O21.

2.8.2 Chemicals in the manufacture of pulp and paper

O34 Chemicals in the manufacture of pulp and paper

Chemicals used in the manufacture of pulp and paper must meet the requirements contained in the Chemical Module for Nordic Ecolabelling of paper, Version 3 or subsequent versions.

- Documentation in compliance with the requirements contained in the Chemicals Module, Version 3.

Background

Nordic Ecolabelling has long experience of setting requirements for paper production. The consultation period for Version 3 of the Chemicals Module was autumn 2019 and the final version of the requirements is expected to be published in spring 2020. The requirements submitted for consultation are available for viewing at:

http://www.svanemerket.no/PageFiles/20068/AI002_3.0_Chemical_Module_CD.pdf

2.8.3 Surface treatment and additives in paper

O35 Antibacterial substances

Chemical products and nanomaterials* with antibacterial or disinfectant properties must not be added to the paper or used in surface treatment of the paper.

The term antibacterial means chemical products that prevent or inhibit growth of microorganisms, such as bacteria or fungi. Silver ions, silver nanoparticles, gold nanoparticles and copper nanoparticles are classed as antibacterial agents.

** In accordance with the definition of a nanomaterial adopted by the European Commission on 18 October 2011 (2011/696/EU), see definitions.*

- A declaration from the manufacturer of the paper showing that no chemical products and nanomaterial with antibacterial or disinfectant properties have been added to the paper or used as a surface treatment.

Background

See background to O12.

O36 Classification of chemical products

Chemical products used as surface treatment or added to the finished paper must not have any of the classifications in the table below.

CLP Regulation 1272/2008		
Hazard class	Hazard category	Hazard code
Hazardous to the aquatic environment	Aquatic Acute 1	H400
	Aquatic Chronic 1	H410
	Aquatic Chronic 2	H411
	Ozone	H420
Carcinogenicity ¹	Carc 1A or 1B	H350
	Carc 2	H351
Germ cell mutagenicity ¹	Muta. 1A or 1B	H340
	Muta. 2	H341
Toxic for reproduction ¹	Repr. 1A or 1B	H360
	Repr. 2	H361
	Lact.	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

¹ 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.

- A declaration from the chemical manufacturer or supplier.
- A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

O37 Classification of ingoing substances

Ingoing substances* in the chemical products used as surface treatment or added to the finished paper must not have any of the classifications in the table below:

CLP Regulation 1272/2008		
Hazard class	Hazard class and category	Hazard code
Carcinogenic ¹	Carc. 1A or 1B Carc 2	H350 H351
Germ cell mutagenic ¹	Mut. 1A or 1B Mut. 2	H340 H341
Toxic for reproduction ¹	Repr. 1A or 1B Repr 2 Lact	H360 H361 H362

¹Including all combinations of stated exposure route and stated specific effect.
For example, H350 also covers the classification H350i.

* For definition of ingoing substances and impurities, see Definitions.

- A declaration from the chemical manufacturer or supplier.
- A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

O38 Prohibited substances

The following substances shall not be an ingoing substance* in chemical products used as surface treatment or added to the finished paper:

* For definition of ingoing substances and impurities, see Definitions.

- Substances on the Candidate List**
- Substances that have been evaluated in the EU to be PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative)***
- Substances considered to be potential endocrine disruptors in category 1 or 2 on the EU's priority list of substances for further evaluation of their role in endocrine disruption****
- Halogenated organic compounds with the following exceptions:
 - Bronopol (Cas. No. 52-51-7) may be present in the chemical product at a level of not more than 0.05% by weight
 - Mixture (3:1) of CMIT/MIT (5 chloro-2-methyl-4-isothiazolin-3-one Cas. No. 247-500-7; 2-methyl-4-isothiazolin-3-one Cas. No. 220-239-6) may be present in the chemical product at a level of not more than 0.0015% by weight

- IPBC (Iodopropynyl butylcarbamate) may be present in the chemical product at a level of not more than 0.20% by weight
- Isothiazolinones may be present in the chemical product at a level of not more than 0.05% by weight
- Butylhydroxytoluene (BHT, CAS nr. 128-37-0)
- Aziridine and polyaziridines
- Bisphenol A, S and F
- Alkylphenols, alkylphenol ethoxylates and other alkylphenol derivatives*****
- Phthalates
- Pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds
- Volatile aromatic hydrocarbons (VAH). They are permitted in the chemical product as an impurity at a level of not more than 1% by weight

**See definition of ingoing substances under Definitions.*

***The Candidate List is available on the ECHA website:
<http://echa.europa.eu/candidate-list-table>*

****PBT and vPvB in accordance with the criteria in Annex XIII of REACH*

*****Substances with endocrine disrupting effects categories 1 or 2, see the following link:
http://ec.europa.eu/environment/chemicals/endocrine/strategy/being_en.htm
(Annex L, page 238 onwards)*

******Alkylphenol derivatives are defined as substances that release alkylphenols when they break down.*

- A declaration from the manufacturer/supplier of the chemical product.
- A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006.

O39 Nanomaterials

The chemical product used as surface treatment or added to the finished paper must not have nanomaterials* as ingoing substances**.

Exceptions are made for:

- Pigments***
- Naturally occurring inorganic fillers*****
- Synthetic amorphous silica
- Polymer dispersions

**In accordance with the definition of a nanomaterial adopted by the European Commission on 18 October 2011 (2011/696/EU), see definitions.*

***See definition of ingoing substances under Definitions.*

**** Nano-titanium dioxide is not classed as a pigment and is thus not covered by the requirement.*

***** This applies to fillers covered by Annex V item 7 of REACH *****This applies to traditional synthetic amorphous silica.*

- A declaration from the chemical manufacturer that the chemical product does not contain any nanomaterial.
-

Background

For general background to O36-O39, see O12-O16.

O40 Organofluorine compounds

Chemicals used in the surface treatment of paper or as additives in the production of pulp and/or paper must not contain organofluoride compounds.

- A declaration from the chemical supplier that chemicals for surface treatment do not contain organofluoride compounds.
- A declaration from the manufacturer of pulp and paper that no chemicals containing organofluoride compounds have been added during production of the pulp or paper.
- A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

Background

Nordic Ecolabelling does not have any experience of paper as a material in furniture. However, we know that chemicals can be added to give paper desired characteristics. Organofluoride compounds are used for many other purposes and are widely used to make products more water resistant. For example, they are used as agents for waterproofing textiles, footwear and food packaging. It is therefore not possible to rule out that such fluorine compounds may be added to the paper to give it such properties. It is known from other criteria that fluorinated substances may also be added during the production of pulp or paper. The requirement therefore applies to any additives to the paper as a finished product and to any chemicals used in the production of pulp and paper.

PFAS are a group of different types of fluorinated compounds that are persistent and bioaccumulable. PFOS (perfluorooctane sulfonate) and PFOA (perfluorooctanoic acid) are the two fluorinated compounds that we know the most about today. They both have serious effects on human health and the environment. Long-chain perfluorocarboxylic acids (C9-PFCA – C14-PFCA) are another type of fluorinated substance that is also persistent, with high potential for bioaccumulation. Knowledge of short-chain perfluorinated compounds has increased, and several of these have been suspected of being as harmful as the long-chain compounds they replace.³³ PFBS is a fluorine compound with a short carbon chain (C4) recently adopted to be listed on the Candidate List.

2.9 Laminate

The requirements in this chapter cover different types of laminate, for example, direct pressure laminate (melamine), High Pressure Laminate (HPL), Continuous Pressure Laminate (CPL) and compact laminate. The requirements apply only to the laminate itself, i.e. if a wood-based panel is used as a substrate, the panel must meet the requirements in Chapter 2.7. Adhesives used to secure the laminate to the substrate must meet the requirements in Chapter 2.5. Any surface treatment must meet the requirements in Chapter 2.9 and edging must meet the requirements in Chapter 2.12.

The criteria for chemicals apply to all chemical products used for the manufacture of laminate, for example, resins. However, the criteria do not apply

³³ Danish Ministry of the Environment, 2015: Short-chain polyfluoroalkyl substances (PFAS), A literature review of information on human health effects and environmental fate and effect aspects of short-chain PFAS, Environmental project No. 1707, 2015

to chemical products used for the manufacture of paper and for printing patterns on decor paper.

O41 Nordic Swan Ecolabelled laminate

Laminate that is Nordic Swan Ecolabelled or is included in a licence for the Nordic Swan Ecolabelling of Construction and facade panels automatically meets the requirements in Chapter 2.9.

- ☒ Name, manufacturer and licence number for the laminate.

O42 Antibacterial substances

Chemical products and nanomaterials* with antibacterial or disinfectant properties must not be added to the laminate.

The term antibacterial means chemical products that prevent or inhibit growth of microorganisms, such as bacteria or fungi. Silver ions, silver nanoparticles, gold nanoparticles and copper nanoparticles are classed as antibacterial agents.

* *In accordance with the definition of a nanomaterial adopted by the European Commission on 18 October 2011 (2011/696/EU), see definitions.*

- ☒ A declaration from the manufacturer of the laminate showing that no chemical products and nanomaterials with antibacterial or disinfectant properties have been added to the laminate.

Background

The requirement is new. A requirement is also made that the finished item of furniture must not contain nanoparticles and antibacterial substances. A declaration of compliance with this is required from the furniture manufacturer. To ensure that the laminate manufacturer does not use these substances, the requirement is made here too. Laminate worktops for kitchens and bathrooms can be given an antibacterial finish and are marketed as more hygienic. More background information about nanoparticles and antibacterial substances can be found in previous chapters, see 2.5.

O43 Classification of chemical products

The chemical products used for the manufacture of laminate must not have any of the classifications in the table below.

CLP Regulation 1272/2008		
Hazard class	Hazard class and category	Hazard code
Hazardous to the aquatic environment	Aquatic Acute 1 Aquatic Chronic 1 Aquatic Chronic 2 Ozone	H400 H410 H411 H420
Acute toxicity	Acute Tox 1 or 2 Acute Tox 3	H300, H310, H330 H301, H311, H331
Specific target organ toxicity - single exposure/repeated exposure	STOT SE 1 STOT RE 1	H370 H372
Carcinogenicity ¹	Carc. 1A or 1B Carc. 2	H350 H351
Germ cell mutagenicity ¹	Mut. 1A or 1B Mut. 2	H340 H341

Toxic for reproduction ¹	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362
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¹ Including all combinations of stated exposure route and stated specific effect. For example, H350 also covers the classification H350i.

Exemptions apply to:

- Classifications H341, H301 and H331 for resins containing a maximum of 10% by weight of phenol (CAS number 108-95-2).
 - Classifications H350, H341, H301, H311 and H331 for resins containing formaldehyde (CAS number 50-00-0). Emissions of formaldehyde from the laminate are regulated in a separate requirement.
 - Classifications H301, H311, H331 and H370 for resins containing a maximum of 10% by weight of methanol (CAS number 67-56-1).
- A declaration from the manufacturer or supplier of the chemical products that are used for the manufacture of laminate.
- Safety data sheet for each chemical product used for the manufacture of laminate in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

Background

It was unclear in Version 4 of the criteria for furniture whether the chemical requirements apply to laminate. A separate chapter has therefore now been included stipulating all the chemical requirements that must be met for all types of laminates. It is desirable to set requirements for the chemicals used in the manufacture of laminate, since many chemicals are used and some of them have hazardous properties in their unhardened state. The requirements apply to all chemicals used in the manufacture of laminate. However, the requirements do not apply to chemicals used in the manufacture of paper and to dye or print patterns on decor paper. It is felt that this takes place too far off in the supply chain and the steerability for setting requirements is low.

Resins containing phenol, formaldehyde and methanol are used in the production of several types of laminates to waterproof the paper. Since it is not possible to produce laminate without these resins, an exemption is made for these substances. A maximum of 10% by weight of phenol and methanol respectively is permitted in the resins. This threshold limit value is taken from Version 6 of the criteria for Construction and facade panels. To ensure that the resins have hardened properly, a subsequent requirement is made concerning emissions from the laminate in its finished form.

O44 Classification of ingoing substances

Ingoing* substances in the chemical product used in the manufacturing of laminate must not have any of the classifications in the table below:

Hazard class	Hazard class and category	Hazard code
Carcinogenicity ¹	Carc. 1A or 1B Carc. 2	H350** H351
Germ cell mutagenicity ¹	Mut. 1A or 1B Mut. 2	H340 H341***
Toxic for reproduction ¹	Repr. 1A or 1B Repr. 2 Lact	H360 H361 H362

¹Including all combinations of stated exposure route and stated specific effect. For example, H350 also covers the classification H350i.

**See definition of ingoing substances under Definitions.*

***An exemption applies to the classification H350 for resins containing formaldehyde (CAS number 50-00-0). Emissions of formaldehyde are regulated in a separate requirement, see O47.*

****An exemption applies to the classification H341 for resins containing a maximum of 10% by weight of phenol (CAS number 108-95-2).*

- A declaration from the manufacturer or supplier of the chemical products that are used for the manufacture of laminate.
- Safety data sheet for each chemical product used for the manufacture of laminate in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

Background

The requirement was added to the laminate chapter to make it clear that the requirement must be met. For background details, see the general chemical requirements in Chapter 2.5. In this requirement too, there is a need for an exemption for formaldehyde that is used in resins. A subsequent requirement is made concerning emissions of formaldehyde from the laminate in its finished form.

O45 Prohibited substances

The following substances shall not be an ingoing substance* in chemical products used in the manufacturing of the laminate:

** For definition of ingoing substances and impurities, see Definitions.*

- Substances on the Candidate List**
- Substances that have been evaluated in the EU to be PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative)***
- Substances considered to be potential endocrine disruptors in category 1 or 2 on the EU's priority list of substances for further evaluation of their role in endocrine disruption****
- Halogenated organic compounds with the following exceptions:
 - Bronopol (Cas. No. 52-51-7) may be present in the chemical product at a level of not more than 0.05% by weight
 - Mixture (3:1) of CMIT/MIT (5 chloro-2-methyl-4-isothiazolin-3-one Cas. No. 247-500-7; 2-methyl-4-isothiazolin-3-one Cas. No. 220-239-6) may be present in the chemical product at a level of not more than 0.0015% by weight
 - IPBC (Iodopropynyl butylcarbamate) may be present in the chemical product at a level of not more than 0.20% by weight
- Isothiazolinones may be present in the chemical product at a level of not more than 0.05% by weight
- Butylhydroxytoluene (BHT, CAS nr. 128-37-0)
- Aziridine and polyaziridines
- Bisphenol A, S and F
- Alkylphenols, alkylphenol ethoxylates and other alkylphenol derivatives*****
- Phthalates
- Pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds

- Volatile aromatic hydrocarbons (VAH). They are permitted in the chemical product as an impurity at a level of not more than 1% by weight
- *See definition of ingoing substances under Definitions.*
- **The Candidate List is available on the ECHA website:
<http://echa.europa.eu/candidate-list-table>*
- ***PBT and vPvB in accordance with the criteria in Annex XIII of REACH*
- ****Substances with endocrine disrupting effects categories 1 or 2, see the following link:
http://ec.europa.eu/environment/chemicals/endocrine/strategy/being_en.htm
(Annex L, page 238 onwards)*
- *****Alkylphenol derivatives are defined as substances that release alkylphenols when they break down.*

- A declaration from the manufacturer/supplier of the chemical product used in the manufacturing of the laminate.
- A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006.

Background

The requirement was added to the laminate chapter to make it clear that the requirement must be met. For background details, see the general chemical requirements in Chapter 2.5.

O46 Nanomaterials

The chemical product must not have nanomaterials* as ingoing substances**. Exemptions apply to:

- Pigments***
- Naturally occurring inorganic fillers****.
- Synthetic amorphous silica*****
- Polymer dispersions

** In accordance with the definition of a nanomaterial adopted by the European Commission on 18 October 2011 (2011/696/EU), see definitions ** For a definition of ingoing substances, see definitions.*

**** Nano-titanium dioxide is not classed as a pigment and is thus not covered by the requirement.*

***** This applies to fillers covered by Annex V item 7 of REACH *****This applies to traditional synthetic amorphous silica.*

- A declaration from the chemical manufacturer that the chemical product does not have any nanomaterial as ingoing substances.

Background

The requirement is new for laminate. Previous requirements contain more background information about nanomaterials, see Chapter 2.5.

O47 Requirements for emissions

Laminate must comply with the requirements for emissions in the table below. The test must be performed in compliance with CEN/TS 16516, ISO 16000-3/-6/-9/-10 or an equivalent test method.

Substances or groups of substances	Threshold limit values after 28 days ($\mu\text{g}/\text{m}^3$)
TVOC (C6-C16)	160
SVOC (C16-C23)	30
Formaldehyde	30

Alternatively, compliance with only the requirement for emissions of formaldehyde can be chosen for direct pressure laminate (melamine). Emissions of formaldehyde must then not exceed an average of $0.07 \text{ mg}/\text{m}^3$ air as measured by EN 717-1. The emissions can also be documented using the ASTM E 1333 and JIS A 1460 test methods. The correlations between the threshold limit values that must be met measured by EN 717-1 and the other test methods are:

EN 717-1 (23°C/45% RH)	ASTM E 1333 (25°C/50% RH)	ASTM E 1333 (25°C/50% RH)	JIS A 1460
0.07 mg/m^3	0.08 ppm	0.10 mg/m^3	0.53 mg/L

- ☒ Analysis report, including measurement methods, results and measurement frequency. It must be clearly stated which method/standard was used, the laboratory that conducted the analysis, and that the analysis laboratory is an independent third party. Other analysis methods than those stated in the requirement may be used, provided that the correlation between test methods can be verified by an independent third party.

Background

The requirement is new for the product group Furniture and fitments and has been taken from the product group Construction and facade panels, Version 6, where HPL boards and melamine-coated boards can be Nordic Swan Ecolabelled. It is considered relevant to set requirements for emissions in order to ensure that the resin used to manufacture the laminate has properly hardened and is not releasing high emissions indoors.

There are requirements for the amount of VOCs in adhesives for wood-based panels, and for the amount of VOCs in the products that are used or the amount of VOCs applied in the surface treatment of wood-based materials. As these requirements are not applicable for chemicals used in the manufacture of laminate, requirements are therefore made concerning emissions of TVOC and SVOC, in addition to requirements concerning emissions of formaldehyde.

For direct pressure laminate (melamine), there is the option of meeting the formaldehyde emission requirements using a test in compliance with EN 717-1, or one of the other test methods where a correlation between the threshold limit values is carried out. Usually the same manufacturer will make the carrier substrate material, in the form of chipboard or MDF, and waterproof the paper with resin. The manufacturer then laminates the waterproofed paper on the panel at the factory using heat and pressure. It is thus not possible to just test the laminate emissions. It is the panel as a finished product that is tested. It is normal to use just one layer of paper when manufacturing direct pressure laminate. This means that it contains less resin than other types of laminate. It is thus sufficient that direct pressure laminate shows compliance with the formaldehyde emissions requirements. The same requirements are made earlier in the criteria document for wood-based panels. However, direct pressure

laminate must meet the lower threshold limit value of 0.07 mg/m³ of air whether chipboard or MDF is used as the carrier substrate. This is because the laminate layer acts partly as a barrier against emissions of formaldehyde from the carrier substrate and that it should therefore also be possible to meet the lower threshold limit value for MDF.

2.9.1 Requirement where laminate makes up more than 10% by weight of the furniture/fitment as a finished product

O48 Energy consumption in the manufacture of laminate

No more than 14 MJ/kg per panel may be used for the manufacture of the laminate.

The energy consumption must be stated as an annual average and can either be stated for the manufacture of the laminate that must be included in the Nordic Swan Ecolabelled furniture/fitment, or for the entire production.

Energy for the production of raw materials must not be included in the calculation. Paper has a separate energy requirement.

Internally produced energy and excess energy that are sold off must be stated but must not be included as consumed energy in the calculation.

- Calculation of energy consumption from the laminate manufacturer.

Background

The requirement was also included in Version 4 of the criteria and the requirement level is unchanged. Previously, there were two requirement levels depending on the thickness of the laminate. One of the requirement levels has been removed because the requirement only has to be met if the content of laminate in the finished item of furniture is more than 10% by weight.

This is the same as the requirement in Version 6 of Construction and facade panels, where Nordic Ecolabelling gathered data for energy consumption for the manufacture of HPL from various manufacturers. The requirement's threshold limit value for thicker laminates is still considered to be strict and has therefore not been changed.

2.9.2 Requirement where laminate makes up more than 30% by weight of the furniture/fitment as a finished product

The requirements for paper in this section only apply to kraft paper. It is not necessary for decor paper and any balance paper to meet the requirements.

Nordic Ecolabelling has produced a calculation sheet for requirements O51(Energy). This can be used to calculate and document the requirement. Pulp that has been inspected in accordance with the Nordic Swan Ecolabel Base Module for paper automatically meets the requirements for pulp in this section. However, it must be shown that the cumulative pulp and paper production also meets the requirements.

O49 Wood fibre in paper

Where paper is used in the manufacture of laminate, the following requirements must be met:

- The names of the species of trees used to produce the paper must be stated. Species of trees on the Nordic Swan Ecolabel's list of prohibited tree species*

(<http://www.nordic-ecolabel.org/wood/>) must not be used. The requirement applies to new fibres only and not to recycled fibres*.

- The paper producers must be Chain of Custody certified by the FSC scheme or the PEFC scheme.
- Compliance with one of the following three alternatives is required, on an annual basis, for certified wood fibre and/or recycled fibres:
 - a) 70% of the fibre raw material in the paper must be certified by the FSC or the PEFC scheme
 - b) The paper must be labelled FSC or PEFC Recycled. Alternatively, 70% of the fibre raw material must consist of recycled fibres.
 - c) If less than 70% of the fibre raw material content in the paper is recycled fibre, the percentage of fibre raw material that must be sourced from certified forests is calculated using the following formula:

$$Y (\%) \geq 70 - x$$

Y = Percentage of fibre raw material from certified forests

x = Percentage of recycled fibre or by-products (e.g. shavings, wood chips and sawdust)

**Recycled material defined as pre-consumer and post-consumer in accordance with ISO 14021. See detailed information in Definitions.*

- Information about names of the tree species used and a declaration of compliance with the requirement concerning prohibited tree species.
- Copy of the paper producer's FSC or PEFC Chain of Custody certificate.
- Certified wood fibre option a): An invoice between the paper manufacturer and laminate manufacturer showing the purchase of FSC/PEFC certified paper.
- Certified wood fibre option b): An invoice between the paper manufacturer and laminate manufacturer showing the purchase of FSC or PEFC Recycled labelled paper. Or a declaration of compliance with the requirement for recycled fibre content from the paper manufacturer. Recycled fibres not covered by FSC/PEFC chain of custody certificates must be covered by delivery notes of paper for recycling in accordance with EN 643.
- Certified wood fibre option c): Paper manufacturer's calculation of the percentage of fibre raw material that is FSC/PEFC certified and recycled, and documentation showing that paper with the certified amount is purchased. This should be specified in e.g. invoices or delivery note.

Background

The requirement was also included in Version 4 of the criteria but has been updated to comply with the new forestry requirements introduced by Nordic Ecolabelling in 2015. Consequently, tree species listed on Nordic Ecolabelling's list of prohibited tree species may not be used, and the content of certified wood fibre has been increased from 30% to 70%. This is a significant increase but corresponds to the requirement level proposed in the Nordic Swan Ecolabel's revised basic module for paper, Version 3, with which the requirement has largely been harmonised.

The threshold limit value has been raised to 30% by weight of the finished furniture. This was 10% by weight in the previous version of the criteria. In practice, this means that the requirement only must be met for compact laminate which is made of compact layers of impregnated paper. The reason why only compact laminate needs to meet the paper requirements is that the requirements

must be documented far back in the supply chain and are most relevant when the laminate is composed of a large amount of paper.

Kraft paper and decorative paper are used to manufacture compact laminate. Only the uppermost layer is made of decorative paper. Since it therefore accounts for a very small percentage of the panel it does not need to meet the requirements for paper. A sheet of balance paper can be used if only one side of a panel is laminated. This balance paper does not need to meet the requirements. Kraft paper must meet the requirement and it is relevant to have a requirement for the wood fibre to ensure that it comes from sustainably managed forests or is recycled fibre. Recycled fibre is environmentally beneficial as it saves virgin raw materials. Moreover, producing paper from new fibres consumes more energy than producing it from recycled fibres.

O50 Emissions of COD from paper and pulp production

The total discharge of COD (chemical oxygen demand) into waterways must be less than the COD value in the table below.

COD is calculated by adding COD emissions from the pulp and paper:

COD pulp (kg/ADt) + COD emissions from the paper machines (kg/ADt).

A weighted reference value of the different types of pulp is calculated for paper produced from mixes of chemical, recycled fibres and mechanical pulp.

Types of pulp	Total emission of COD for both pulp and paper (kg/ADt)
Unbleached chemical pulp	14.0
CTMP pulp	19.0
TMP/Groundwood pulp	7.0
Recycled fibre pulp	4.0

- ☒ Information about the types of pulp used for the manufacture of paper.
- ☒ If pulp that is inspected in accordance with the Nordic Swan Ecolabelled basic module for paper is used: Description of manufacturer, production facility and name of the pulp.
- ☒ Description of test procedures including measuring methods and measuring results for the last 12 months from the paper and pulp manufacturers.
- ☒ Calculation from the paper and pulp manufacturers showing that the total emission of COD is below the relevant threshold limit value in the requirement.

Background

The requirement was also included in Version 4 of the criteria and remains unchanged. All pulp and paper production facilities generate wastewater with organic content expressed as chemical oxygen demand (COD). It consists of organic materials from wood, bark and fibres, plus residues from cooking, bleaching and paper chemicals. Microorganisms consume oxygen to break down the organic matter. This may lead to low oxygen concentrations in the water and, in some cases, anaerobic conditions. The Nordic Swan Ecolabel's basic module for paper also contains requirements concerning other emissions, such as emissions of nitrogen and phosphorus. It has been decided, however, only to set requirements for COD. COD emissions also correlate with other emissions. If the emission of COD is low, emissions of other substances are thus also expected to be low.

O51 Energy consumption in paper and pulp production

The following requirements must be met:

$$P_{\text{electricity(total)}} < 2.5$$

$$P_{\text{fuel(total)}} < 2.5$$

For paper comprising solely of TPM/GW produced on-site, the limit value for $P_{\text{fuel(total)}}$ is 1.25

P is the energy score for the paper and pulp production. The energy score from both the production of paper and the pulps are included in $P_{\text{electricity(total)}}$ and $P_{\text{fuel(total)}}$. A more detailed explanation of the calculation is given in Annex 2.

- If pulp that is inspected in accordance with the Nordic Swan Ecolabelled basic module for paper is used: Description of manufacturer, production facility and name of the pulp
- A calculation from the paper and pulp manufacturers showing compliance with the limit values for the score. Please note that there has been developed a calculation sheet for the energy calculations that can be obtained by Nordic Ecolabelling.

Background

The requirement was also included in Version 4 of the criteria but has been changed to harmonise with the requirement proposed in Nordic Swan Ecolabel's revised basic module for paper Version 3. The calculation in the revised basic module has been reworked, resulting in a change to the requirement level for the total energy score. Details of this can be found in the basic module's background document.

The requirement must be met for compact laminate which consists largely of kraft paper, and where the manufacture of paper accounts for a substantial amount of the energy used in the production of the laminate as a whole. It is therefore relevant to set energy consumption requirements for both paper and pulp. A reference value for kraft paper production that is to be used for the calculation was defined when Construction and facade panels Version 6 was revised. This reference value has not been changed and further details are given in Annex 2.

2.10 Surface treatment of wood, wood-based panels and laminate

The requirements in this section relate to surface treatment of wood, bamboo and willow, wood-based panels and laminate.

O52 Antibacterial substances

Chemical products and nanomaterials* with antibacterial or disinfectant properties must not be used in surface treatment.

The term antibacterial means chemical products that prevent or inhibit growth of microorganisms, such as bacteria or fungi. Silver ions, silver nanoparticles, gold nanoparticles and copper nanoparticles are classed as antibacterial agents.

** In accordance with the definition of a nanomaterial adopted by the European Commission on 18 October 2011 (2011/696/EU), see definitions.*

- A declaration from the supplier of surface treatment that no chemical products and nanomaterial with antibacterial or disinfectant properties have been used in the surface treatment.

Background

The requirement is new because there were no requirements for antibacterial substances for surface treatment products in Version 4 of the criteria. Since Nordic Ecolabelling wants to take a restrictive approach to nanoparticles and antibacterial substances, it is relevant to make the requirement for surface treatment products too. More detailed background information is given in Chapter 2.5.

O53 Classification of chemical products

The chemical products used for the manufacture of laminate must not have any of the classifications in the table below.

CLP Regulation 1272/2008		
Hazard class	Hazard class and category	Hazard code
Acute toxicity	Acute Tox 1 or 2	H300
	Acute Tox 1 or 2	H310
	Acute Tox 1 or 2	H330
	Acute Tox 3	H301
	Acute Tox 3	H311
	Acute Tox 3	H331
Specific target organ toxicity - single exposure/repeated exposure	STOT SE 1	H370
	STOT RE 1	H372
Carcinogenicity ¹	Carc. 1A or 1B	H350
	Carc. 2	H351
Germ cell mutagenicity ¹	Mut. 1A or 1B	H340
	Mut. 2	H341
Toxic for reproduction ¹	Repr. 1A or 1B	H360
	Repr. 2	H361
	Lact.	H362

¹ Including all combinations of stated exposure route and stated specific effect. For example, H350 also covers the classification H350i.

- Safety data sheet for each chemical product used in the surface treatment/surface treatment system in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).
- A declaration from the manufacturer of the chemical products that are used in the surface treatment/surface treatment system.

Background

The requirement is unchanged, but the minimum threshold for when the requirements for surface treatment must be met have been changed. Previously, all requirements applied only if the parts that had been surface treated made up more than 5% by weight of the finished furniture. This has been changed. The chemical requirements must now be met irrespective of the percentage of the surface treated parts in the furniture, and the requirements for the amount of hazardous substances and VOCs applied in the surface treatment must be met when the parts account for more than 5% by weight. Nordic Ecolabelling normally sets requirements for chemicals irrespective of the quantities used, which is why the minimum threshold has been changed.

The chemical requirements for surface treatment are now in a separate chapter to make it clearer which chemical requirements and exceptions apply specifically for chemical products that are used in surface treatment systems.

The amendment has removed the “hazardous to the environment” hazard class from the table. This was previously listed as an exception in the general chemical requirements. The “hazardous to the environment” hazard class is permitted for chemical products in surface treatment systems as there is a separate requirement for a maximum amount of applied environmentally hazardous substances.

O54 Classification of ingoing substances

Ingoing substances* in the chemical product that is used for the surface treatment must not have the classifications in the table below:

Hazard class	Hazard class and category	Hazard code
Carcinogenic ¹	Carc. 1A or 1B Carc. 2	H350 H351
Germ cell mutagenic ¹	Mut. 1A or 1B Mut. 2	H340 H341
Toxic for reproduction ¹	Repr. 1A or 1B Repr. 2 Lact	H360 H361 H362

¹Including all combinations of stated exposure route and stated specific effect. For example, H350 also covers the classification H350i.

*See definition of ingoing substances under Definitions.

An exemption applies to the requirement for photo initiators for Category 2 classification.

- Safety data sheet for each chemical product used in the surface treatment/surface treatment system in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).
- A declaration from the manufacturer of the chemical product(s) used in the surface treatment.

Background

The requirement has been raised so that Category 2 substances are now also included. An exemption applies to photo initiators. They may be present in UV products. They are present in small amounts but are necessary to speed up the hardening process.

O55 Prohibited substances

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

* For definition of ingoing substances and impurities, see Definitions.

- Substances on the Candidate List**
- Substances that have been evaluated in the EU to be PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative)***
- Substances considered to be potential endocrine disruptors in category 1 or 2 on the EU’s priority list of substances for further evaluation of their role in endocrine disruption****
- Halogenated organic compounds with the following exceptions:
 - Bronopol (Cas. No. 52-51-7) may be present in the chemical product at a level of not more than 0.05% by weight
 - Mixture (3:1) of CMIT/MIT (5 chloro-2-methyl-4-isothiazolin-3-one Cas. No. 247-500-7; 2-methyl-4-isothiazolin-3-one Cas. No.

220-239-6) may be present in the chemical product at a level of not more than 0.0015% by weight

- IPBC (Iodopropynyl butylcarbamate) may be present in the chemical product at a level of not more than 0.20% by weight
- halogenated organic pigments that comply with the Council of Europe recommendation "Resolution AP (89) 1 on the use of colorants in plastic materials coming into contact with food", point 2.5
- Epoxy acrylate used in UV curing coatings
- Isothiazolinones may be present in the chemical product at a level of not more than 0.05% by weight
- Butylhydroxytoluene (BHT, CAS nr. 128-37-0)

An exemption is given for BHT in UV-curing lacquers and paints in amounts up to 0.3% (3000 ppm) in the finished product (lacquer or paint). If BHT is given a harmonized official classification so that the substance does not meet the requirements of the criteria document, the exemption will no longer be valid.

- Aziridine and polyaziridines
- Bisphenol A, S and F
- Alkylphenols, alkylphenol ethoxylates and other alkylphenol derivatives*****
- Phthalates
- Pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds
- Volatile aromatic hydrocarbons (VAH). They are permitted in the chemical product as an impurity at a level of not more than 1% by weight

**See definition of ingoing substances under Definitions.*

***The Candidate List is available on the ECHA website:
<http://echa.europa.eu/candidate-list-table>*

****PBT and vPvB in accordance with the criteria in Annex XIII of REACH*

*****Substances with endocrine disrupting effects categories 1 or 2, see the following link:
http://ec.europa.eu/environment/chemicals/endocrine/strategy/being_en.htm
(Annex L, page 238 onwards)*

******Alkylphenol derivatives are defined as substances that release alkylphenols when they break down.*

- A declaration from the manufacturer/supplier of the chemical product used for surface treatment.
- A safety data sheet for the product used for surface treatment in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006.

Background

The requirement has changed, with the addition that ingoing substances that are on the Candidate List, considered PBT or vPvB, or potentially endocrine disrupting, are not permitted as ingoing substances in chemical products. This requirement already exists in a number of Nordic Ecolabelling's other product groups, such as Floor coverings, Indoor paints and varnishes, and Construction and facade panels.

The requirement has been revised to include chemical products that are used in surface treatment systems. There are three exemptions for halogenated organic compounds:

- **Preservatives:** The threshold limit values are the same as those in Version 4 of the criteria. For a more detailed explanation of why exemptions are made for preservatives, see Chapter 2.5.
- **Paint pigments:** Halogenated paint pigments are used in the paint industry and an exemption is made if they meet the Council of Europe's recommendation "Resolution AP (89) 1 on the use of colorants in plastic materials coming into contact with food, point 2.5. PCBs have been found in analyses of paints containing organic pigments. PCBs are not added but can be formed in the production process by reactions between different chlorinated solvents and the organic pigment. Nordic Ecolabelling does not really want to allow PCBs, but since it is not possible to set a zero limit for the pigments, Nordic Ecolabelling has chosen the same level that is approved in food packaging (Resolution 89 point 2.5). This threshold has been set because it is an established method in the industry and the low threshold allowed in food packaging is considered strict enough for indoor paints and varnishes. The exemption for these pigments is necessary to enable the manufacturers to make products with good colour fastness and not use pigments that are even more damaging to the environment.
- **Epoxy acrylate in UV curing surface treatment products:** A side reaction can occur during the manufacture of epoxy acrylate which results in a small amount of chlorine remaining inside the molecule. The chlorine that is bound in the molecule is relatively stable and will not react further while polymerisation continues. The ban on ingoing substances in the form of halogenated organic compounds applies to the chlorine because it becomes part of the molecule. The quantity of oligomers is normally below 1,000 ppm. According to the manufacturers of surface treatment products, however, it is not possible to state an exact quantity. Nordic Ecolabelling does not want to ban epoxy acrylate that is used in UV curing surface treatment products. These surface treatment products have environmental advantages compared with others, one of which is that they substantially minimise the use of solvents. The chlorine in the molecules is not added intentionally for a specific purpose and is therefore exempted. Bisphenol A is also used in the manufacture of epoxy acrylate and it is clarified that in this case Bisphenol A is exempt from the requirement.

O56 Nanomaterials

The chemical product used for surface treatment must not have nanomaterials* as ingoing substances**. Exemptions are made for:

- Pigments***
- Naturally occurring inorganic fillers****
- Synthetic amorphous silica*****
- Polymer dispersions

**In accordance with the definition of a nanomaterial adopted by the European Commission on 18 October 2011 (2011/696/EU), see definitions.*

***See definition of ingoing substances under Definitions.*

*** *Nano-titanium dioxide is not classed as a pigment and is thus not covered by the requirement.*

**** *This applies to fillers covered by Annex V item 7 of REACH*

***** *This applies to traditional synthetic amorphous silica.*

- A declaration from the chemical manufacturer that the chemical product does not have nanomaterial as ingoing substance.

Background

The requirement is new. More detailed background information is given in Chapter 2.5.

O57 Free formaldehyde

The content of free formaldehyde in each individual chemical product used for surface treatment must not exceed 0.2% by weight (2,000 ppm) measured in the finished product.

- A declaration from the manufactures of the chemical products in the surface treatment system.

Background

The requirement remains unchanged. For further background information about free formaldehyde, see Chapter 2.5.

2.10.1 Requirement if surface coated parts make up more than 5% by weight of the furniture/fitment

O58 Quantity applied and application method

For each surface treatment system used, the following information must be provided by the furniture manufacturer:

- a) Name of the surface treatment product and manufacturer of the surface treatment product
- b) Quantity applied (g/m^2), number of coats and application method(s) used.

The following levels of efficiency* must be used when calculating the quantities of applied environmentally hazardous substances and VOCs in subsequent requirements:

- Automated spray with no recycling, 50%
- Automated spray with recycling, 70%
- Spray application, electrostatic, 65%
- Spray application, bell/disk, 80%
- Roller varnishing 95%
- Blanket varnishing 95%
- Vacuum varnishing 95%
- Dipping 95%
- Rinsing 95%

**The levels of efficiency are standard values. Other efficiency levels may be applied if they can be documented.*

- A description from the furniture manufacturer of each surface treatment system that is used.

Background

The requirement is unchanged. However, it has been made more explicit that the furniture manufacturer must also state the name and manufacturer of the chemical products that are used in each surface treatment system. Information about applied quantities, number of coats and method of application was also a requirement in the previous version of the criteria. This information is required to calculate applied quantities of environmentally hazardous substances and VOCs in subsequent requirements.

O59 Quantity of applied volatile organic compounds (VOC)

The chemical products that are used must meet one of the following alternatives in each surface treatment system:

- a) The total content of VOCs* must not exceed 5% by weight
- b) The total amount of VOCs applied must not exceed the relevant threshold limit value in the table below:

Type of furniture	Threshold limit value for VOC applied (g/m ² coated surface)
Furniture coated with laminate	10
Furniture and interior doors intended for domestic use	30
Furniture and interior doors intended for non-domestic use	60
Kitchen and bathroom fitments	60

The applied quantity of VOCs according to alternative b) is calculated using the following formula:

$$\frac{\text{Applied amount of the surface treatment chemical} \left(\frac{\text{g}}{\text{m}^2} \right) \times \text{share of VOC in the surface treatment chemical (\%)}}{\text{Efficiency of the surface treatment (\%)}}$$

For both these alternatives, it is the content of VOCs that the chemical products have in their uncured form that must meet the requirement. If the products require dilution, the calculation must be based on the content in the diluted product.

**Volatile organic compounds (VOCs) are defined as compounds with a boiling point of <250°C at 101.3 kPa (1 atm).*

- Safety data sheet in accordance with Appendix II of REACH (Regulation No. (EC) 1907/2006) for each chemical product in the surface treatment system.
- A declaration from the manufacturers of the chemical products in the surface treatment system stating the quantities of VOCs in each product.
- A calculation from the furniture manufacturer showing that alternative b) in the requirement is met if the surface treatment system does not meet alternative a).

Background

The reason for this requirement is that VOCs contribute to the formation of ozone and can have adverse health effects in the workplace and indoor climates. Nordic Ecolabelling has decided not to introduce requirements for the testing of

VOC emissions from furniture as a finished product, since such tests are expensive and time-consuming, especially for small-scale furniture makers. With a strict requirement for the amount of VOCs in the surface treatment products or the applied amount of VOCs, the emissions from the furniture are expected to be low.

The threshold limit values under this requirement have not been changed. However, changes have been made for which types of furniture must meet which threshold limit values. There was a requirement in Version 4 of the criteria that bedroom furniture and living room furniture must meet the threshold limit value of 10 g/m². This has proved problematic when processing an application because normally an item of furniture can be used in several different rooms and it has been unclear which threshold limit value must be met. The requirement has therefore been changed so that furniture intended for domestic use must meet the 30 g/m² requirement. This is the threshold limit value most often used when processing an application and it is considered to be strict. It was also stated in Version 4 of the criteria that the requirement for doors was 10 g/m². This threshold limit value has proved too strict to achieve good quality. The threshold limit value has therefore been changed to 30 g/m² for doors intended for domestic use and 60 g/m² for doors intended for non-domestic use. The requirement threshold of 10 g/m² is unchanged for furniture coated with laminate. It is not necessary to surface treat these and if they are treated, they do not require as much coating to achieve a durable finish.

There was also a paragraph in Version 4 of the criteria saying that high-quality furniture must meet the higher threshold limit value of 60 g/m². High-quality furniture was considered those which in subsequent requirements for surface strength and durability are at level 5 or above. Level 5 is only relevant for tabletops and worktops and no other types of furniture. All surface treated furniture must meet the relevant requirement level for surface strength and the paragraph about high-quality furniture has therefore been deleted. The furniture that must meet the higher threshold limit value of 60 g/m² is furniture intended for use in office or public spaces and in kitchens and bathrooms. The reason for the higher threshold limit value is that these types of fitments can expect more wear and tear and need a higher-quality surface finish for a longer-lasting result.

O60 Applied environmentally hazardous substances

The chemical products that are used must meet one of the following alternatives in each surface treatment system:

- a) None of the chemical products may be classified as H410, H411 or H412 under the CLP Regulation No. 1272/2008
- b) The amount of applied environmentally hazardous substances must not exceed 90 g/m² of treated surface.

For the calculation, the content of environmentally hazardous substances must be weighted using the formula below before calculating the total amount of applied environmentally hazardous substances:

$$100*H410 + 10*H411 + H412$$

H410 is the total concentration of ingoing substances classified as H410 in the uncured surface treatment product as a percentage.

H411 is the total concentration of ingoing substances classified as H411 in the uncured surface treatment product as a percentage.

H412 is the total concentration of ingoing substances classified as H412 in the uncured surface treatment product as a percentage.

Preservatives do not need to be included in the calculation.

The total amount of applied environmentally hazardous substances is calculated using the following formula:

$$\frac{\text{Applied amount of the surface treatment chemical } \left(\frac{\text{g}}{\text{m}^2}\right) \times \text{weighted share of environmentally hazardous substances}^1 (\%)}{\text{Efficiency of the surface treatment } (\%)}$$

¹Weighted share of environmentally hazardous substances in the surface treatment chemical

- Safety data sheet in accordance with Appendix II of REACH (Regulation No. (EC) 1907/2006) for each chemical product in the surface treatment system.
- A declaration from the manufacturers of the chemical products in the surface treatment system stating the amounts of constituent environmentally hazardous substances in each product.
- A calculation from the furniture manufacturer showing that alternative b) in the requirement is met if the surface treatment system does not meet alternative a).

Background

The requirement has been changed to harmonise with Nordic Ecolabelling's other product groups, e.g. Floor coverings, Construction and facade panels, and Outdoor furniture and playground equipment:

- Factors for weighting the environmentally hazardous content in the surface treatment products are included. These weighting factors derive from the chemicals legislation and are a good way of balancing the different environmental risks. H410 is weighted with factor 100 as it is the most environmentally hazardous, H411 is weighted with factor 10 and H412 is not weighted as it is the least environmentally hazardous.
- The restriction of the classifications H400 and EUH059 is removed. H400 is the hazard statement for Very toxic to aquatic life (not chronic) and EUH059 is Hazardous to the ozone layer. The classifications are not considered to be as relevant to chemical products that are used in surface treatment systems as H410, H411 and H412.

It became necessary to change the threshold limit value when the weighted formula for environmentally hazardous content was introduced. At first glance, the new threshold limit value of 90 g/m² may seem high, but it should not be compared with the previous unweighted threshold limit values of 10 g/m² and 14 g/m² respectively. By comparison, the threshold limit value in the criteria for Floor coverings, Version 5, was 7 g/m², and when the weighted formula was introduced in Version 6 this was changed to 60 g/m².

The new threshold limit value of 90 g/m² is based on licence data. The intention was not to raise the requirement but introducing the weighted formula has

meant it has been raised somewhat for surface treatment products that contain substances classified as H410 or H411. Surface treatment products that are cured using UV contain substances hazardous to the environment, e.g. acrylates or photo initiators. The substances have properties that are harmful to the environment in an uncured state, but not on the furniture as a finished product. Nevertheless, Nordic Ecolabelling wants to have a requirement in place for environmentally hazardous substances because content varies widely across the various surface treatment systems and as an exception is made for the “hazardous to the environment” hazard class a requirement limit is desirable.

Version 4 of the criteria previously contained two different threshold limit values. A higher one for UV systems and a lower one for other types of surface treatment systems. The requirement governing VOCs in surface treatment systems steers towards water-based UV systems and the requirement has therefore been changed to include just one threshold limit value.

Preservatives classified as hazardous to the environment do not need to be included in the calculation of applied environmentally hazardous substances as the amounts are regulated in another requirement.

Nordic Ecolabelling is aware that some substances such as acrylates in UV-curing varnishes and paints have recently been reclassified and have received a stricter classification. This is something that we will look into further in the consultation period.

2.11 Metal

There are requirements for the surface treatment (metallisation) and requirements for the percentage of recycled metal.

Requirements for the percentage of recycled metal apply if the product contains more than 30% metal by weight. Small parts such as screws, bolts, plugs, brackets, buttons, zips etc. must not be included in the calculation of weight.

O61 Copper, tin, lead and cadmium

The metals copper, tin, lead and cadmium are prohibited. This also applies to any surface coating.

- A declaration from the supplier of the surface coating stating that these substances are not used.

Background

The requirement is in place because these substances cause problems during metal recycling³⁴.

2.11.1 Metallisation

There are requirements for metal coating, such as metallisation, powder coating and any other surface treatment. The following requirements apply:

- Coatings with metals (metallisation) must comply with O62

³⁴ EU-27 Steel Scrap Specification, May 2007: <https://www.euric-aisbl.eu/facts-figures/standards-specifications>

- Other surface treatment must comply with O63-O70

O62 Chrome, nickel and zinc plating

Surface treatment using chromium (Cr), nickel (Ni), zinc (Zn) and their compounds is permitted only for the following furniture parts and under the following conditions:

- Screws, bolts, mechanisms where it is necessary due to excessive physical wear/load
- Legs on folding tables, chair legs and legs on tables/desks that comply with the requirements of standards for educational institutions (EN 1729-1:2015, EN 1729-2:2012+A1:2015)
- Legs on folding tables and chair legs that meet standards for tables and chairs for public spaces (EN 16139:2013 Furniture - Strength, durability and safety - Requirements for non-domestic seating, EN 1728:2012 Furniture - Seating - Test methods for the determination of strength and durability, EN 1022:2018 Furniture - Seating - Determination of stability)
- Nickel: The exemption does not apply to parts that frequently come into contact with the skin

It should be noted that the above exemptions only apply to the types of furniture covered by the standards. The exemption cannot be used for office chairs and other typical office furniture that are covered by standards for office environments.

The following requirement applies when chromium (Cr), nickel (Ni), zinc (Zn) are used in the surface treatment:

- All stages of the process using chromium must be based on trivalent chromium. Hexavalent chromium must not be used.
- The facilities must have a closed-loop wastewater system*. Residual products from the surface treatment are to be recycled or destroyed at a facility that is licensed and authorised to handle hazardous waste.
- The following applies to zinc electroplating:
 - Cyanide baths must not be used
 - The passivation process must be cobalt-free

* *A closed-loop wastewater system means that effluent is not discharged to recipient/municipal wastewater treatment plants.*

- ☒ A description from the furniture manufacturer of which parts are coated with chromium, nickel or zinc.
- ☒ A declaration from the supplier of the surface coating that hexavalent chromium has not been used.
- ☒ For zinc: A declaration from the supplier of the surface coating that cyanide baths have not been used and that the passivation process is cobalt-free.
- ☒ Name of the waste management facility handling the waste products and a description of what happens to the waste products from the surface coating supplier.

Background

As before, the use of chromium, nickel and zinc for coating is permitted for some parts and for some types of furniture that tend to get more wear and tear. Metal coatings ensure good wear resistance and potentially extend the useful life. This is important from a circular economy perspective and it may become even more important in the future as society places an increasing focus on recycling. For example, chairs can be reupholstered if the legs are still in good condition. It is

important to point out that the useful life of an item of furniture depends on a number of factors and furniture is often replaced before it is worn out³⁵. Nevertheless, Nordic Ecolabelling is of the opinion that good quality and good resistance to wear will offer the potential for a long useful life. Coating with chromium, nickel and zinc also has no significant impact on the ability to recycle metal.

However, coating with these metals has adverse effects on human health and the environment. The chemicals that are used have a number of classifications, e.g. Chromium VI is classified as H317, H400, H410 and H350. Chromium III does not have these effects³⁶. Nickel plating salts e.g. NiCl₂, are classified as H350, H341 and H360D. The substances in the finished coating are converted into pure metal layers that are not classified. However, nickel is known to cause allergies as small amounts of nickel are released from the coating upon contact with skin³⁷. Emissions to water from facilities is also a relevant parameter.

For that reason, it is only allowed on small parts, such as screws, bolts and mechanisms that are subject to excessive wear, on chair legs and tables/desks for educational institutions and table legs and folding tables that comply with standards for public spaces. This means that it is not allowed on office chairs, for example, because there is more scope to design such furniture to withstand wear and tear, e.g. by using brushed steel on areas particularly subject to high wear.

The requirement has been changed and tightened so that all coating processes must be zero-emission processes. This was also required previously, with the exception of zinc, but the requirement was not very clearly worded. A zero-emission process means that nothing can be discharged to a recipient or municipal wastewater treatment plant. The waste must be collected and sent to an authorised and approved collection facility for hazardous waste. Closed-loop wastewater systems consume more energy because the process water has to be distilled/evaporated. Heat exchangers are usually installed to utilise this energy. All new or renovated systems are zero-emission and, according to the Swedish industry association, that will be BAT when the new BAT report is published in 2020. There are no major differences in the Nordic region to indicate that it will be problematic to comply with this according to the Swedish industry association.

2.11.2 Other surface treatment

O63 Classification of chemical products

The chemical products used to surface coat metals must not have any of the classifications in the table below.

CLP Regulation 1272/2008		
Hazard class	Code for hazard class and category	Hazard statement code
Carcinogenicity*	Carc. 1A or 1B Carc 2	H350 H351
Germ cell mutagenicity*	Mut. 1A or 1B Mut. 2	H340 H341

³⁵ Bartlett, 2009. "Reuse of office furniture – incorporation into the 'Quick Wins' criteria: A study of the market potential for reused and remanufactured office furniture in the UK."

³⁶ http://www.syf.se/Filer/Guide_ytbeh_v0.pdf

³⁷ Shane Donatello, Hans Moons and Oliver Wolf, Revision of EU Ecolabel criteria for furniture products, final technical report, 2017

Toxic for reproduction*	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362
Hazardous to the aquatic environment	Aquatic Acute 1 Aquatic Acute 1 Aquatic Chronic 2	H400 H410 H411
Acute toxicity	Acute Tox. 1 or 2 Acute Tox. 1 or 2 Acute Tox. 1 or 2 Acute Tox. 3 Acute Tox. 3 Acute Tox. 3	H300 H310 H330 H301 H311 H331
Specific target organ toxicity: single exposure and 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 classification H350i.

- Safety data sheet in accordance with Appendix II of REACH (Regulation No. (EC) 1907/2006) for each chemical product in the surface treatment system.
- A declaration from the manufacturers of surface treatment products.

Background

The requirement remains unchanged. Background details are given in Chapter 2.5.

O64 Classification of ingoing substances

The chemical products used to surface coat metals must not contain any substances with the classifications listed in the table below.

CLP Regulation 1272/2008		
Hazard class	Code for hazard class and category	Hazard statement code
Carcinogenicity ¹	Carc. 1A or 1B Carc 2	H350 H351
Germ cell mutagenicity ¹	Mut. 1A or 1B Mut. 2	H340 H341
Toxic for reproduction ¹	Repr. 1A or 1B Repr 2 Lact	H360 H361 H362

¹ Including all combinations of stated exposure route and stated specific effect. For example, H350 also covers classification H350i.

- Safety data sheet in accordance with Appendix II of REACH (Regulation No. (EC) 1907/2006) for each chemical product in the surface treatment system.
- A declaration from the manufacturers of surface treatment products.

Background

The requirement has been tightened so that Category 2 substances are now also included.

O65 Prohibited substances

The following substances shall not be an ingoing substance* in chemical products used for surface treatment:

* For definition of ingoing substances and impurities, see Definitions.

- Substances on the Candidate List**

- Substances that have been evaluated in the EU to be PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative)***
- Substances considered to be potential endocrine disruptors in category 1 or 2 on the EU's priority list of substances for further evaluation of their role in endocrine disruption****
- Halogenated organic compounds with the following exceptions:
 - Bronopol (Cas. No. 52-51-7) may be present in the chemical product at a level of not more than 0.05% by weight
 - Mixture (3:1) of CMIT/MIT (5 chloro-2-methyl-4-isothiazolin-3-one Cas. No. 247-500-7; 2-methyl-4-isothiazolin-3-one Cas. No. 220-239-6) may be present in the chemical product at a level of not more than 0.0015% by weight
 - IPBC (Iodopropynyl butylcarbamate) may be present in the chemical product at a level of not more than 0.20% by weight
 - halogenated organic pigments that comply with the Council of Europe recommendation "Resolution AP (89) 1 on the use of colorants in plastic materials coming into contact with food", point 2.5
- Isothiazolinones may be present in the chemical product at a level of not more than 0.05% by weight
- Butylhydroxytoluene (BHT, CAS nr. 128-37-0)
- Aziridine and polyazidirines
- Bisphenol A, S and F
- Alkylphenols, alkylphenol ethoxylates and other alkylphenol derivatives*****
- Phthalates
- Pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds
- Volatile aromatic hydrocarbons (VAH). They are permitted in the chemical product as an impurity at a level of not more than 1% by weight

**See definition of ingoing substances under Definitions.*

***The Candidate List is available on the ECHA website:
<http://echa.europa.eu/candidate-list-table>*

****PBT and vPvB in accordance with the criteria in Annex XIII of REACH*

*****Substances with endocrine disrupting effects categories 1 or 2, see the following link:
http://ec.europa.eu/environment/chemicals/endocrine/strategy/being_en.htm
(Annex L, page 238 onwards)*

******Alkylphenol derivatives are defined as substances that release alkylphenols when they break down.*

- A declaration from the manufacturer/supplier of the chemical product used for surface treatment.
- A safety data sheet for the product used for surface treatment in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006.

Background

The requirement has changed, with the addition that ingoing substances that are on the Candidate List, considered PBT or vPvB, or potentially endocrine

disrupters, are not permitted as ingoing substances in chemical products. This requirement already exists in several of Nordic Ecolabelling's other product groups, such as Floor coverings, Indoor paints and varnishes, and Construction and façade panels.

In connection with licences for furniture in accordance with Version 4, it has been found necessary to make an exception for residual monomers of Bisphenol A in powder coatings. Bisphenol A is used as monomers in all epoxy powder coatings and residual monomers over 100 ppm can be found. Epoxy powder coatings do not contain any solvents and there is very little waste during the coating process. Nordic Ecolabelling therefore wants to approve this type of coating and the requirement therefore does not apply to Bisphenol A that is used in the manufacture of epoxy powder coatings. The details of other exemptions for halogenated organic compounds are given in the chapter on surface treatment of wood.

O66 Nanomaterial

The chemical product must not have nanomaterials* as ingoing substances**. Exemptions apply to:

- Pigments***
- Naturally occurring inorganic fillers****
- Synthetic amorphous silica*****
- Polymer dispersions
- Aluminium oxide in powder coatings

* *In accordance with the definition of a nanomaterial adopted by the European Commission on 18 October 2011 (2011/696/EU), see definitions*

** *For a definition of ingoing substances, see definitions.*

*** *Nano-titanium dioxide is not classed as a pigment and is thus not covered by the requirement.*

**** *This applies to fillers covered by Annex V item 7 of REACH *****This applies to traditional synthetic amorphous silica.*

- A declaration from the manufacturer of the chemical product(s) used in the surface treatment that the chemical product does not contain any nanomaterial.

Background

The requirement is unchanged. However, an exemption for aluminium oxide in powder coatings has been introduced. Aluminium oxide is used as a "free flow additive" in powder coatings to improve the performance of the electrostatic powder coating and thus facilitate application. The aluminium oxide can be nano size because the best performance is obtained with very small particles. The coating does not contain any nano-size particles when it has cured, because the particles are bound into the polymer. The powder coating is applied at a factory and the workers use personal protective equipment. As stated previously, powder coating has environmental benefits and Nordic Ecolabelling wants to allow this type of coating. An exemption has therefore been made for aluminium oxide. The exemption is also contained in the Nordic Swan Ecolabel's criteria for Windows and exterior doors.

O67 Free formaldehyde

The content of free formaldehyde in each individual chemical product used for surface treatment must not exceed 0.2% by weight (2,000 ppm) measured in the finished product.

- A declaration from the manufactures of the chemical products in the surface treatment system.

Background

The requirement is not changed. See more background about free formaldehyde earlier in the document.

O68 Quantity applied and application method

The requirement applies if the surface-treated metal part makes up more than 5% by weight of the furniture / interior.

For each surface treatment used, the following information must be provided by the furniture manufacturer:

- c) Name of the surface treatment product and manufacturer of the surface treatment product
- d) Quantity applied (g/m²), number of coats and application method(s) used.

The following levels of efficiency* must be used when calculating the quantities of applied VOCs in subsequent requirement:

- Automated spray with no recycling, 50%
- Automated spray with recycling, 70%
- Spray application, electrostatic, 65%
- Spray application, bell/disk, 80%
- Roller varnishing 95%
- Blanket varnishing 95%
- Vacuum varnishing 95%
- Dipping 95%
- Rinsing 95%

**The levels of efficiency are standard values. Other efficiency levels may be applied if they can be documented.*

- A description from the furniture manufacturer of each surface treatment system that is used.

O69 Quantity of applied volatile organic compounds (VOC)

The chemical products that are used must meet one of the following alternatives in each surface treatment system:

- a) The total content of VOCs* must not exceed 5% by weight
- b) The total amount of VOCs applied must not exceed 30g/m² treated surface

The applied quantity of VOCs according to alternative b) is calculated using the following formula:

$$\frac{\text{Applied amount of the surface treatment chemical} \left(\frac{\text{g}}{\text{m}^2} \right) \times \text{share of VOC in the surface treatment chemical (\%)}}{\text{Efficiency of the surface treatment (\%)}}$$

For both these alternatives, it is the content of VOCs that the chemical products have in their uncured form that must meet the requirement. If the products require dilution, the calculation must be based on the content in the diluted product.

**Volatile organic compounds (VOCs) are defined as compounds with a boiling point of <250°C at 101.3 kPa (1 atm)*

- ☒ Safety data sheet in accordance with Appendix II of REACH (Regulation No. (EC) 1907/2006) for each chemical product in the surface treatment system.
- ☒ A declaration from the manufacturers of the chemical products in the surface treatment system stating the quantities of VOCs in each product.
- ☒ A calculation from the furniture manufacturer showing that alternative b) in the requirement is met if the surface treatment system does not meet alternative a).

Background

The requirements for a description of surface treatment systems and the amount of VOCs applied is new for metal. The wording of the requirement is based on that for the requirement concerning VOCs in surface treatment processes for wood. The proposed requirement limit is 30g/m² treated surface. Nordic Ecolabelling has not previously had such a requirement and therefore has limited knowledge of VOC content in the products in question. Nordic Ecolabelling therefore wants to investigate this further in the consultation period and hopes that the consultation responses will provide more insight into the matter. However, the EU Ecolabel, Möbelfakta and the Swedish National Agency for Public Procurement have requirements for VOCs in wood, metal and plastic surface treatment processes. The EU Ecolabel places a limit of 30 g/m² but can allow up to 60 g/m² under certain conditions. Möbelfakta places limits of 35 and 60 respectively for domestic and non-domestic environments.

Powder coating is the most common method of surface treatment and does not use VOCs. However, it cannot be ruled out that other methods are used where VOCs might be a factor.

2.11.3 Recycled metal

The requirement applies if the product contains more than 30% metal by weight.

070 Percentage of recycled metal

It is possible to document the percentage of recycled metal using either alternative 1 or 2.

Alternative 1:

70% by weight of aluminium and 70% by weight of steel must be recycled*.

Alternative 2:

Together, aluminium and steel must meet the following requirement for the percentage of recycled* metal:

$$\text{recycledAl} * \text{kgAl} + \text{recycledSteel} * \text{kgSteel} \geq 0.70 * \text{kgAl} + 0.70 * \text{kgSteel}$$

Where:

kgAl and kgSteel are the weight of aluminium and steel respectively in kg.

recycledAl and recycledSteel are the percentage of recycled aluminium and steel respectively which must be stated as a number between 0 and 1 (corresponding to 0% to 100%).

The smelter must declare the percentage of recycled materials used in production. An annual average for the smelter is accepted.

The supply chain must be stated and there must be traceability all through the supply chain, from the smelter to the finished product, so that the percentage of recycled materials is guaranteed along the entire supply chain.

Information about recycled materials must be shown on the invoice or be documented with a declaration from the supplier about the percentage of recycled materials.

The supplier can confirm the percentage of recycled materials in its products by providing an overview of the quantity of recycled materials purchased and the quantity sold. There must be an agreement between the supplier and the manufacturer of the Nordic Ecolabelled production that the recycled material is sold to the Nordic Ecolabelled production.

**Recycled metal is defined as both pre-consumer and post-consumer, c.f. the definition given in ISO 14021.*

- ☒ The percentage of recycled metal in the product must be stated.
- ☒ A declaration from the smelter of the percentage of recycled metal used in its production (on an annual basis). Supply chain traceability must be documented, e.g. as a flowchart. The percentage of recycled metal in the supply chain must be documented, e.g. with information on the invoice or a declaration from the supplier. The percentage of recycled content for Al can be documented with the certification Hydro Circal.

Background

The requirement has been tightened for both aluminium and steel, and the limit for when the requirement must be met has been lowered from 50% metal by weight in the product to 30% metal by weight in the product. Nordic Ecolabelling wants a strict requirement in place for the percentage of recycled metal for products with significant metal content. Nordic Ecolabelling does not believe that the requirement stimulates increased recycling of metal in society to any great extent, nor is that the main purpose of the requirement. A high percentage of metal is already being recycled. However, the figures for how much metal is recycled vary. How much is recycled will depend not just on demand but on other factors too, such as how easy it is to sort and deliver metal waste, and how good end users are at recycling. However, the production of metal, including mining, is associated with major environmental impacts relating to raw material extraction, large quantities of waste, energy consumption and emissions from production. Nordic Ecolabelling has limited opportunity to set criteria for these parameters. Use of recycled metal minimises negative impacts on the environment significantly and is beneficial to the climate. See more about environmental stresses related to metal in Chapter 1 and under requirement O2. Nordic Ecolabelling can set requirements for using recycled metal. Nordic Ecolabelling is aware that the availability of recycled metal and the traceability can present a challenge. Nevertheless, Nordic Ecolabelling believes that, with the steadily growing global focus on adopting a circular economy approach, this is the way to go. Traceability in the supply chain is a value in itself as well, and is important for a number of aspects e.g. it makes it possible to select suppliers based on their environmental practices, workplace conditions, quality and so on. Demand for traceability will hopefully help the industry to place an even greater focus on this. For aluminium, Hydro has launched its own traceability certification system

with a minimum of 75% recycled Al, Hydro Circal.³⁸ There is currently one small facility in Luxembourg that can deliver this. The Azuqueca facility in Spain will start delivering Hydro Circal in 2020 with a production capacity of 25,000 tonnes³⁹. The annual industry average for aluminium produced in the EU is approx. 50% recycled, and for aluminium produced outside the EU approx. 40%.

The two steel production processes are Basic Oxygen Furnace (BOF) for which the input is iron ore, and Electric Arc Furnace (EAF) for which the input is mainly scrap steel. The current requirement of 20% recycled metal has no significant impact since all steelworks, including the BOF plants, meet this today. It is therefore necessary to raise the requirement to promote the use of recycled steel and traceability. In practice, this means that steel that should contain more than 20% recycled steel must be produced at plants that use EAF technology. There are steel producers using the EAF process across the whole of Europe⁴⁰. According to the World Steel Association⁴¹ the EU produces 58% of steel using BOF and 41% using EAF technology. Globally, approx. 70% is produced using BOF and 30% using EAF technology.

2.12 Plastic and rubber

Polymer materials used as padding materials, e.g. polyurethane foam and textiles do not come under the requirements applicable to plastic.

Small plastic parts (e.g. screws, staples and fasteners) are not included in the weight fraction and do not come under the requirements of Chapter 2.12. Similarly, wires e.g. in height-adjustable tables and adjustable beds do not come under the requirements of Chapter 2.12.

2.12.1 General requirements

071 Types of plastic

Details must be provided of the types of plastic, fillers and reinforcements used in the plastic parts.

Plastics containing a mixture of different materials*, e.g. plastic that is a mixture of other materials such as wood fibre or bamboo (wood-plastic composite (WPC)) may not be used.

Reinforcement of plastic, e.g. adding glass is allowed.

- A description of plastic parts and types of plastic, fillers and reinforcements contained in the plastic part.

Background

The requirement is changed. Plastics which are mixed with other materials, e.g. wood raw materials and which cannot be recycled in today's recycling systems are not allowed. Otherwise, the requirement is unchanged.

³⁸ <https://www.hydro.com/en/products-and-services/low-carbon-aluminium/hydro-circal-75r/> (accessed 17 October 2019)

³⁹ <https://www.hydro.com/en/media/news/2018/hydro-to-increase-production-of-post-consumer-recycled-aluminium/>

⁴⁰ <http://www.eurofer.org/About%20us/About%20Steel/EuropeanSteelMap.shtml>

⁴¹ <https://www.worldsteel.org/en/dam/jcr:96d7a585-e6b2-4d63-b943-4cd9ab621a91/World%2520Steel%2520in%2520Figures%25202019.pdf>

O72 Bio-based plastics

It must be possible to recycle* the bio-based plastic materials contained in the product at today's recycling facilities.

**Incineration for energy recovery is not classed as material recycling.
Biodegradable/compostable plastics cannot be recycled at today's recycling facilities.*

- Documentation showing the materials contained in the product.

Background

Biodegradable and compostable plastic cannot be used, as they "pollute" the other plastic streams of recycled plastics in the Nordic region. Bio-based plastic in PET, PE and PP can be recycled in the same stream as fossil-based plastic in PET, PE and PP.

O73 Labelling

Parts that contain plastic and weigh more than 100 g must be clearly labelled in compliance with the ISO 11469 and ISO 1043 standards.

An exemption is made for plastic in rolls, e.g. edge trim.

An exemption may also be made if it is technically difficult to label, e.g. because of lack of space or the production method. In such cases, it must be explained why labelling is difficult and the exemption must be specifically approved by Nordic Ecolabelling.

- Information about plastic parts and how they are labelled. A description of any exemption that applies must be given in compliance with the requirement.

Background

The requirement applicable to the labelling of plastic parts is still in place and is aimed at helping with sorting and recycling at end-of-life. In many cases, manual sorting is replaced by a sorting technology using infrared light or sorting by density separation using a float/sink process. Labelling makes the sorting process simpler, however, when materials are sorted manually. It is mainly large parts that are separated out during a manual sorting process. The limit for labelling has therefore been raised from 50 g to 100 g. An exemption applies to plastic in rolls, e.g. edge trim. An exemption may also be made for other plastic parts if it is technically difficult to label them, e.g. because of lack of space or the production method used. In such cases, it must be explained why labelling is not possible.

ISO 11469 is a system for uniform labelling of products made of plastic and generic identification of the plastics is provided by the symbols and abbreviated terms given in ISO 1043.

2.12.2 Chemicals

O74 Chemicals in recycled plastics

The requirement applies to chemicals in the recycled plastic raw material.

Recycled plastic must not contain:

- halogenated flame retardants
- cadmium
- lead
- mercury

- chromium VI
- arsenic
- phthalates

Impurities up to 100 ppm are permitted.

- ☒ A test report (XRF, X-ray fluorescence or equivalent method) from the supplier of the recycled plastic showing compliance with the requirement. Alternatively, the requirement can be documented with traceability to the source to substantiate that these substances are not included.

Background

The requirement has been extended to include more substances in addition to halogenated flame retardants and is harmonised with the requirement in Floor coverings. The requirement applies to chemicals contained in the recycled plastic raw material and not chemicals that are added through regranulation. There are separate requirements for this, see O76 and O77. The requirement must be documented with a test report using X-ray fluorescence (XRF) or equivalent methods, or traceability to the source that substantiates that the specified substances are not included. The aim of the requirement is to capture the “worst substances”. Ways of documenting this were assessed during a review of the floor covering criteria and as part of an internal investigation by Nordic Ecolabelling in connection with amendments to the requirement applicable to plastics in Version 4 of Furniture and fitments. The dialogues held with floor covering and furniture manufacturers and suppliers of recycled plastics during this process showed that there are different practices in the industry for testing substances in recycled plastics. Some manufacturers rely on questionnaires/declarations from their subcontractors and follow them up with chemical analyses if it is considered likely that the plastic contains substances of concern. Some manufacturers of recycled plastic have XRF (X-ray fluorescence spectrometer) equipment for testing the plastic to see whether it can meet the given requirement (a level of 100 ppm can be achieved). Although this will entail extra documentation work, it shows that it is possible to set such a requirement. Using recycled plastic is good as it helps reduce resource use and stimulates a circular economy. At the same time, there is no wish to recycle chemicals that are harmful to health and the environment.

O75 Chemicals in reused plastics

The requirement applies to plastic parts that are directly reused and not plastics that have been through mechanical or chemical recycling (see requirement O74).

Reused plastics:

- it must be stated what the plastic part was previously used for
 - plastics may not be used from product areas where it is probable that halogenated flame retardants have been used. Alternatively, it can be documented with tests, see requirement O74.
- ☒ Information about previous types of use for the plastic part, and a declaration or similar from the supplier of the plastic part stating that the part does not contain halogenated flame retardants. Alternative test report, see O74.

Background

The requirement is new. If the furniture is to contain reused plastic parts (directly reused, not regranulate), it must be stated what the plastic was

previously used for and substantiate that it does not contain halogenated flame retardants. Reusing is good, yet it is important not to recycle chemicals that are harmful to health and the environment. Nordic Ecolabelling does not want to be associated with halogenated flame retardants and has therefore set a requirement for this, even if it can be challenging to confirm that information.

076 Additives - prohibited substances

Additives in the list below must not be added to plastic, rubber and silicon (both virgin and recycled plastic). The requirement applies to additives actively added to the polymer raw material in the master batch or compound in production of plastic or rubber.

- Substances on the Candidate List**
- Substances that have been evaluated in the EU to be PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative)***
- Substances considered to be potential endocrine disruptors in category 1 or 2 on the EU's priority list of substances for further evaluation of their role in endocrine disruption****
- Halogenated organic compounds with the following exceptions:
 - Bronopol (Cas. No. 52-51-7) may be present in the chemical product at a level of not more than 0.05% by weight
 - Mixture (3:1) of CMIT/MIT (5 chloro-2-methyl-4-isothiazolin-3-one Cas. No. 247-500-7; 2-methyl-4-isothiazolin-3-one Cas. No. 220-239-6) may be present in the chemical product at a level of not more than 0.0015% by weight
 - IPBC (Iodopropynyl butylcarbamate) may be present in the chemical product at a level of not more than 0.20% by weight
 - halogenated organic pigments that comply with the Council of Europe recommendation "Resolution AP (89) 1 on the use of colorants in plastic materials coming into contact with food", point 2.5
- Isothiazolinones may be present in the chemical product at a level of not more than 0.05% by weight
- Butylhydroxytoluene (BHT, CAS nr. 128-37-0)
- Aziridine and polyaziridines
- Bisphenol A, S and F
- Alkylphenols, alkylphenol ethoxylates and other alkylphenol derivatives*****
- Phthalates
- Pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds
- Volatile aromatic hydrocarbons (VAH). They are permitted in the chemical product as an impurity at a level of not more than 1% by weight

*See definition of ingoing substances under Definitions.

**The Candidate List is available on the ECHA website:
<http://echa.europa.eu/candidate-list-table>

***PBT and vPvB in accordance with the criteria in Annex XIII of REACH

****Substances with endocrine disrupting effects categories 1 or 2, see the following link:

http://ec.europa.eu/environment/chemicals/endocrine/strategy/being_en.htm
(Annex L, page 238 onwards)

*****Alkylphenol derivatives are defined as substances that release alkylphenols when they break down.

- A declaration from the manufacturer of plastic/rubber/silicon.
- A safety data sheet for the additives in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

O77 Additives - CMR

Additives to plastic, rubber and silicon (both virgin and recycled plastic) must not be classified according to the table below. The requirement applies to additives actively added to the polymer raw material in the master batch or compound in production of plastic or rubber.

Hazard class	Hazard class and category	Hazard code
Carcinogenic ¹	Carc. 1A or 1B Carc. 2	H350 H351
Germ cell mutagenic ¹	Mut. 1A or 1B Mut. 2	H340 H341
Toxic for reproduction ¹	Repr. 1A or 1B Repr. 2 Lact	H360 H361 H362

¹Including all combinations of stated exposure route and stated specific effect. For example, H350 also covers the classification H350i.

- Safety data sheet for additives in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).
- A declaration from the plastics/rubber/silicon manufacturer.

Background

There were also requirements to additives in Version 4 of Furniture. Following an amendment, requirement O76 now also includes a ban on Candidate List substances, PBT and vPvB substances, and endocrine disruptors. Requirement O77 now includes the classification Lact H362. More detailed background information about the substances is given in Chapter 2.5.

O78 Surface treatment

Surface treatment of plastic materials may be permitted if documentation can be submitted showing that this does not affect the potential for recycling.

The coating must meet requirements O76 and O77. There is also a requirement that applies to VOCs, see O79.

- A declaration from the furniture manufacturer and documentation stating that the coating does not negatively affect the potential for recycling.
- For coating/surface treatment: documentation in compliance with O76 and O77. For VOC, see O79.

O79 Quantity of applied volatile organic compounds (VOC)

The requirement applies if the surface-treated plastic part makes up more than 5% by weight of the furniture / interior.

For each surface treatment used, the following information must be provided by the furniture manufacturer:

- a) Name of the surface treatment product and manufacturer of the surface treatment product

- b) quantity applied (g/m²), number of coats and application method(s) used.

The chemical products that are used for surface treatment must meet one of the following alternatives:

- The total content of VOCs* must not exceed 5% by weight or
- The total amount of VOCs applied must not exceed 30 g/m² treated surface

The applied quantity of VOCs according to alternative b) is calculated using the following formula:

$$\frac{\text{Applied amount of the surface treatment chemical} \left(\frac{\text{g}}{\text{m}^2} \right) \times \text{share of VOC in the surface treatment chemical (\%)}}{\text{Efficiency of the surface treatment (\%)}}$$

For both these alternatives, it is the content of VOCs that the chemical products have in their uncured form that must meet the requirement. If the products require dilution, the calculation must be based on the content in the diluted product.

For calculating the surface treatment efficiency, the following levels** of efficiency must be used:

- Automated spray with no recycling, 50%
- Automated spray with recycling, 70%
- Spray application, electrostatic, 65%
- Spray application, bell/disk, 80%
- Roller varnishing 95%
- Blanket varnishing 95%
- Vacuum varnishing 95%
- Dipping 95%
- Rinsing 95%

**Volatile organic compounds (VOCs) are defined as compounds with a boiling point of <250°C at 101.3 kPa (1 atm)*

***The levels of efficiency are standard values. Other efficiency levels may be applied if they can be documented.*

- Safety data sheet in accordance with Appendix II of REACH (Regulation No. (EC) 1907/2006) for each chemical product in the surface treatment system.
- A declaration from the manufacturers of the chemical products in the surface treatment system stating the quantities of VOCs in each product.
- A calculation from the furniture manufacturer showing that alternative b) in the requirement is met if the surface treatment system does not meet alternative a).

Background

The requirement is new. The wording of the requirement is based on that for the requirement concerning VOCs in surface treatment processes for wood. The proposed requirement limit is 30g/m² treated surface. Nordic Ecolabelling has not previously had such a requirement and therefore has limited knowledge of VOC content in the products in question. Nordic Ecolabelling therefore wants to investigate this further in the consultation period and hopes that the consultation responses will provide more insight into the matter. However, the

VOC limit set by Möbelfakta (the Swedish furniture industry's reference and marking system for furniture) for coatings of wood, metal and plastic is 35 for domestic settings and 60 for office/public/outdoor spaces.

O80 Nitrosamines in rubber

The content of nitrosamines or nitrosamine soluble substances must not exceed 0.01 mg/kg and 0.1 mg/kg of rubber, respectively.

- A declaration from the rubber manufacturer.

Background

The requirement remains unchanged. Nitrosamines and nitrosamine-forming substances are suspected of causing cancer. Nitrosamines are by-products that form during the rubber manufacturing process. The requirement places the same limits as those in Nordic Ecolabelling's criteria for toys.

2.12.3 Recycled plastics

O81 Recycled plastics

The requirement applies if the content of plastic is 10% by weight or more.

The plastic must have a minimum of 50% pre-consumer or post-consumer recycled material content*.

**Recycled plastic is defined in accordance with ISO 14021, see definitions.*

- Manufacturers of recycled raw materials must be stated. Description and documentation from manufacturers of recycled raw materials showing that the plastic is recycled in compliance with the requirement's definition or has Global Recycled Standard certification or EuCertPlast certification, showing that the raw materials are recycled, or other equivalent certification approved by Nordic Ecolabelling.

Background

Following an amendment, the requirement now applies generally for all types of plastic. The requirement previously specified 50% recycled content for PP, PET and PE and 30% for other types of plastic. PP, PET and PE are the plastics mainly used and it is very hard to find recycled plastic of other materials of a good enough quality. The requirement was amended while Version 4 was effective, and in-depth studies on availability, quality and traceability were undertaken. The studies showed that it is possible, but challenging, to meet the requirement.

2.13 Textiles

The requirements apply to textiles made of both synthetic and natural fibres. There are different sets of requirements for textiles depending on the amount in the product and the purpose. Since textiles generally weigh considerably less than other materials, rather than using the minimum threshold model, a different model has been chosen in relation to the ingoing quantity in the finished piece of furniture. This is because although textiles can account for a significant part of the product, their total percentage is low. In the model, some requirements apply regardless of the amount and purpose in the product. The requirements for furniture coverings, such as sofa covers, cushions, chairs and mattresses, are the most comprehensive. These are textiles which, as well as

covering a relatively large part of the furniture, also come into contact with skin. Less stringent requirements apply to textiles that do not come into contact with skin, such as textiles on a bed frame, textiles under sofa cushions, partition walls and similar.

All textile parts, irrespective of ingoing quantity and purpose, must meet the following requirements:

- O83 Biocides and antibacterial substances
- O84 Flame retardants
- O85 Classification of chemicals

Coverings on furniture such as mattresses, sofas and chairs must also fulfil:

- O86 Ban on CMR substances
- O87 List of prohibited substances
- O88 Metal complex dyes
- O89 Formaldehyde
- The requirements for production of fibre: O90-097 depending on fibre type
- Quality standards for textiles (for seating): O98-O104

In addition to O83-O85, other textile parts, such as textiles on a bed frame or partition wall, must meet:

- O105-0110 Test of the finished textile

Textiles with the Nordic Swan Ecolabel meet all the requirements in this section. The name of the textile, manufacturer and licence number must be submitted.

Textiles labelled with the EU Ecolabel meet all the requirements in this section with the exception of requirements for flame retardants. In order for textiles with the EU Ecolabel to be approved, documentation is required declaring that any flame retardants that have been added meet the O84 requirement for flame retardants, and that the flame retardant is not classified according to the hazard classes specified in O85.

The following applies in respect of requirements for chemicals:

The requirements apply to all chemicals used during the manufacture of textiles unless otherwise specified in the requirement. Plasticisers, bleaching agents, pigments, colourants, stabilisers, dispersing agents, erasers, enzymes and other processing additives are examples of chemicals used in the various textile production processes. These include carding, spinning, weaving, knitting, washing, bleaching, dyeing, printing and finishing, such as coating, lamination or gluing. The requirements apply regardless of whether the chemicals are used by the textile manufacturer or its subcontractors.

The requirements do not apply to chemicals used in treatment plants or for maintenance of production equipment. This also applies to chemicals used in small quantities, such as levelling agents and de-sizing agents.

The following definition applies to ingoing substances in chemicals:

Ingoing substances: All substances in the chemical product, including additives (e.g. preservatives and stabilisers) in the raw materials. Substances known to be released from ingoing substances (e.g. formaldehyde, arylamine, in-situ generated preservatives) are also considered as ingoing substances.

Impurities: Residuals, pollutants, contaminants etc. from production, incl. production of raw materials that remain in the raw material or in chemical product in concentrations less than 100 ppm (0,0100 w-%, 100 mg/kg) in the chemical product. Impurities in the raw materials exceeding concentrations of 1,0 % / 0,10 % 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.

2.13.1 Requirements that apply to textiles regardless of quantity

O82 Ecolabelled textile

If the textile is ecolabelled with the Swan, all the requirements in this chapter are fulfilled.

If the textile is ecolabelled with EU Ecolabel and it contains flame retardants, O84 and O85 must also be fulfilled.

- Swanlabelled textile: Submit name of textile, manufacturer and license number.
- Textile labelled with EU Ecolabel: Submit name of textile, manufacturer and license number. Documentation according to O84 and O85.

O83 Biocides and antibacterial substances

Chemicals with the following properties may not be added to and/or used in fibres, rolls of fabrics or the textile end product:

- Antibacterial substances (including silver ions, silver nanoparticles and copper nanoparticles)
and/or
- Biocides in the form of pure active substances or as biocidal products.

This requirement also applies to the transport of the textiles.

The ban does not apply to natural antibacterial effect in materials.

- A declaration of compliance with the requirement from the chemical manufacturer/supplier.

Background to requirements

Biocidal products and antibacterial products are not desirable in eco-labelled products. Frequent use of antibacterial agents in common consumer products can lead to bacteria becoming more resistant and eliminate beneficial bacteria. Two of the antimicrobial agents that are commonly added are silver nanoparticles and copper nanoparticles. There has been particular concern that silver nanoparticles released into effluent and wastewater could eliminate beneficial bacteria and cause resistance in bacteria. Other examples of antibacterial agents that may not be used are organotin compounds, chlorophenols and dimethyl fumarate which are used, for example, as fungicides or pesticides during transport and storage of textiles.

The ban does not apply to in-can preservatives for use in adhesives, coatings, etc. In these cases, the biocide acts as a preservative that protects the chemical product during storage.

O84 Flame retardants

The following flame retardants are prohibited:

- Halogenated flame retardants
 - Organophosphate flame retardants
 - Flame retardants must also meet requirements O85.
- A declaration from the textile manufacturer stating that no halogenated and/or organophosphate flame retardants have been added to textiles or during the production process.
- Documentation in compliance with the requirements O85.

Background

Nordic Ecolabelling wants stringent requirements to apply to flame retardants. However, it does not want to prohibit flame retardation as a function.

Some flame retardants have a number of adverse health and environmental effects. At the same time, flame retardancy can be an important property and documentation about flame retardant properties is often required in public tenders. This makes it important to find a balance between fire safety and the use of chemicals that are harmful to health and the environment. Wool and some other textile fibres have an inherently lower flammability. It is not necessary to add flame retardants to these fibres e.g. if using woollen textiles as sofa covers. Synthetic textiles or a blend of synthetic and natural fibres are frequently used in mattresses. These are more flammable.

Europe does not have a common standard for testing the flammability of furniture, making the use of flame retardants in furniture a complicated issue. Some countries like the UK and Ireland require the flammability of textiles to be tested using the open-flame test method. It is impossible to perform this test without the use of flame retardants with hazardous properties. SafeFurnitureEurope is working, among other things, to focus on the problematic use of flame retardants in furniture and considers that there is no clear evidence that fire safety increases by requiring such tests⁴². Instead, flame retardants may even make fires more dangerous for firefighters and those being rescued, as flame retardants have very negative impacts on human health and the environment.⁴³

Nordic Ecolabelling thus sets a requirement prohibiting the flame retardants that we know are particularly harmful to the environment and/or health. It is not necessary to use these flame retardants to meet standards stipulated in public sector tenders in the Nordic countries. The ban on halogenated flame retardants is still in place. Furthermore, a ban on organophosphate flame retardants has been introduced. TCEP is a phosphate-based flame retardant with serious impacts on human health and the environment. TCEP could impair fertility and is harmful if swallowed. The substance is also toxic to aquatic life with long

⁴² OPINION of the French Agency for Food, Environmental and Occupational Health & Safety concerning the "request regarding the fire safety of domestic upholstered furniture", 2015, <https://www.anses.fr/en/system/files/CONSO2011sa0132Ra-02EN.pdf>

⁴³ Policy paper.....https://docs.wixstatic.com/ugd/a1d93b_80d870dc93bd4585af6d583f4ff3a712.pdf

lasting effects. TCEP is designated as a substance of very high concern (SVHC) and is on Norway's Priority list of environmentally hazardous substances. Other organophosphorus flame retardants are persistent organic pollutants that last a very long time in the environment and are also bioaccumulative, which means they accumulate inside cells and living organisms.⁴⁴

In addition, it is emphasised that any flame retardants must meet the requirement for classification of chemicals. This ensures that flame retardants that are based on boron, like borax, for example, cannot be used.

O85 Classification of chemical products

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

CLP Regulation 1272/2008		
Hazard class	Hazard category	Hazard code
Hazardous to the aquatic environment	Aquatic Acute 1	H400
	Aquatic Chronic 1	H410
	Aquatic Chronic 2	H411
Hazardous to the ozone layer	Ozone	H420
Carcinogenicity	Carc 1A or 1B	H350
	Carc 2	H351
Germ cell mutagenicity	Muta. 1A or 1B	H340
	Muta. 2	H341
Reproductive toxicity	Repr. 1A or 1B	H360
	Repr. 2	H361
	Lact.	H362
Acute toxicity	Acute Tox 1 or 2	H300, H310, H330
	Acute Tox 3	H301, 311, 331
Specific target organ toxicity with single or repeated exposure	STOT SE 1	H370
	STOT RE 1	H372
Sensitising on inhalation or skin contact	Resp. Sens. 1, 1A or 1B	H334*
	Skin Sens. 1, 1A or 1B	H317*

* *Non-disperse dyes are exempt from the prohibition of H334 and H317, provided that non-dusting formulations are used or that automatic dosing is used.*

- Declaration from the chemical manufacturer that the requirement is fulfilled.
- For exempted non-disperse dyes: Declaration that non-dusting formulations of these are used or that automatic dosing is used.

Background

The requirement is new. A classification requirement was previously set for dyes, pigments and auxiliary chemicals. The requirement is now set for all chemicals used during the textile production process. The requirement has been harmonised with the proposed revised criteria for the Nordic Swan Ecolabelling of textiles, hide and leather. Disperse dyes often have poor colour fastness because they are not covalently bound to the textile fibre. It is therefore greater

⁴⁴ <https://miljostatus.miljodirektoratet.no/tema/miljogifter/prioriterte-miljogifter/fosfororganiske-flammehemmere/>

risk of exposure to disperse dyes. Requirements are therefore more stringent for disperse dyes that are classified as allergens⁴⁵.

2.13.2 Requirements for coverings on furniture

The following requirements apply to coverings on furniture, such as mattresses, sofas and chairs. There are requirements for chemicals in production processes, emissions of formaldehyde in the textile end product and requirements for fibre production.

The requirements apply to each type of textile that makes up more than 10% by weight of the textile in the product.

O86 Prohibition of CMR substances

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

CLP Regulation 1272/2008		
Hazard class	Hazard category	Hazard code
Carcinogenicity	Carc. 1A or 1B	H350
	Carc. 2	H351
Germ cell mutagenicity	Muta. 1A or 1B	H340
	Muta. 2	H341
Reproductive toxicity	Repr. 1A or 1B	H360
	Repr. 2	H361
	Lact.	H362

* For definition of ingoing substances, see Definitions.

Declaration from the chemical producer that the requirement is fulfilled.

Background

The requirement is new and has been harmonised with the requirements to chemicals in the proposed revised criteria for the Nordic Swan Ecolabelling of textiles, hide and leather. Nordic Ecolabelling seeks to ensure that the health and environmental impacts of the products are as low as possible. A ban on substances with CMR classification has therefore been set as a requirement, which thus excludes some of the substances identified as having serious effects on human health.

O87 Prohibited substances

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

- Candidate List substances**

For the siloxanes D4, D5 and D6 the following applies: D4 (cas no 556-67-2), D5 (cas nr 541-02-6) or D6 (cas nr 540-97-6) may only be included in the form of residues from raw material production and allowed for each up to 1000 ppm in the silicone raw material (chemical).

- Substances that are PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative) according to the criteria in Annex XIII of REACH

⁴⁵ JRC Technical Reports, Revision of the European Ecolabel and Green Public Procurement (GPP) Criteria for Textile Products, November 2013, page 304:
http://ec.europa.eu/environment/ecolabel/documents/140124%20Ecolabel%20Textiles_Technical%20report%20final.pdf

- Substances identified as potential endocrine disruptors in category 1 or 2 on the EU's priority list of substances for further investigation of endocrine disrupting effects***, and endocrine disruptors identified in the Biocidal Products Regulation (EU 528/2012) and/or the Plant Protection Products Regulation (EC 1107/2009).
- Per- and polyfluorinated compounds, e.g. PTFE, PFOA and PFOS
- Chlorinated polymers, e.g. PVC and PVDC
- Nanoparticles from nanomaterials****
- Heavy metals*****
- Azo dyes that may release aromatic amines with carcinogenic properties (see appendix 3)
- Phthalates
- Chlorinated solvents and carriers, including chlorophenols and chlorinated benzenes
- Alkylphenols and alkylphenol ethoxylates (APEO)
- Organotin compounds

**For definition of ingoing substances, see Definitions.*

***The Candidate List is available on the ECHA website:
<http://echa.europa.eu/candidate-list-table>*

****Substances with endocrine disrupting effects categories 1 or 2, see the following link:
http://ec.europa.eu/environment/chemicals/endocrine/strategy/being_en.htm
(Annex L, page 238 onwards)*

*****In accordance with the definition of a nanomaterial adopted by the European Commission on 18 October 2011 (2011/696/EU). The requirement does not apply to natural pigments.*

******Heavy metals are the metals listed under item 2 below. Exemptions from the requirement:*

1) copper in metal complex dyes, see requirement O34.

2) metallic impurities in dyes and pigments up to amounts set by 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)

3) an exception is made here for iron used in depigmentation prior to printing.

- Declaration from the chemical manufacturer or chemical supplier that the requirement is fulfilled.

Background

The requirement has been changed and extended to include more substances, and now applies to all chemicals used during the textile production process, not just auxiliary chemicals used for textile dyeing or finishing. The requirement is also partially harmonised with the proposed criteria for chemicals in the revised criteria for the Nordic Swan Ecolabelling of textiles, hide and leather. The requirement now places a ban on Candidate List substances, PBT and vPbB substances, and endocrine disruptors. Nordic Ecolabelling always focuses on

restricting these types of substances. For further background information about the ban on these substances, see Chapter 2.5.

The other substances on the list now cover the 11 substance groups from the “Detox My Fashion” initiative started in 2011 by GreenPeace. Other initiatives, such as Detox to Zero by OekoTex and ZDHC, also refer to this list of substances. There is wide consensus in the textile industry to phase out these substances. Use of some of the substance groups and substances below might be restricted in the EU. However, it is still considered relevant to exclude these and to document that they are not included. One reason being that many textiles are produced in non-EU countries. Most substances on the list are also prohibited for other uses and materials. A general description of why these are prohibited is given in Chapter 2.5. A brief background on the ban on the substances that are only specified in this requirement is given below.

Heavy metals

The requirement prohibits the use of the following heavy metals; antimony, arsenic, cadmium, chromium, lead, mercury, zinc, copper, nickel, tin, barium, cobalt, iron, manganese, selenium and silver.

Heavy metals like cadmium, lead and mercury may be present as impurities in some dyes and pigments that are used in textiles. These metals can accumulate in the body over time, are highly toxic and have irreversible effects, including damage to the nervous system (lead and mercury) or kidneys (cadmium). Cadmium is classified as carcinogenic, mutagenic, toxic to reproduction and Hazardous to the aquatic environment. Chromium is allergenic, carcinogenic and Hazardous to the aquatic environment. The use of cadmium, mercury and lead is highly restricted in textiles but it is still relevant to have controls in place⁴⁶.

Azo dyes

Aromatic amines released from azo dyes can have carcinogenic and toxic effects, and may cause respiratory irritation and sensitisation. All the carcinogenic aromatic amines that come under the Nordic Swan Ecolabel’s requirements are listed in Annex 3.

Some of the substances in Annex 3 are banned under REACH (Regulation No. 1907/2006) Annex XVII no. 43 if their content exceeds 30 mg/kg (see Annex 8 of the REACH Regulation). Nordic Ecolabelling’s requirements go further than REACH by completely banning azo dyes, which may release aromatic amines with carcinogenic properties.

Phthalates

The requirement prohibits both phthalates on the Candidate List and other phthalates. A number of phthalates including the phthalates listed on the REACH Candidate List are identified as problematic. The phthalates on the Candidate List can cause reproductive damage and are classified as reprotoxic. Nordic Ecolabelling prohibits all phthalates on the basis of the precautionary

⁴⁶Investigation of chemical substances in textiles, The Danish Environmental Protection Agency, 2011.

principle. Phthalates are used in the textile printing process, on waterproof clothing, synthetic leather, rubber, plasticisers for PVC plastic and in some dyes.

Chlorinated solvents, including chlorophenols and chlorinated benzenes

Chlorinated solvents, such as trichloroethylene (TCE) are used by textile manufacturers to dissolve other substances during the process and to clean textiles. TCE is an ozone depleting substance and a persistent organic pollutant. It is also associated with effects in the central nervous system, liver and kidneys. Severe restrictions on the use of TCE in the EU have been in place since 2008. Chlorinated carriers are used as dye carriers in synthetic textiles and fabrics or blends of polyester and wool.

Chlorobenzenes are persistent and bioaccumulative chemicals that have been used as solvents and biocides, in the manufacture of dyes and as chemical intermediaries. The effects of exposure depend on the type of chlorobenzene; however, they commonly affect the liver, thyroid and central nervous system. Hexachlorobenzene (HCB), the most toxic and persistent chemical of this group, is also a hormone disruptor.

Chlorophenols

Chlorophenols are a group of chemicals frequently used as biocides in a wide range of products. Pentachlorophenol (PCP) and its derivatives are used as biocides in the textile industry. PCP is highly toxic to humans and can affect many organs in the body. It is also highly toxic to aquatic organisms. The EU banned production of PCP-containing products in 1991 and now also heavily restricts the sale and use of all goods that contain the chemical. Imported products that contain PCP are the major remaining sources of potential emissions of and exposure to PCP. It can be present in leather and textiles used as a fungicide to prevent mould. It can also be present as impurities from raw materials that have been used for the production of dyes. PCP and tetrachlorophenol (TeCP) can also be used as preservatives in print pastes⁴⁷.

Alkylphenols and their ethoxylates

Alkylphenol ethoxylates (APEO) and/or alkylphenol derivatives (APD) are a group of non-readily degradable surfactants that are proven endocrine disruptors. The most commonly used alkylphenol compounds in textiles are nonylphenols (NPs) and octylphenols and their ethoxylates, particularly nonylphenol ethoxylates. NPs are widely used in the textiles industry in cleaning and dyeing processes.

Organotin compounds

Organotin compounds are used as biocides and fungicides in a wide range of consumer products. The textile industry uses them in socks, footwear, sports clothes and other products to prevent odour caused by sweat. The ban on the use of some organotin compounds are part of the REACH regulations, Annex XVII

⁴⁷ Roadmap to zero
<https://www.roadmaptozero.com/fileadmin/layout/media/downloads/en/Chlorophenols.pdf> viewed 2/8
2019

Entry 20 and the following three; TBTO, DBTC and DOTE are on the EU's Candidate List⁴⁸.

O88 Metal complex dyes and pigments

Only metal complex dyes and pigments based on copper that make up a maximum of 5% by weight may be used, and only for the following fibres and processes:

- when dyeing wool fibre
- when dyeing polyamide fibre
- when dyeing a blend of wool and/or polyamide with regenerated cellulose fibre

Declaration from the chemical manufacturer or chemical supplier that the requirement is fulfilled.

Background

The requirement has been harmonised with proposals for new criteria for the Nordic Swan Ecolabelling of textiles. This means that the requirement has been raised because it is possible to substitute metal complex dyes for the dyeing of cotton. Metal complex dyes are used in connection with dyeing of wool, silk, cotton, polyamide, etc. Metal complex dyes are problematic because they contain heavy metals of environmental concern. The requirement prohibits metal complex dyes and pigments with, e.g. chromium, cobalt and nickel. The possibility to use copper is also restricted. Copper is widely used in metal complex dyes. Copper is of concern to aquatic ecosystems but is not harmful to health unless it is ingested. Copper can therefore be accepted in small amounts (max. 5% by weight in dyes) for some fibre types.

Metal complex dyes generally have good affinity (85% - 98%) for fibres and good light fastness. The good light fastness can help extend the useful life of the textile⁴⁹. In wool/polyamide blends, it can be difficult to achieve the desired clarity and accuracy of certain colours without the use of metal complex dyes. The industry is divided in its views on whether metal complex dyes are essential to achieve the quality demanded by the market. Nordic Ecolabelling has decided to allow metal complex dyes with restrictions when good quality and long useful life are important.

O89 Formaldehyde

The amount of free and partly hydrolysable formaldehyde in the finished textile must not exceed 16 ppm. Content of formaldehyde must be tested for compliance with the EN ISO 14184-1 standard.

A test report showing compliance with the requirement.

Certificate from Oeko-Tex 100 class I Baby or GOTS can also be used as documentation.

⁴⁸ <https://miljostatus.miljodirektoratet.no/tema/miljogifter/prioriterte-miljogifter/tbt-og-andre-organiske-tinnforbindelser/> viewed 8 August 2019.

⁴⁹ Industry Report on Textile Dying and Printing, Report from the Danish Environmental Protection Agency, No. 7 2010

Background

The requirement has been tightened from 20 ppm to 16 ppm and harmonised with the requirement limit in the consultation draft for new requirements for the Nordic Swan Ecolabelling of textiles, hide and leather.

Formaldehyde is classified as carcinogenic and causing irritation of the eyes, throat and skin and thus poses a significant danger to human health. Formaldehyde residues in textiles often come from the anti-wrinkle agents used during the finishing process. A certificate for Oeko-Tex 100 class I baby (> 16 mg/kg) and for GOTS (> 16 mg/kg) can also be used as documentation even though Oeko-Tex uses the Japanese Law 112 testing standard.

Fibre production

The requirements for fibre apply to the textile fibre with a content in the textile part of 30% by weight. This means that e.g. for a blend of 75% cotton and 25% polyester, only the requirements for cotton must be met. The requirements for fibre are new. Some of the requirements are harmonised with requirements in the draft version for new criteria for the Nordic Swan Ecolabelling of textiles, hide and leather. Other requirements are based on requirements in the current version of the textile criteria and/or criteria for the Nordic Swan Ecolabelling of Baby products with textiles, and requirements in the Nordic Swan Ecolabelling of Sanitary products.

O90 Cotton

Cotton and other cellulose seed fibres (including kapok) must be:

- organically farmed* or
- recycled** or
- GOTS certified or
- grown under an Integrated Pest Management (IPM) programme in compliance with one of the following standards: BCI (Better Cotton Initiative), CmiA (Cotton made in Africa) or FairTrade for cotton.

**Organic means cotton that is certified organic or is grown during the transition period to organic cultivation in accordance with a standard approved in the IFOAM Family of Standards. See definitions for more details.*

*** Recycled fibres or materials: Pre-consumer or post-consumer recycled raw materials, c.f. the definition given in the ISO 14021 standard. Both mechanical and chemical recycling are included. See definitions for more details.*

- ☒ A valid certification showing that the cotton in the Nordic Swan Ecolabelled product has been organically grown in compliance with the standards in the requirement. If the GOTS certification is held by the subcontractor, a transaction certificate is required showing that the product being shipped is GOTS certified. Documentation for BCI cotton must show traceability back to the BCI farmers.
- ☒ Documentation for recycled fibres must be either a or b:
 - a) a Global Recycled Standard certificate showing that the raw material has been recycled or other equivalent certification approved by Nordic Ecolabelling.
 - b) documentation showing that the recycled fibres were purchased as recycled and the name of the supplier.

Background

The cultivation and harvesting of cotton are associated with serious environmental and health problems. This is mainly caused by the use of pesticides, fertilisers and other chemicals during cultivation. Other factors, such as water consumption (irrigated or rainwater), monoculture, land use also have significant impacts on the environment⁵⁰. There are a number of ways to reduce adverse effects on health and the environment in the production of cotton. Integrated Pest Management (IPM) promotes measures such as the use of personal protective equipment, training farmers in the use of pesticides, and improved control of the pesticides used. A reduction in the use of artificial fertiliser and energy is also a requirement.

The environmental impact can also be reduced through organic cultivation and farming that does not use synthetic pesticides or artificial fertilisers and does not allow genetically modified cotton. One of the environmental problems that organic production does not solve is the problem related to artificial irrigation. Organic cultivation today is primarily located in areas where rainwater is the main source of water, which reduces the problems associated with water consumption⁵¹. Although organic production does not necessarily result in reduced water consumption, the run-off water quality will be significantly better for both humans and nature. It is difficult to say whether there is any difference between cotton yields in conventional and organic production. One of the reasons for this is that yields already differ greatly within individual systems. Various studies suggest that IPM produces the highest yields of the three production methods and that approx. 20% of global cotton production is IPM⁵².

O91 Flax and other bast fibres

Flax and other bast fibres (e.g. ramie, hemp and jute) must only be farmed with pesticides allowed under the EU Regulation No. 1107/2009.

- ☒ A declaration that only pesticides approved under the EU Regulation No. 1107/2009 have been used.

Background

Use of natural fibres in textiles has the advantage of not directly relying on fossil resources. However, it is increasingly relevant to consider whether these natural fibres are sustainably farmed with minimal harm to the environment. For example, ensuring that harmful pesticides that can lead to loss of biodiversity are not used. Only pesticides allowed under the EU Regulation No. 1107/2009 may be used in the cultivation of flax and other bast fibres, such as hemp.

O92 Wool and other keratin fibres

Any wool and other keratin fibres used must originate from sheep, camels, alpaca or goats, and must be one of the following:

⁵⁰ Revision of the European Ecolabel and Green Public Procurement (GPP) Criteria for Textile Products – Technical report and criteria proposal, Working document, European Commission, Joint Research Centre Institute for Prospective Technological Studies (IPTS) 2013.

⁵¹ 28 "The sustainability of cotton – consequences for man and the environment", Kooistra K., Termorshuizen A and Pyburn R., Wageningen University & Research Center, report no. 223, April 2006

⁵² Revision of the European Ecolabel and Green Public Procurement (GPP) Criteria for Textile Products – Technical report and criteria proposal, Working document, European Commission, Joint Research Centre Institute for Prospective Technological Studies (IPTS) 2013.

1. certified organic wool*
2. recycled wool**

or

3. conventional wool with documentation that the requirement below concerning pesticide content in the raw wool is fulfilled.

Pesticide content in conventional wool:

- The total content of the following substances may not exceed 0.5 ppm:
γ-hexachlorocyclohexane (lindane), α-hexachlorocyclohexane, β-hexachlorocyclohexane, δ-hexachlorocyclohexane, aldrin, dieldrin, endrin, p,p'-DDT and p,p'-DDD, cypermethrin, deltamethrin, fenvalerate, cyhalothrin and flumethrin.
- The total content of the following substances may not exceed 2 ppm:
diazinon, propetamphos, chlorfenvinphos, dichlorfenthion, chlorpyrifos, 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.

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.*

*** Definition of recycled wool: Pre-consumer or post-consumer recycled raw materials, see the definition in the ISO 14021 standard. Both mechanically and chemically recycled fibres are included. See the definitions in section 5.2 for more details.*

- 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 GOT certified.
- Fulfilment of the requirement is documented for **recycled fibre** with either a or b below:
 - c) Global Recycled Standard certificate showing that the raw material is recycled, or other equivalent certification approved by Nordic Ecolabelling.
 - d) 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.
- ☒ In addition, a 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

The requirement only allows wool fibres from sheep and other keratin fibres from camels, alpaca and goats. Angora wool from the Angora rabbit is not allowed.

Wool scouring wastewater often contains a high concentration of pesticide residues from the sheep dipping process. Pesticide residues that find their way into natural water bodies can cause toxic impacts. At the same time, organochlorine pesticides that are toxic, non-readily degradable and bioaccumulative will be harmful to the environment while active in the wool. Despite a ban, these types of pesticides are still being used⁵³. Wool scourers and wool exporters have the greatest ability to influence the use of ectoparasites (pesticides) by placing absolute requirements on the wool producers (farmers). This requirement can thus be documented by at least 75% of wool farmers declaring that they do not use the ectoparasites specified. Organic wool automatically meets the requirement. According to the International Wool Textile Organization (IWTO), less than 1% of global sheep farming was organic in 2015⁵⁴. It has therefore been adjudged that requiring wool to be organic is too strict.

O93 Ban on mulesing

Surgical mulesing and mulesing performed using liquid nitrogen are not permitted on merino sheep.

- ☒ Declaration from the merino wool producer, stating that no mulesing has taken place.

Background

Mulesing remains a problem associated with merino wool. Merino sheep are specially bred to have wrinkled skin, so that they produce more wool. This causes urine and faeces to collect around the hind quarters, which attracts flies, who then lay eggs in the folds of skin. Surgical mulesing involves removing wool and skin on the rear end of the sheep to avoid parasites from egg-laying flies. This method is primarily used in Australia. The requirement prohibits this type of treatment and must be documented with a declaration from the wool producer stating that mulesing is not performed.

O94 Synthetic fibres

Synthetic fibres must either be recycled or meet the requirements below for acrylic, polyamide, polyester and polypropylene.

⁵³ Ravidnran, 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

⁵⁴ ⁵⁴ International Wool Textile Organization (IWTO), "Wool Production". Viewed September 7, 2017: <http://www.iwto.org/wool-production>

- Recycled: Recycled plastics must not be used if they are approved for food contact and originate from facilities that are EFSA** or FDA*** approved or are marketed as compliant with these.
 - Acrylic:
 - a) The residual acrylonitrile content in raw fibres from the fibre production plant must be less than 1.5 mg/kg. The amount of acrylonitrile must be measured using the following method of analysis: Extraction with boiling water and quantification with capillary gas-liquid chromatography.
 - b) N,N-Dimethylacetamide (DMAc, CAS no. 127-19-5) must not be used in the production of acrylic
 - Polyamide: Emissions of nitrogen dioxide (N₂O) to the air from the production of monomers must not exceed 10 g/kg produced polyamide 6-fibre and 50 g/kg produced polyamide 6.6-fibre, expressed as an annual average.
 - Polyester: The amount of antimony in polyester fibre measured as an annual average must not exceed 260 ppm.
Antimony must be tested using the following method: Direct determination by atomic absorption spectrometry. The test must be conducted on raw fibre prior to wet treatment.
 - Polypropylene: Lead-based pigments must not be used.
- For recycled fibre: A declaration from the manufacturers of recycled raw materials stating that the raw materials are not EFSA or FDA approved, c.f. the requirement. Certificate for third party certification of the supply chain (e.g. Global Recycled Standard) or documentation from the manufacturer showing that the feedstock used in the raw material is 100% recycled material, c.f. the definition of the requirement
- Acrylic: An analysis report from the manufacturer of acrylic showing compliance with the requirement. A declaration from the manufacturer of acrylic that DMAc has not been used.
- Polyamide: A test report from the manufacturer of polyamide showing compliance with the requirement.
- Polyester: A declaration from the manufacturer of polyester showing that antimony has not been used or a test report showing compliance with the requirement.
- Polypropylene: A declaration from the manufacturer of polypropylene that lead-based pigments have not been used.

Background

The requirement is new and is based on requirements in the criteria for the Nordic Swan Ecolabelling of Baby products with textiles and the Nordic Swan Ecolabelling of Sanitary products.

Recycled textiles

Nordic Ecolabelling wants to support the circular economy through the use of recycled materials instead of virgin materials, which in this case is crude oil. However, fibre to fibre recycling is still limited for textiles⁵⁵ and recycled polymers from other synthetic materials are frequently used today as different plastic materials. The requirement thus accepts both fibre to fibre recycling and polymer fibre recycling. There are reasonable opportunities for using recycled

⁵⁵ PULSE OF THE FASHION INDUSTRY, Global Fashion Agenda & The Boston Consulting Group 2017

fibre types like polyester and polyamide today. The opportunities for other fibre types are not yet quite the same (August 2019).

The article “Environmental impact of textile reuse and recycling - A review”⁵⁶ reports that it is well documented that textile reuse and recycling in general minimises negative impacts on the environment compared with incineration and landfill, and that reuse is more beneficial than recycling.

There is a ban on the use of regranulate that is approved for contact with foods by the EFSA under Regulation No. 282/2008 or FDA in compliance with Code of Federal Regulations Title 21: Food and Drugs, PART 177—INDIRECT FOOD ADDITIVES: POLYMERS. It is considered inappropriate that raw materials which are approved for production of food packaging should be used in the production of textiles. The highest levels of traceability and purity are required for plastic raw materials used in packaging in contact with food. The use of these plastics for anything other than food contact is therefore downcycling.

The requirement stipulates that feedstock used in the recycled raw material must be fully traceable. Without proper traceability, it is difficult to ascertain that the material is actually recycled. Documentation regarding traceability should be available, e.g. a certificate from a third party’s certification of the supply chain, such as Global Recycled Standard. Alternatively, the manufacturer of the recycled raw material can document the traceability by declaring that 100% recycled feedstock has been used.

Acrylic

Acrylic fibres are produced through polymerisation of acrylonitrile (min. 85%) with a comonomer (max. 15%). Acrylonitrile is relatively toxic and classified as carcinogenic.⁵⁷ Nordic Ecolabelling therefore sets requirements for residual monomers in the polymer and for emissions of acrylonitrile in the process. Toxic solvents are also used in the spinning process, dimethylformamide (DMF) or N,N-Dimethylacetamide (DMAc). DMAc (CAS no. 127-19-5) is also on the Candidate List. Since it is difficult to find good alternatives, Nordic Ecolabelling allows the use of DMF, but not the use of DMAc in the production of acrylic, as this is on the Candidate List.

Polyamide

The requirement has been harmonised with the requirement set in Version 4 of the Nordic Swan Ecolabelling of Textiles and Version 1 of Baby products with textiles. The requirement concerns emissions of nitrogen dioxide (N₂O) gases from the production of monomers in polyamide production.

Polypropylene

The requirement has been harmonised with the requirement set in Version 4 of the Nordic Swan Ecolabelling of Textiles. Inorganic pigments are used to dye the

⁵⁶ Sandin, G, Environmental impact of textile reuse and recycling – A review, Journal of Cleaner Production Volume 184, 20 May 2018, Pages 353-365

⁵⁷ EU Ecolabel’s background report; “Establishment of ecological criteria for textile products”, final report, April 1998

fibre the correct colour. The use of lead-based pigments is therefore prohibited in the production of polypropylene.

Polyester

The production process for PET fibre often uses the catalyst diantimony trioxide (Sb₂O₃). Antimony trioxide (CAS no. 1309-64-4) is mentioned in the 2014⁵⁸ report “Everything you (don’t) want to know about plastic” by the Swedish Society for Nature Conservation as carcinogenic and as the key catalyst in PET production. Nordic Ecolabelling wants to limit the content of antimony as it is a substance of very high concern. Polyester usually contains antimony in concentrations of 150-350 ppm (mg/kg).⁵⁹

O95 Regenerated cellulose (for example, lyocell)

The following requirements apply to regenerated cellulose:

- Chlorine gas (Cl₂) must not be used to bleach cellulose pulp or cellulose fibre.
- Sulphur emissions (viscose and modal fibre) to the air must not exceed 120 g S/kg of filament fibre and 30 g/kg of staple fibre expressed as an annual average. Measurement of sulphur emissions must be in accordance with ISO 7934, ISO 7935 or equivalent standards.
- Zinc emissions (viscose) to water must not exceed 0.3 g Zn/kg of regenerated cellulose, expressed as an annual average. Information on sampling, analysis methods and analysis laboratories is given in Appendix 1.
- Tree species on the Nordic Swan Ecolabel’s list of prohibited tree species* must not be used.

**The complete list of prohibited tree species is available for viewing at:*

www.nordic-ecolabel.org/wood/

- A declaration from the manufacturer of regenerated cellulose that chlorine gas has not been used for bleaching.
- An analysis report showing emissions of sulphur.
- An analysis report showing emissions of zinc.
- A declaration from the manufacturer of regenerated cellulose stating compliance with the requirement not to use protected tree species.

Background

Cellulose pulp or cellulose fibres must not be bleached using chlorine gas. Chlorine gas is no longer used in Europe, but its use has not ended everywhere in the world. Chlorine gas is an effective bleaching agent, but it causes considerable emissions of organochlorine substances. ECF and TCF are examples of better alternative methods that are used for bleaching cellulose pulp. The requirement aims to reduce emissions of AOX by prohibiting the use of chlorine for bleaching. The manufacture of viscose generates emissions of sulphur and zinc. A requirement restricting emissions of these substances has been made.

See Chapter 2.6 for background details about the list of prohibited species.

⁵⁸ Klar, M., Gunnarsson, D., Prevodnik, A., Hedfors, C. and Dahl, U., “Everything you (don’t) want to know about plastic”, the Swedish Society for Nature Conservation, 2014

⁵⁹ The Danish Environmental Protection Agency, Environmental Project No. 892, 2004, Antimon - forbrug, spredning og risiko (Antimony - use, spread and risks)

O96 Traceability and certified raw materials

The requirement applies if the regenerated cellulose fibre content in the textile is more than 50%.

The manufacturer of regenerated fibre or the manufacturer of the dissolving pulp must state the name (species name) of the wood raw materials used in its production.

The manufacturer of regenerated fibre or the manufacturer of the dissolving pulp must have Chain of Custody certification under the FSC or PEFC schemes.

On an annual basis:

- a) At least 50% of the wood raw materials that are used as cellulose fibre/in the dissolving pulp must be certified as sustainably forested under the FSC or PEFC schemes. The remaining percentage of wood raw materials must be covered by the FSC/PEFC compliance schemes (FSC Controlled Wood/PEFC Controlled Sources)

or

- b) At least 75% of the regenerated fibre in the dissolving pulp must be recycled material*

or

- c) a combination of certified raw material and recycled material, calculated using the following formula:

Requirement for the percentage of fibre raw material from certified forestry in the pulp (Y):

$$Y (\%) \geq 50 - 0.67 x$$

where x = percentage of recycled material.

The requirement must be documented as purchased wood/fibre on an annual basis (volume or weight) by the producer of regenerated fibre or the manufacturer of the dissolving pulp.

If several pulps are mixed, the certification percentage must be met for the finished pulp that is used.

**Recycled material is defined according to ISO 14021, see Definitions.*

- Declaration from the producer of the fibre raw material in the case of regenerated fibre, or the producer of the dissolving pulp, that the requirement concerning wood species that must not be used has been fulfilled.
- Name (in Latin and one Nordic language) of the wood raw materials used.
- The producer of the fibre raw material in the case of regenerated fibre, or the producer of the dissolving pulp, must present a valid chain of custody certificate issued by FSC or PEFC that covers the wood raw materials and recycled material used in the pulp.
- Documentation from the producer of the pulp, showing the quantity of certified wood raw material purchased. The amounts purchased must be supported by an invoice or delivery note (paper or e-invoice). The proportion of certified fibre must be updated and reported annually throughout the validity period of the licence.

Background

The requirement for certification applies if the regenerated cellulose content in the textile part is more than 50%. The requirement is the same as that set in the draft version for consultation of new criteria for the Nordic Swan Ecolabelling of textiles.

O97 Recycled fibres, test for environmentally harmful substances

This requirement applies to all recycled fibres – both synthetic and natural. Recycled fibres/raw materials for fibre production shall not contain the following substances above the limits stated in the table below.

PET bottles that are used in the production of polyester as well as chemically recycled polymers that perform chemical purification are exempt from the requirement. The requirement must be documented on application, with subsequent annual checks via self-assessment.

Substance/substance group	Max. limit
Metals	
Chromium total	1.0 mg/kg
Lead	0.1 mg/kg
Mercury	0.02 mg/kg
Cadmium	0.1 mg/kg
Antimony	30.0 mg/kg
Organic tin compounds	
TBT and TPhT	0.5 mg/kg
Total of DBT, DMT, DOT, DPhT, DPT, MOT, MMT, MPhT, TeBT, TeET, TCyHT, TMT, TOT, TPT	1.0 mg/kg
Chlorophenols	
Pentachlorophenol	0.05 mg/kg
Tetrachlorophenol	0.05 mg/kg
Trichlorophenol	0.2 mg/kg
Dichlorophenol	0.5 mg/kg
Monochlorophenol	0.5 mg/kg
Per- and polyfluorinated compounds	
PFOS, PFOSA, PFOSE, N-Me-FOSA, N-Me-FOSE, N-Et-FOSE	Total < 1.0 µg/m ²
PFOA	< 1.0 µg/m ²
PFHpA, PFNA, PFDA, PFUdA, PFDoA, PFTTrDA, PFTeDA	0.05 mg/kg for each
Other stated per- and polyfluorinated compounds as set out in Oeko-Tex 100 Annex 5.	0.05 or 0.5 mg/kg for each as stated in Oeko-Tex 100
Phthalates	
BBP, DBP, DEP, DMP, DEHP, DMEP, DIHP, DHNUP, DCHP, DHxP, DIBP, DIHxP, DIOP, DINP, DIDP, DPrP, DHP, DNOP, DNP, DPP	Total 0.1 wt%
Flame retardants	
Flame retardants, with the exception of flame retardants approved by Oeko-Tex	< 100 mg/kg for each
Formaldehyde	16 mg/kg

Arylamines with carcinogenic properties stated in Oeko-Tex 100 Annex 5	Total 20 mg/kg
Surfactant, wetting agent residues	
Nonylphenol, octylphenol, heptylphenol, pentylphenol	Total 10 mg/kg
Nonylphenol, octylphenol, heptylphenol, pentylphenol, nonylphenol ethoxylate and octylphenol ethoxylate	Total 100 mg/kg
Dyes	
Cleavable, classified as carcinogenic in Oeko-Tex Annex 5	Total 20 mg/kg
Cleavable aniline as listed in Oeko-Tex Annex 5	Total 100 mg/kg
Classified as carcinogenic in Oeko-Tex Annex 5	50 mg/kg
Dyes classified as allergenic in Oeko-Tex Annex 5	50 mg/kg
Other dyes listed in Oeko-Tex Annex 5	50 mg/kg
Pesticides (for recycled natural fibre)	
Pesticides listed in Oeko-Tex 100 Annex 5	Total 0.5 mg/kg

Test methods: as stated in Testing Methods Standard 100 by Oeko-Tex

- Test reports or Oeko-Tex 100 class I certificate showing fulfilment of the requirement.
- A written procedure showing how an annual test is performed in line with the 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.

Background

The requirement is new and corresponds to requirements set in the consultation version of new criteria for Nordic Ecolabelling of textiles and leather. It is important to consider the potential exposure of the user and the environment to undesirable chemicals from recycled material. The requirement covers the chemical substances and substance groups that are at greatest risk of being present in recycled fibre for textile production. Recycled fibre may contain residues of additives from previously used dyes, pesticides from cultivation, biocides used during transport, and so on⁶⁰. This applies to both fiber recovered from used textiles and fibre recovered from products other than textiles. Even if the textile is washed several times, unwanted chemicals may still be present in the recycled fibre. In mechanical recycling processes, all the chemical substances

⁶⁰ IKEA and H&M analyze the content of recycled fabrics, article 29-10-2019 on Treehugger.com https://www.treehugger.com/sustainable-fashion/ikea-and-hm-analyze-content-recycled-fabrics.html?utm_source=TreeHugger+Newsletters&utm_campaign=9cd1c025b2-EMAIL_CAMPAIGN_11_16_2018_COPY_01&utm_medium=email&utm_term=0_32de41485d-9cd1c025b2-243762625

remain in the fibre and may be transferred to the new textile fibre. In the chemical recycling process, some chemical substances remain in the material, and both unproblematic and problematic substances can cause technical interference with the process⁶¹. 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 2006⁶².

2.13.3 Quality standards - textiles for seating furniture

O98 Dimensional changes after washing and drying

Dimensional changes after washing and drying must not exceed $\pm 2\%$ for textiles that can be removed and washed.

Test procedure to be followed:

- Wash once
- Washing at the temperature stated on the care label
- Drying as stated on the care label

Test method:

The tests must be performed in accordance with EN ISO 6330 Textiles – Domestic washing and drying procedures for textile testing, in combination with ISO 5077 Textiles – Determination of dimensional change in washing and drying, or an equivalent standard.

For workwear intended to be industrially laundered, the standards used are ISO 15797 Textiles – Industrial washing and finishing procedures for testing of workwear and EN ISO 5077.

- A test report showing compliance with the requirement.

Background

The aim of the requirement is to ensure that the Nordic Ecolabelled textile is of high quality. The requirement has changed since the previous version of the criteria and is based on the consultation proposal for new criteria for the Nordic Swan Ecolabelling of textiles.

O99 Colour fastness to light

Colour fastness to light must be at least level 5.

Level 4 may be permitted if the textile is lightly dyed (standard depth $<1/12$ in accordance with 105 A06) and consists of mixes containing more than 20% wool or other keratin fibres, or of mixes containing more than 20% flax or other bast fibres.

⁶¹ Nordic Council of Ministers (2016). Gaining benefits from discarded textiles: LCA of different treatment pathways

⁶² M. Whitt, Survey of heavy metal contamination in recycled polyethylene terephthalate used for food packaging, Journal of Plastic Film & Sheeting 2012

The requirement does not apply to white textiles, mattress bolsters and mattress covers.

Tests must be performed in accordance with EN ISO 105 B02 or an equivalent standard.

- A test report showing compliance with the requirement. Alternatively, a GOTS transaction certificate may be used as documentation for the selected types of upholstery.

Background

The requirement remains unchanged. The aim of the requirement is to ensure that the colours of a dyed or printed textile are resistant to change (fading) on exposure to light and that the product thus retains its colour for a long time. This requirement therefore ensures the textile has a long lifespan. The requirement does not apply to white textiles or mattresses/mattress covers. The requirement refers to the EN ISO 105 B02 standard.

O100 Colour fastness to washing

Colour fastness must be at least:

- Colour change: level 3-4
- Discolouration: level 3-4

The requirement does not apply to textile elements that are clearly labelled “dry clean only” or equivalent (if the product in question is normally labelled in this way), nor white products, products that are neither dyed nor printed, nor textiles that are not intended for removal and washing.

Tests must be performed in accordance with ISO 105 C06 (a single wash at the temperature stated on the product) or an equivalent standard.

- A test report showing compliance with the requirement. Alternatively, a GOTS transaction certificate may be used as documentation.

Background

The requirement is unchanged. The requirement is set to ensure high quality and long lifespan for the products. The requirement refers to the ISO 105 C06 standard: Textiles - Tests for colour fastness - Part C06: Colour fastness to household and industrial washing. The GOTS standard also tests in accordance with ISO 105-C06 and sets the same requirement level. It is therefore possible to use a GOTS transaction certificate as documentation.

The Oeko-Tex 100 tests in accordance with ISO 105-E01. ISO 105 Part E01 specifies a method for determining the resistance of the colour of textiles of all kinds and in all forms to immersion in water but not washing.

O101 Colour fastness to rubbing (wet)

Colour fastness to wet rubbing must be at least level 2-3.

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

Tests must be performed in accordance with ISO 105 X12 or an equivalent standard.

- A test report showing compliance with the requirement.

Background

The requirement remains unchanged. The requirement is set to ensure that the dye is well-fixed in the textile. 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 to control fixing of the dye on the fabric.

The requirement refers to EN ISO 105-X12 Textiles – Tests for colour fastness – Part X12: Colour fastness to rubbing. The scale is given in ISO 105-A03.

This requirement is relevant in relation to the textile's durability, and also to ensure that the dye does not rub off when the product is used. A GOTS or Oeko-Tex certificate cannot be used as documentation for this requirement as these labels require lower levels.

O102 Colour fastness to rubbing (dry)

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

Tests must be performed in accordance with ISO 105 X12 or an equivalent standard.

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

- ☒ A test report showing compliance with the requirement. Alternatively, an Oeko-Tex 100 version 2019 certificate can be used as documentation for the requirement.

Background

The requirement remains unchanged. The requirement is set to ensure that the dye is well-fixed in the textile. 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 to control fixing of the dye on the fabric. The requirement refers to EN ISO 105-X12 Textiles – Tests for colour fastness – Part X12: Colour fastness to rubbing. The scale is given in ISO 105-A03.

O103 Wear resistance

Fabric for furniture upholstery (seating) must have the following wear resistance:

- For use in public spaces: 80,000
- For use in domestic spaces: 20,000

Tests must be performed in accordance with EN ISO 12947-2 or an equivalent standard.

- ☒ A test report showing compliance with the requirement.

Background

The aim of the requirement is to ensure that the textile has high abrasion resistance in relation to wear and tear. The wear resistance of woven textiles is tested by measuring the number of times a piece of fabric can be rubbed against an abradant before two threads break. The wear resistance is important to the lifespan of a product. The number of rub cycles on textiles for upholstery can vary from 20,000 to as many as 120,000. The requirement is unchanged for textiles for

domestic use, but has been raised from 40,000 to 80,000 for textiles for use in public spaces.

O104 Pilling - upholstery fabric

Upholstery fabric must have pilling resistance equivalent to level 4 in accordance with EN ISO 12945-2 or an equivalent standard.

- A test report showing compliance with the requirement.

Background

The requirement has not changed. It is relevant to ensure that pilling does not occur easily on upholstery fabrics in order to give the product as long a useful life as possible.

2.13.4 Requirements for other parts of textiles

The requirements for other textile parts are based on tests of the finished textile and harmonize with the requirements that Nordic Ecolabelling sets for certain textile parts in the criteria for Nordic Ecolabelling of baby products with textiles.

O105 Extractable metals

Extractable metals must be tested in accordance with: Extraction: EN ISO 105-E04 (perspiration-proof (acidic)). Detection: ICP-MS or ICP-OES.

For the individual textile, hide/skin and leather element the extractable metals may at most be the following:

Metal	Extractable metal in mg/kg
Antimony (Sb)	30.0 mg/kg
Arsenic (As)	0.2 mg/kg
Cadmium (Cd)	0.1 mg/kg
Chromium (Cr)	1.0 mg/kg
Cobalt (Co)	1.0 mg/kg
Copper (Cu)	25.0 mg/kg
Lead (Pb)	0.2 mg/kg
Nickel (Ni)	1.0 mg/kg
Mercury (Hg)	0.02 mg/kg

- Test report showing that the requirement is fulfilled.
- Alternatively, a certificate for Oeko-Tex 100 class I Baby or GOTS version 4 or later can also be used as documentation.

O106 Total metal content

For the individual textile, hide/skin and leather element, the total content of the following metals may not exceed:

- a) Lead (Pb) 90 mg/kg.
- b) Cadmium (Cd): 45 mg/kg.

The metal content must be tested in accordance with EPA 3050 B (ICP/MS).

- Test report showing that the requirement is fulfilled.
- Alternatively, a certificate from Oeko.Tex 100 class I Baby or GOTS version 4 can also be used as documentation.

Background

The requirements are made to ensure that the user is not exposed to the effects of hazardous metals from the textile.

O107 Formaldehyde in textile

The amount of free and partly hydrolysable formaldehyde in the finished textile may not exceed 16 ppm for the individual textile element.

Testing must be in accordance with EN ISO 14184-1.

- Test report showing that the requirement is fulfilled, or certificate from Oeko-Tex 100 class I Baby or certificate from GOTS version 4, specifically approved for babywear, can also be used as documentation

Background

The limit values for the permitted amount of formaldehyde in the finished textile are harmonized with the limit level for Nordic Ecolabelled textile for products for babies and children under 3 years. Formaldehyde is classified as harmful to health as a carcinogen and irritant to eyes, throat and skin. Residues of formaldehyde in textiles can often result from post-treatment with anti-curling agents. OekoTex and GOTS have similar requirements for formaldehyde emission. Although test method is different from requirement, certificate from Oeko Tex Baby and GOTS is accepted as documentation.

O108 Polycyclic aromatic hydrocarbons (PAHs)

For the individual textile element which includes more than 10 weigh-t% synthetic fibre, the sum of the PAHs stated here must be below 5 mg/kg and each individual PAH must be below 0.5 mg/kg.

The requirement concerns the following PAHs:

Substance name	CAS no.	Substance name	CAS no.
Benzo[A]Pyrene	50-32-8	Benzo[A]Pyrene	50-32-8
Benzo[E]Pyrene	192-97-2	Benzo[E]Pyrene	192-97-2
Benzo[A]Anthracene	56-55-3	Acenaphthylene	208-96-8
Dibenzo[A,H]Anthracene	53-70-3	Acenaphthene	83-32-9
Benzo[B]Fluoranthene	53-70-3	Anthracene	120-12-7
Benzo[J]Fluoranthene	205-82-3	Fluorene	86-73-7
Benzo[K]Fluoranthene	207-08-9	Naphthaline	91-20-3
Chrysene	218-01-9	Phenanthrene	85-01-8
Benzo[ghi]perylene	191-24-2	Fluoranthene	206-44-0
Indeno[1,2,3-cd]pyrene	193-39-5	Pyrene	129-00-0

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

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

Background

There are more than 100 PAH compounds. Several of the PAHs are carcinogenic with 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, for example.

From December 2015, the first 8 PAHs in the table became illegal to use in quantities of more than 0.5 mg/kg in plastic and latex components in contact with the child⁶³.

The requirement here in the criteria is harmonised with Oeko-Tex class I baby, where requirements are made of testing and a threshold level of maximum 0.5 mg/kg for each of the 8 REACH PAHs, and a requirement is made of a sum of maximum 5 mg/kg for 24 stated PAHs. Oeko-Tex only makes requirements of textiles with synthetic fibres. The same applies here. Here, however a requirement is defined concerning textile elements with more than 5 wt% synthetic fibres. This achieves control of the statutory requirement for the 8 limited PAHs and the limitation of a larger amount of PAHs than stipulated in legislation.

GOTS has a threshold level of under 1 mg/kg for the individual PAH and a sum of maximum 10 mg/kg for 18 selected PAHs. This means that a GOTS version 4 certificate cannot be used alone as documentation for the requirement. Tests must be presented showing fulfilment of the requirement.

O109 Pesticides in cotton and other natural seed fibres of cellulose, as well as flax, bamboo or other bast fibres

The requirement concerns textile elements which include cotton or other natural seed fibres of cellulose, and flax, bamboo or other bast fibres.

The total sum of pesticides in the individual textile element may not exceed 0.5 mg/kg.

The pesticides to be tested for are:

Aldrin, captafol, chlordane, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene, hexachlorocyclohexane (total isomers), 2,4,5-T, chlordimeform, chlorobenzilate, dinoseb with salts, monocrotophos, pentachlorophenol, toxaphene, methamidophos, methyl parathion, parathion, phosphamidon, gluphosinate and glyphosate.

Textile elements of 100% organic fibre are exempt from the requirement. See the definition or organic under requirement O3.

The content must be tested in accordance with Section 64 LFGB L 00.0034 (GC/MS); Section 64 LFGB L 00.00-114 (LC/MS/MS) or equivalent EN test standards (assessed by a test institute or Nordic Swan Ecolabelling).

A test report must be submitted at the time of application and the applicant must have a routine to test annually in accordance with the requirement and ensure that the requirement is complied with. Nordic Ecolabelling must be notified if the requirement is not complied with.

If the requirement is documented with either a license for the Nordic Swan Ecolabelled Textile, Hides and Leather, certificate for the Oeko-Tex 100 Class I Baby or GOTS Transaction Certificate, it must be ensured, that a valid license/certificate exists throughout the lifetime of the license. A valid license/certificate must be available on request from Nordic Ecolabelling.

- Test report at the time of application, showing fulfilment of the requirement, or valid certificate showing that the fibres are organic. A certificate from Oeko-Tex 100 class I Baby or GOTS version 4 or later can also be used as documentation.

⁶³ Visited 14/9 2016 ANNEX XVII TO REACH – Conditions of restriction, ECHA
<https://echa.europa.eu/documents/10162/176064a8-0896-4124-87e1-75cdf2008d59>

- Written routine describing that a test is performed annual according to the requirement and self-monitoring is done to ensure that the requirement is complied with.

O110 Ectoparasiticides in wool and other keratin fibres:

The requirement concerns textile elements that include wool or other keratin fibres, in any amount.

Textile elements of 100% organic wool fibres, or which have documented that the textile element fulfils requirement O93, are exempt from this requirement. See the definition of organic under requirement O3. At the same time wool fibers, that have already documented compliance with requirement O4 are exempted from this requirement.

The total sum of ectoparasiticides in the individual textile element may not exceed 0.5 mg/kg.

The ectoparasiticides to be tested for are:

γ -hexachlorocyclohexane (lindan), α -hexachlorocyclohexane, β -hexachlorocyclohexane, δ -hexachlorocyclohexane, aldrin, dieldrin, endrin, p,p'-DDT and p,p'-DDD, cypermethrin, deltamethrin, fenvalerate, cyhalothrin, flumethrin, diazinon, propetamphos, chlorfenvinphos, dichlorophenthion, chlorpyrifos, phenchlorphos, diflubenzuron and triflumuron.

The content must be tested in accordance with Section 64 LFGB L 00.0034 (GC/MS); Section 64 LFGB L 00.00-114 (LC/MS/MS).

- Test report showing fulfilment of the requirement, or valid certificate showing that the fibres are organic. Certificate from Oeko-Tex 100 class I Baby or GOTS version 4 can also be used as documentation.

Background

Since it is possible to use a combination of organic, IPM and conventional cotton, or organic or conventional wool, it is assessed that for this product group, where the textile is not washed, it is relevant to ensure a minimum content of pesticides in the finished textile. The requirements are the same as in the criteria for Swan labelling of baby products with textiles.

2.14 Padding materials

The requirements of this chapter apply to padding materials that make up more than 1% by weight of the finished item of furniture. Padding materials that may be included in Nordic Swan Ecolabelled furniture and come under the requirements are polyurethane foam (PUR), polyester fibre, synthetic latex, recycled textile waste and natural padding materials, such as natural latex, coir (coconut fibre), straw, down and feathers. The first requirements in the chapter apply to all padding materials. The additional requirements given later in the chapter apply to certain types of padding materials.

Padding materials evaluated for compliance with the Nordic Swan Ecolabel's criteria for Textiles, hides and leather, or the EU Ecolabel criteria for Bed mattresses, already meet the requirements in this section. Only the name, manufacturer and licence number of the licence that includes the padding material need to be submitted.

2.14.1 Material requirements

O111 Recycled padding materials

Recycled padding materials must not contain halogenated flame retardants.

Recycled material is defined according to ISO 14021, see definitions.

- Documentation showing that the material is recycled in compliance with ISO14021.
- A declaration from the supplier of the recycled padding material that it does not contain halogenated flame retardants.

Background

The requirement is new. Nordic Ecolabelling is positive towards the use of recycled materials. However, it does not want Nordic Swan Ecolabelled products to contain materials with halogenated flame retardants.

O112 Renewable padding materials

The species name (Latin and English) and geographic origin (country) must be stated for the renewable raw material.

The renewable raw materials must either:

- Be residual products from other production processes, e.g. straw from grain production or
 - Meet the relevant requirements for fibre given in Chapter 2.13
- Name and geographic origin of the renewable raw materials.
 - A description of the raw material showing that it is a residual product or documentation in compliance with the relevant requirement in Chapter 2.13

Background

The requirement is new. Nordic Ecolabelling is positive towards the use of renewable padding materials. However, it wants information about which species are used and where the raw materials originate from. The renewable raw materials must either be residual products from another production process, e.g. straw from grain production or must meet the relevant requirements for fibre given in the chapter on textiles. This applies to requirements for cotton, linen and other bast fibres, wool and other keratin fibres.

O113 Ethical requirements for feathers and down

The use of feathers and down plucked from live birds is prohibited.

Force feeding the birds is prohibited.

Recycled* down and feathers are exempt from the requirement, but it must be documented through a traceability system that the down and feathers are recycled.

**Recycled down and feathers are defined here as post-consumer recycled material in accordance with the ISO 14021 standard*

- A Responsible Down Standard certificate or a certificate from another relevant standard that fulfils the requirement.
- Recycled down and feathers: Recycled Global Standard certificate. Or documentation from a supplier of recycled down or feathers showing that it is a post-consumer recycled material.

Background

This is a new requirement and is the same requirement that is set in the draft version for consultation of the criteria for Textiles, hides/skins and leather Version 5. It is mainly geese that are live plucked for feathers and down, although other species are live plucked too. Plucking feathers and down from live geese is banned in the EU, but an investigation by the European Food and Safety Authority (EFSA) has established that it is possible to pluck down and feathers from live geese during the moulting period. EFSA has recommended setting up a control system for this. Since no such control system is currently in place, Nordic Ecolabelling makes the requirement that plucking down and feathers from live birds is prohibited. A requirement has also been made that force feeding is prohibited.

Textile Exchange has issued a standard for down and feathers. Certification under this standard, the Responsible Down Standard (RDS), is possible. The RDS requires independent, third party assessments of key aspects of animal rearing and handling and ensures traceability all the way through the supply chain. The goal of the Responsible Down Standard is to ensure that down and feathers do not come from birds that have been subjected to any unnecessary harm. The standard may apply to both blended and 100% certified products. However, final products may only be labelled as RDS certified if the down or feathers in them are 100% certified. The standard certifies that birds have not been force fed nor live plucked. There are many certified providers of down and feathers and these are used for a wide range of products in the market.

O114 Manufacture of polyurethane foam

CFC, HCFC, HFC, methylene chloride or other halogenated organic compounds must not be used as blowing agents.

Protective measures must be taken when handling isocyanates to reduce employee exposure as far as is possible. The Workplace Exposure Limits for air concentrations of isocyanates in areas where employees are working without PPE are:

- MDI (CAS number 101-68-8): Average over an 8-hour period must not exceed 0.005 ppm (0.05 mg/m³)
- TDI (CAS numbers 584-84-9 and 91-08-7): Average over an 8-hour period must not exceed 0.005 ppm (0.04 mg/m³)

- A declaration from the manufacturer of padding materials stating which blowing agent has been used.
- A description of the safety measures taken and the statutory Workplace Exposure Limits for isocyanates in the country of manufacture. If the statutory limits are the same or more stringent than the threshold limit values in the requirement, no further documentation is required. If the statutory limits are less stringent, a description of how air concentration levels of isocyanates are measured must be submitted, along with a test report showing compliance with the threshold limit values specified in the requirement.

Background

Polyurethane must not be foamed using CFC, HCFC, HFC or methylene chloride. These substances are stable organic substances that are strong greenhouse gases. CFC and HFC break down the ozone layer and methylene chloride are suspected of being carcinogenic. This requirement remains the same as in Version 4 of the criteria. Manufacturers have phased out the use of these agents as foaming agents, but it is still considered relevant to keep the requirement in order to

ensure that they are not used. Foaming agents are only relevant for polyurethane foam because foaming agents are not required to produce latex foam.

Polyurethane is formed through polyaddition between isocyanates and polyol. The isocyanates that are used for the manufacture of polyurethane foam are MDI (CAS number 101-68-8) and TDI (CAS numbers 584-84-9 and 91-08-7). Both these isocyanates are suspected of causing cancer and may cause sensitisation by inhalation and contact with skin. From an occupational health and safety perspective, MDI is slightly better but gives the foam other technical properties and it is therefore not possible to completely replace TDI with MDI. Among other things, MDI gives the foam a higher density.

Polyurethane foam that has completely hardened is harmless, but it is important to limit worker's exposure to it because of the risks of unreacted isocyanates. The requirement in Version 4 of the criteria stipulates that isocyanate compounds may only be used in closed processes. Manufacturers have pointed out that this stipulation is unclear and can be interpreted in different ways. Production of polyurethane foam does not take place in a closed process and personal protective equipment (respiratory masks and gloves) are only required for certain stages of the process. Closed-loop systems have therefore been removed from the requirement. Instead, a description of the safety measures taken to minimise employee exposure is required, and the hygiene threshold limit values for TDI and MDI must be observed. The threshold limit values set in this requirement are the same as those in the Norwegian Labour Inspection Authority's Regulations on measures and threshold limit values.

O115 Content of butadiene in synthetic latex

The content of butadiene in synthetic latex must be less than 1 mg/kg (ppm). Gas chromatography with flame ionisation detection must be used to determine the concentration. Before the analysis is performed, the latex foam must be ground and weighed, and the sample placed in a headspace vial.

- A test report from the latex manufacturer.

Background

The requirement remains unchanged. A number of synthetic latex materials are made of substances that are hazardous to the environment and human health, for example substances that are suspected to cause cancer. One substance that acts as a monomer in the production of latex is 1,3-butadiene (CAS number 106-99-0) which has H340 and H350 CMR classifications. There is therefore a requirement for content of butadiene to be tested to ensure that the monomer content of the final latex is low.

2.14.2 Chemical requirements

O116 Chemicals used in the production/treatment of padding materials

The chemical products that are used in the production or treatment of padding materials must not contain the following substances*:

- Substances of Very High Concern (SVHC)**
- Halogenated organic compounds, for example halogenated flame retardants and organofluorine compounds
- Organophosphate flame retardants

- Substances classified as carcinogenic categories 1A/1B/2 (H350, H351), mutagenic categories 1A/1B/2 (H340, H341) or reprotoxic categories 1A/1B/2/Lact (H360, H361, H362) according to the CLP Regulation 1272/2008. An exemption applies to:
 - 1,3-butadiene (CAS number 106-99-0) that is used in the manufacture of synthetic latex from the classifications H340 and H350 if subsequent requirements regarding residual monomers are met
 - An exemption applies to formaldehyde (CAS number 50-00-0) from the classification H350 if subsequent requirements regarding emissions are met
 - MDI (CAS-nummer 101-68-8) and TDI (CAS-nummer 584-84-9 and 91-08-7).
- Phthalates
- Organotin compounds
- Biocides or biocide products that are added to the padding material for a disinfecting or antibacterial purpose

**See definitions and terms for the definition of substances*

***The Candidate list can be found here: <https://echa.europa.eu/candidate-list-table>*

- A declaration from the manufacturer of padding material.
- For natural padding materials without chemical additives or treatments: A declaration from the supplier that verifies this.

Background

The requirement was also included in the previous version of the criteria but was then referred to as chemical additives. The requirement has been perceived as unclear concerning which chemical additives are covered by the requirement and how far back in the manufacturing chain the requirement goes. An attempt has therefore been made to clarify that the requirement apply to all chemical products used in the manufacture or treatment of padding materials.

The products that are not chemically hardened and monomers that are used in the manufacture of padding materials can, for example, have classifications that do not meet the requirement that Nordic Ecolabelling normally makes for prohibited classifications. In its finished form, the padding material has other properties and it has therefore been considered most relevant to make the requirement that a number of specific substances must not be used in the manufacturing or treatment processes.

1,3-butadiene and formaldehyde are exempt from the ban on substances classified in CMR categories 1A/1B provided they meet subsequent requirements concerning residual monomers and emissions respectively. An exemption applies to these substances as their use in the manufacture of certain types of padding materials is necessary.

Different types of padding materials may contain halogenated flame retardants. A ban on these would be preferable, however, as they have limited biodegradability and are associated with adverse effects on the environment and human health. A ban is also placed on organophosphate flame retardants.

Organotin compounds are used as catalysts for the formation of polyurethane foam. Disubstituted organotin compounds are normally used, such as dibutyltin (DBT) and dioctyltin (DOT). These are highly toxic to the environment and a hazard to human health and are considered endocrine disruptors⁶⁴.

O117 Dyes

Dyes may only be added to padding materials to distinguish between different qualities (e.g. hard and soft foam) within the same type of filling.

Metal complex dyes that have a classification in the table below must not be used.

CLP Regulation 1272/2008		
Hazard class	Code for hazard class and category	Hazard statement code
Carcinogenicity*	Carc. 1A or 1B Carc 2	H350 H351
Germ cell mutagenicity*	Mut. 1A or 1B Mut. 2	H340 H341
Toxic for reproduction*	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362
Hazardous to the aquatic environment	Aquatic Acute 1 Aquatic Acute 1 Aquatic Chronic 2	H400 H410 H411
Acute toxicity	Acute Tox. 1 or 2 Acute Tox. 1 or 2 Acute Tox. 1 or 2 Acute Tox. 3 Acute Tox. 3 Acute Tox. 3	H300 H310 H330 H301 H311 H331
Specific target organ toxicity: single exposure and 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 classification H350i.

- A declaration from the manufacturer of the padding material that no dyes have been added or have only been added for the purpose of distinguishing between different qualities.
- Safety data sheet in accordance with Appendix II of REACH (Regulation No. (EC) 1907/2006) for any added dyes.

Background

The requirement is the same as in the previous version of the criteria, except that the exemption permitting the use of the dye now only applies for the purpose of distinguishing between different qualities. Previously, an exemption was also made for padding materials that are visible and will be used without a cover. This has been deleted because it is unusual that padding materials are used that way and that this needs to be declared by the furniture manufacturer while other parts of the requirement are declared by the manufacturer of the padding materials.

⁶⁴ Tüv Süd, Technical guidance on organotin compounds: <https://www.tuvsud.com/en/e-ssentials-newsletter/past-topics/technical-guidance-on-organotin-compounds> (downloaded 17 October 2019)

2.14.3 Requirements for emissions

O118 Requirements for emissions for foam padding materials

Foam padding materials, such as polyurethane foam and latex foam, must meet the requirements for emissions in the table below. Emissions testing must be carried out in compliance with ISO 16000-3/-6/-9/-11.

Substance or substance group	Threshold limit value (mg/m ³)
Formaldehyde (CAS 50-00-0)	0.1
Toluene (CAS 108-88-3)	0.1
Styrene (CAS 100-42-5)	0.005
4-4-Vinylcyclohexene (CAS 100-40-3)	0.002
4-Phenylcyclohexene (CAS 4994-16-5)	0.03
Vinyl chloride (CAS 75-01-4)	0.002
Volatile aromatic hydrocarbons (VAH)	0.3
Volatile organic compounds (VOC)	0.5

- A test report showing that the threshold limit values in the requirement have been met.
- Alternatively, an Oeko-Tex Standard 100 certificate or CertiPUR certificate can be used as documentation for the requirement.

Background

The previous Version 4 of the criteria made the requirement that the concentration or emission of formaldehyde must be tested if it has been used in the manufacture of the padding material. This has been amended to require testing of emissions for additional substances and substance groups and not just for formaldehyde. Emissions testing must be carried out for foam padding materials, such as polyurethane foam and latex foam. Foam padding materials can contain and emit volatile organic compounds found as residues from the production of polymers. Foam padding materials are frequently used in beds, sofas and other items of furniture that come into close contact with the user. Tests must therefore be carried out to ensure low emissions from the padding materials. Latex foam must also meet subsequent requirements for the content of butadiene and emissions of N-Nitrosamines.

Several other labelling bodies set requirements for emissions of the same substances and substance groups, e.g. Oeko-Tex Standard 100, CertiPUR and the EU Ecolabel criteria for bed mattresses and furniture. To allow greater flexibility in the requirement, certificates from Oeko-Tex or CertiPUR are accepted as documentation. Padding materials that have been inspected in accordance with the EU Ecolabel criteria automatically meet the requirement. Oeko-Tex has the same threshold limit values as in the requirement and the threshold limit values are the same for all the different Oeko-Tex classes. Certificates from all the Oeko-Tex classes (class I, II, III and IV) are therefore accepted as documentation. The threshold limit values are slightly different for CertiPUR, for example, in the case of styrene and aromatic hydrocarbon emissions. Nonetheless, a certificate from CertiPUR has still been considered sufficient to meet the requirement, since their threshold limit values are also low.

O119 N-nitrosamines in latex

If accelerators that form N-nitrosamines* have been used in the manufacture of latex, emissions must not exceed 0.0005 mg/m³ in compliance with ISO 16000-9.

The requirement applies to both natural latex and synthetic latex.

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

- A declaration from the latex manufacturer that no accelerators that form N-nitrosamines have been used, or a test report showing that the threshold limit value has been met.

Background

The requirement remains unchanged, but the test method has been changed to harmonise with Version 5 of Nordic Swan Ecolabelling of Textiles, hides/skins and leather, and with the EU Ecolabel criteria for furniture.

Accelerators used for vulcanisation of latex can emit nitrosamines during the production process. Several N-nitrosamines tested in animal experiments have been found to be carcinogenic. It is possible to use accelerators that do not form nitrosamines, but the choice of accelerator can be influenced by technical difficulties or cost⁶⁵. If accelerators that form N-nitrosamines are used in the manufacture of latex, an emissions test is required to ensure that the majority emitted during production will not be emitted during use.

2.15 Hide and leather

There are different sets of requirements for hide and leather depending on the amount contained in the product and the purpose, based on the model for textiles. In the model, some requirements therefore apply regardless of the amount and purpose in the product. The requirements for furniture coverings, such as covers for sofas and chairs, are the most comprehensive. These concerns hide and leather which in addition to being included in a relatively large amount also come into contact with skin. Hide and leather previously had to comply with all the requirements specified in the criteria for the Nordic Swan Ecolabelling of textiles, hide and leather.

2.15.1 Requirements for hide and leather regardless of the amount in the product

O120 Chromium in hide and leather

The content of total chromium in the processed (including finishing) hide or leather must not exceed 0.1% (mass of chromium/total dry weight of hide or leather).

Processed hide or leather (including finishing) must not contain chromium VI in compliance with EN ISO 17075 (detection limit 3 ppm) or equivalent.

- A test report showing compliance with the requirement for both total chromium and chromium VI.

⁶⁵ European Ecolabel Bed Mattresses, LCA and criteria proposals final report for the EC, accessed 18 June 2019 http://ec.europa.eu/environment/ecolabel/documents/bed_mattresses_report.pdf

Background

The requirement is the same as that proposed in the revised criteria for the Nordic Swan Ecolabelling of textiles. The requirement is not new, but has been raised to also include a requirement for total chromium. The EU restriction states that hide and leather products that come into contact with skin must not contain more than 3 mg/kg (3 ppm) chromium VI. However, no requirements are specified for testing. This requirement is thus more stringent by requiring documentation of tests to be submitted for inspection.

Emissions of Cr (VI) compounds pose a problem because exposure to hexavalent chromium compounds may lead to allergic sensitization. Cr (VI) is one of the most widely known sensitizers. This requirement therefore applies to all hide and leather that is contained in a product to reduce the risk of causing allergic reactions.

The tanning agent most commonly used is chromium sulphate. Between 80% and 90% of global leather production uses chromium (III) salts in the tanning process. Otherwise vegetable, aldehyde or mineral tanning agents are often used in leather production. Hexavalent chromium (Cr (VI)) is not used in the tanning industry. Under certain conditions, however, chromium (III) salts can be converted into Cr (VI) compounds⁶⁶. Whichever tanning process is used, it is relevant to ensure that the content of chromium and, in particular, chromium (VI) in the processed leather is documented and is low. The ISO EN 15987 standard defines different types of tanning and allows up to 0.1% total chromium in the processed leather, even for “chromium-free tanning”. For “vegetable tanning”, it allows up to 0.3% of tanning metals combined (Cr, Al, Ti, Zr Fe) in the processed leather. The EU’s Best Available Techniques (BAT) reference document for hides and leather⁶⁷ does not specify one particular tanning process as the BAT. Each process has different significant environmental and health aspects.

O121 Cadmium and lead

Cadmium and lead shall not be found in processed hides/skins or leather.

The content of cadmium and lead shall be tested according to the methods AAS, ICP-OES or ICP-MS (detection limit 10 ppm).

A test report from the tannery showing that the requirement is fulfilled.

Background

The requirement is set to ensure that there is no cadmium and lead in the finished hides/skins or leather. Lead occurs most often due to contaminants in the chromate during chromium tanning.

O122 Biocides and antibacterial substances

The addition and/or integration of substances that may have a biocidal and/or antibacterial effect into hides/skins or leather is not permitted.

⁶⁶ Kortlægning og sundhedsmæssig vurdering (kun allergi) af krom i lædersko (Survey and allergen risk assessment of chromium in leather footwear)

The requirement also applies during the storage and transport of hides/skins and leather.

Biocides/antibacterial substances include silver compounds, organotin compounds, chlorophenols, nano silver and nanogold.

- Declaration from the producer of the hide/skin or leather that the requirement is fulfilled.

Background

Biocides may be used in various tanning processes to protect the substrate against microbial attack. See also background to O83.

2.15.2 Requirements for coverings of hide and leather

O123 Classification of chemicals

The chemicals used shall not be classified in any of the hazard categories set out in the table below. The requirement applies to all chemicals used in every step of manufacturing leather and hides/skins (including finishing).

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
Toxic for reproduction	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
Sensitising on inhalation or skin contact	Resp. Sens. 1, 1A or 1B Skin Sens. 1, 1A or 1B	H334* H317*

* *Applies only to pigments, dyes and colourings*

- Declaration from the chemical manufacturer that the requirement is fulfilled.

Background

The requirement applies to all chemicals used in the production of hide and leather to ensure there is a focus on this in all processes that use chemicals. Nordic Ecolabelling seeks to ensure that the health and environmental impacts of the products are as low as possible. A ban on, for example, substances with CMR classification, has therefore been set as a requirement.

O124 Classification of ingoing substances in chemical products

Chemical products shall not contain any ingoing substances* that have any of the classifications stated in the table below. The requirement applies to all chemicals used in every step of manufacturing leather and hides/skins (including finishing).

* *See the definition of ingoing substances in Definitions.*

CLP Regulation 1272/2008		
Hazard class	Hazard category	Hazard code
Carcinogenicity	Carc. 1A or 1B Carc. 2	H350 H351
Germ cell mutagenicity	Muta. 1A or 1B Muta. 2	H340 H341
Toxic for reproduction	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362

Declaration from the chemical manufacturer that the requirement is fulfilled.

Background

The requirement is new and has been harmonised with the requirements to chemicals in the proposed revised criteria for the Nordic Swan Ecolabelling of textiles, hide and leather. Nordic Ecolabelling seeks to ensure that the health and environmental impacts of the products are as low as possible. A ban on substances with CMR classification has therefore been set as a requirement, which thus excludes some of the substances identified as having serious effects on human health.

O125 Prohibited substances

The following substances shall not be present as an ingoing substance* in chemical products used to produce hides/skins and leather. The requirement applies to all chemicals used in every step of manufacturing leather and hides/skins (including finishing).

* See definition of ingoing substances in section 4.2.

- Substances on the Candidate List (<https://echa.europa.eu/candidate-list-table>)
- 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. The list can be found at http://ec.europa.eu/environment/chemicals/endocrine/pdf/final_report_2007.pdf (Annex L, pages 238–249)
- Flame retardants (e.g. short chain chloroparaffins)
- Per- and polyfluorinated compounds, e.g. PFOA and PFOS
- Nanoparticles*
- Heavy metals in dyes and pigments **
- Azo dyes that may release carcinogenic aromatic amines (see Appendix Y)
- Phthalates
- Organotin compounds
- Chlorinated solvents, including chlorophenols and chlorobenzenes
- Alkylphenol ethoxylates (APEO)
- Linear alkylbenzene sulphonates (LAS)
- Aziridines and polyaziridines

- EDTA (ethylene diamine tetraacetic acid) and DTPA (diethylene triamine pentaacetate)

** An exception is made for pigments.*

*** Exemptions from the requirement are granted for 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).*

- Declaration from the chemical manufacturer or chemical supplier that the requirement is fulfilled.

Background

The requirement is partially new. There used to be a similar requirement for auxiliary chemicals used in dyeing and finishing processes. The requirement now applies to all chemicals. The requirement is harmonised with corresponding requirements in the draft version for consultation for new criteria for the Nordic Swan Ecolabelling of textiles, hide and leather.

O126 Sources of hides, skins and leather

Skins and hides may only be used if they come from animals farmed for production of milk, wool and/or meat/fish.

Skins and hides may only be used from fish*, sheep, goats, cattle, horses, pigs, elk, deer and reindeer.

**skin from fish on the IUCN Redlist⁶⁸ is not allowed.*

- The applicant must provide a declaration from the leather manufacturer or leather supplier that the hides/skins used have come from animals farmed for production of milk, wool and/or meat/fish.

Background

The requirement is new and is consistent with requirements in the draft version for new criteria for the Nordic Swan Ecolabelling of textiles, hide and leather. The aim of the requirement is to ensure that only hides that are a by-product of the meat/dairy/wool industries are used. This mitigates the environmental impact of livestock and it makes sense from an ethical point of view that the leather and hides produced are derived from a by-product of the meat/dairy/wool industries. Fish skin, provided it is not on the Redlist, is now also included in this version of the criteria. Fish skin must comply with the same requirements as other types of skin and leather.

2.15.3 Quality requirements for hide and leather

O127 Tear strength for leather

Tear strength must be more than 20 N. Testing must be performed in accordance with ISO 3377 or equivalent.

- Test report showing that the requirement is fulfilled.

⁶⁸ The IUCN Redlist, <https://www.iucnredlist.org/>

Background

The requirement has been set to ensure the good quality of the leather, in terms of strength. The requirement refers to the standard ISO 3377-1 “Leather – Physical and mechanical tests – Determination of tear load – Part 1: Single edge tear”. The requirement remains unchanged from the previous generation.

O128 Flexing test

When testing leather’s flexing resistance, the leather must manage 20,000 test repetitions (20 kc) without sustaining visible damage. The requirement only applies to leather with a surface coating.

The test must be performed in accordance with ISO 5402 or equivalent.

- Test report showing that the requirement is fulfilled.

Background

The requirement has been set to ensure the good quality of the leather, in terms of its flexing resistance and how the surface finish is affected. The requirement refers to the standard ISO 5402 “Determination of flex resistance”.

O129 Colour fastness to water

Colour fastness when exposed to water must be at least level 3 for leather that is dyed or has a surface finish.

The test must be performed in accordance with ISO 11642 or equivalent.

- Test report showing that the requirement is fulfilled.

Background to the requirement

The requirement has been set to ensure as long a lifetime as possible for the leather, by requiring that dyed or finished leather has high colour fastness and low cross-staining when wet. The requirement refers to the standard ISO 11642 “Leather – Tests for colour fastness – Colour fastness to water”. Leather that has not been dyed or given a surface finish is exempted from the requirement.

O130 Colour fastness to wear

Colour fastness during wet and dry wear must be at least level 3 for leather that is dyed or has a surface finish.

The test must be performed in accordance with ISO 11640 or equivalent, with 20 repetitions for wet wear and 50 repetitions for dry wear. The results are to be assessed using ISO 105-A02 and ISO 105-A03 or equivalent.

- Test report showing that the requirement is fulfilled.

Background

The requirement has been set to ensure as long a lifetime as possible for the leather, by requiring that dyed or finished leather has high colour fastness during wear. The test describes how the surface of the leather is affected by dry and wet rubbing. ISO 11640: “Leather – Tests for colour fastness – Colour fastness to cycles of to-and-fro rubbing”.

2.16 Acoustic insulation materials

Fibre products that are made, for example, from polyester and recycled textile waste and are used to make acoustic insulation must meet the relevant requirements for padding materials in Chapter 2.14. Textiles that are used to

clad the acoustic insulation material must meet the relevant requirements in Chapter 2.15.

Mineral raw materials that are used for acoustic insulation, for example in a partition wall, and make up more than 5% by weight of the finished furniture product, must meet the requirement in this chapter.

O131 Mineral raw materials for acoustic insulation

The mineral raw materials that are used must be inspected and included as a material in a licence for Nordic Swan Ecolabelled acoustic panels in compliance with the criteria for Construction and façade panels.

- Name, manufacturer and licence number for the Nordic Swan Ecolabelled acoustic panel where the mineral raw materials are included.

Background

Mineral raw materials may be included as a material in furniture, for example, as acoustic insulation material in a partition wall. The requirement is unchanged. It would be complicated to place a requirement for mineral raw materials in the criteria for furniture, so instead there is now a requirement that the raw materials must be inspected in compliance with the Nordic Swan Ecolabel's criteria for Construction and facade panels. Other soundproofing materials must meet relevant requirements in the chapter on padding materials.

2.17 Glass

O132 Glass

Glass may be present as part of the Nordic Swan Ecolabelled product if the following requirements are met:

- Lead glazing, crystal glass and wire reinforced glass must not be used
 - Glass must be readily replaceable should it become damaged or broken.
 - It must be possible to recycle the glass.
 - Mirror glass must not have a metal coating that contains copper.
 - Lead-based paint used in a metal coating for mirror glass must not contain more than 0.2% by weight of lead.
- A declaration from the furniture manufacturer stating which type of glass is used in the furniture
 - User instructions or other document informing the customer how to replace damaged glass
 - A declaration from the glass supplier that the glass can be recycled
 - Mirror glass: A declaration from the mirror glass manufacturer that the metal coating does not contain copper, that any paint used does not contain lead or that the lead content in the paint is below 0.2% by weight.

Background

The requirements for glass were also included in Version 4 of the criteria but have now been merged into one requirement. The requirement has changed so that now it must be possible to recycle all types of glass used in Nordic Swan Ecolabelled furniture. Previously, the requirement for recycling only applied to laminated glass. It is also now more explicit that the requirement concerning copper applies to the process of plating copper as a coating on metal. A reflective metal coating, usually silver, is used in mirror glass. Silver is applied to the

surface of the glass using two different processes, the tin process or the copper process. Tin is mainly used nowadays, because copper contaminates wastewater and is difficult to remove before being discharged. The copper process is therefore prohibited and must not be used. Lead-based paints are often used to protect the silver from corrosion. To limit the lead in paints, lead content must not exceed 0.2% by weight.

O133 Surface treatment of glass

The glass must not be surface treated with chemical products and nanomaterials* with antibacterial or disinfectant properties.

The term antibacterial means chemical products that prevent or inhibit growth of microorganisms, such as bacteria or fungi. Silver ions, silver nanoparticles, gold nanoparticles and copper nanoparticles are classed as antibacterial agents.

* *In accordance with the definition of a nanomaterial adopted by the European Commission on 18 October 2011 (2011/696/EU), see definitions.*

- A declaration from the manufacturer of the glass.

Background

The requirement is new. Glass must not be surface treated with chemicals and nanomaterials that have an antibacterial or disinfectant effect. For more background on antibacterial substances, see O12.

2.18 Linoleum

The requirement in this section applies when linoleum makes up more than 5% by weight of the finished furniture.

O134 Linoleum

Linoleum that is used must be inspected and included as a material in a licence for Nordic Swan Ecolabelled linoleum flooring in compliance with the criteria for Floor Coverings.

- Name, manufacturer and licence number for the Nordic Swan Ecolabelled linoleum flooring where the linoleum has been inspected

Background

Linoleum may be included as a material in furniture, for example, as a surface on a table. The requirement was added to Version 4 in response to demand for Nordic Swan Ecolabelling of furniture with linoleum. The requirement is unchanged. It would be complicated to place a requirement for linoleum in the criteria for furniture, so instead there is now a requirement that the linoleum must be inspected in compliance with the Nordic Swan Ecolabel's criteria for Floor Coverings.

2.19 Natural stone and agglomerated stone

Natural stone and agglomerated stone have been proposed as new materials in these criteria. Nordic Ecolabelling wishes to base the requirements for natural stone and agglomerated stone on the EU's revised criteria for hard coverings. As these criteria are now under review in the EU, it is therefore difficult to include requirements at this time. Information on the audit and draft requirements can be found here: https://susproc.jrc.ec.europa.eu/Hard_coverings/documents.html

Regardless of the requirements set by EU Ecolabel's criteria for hard coverings, Nordic Ecolabelling wishes to lay down requirements for general principles and rights.

O135 General principles and rights

The licensee shall ensure that quarries and further processing of natural and composite stones used in production comply with:

- Relevant national laws and regulations
- The following International Labour Organization (ILO) conventions:
 - Prohibition of forced labour (ILO Convention Nos. 29 and 105)
 - Freedom of organization and protection of the right to organize and conduct collective bargaining (ILO Convention Nos. 87, 98, 135 and 154)
 - Prohibition of child labour (ILO Convention Nos. 138, 182 and 79 and ILO Recommendation No. 146)
 - No discrimination (ILO Convention 100 and 111 UN Convention on the Elimination of Forms of Discrimination against Women)
 - No brutal treatment - Physical abuse or punishment, as well as threats of physical abuse are prohibited. The same applies to sexual or other offenses.
 - Workplace health and safety (ILO Convention No. 155 and ILO Recommendation No. 164)
 - Reasonable salary (ILO Convention No 131)
 - Working hours (ILO Convention Nos. 1 and 14)

The licensee shall have written procedures and procedures in place to ensure that this is followed on quarries and subsequent processing facilities.

- Written procedures and procedures of the licensee to ensure that the quarries and production sites used comply with the requirement.
- SA8000 certificate or third-party verification of compliance. If the manufacturer is in the process of becoming SA8000 certified, it can be accepted under the following conditions: Final certification body report, including action plan with specified deadlines submitted for review. Nordic Ecolabelling may revoke the license if the specified deadlines are not met.

Background

The requirement is new and is considered relevant as quarries and further processing can take place in countries outside Europe where workers' rights may be limited.

3 Quality and regulatory requirements

Quality and regulatory requirements are general requirements that are always included in Nordic Ecolabelling's product criteria. The purpose of these is to ensure that fundamental quality assurance and applicable environmental requirements from the authorities are dealt with appropriately. They also ensure compliance with Nordic Ecolabelling's requirements for the product throughout the period of validity of the licence.

These requirements have been amended compared to the requirements in generation 4 of the criteria and are in line with the formulations used in Nordic Ecolabelling's other criteria.

To ensure that Nordic Ecolabelling requirements are fulfilled, the following procedures must be implemented.

O136 Responsible person and organisation

The company shall appoint individuals who are responsible for ensuring the fulfilment of the Nordic Ecolabelling requirements, for marketing and for finance, as well as a contact person for communications with Nordic Ecolabelling.

- Organisational chart showing who is responsible for the above.

O137 Documentation

The licensee must archive the documentation that is sent in with the application, or in a similar way maintain information in the Nordic Ecolabelling data system.

- ⌘ Checked on site as necessary.

O138 Quality of the furniture/fitment

The licensee must guarantee that the quality of the Nordic Swan Ecolabelled product does not deteriorate during the validity period of the licence.

- Procedures for archiving claims and, where necessary, dealing with claims and complaints regarding the quality of the Nordic Swan Ecolabelled product.

- ⌘ The claims archive is checked on site.

O139 Planned changes

Written notice must be given to Nordic Ecolabelling of planned changes in products and markets, for instance change of subcontractors, that have a bearing on Nordic Ecolabelling requirements.

- Procedures detailing how planned changes in products and markets are handled.

O140 Unplanned nonconformities

Unplanned nonconformities that have a bearing on Nordic Ecolabelling requirements must be reported to Nordic Ecolabelling in writing and journaled.

- Procedures detailing how unplanned nonconformities are handled.

O141 Traceability

The licensee must be able to trace the Nordic Swan Ecolabelled product 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.

- Description of/procedures for the fulfilment of the requirement.

O142 Legislation and regulations

The licensee shall ensure compliance with all applicable local laws and provisions at all production facilities for the Nordic Swan Ecolabelled product, e.g. with regard to safety, working environment, environmental legislation and site-specific terms/permits.

- Duly signed application form.

4 Areas without requirements

In this revision, Nordic Ecolabelling has considered extending the criteria to include more materials and has looked specifically at ceramic (for sinks/countertops), agglomerated stone, natural stone and “solid surface” materials which include various composite materials with slightly different compositions, for example, Corian®. An RPS analysis has been conducted of the different materials, their circular economy performance, extent of use, interests in the market and the EU Ecolabel criteria for hard covering which contains some of the material in question and is currently being revised.

Appendix 1 Laboratories and methods for testing and analysis

General requirements for test and analysis laboratories

Tests must be carried out in a correct and competent way. The analysis laboratory/test institute must be impartial and professional.

If accreditation is not separately required, the test and/or analysis laboratory must comply with the general requirements of the EN ISO 17025 standard for the quality control of test and calibration laboratories or have official GLP status.

The applicant's own testing laboratory may be approved for analysis and testing if:

- the authorities monitor the sampling and analysis process, or if
- the manufacturer has a quality management system encompassing sampling and analysis and has been certified to ISO 9001 or ISO 9002, or if
- the manufacturer can demonstrate conformity between a first-time test carried out as a parallel test between an independent testing institute and the manufacturer's own laboratory, and the manufacturer takes samples in accordance with a predetermined sampling schedule.

Formaldehyde in wood-based board

Chamber method

The EN 717-1 (Chamber method) standard is recommended as suitable for determining emissions of formaldehyde from wood-based panels. The results are presented as mg formaldehyde/m³ air.

The EN 717-2 standard may also be used as a test method for laminated panels. Note that the results are presented as mg formaldehyde/m²h. The conversion factor must be documented.

Other measurement methods

An alternative to the EN 717-1 standard can be a relevant standard in the EN ISO 16000 series, with measurement of formaldehyde after 28 days. The EN standard applicable at the time for determining reference emission values must then be applied.

Other test methods can be used, such as the perforator method in accordance with the applicable EN 120 standard, JIS A 1460, ASTM D6007-2 or equivalent. It must be clearly stated which test method has been used and, if conversion factors have been used, this must be documented.

Test method for COD / TOC emissions

COD content should be tested according to ISO6060 or equivalent. Measurement of PCOD, TOC or BOD can also be used if a correlation to COD is shown. Measurement method for TOC ISO 8245.

Sample frequency: Emissions to water are calculated as the annual average value and are based on at least one representative daily sample per week.

Sampling: Samples of process water shall be taken after external cleaning, and the analysis shall be carried out on unfiltered samples. Alternatively, the sampling frequency set by the authorities is accepted.

Formaldehyde in glue

For the determination of free formaldehyde in liquid adhesives, EN 1243: 1998 is used. Adhesives - Determination of free formaldehyde in amino and amino formaldehyde. CEN / TC 193 - Adhesives.

Zink

Analysis of the zinc content of the wastewater: SS 02 81 52, DS 263, NS 4773, SFS 3047 or ISO 17294 (2007). Analysis can be done regularly using photometric or similar methods, provided that the analysis results are regularly checked and consistent with the above analytical methods.

Emissions of zinc to the water are calculated as the annual average value and are based on at least one representative daily collection sample per day. week, unless the authorities' discharge permit provides for another method of calculation.

Appendix 2 Energy requirements for paper and pulp production

Energy calculation guidelines

Use of energy in the form of fuel and electricity is subject to requirements. These are based on information about actual energy consumption in production in relation to reference values. The ratio between consumption and the reference values is the energy score.

The energy calculations include the entire paper product: both the paper production and the pulps used. The calculations for paper do not include fillers. The energy calculation does not include energy consumed during transport of raw materials and for conversion and packaging. The requirement does not include transport within the factory area.

Non-integrated pulp mill

Electricity

The calculations must include both purchased and on-site produced electricity.

Electricity = on-site produced electricity + purchased electricity - sold electricity.

The calculation of electricity consumption must be based on invoices and readings from electricity meters. On-site produced electricity is documented using readings from electricity meters. The requirement covers all processes from debarking to drying the pulp. An exemption applies to electricity for offices or lighting in the factory area. The average electricity consumption can be used for all pulps if the pulp mill only produces pulps of equivalent quality using the same type of process.

Fuel

The calculation must include both purchased fuel and fuel produced at the plant, divided into renewable and fossil fuels. The pulp producer must report the fuel used for on-site generated electricity and should deduct the fuel for electricity before reporting it to the paper manufacturer. The paper manufacturer deducts the fuel consumption from internally produced electricity using a factor of 1.25 in its own energy calculation.

Fuel pulp = fuel produced at the plant + purchased fuel - sold fuel * (sold fuel and/or heat)

The amount of fuel purchased must be adjusted to the quantities at the start and end of the current year. Consumption of internally produced fuel from bark, shavings and other wood residues is calculated using the thermal values for the fuels used or measured.

**Excess energy*

Excess energy sold in the form of electricity, steam or heat is subtracted from the total consumption. The amount of fuel used to produce electricity or heat is calculated by dividing the sold electricity or heat by 0.8. This is equivalent to an average efficiency for the total production of electricity and heat.

Alternatively, the actual efficiency of the plant in the conversion of fuel to heat energy can be used.

Verification

An overview of the factory's energy supply system showing the number of boilers, with information about the boiler effect and which fuel is used.

Report on the amount of purchased, on-site produced and sold electricity.

Report on the amount of purchased, on-site produced and sold fuel/heat

Conversion factors and efficiency must be stated if thermal energy has been re-calculated to fuel.

The calculation sheet produced by Nordic Ecolabelling can be used.

Non-integrated paper mill

Electricity

The calculations must include both purchased and on-site produced electricity.

Electricity = on-site produced electricity + purchased electricity - sold electricity.

The calculation of electricity consumption must be based on invoices and readings from electricity meters. On-site produced electricity is documented using readings from electricity meters. The requirement covers all processes from pulping to drying the base paper. An exemption applies to electricity for offices or lighting in the factory area. The average electricity consumption can be used for all paper if the paper mill only produces paper of equivalent quality using the same type of process.

Fuel

All purchased fuel must be included in the calculations, divided into fossil and renewable fuels.

Fuel paper = purchased fuel - sold heat converted to excess energy*

The amount of purchased fuel must be adjusted to the quantities at the start and end of the current year.

**Excess energy*

Excess energy sold in the form of electricity, steam or heat is subtracted from the total consumption. The amount of fuel used to generate electricity or heat that is sold off is calculated by dividing the sold electricity or heat by 0.8. The coefficient of 0.8 is equivalent to the average energy efficiency for total heat and electricity production. Alternatively, the actual energy efficiency of the plant in the conversion of fuel to heat energy can be used.

Verification

An overview of the paper machinery's energy supply system showing the number of boilers, with information about the boiler effect and which fuel is used.

Report on the amount of purchased, on-site produced and sold electricity.

Report on the amount of purchased, on-site produced and sold fuel/heat

Conversion factors and efficiency must be stated if thermal energy has been re-calculated to fuel.

The calculation sheet produced by Nordic Ecolabelling can be used.

Steam

If excess steam from another production process is used (e.g. from another industry), the energy content of the steam must be included in the calculation. In this case, Table 1, the steam table should be used. If steam from electric boilers is used, the energy content must be converted to fuel in the same way, but the energy content must be multiplied by 1.25.

Energy calculation, paper production

Energy score for paper production

Energy scores for $P_{\text{paper(electricity)}}$ and $P_{\text{paper(fuel)}}$ for paper production are calculated using the following formulas:

$$P_{\text{paper_electricity}} = \frac{\text{Electricity}_{\text{consumed}}}{\text{Electricity}_{\text{reference}}}$$

$$P_{\text{paper_fuel}} = \frac{\text{Fuel}_{\text{consumed}} - 1.25 \cdot \text{in-house generated electricity}}{\text{Fuel}_{\text{reference}}}$$

The following reference values for kraft paper must be used:

$$\text{Electricity}_{\text{reference}} = 1600 \text{ kWh/ADt}$$

$$\text{Fuel}_{\text{reference}} = 2100 \text{ kWh/ADt}$$

Verification

Calculation of energy score. The calculation sheet produced by Nordic Ecolabelling can be used.

Energy score when a mixture of different pulp types are used

The following formulas are used to calculate the energy score when a mixture of different pulp types are used:

$$P_{\text{pulp_electricity}} = \sum_{i=1}^n P_{\text{pulp_electricity}_i} \cdot \text{pulp}_i$$

$$P_{pulp_fuel} = \sum_{i=1}^n P_{pulp_fuel_i} \cdot pulp_i$$

$Pulp_i$ is the percentage of the individual pulp relative to the total pulp mixture. Due to wastage and differences in water content, the sum total of the pulp may be greater than 1. $P_{pulp(electricity)_i}$ is the energy score for electricity for pulp i . $P_{pulp(fuel)_i}$ is the energy score for fuel for pulp i .

Verification

Calculation of energy score. The calculation sheet produced by Nordic Ecolabelling can be used.

Total energy score for paper and pulp production

The total energy score for both electricity and fuel consumption for the paper production, including pulp production, is calculated using the formulas below:

$$P_{electricity} = P_{electricity_pulp} + P_{electricity_paper}$$

$$P_{fuel} = P_{fuel_pulp} + P_{fuel_paper}$$

The amount of fuel used to produce electricity in the pulp mill must be deducted by the paper manufacturer from the values received from the pulp producer using a factor of 1.25.

Worst case calculations must be included to show that each pulp recipe meets the requirements if no specific calculations are reported for each pulp mixture.

Verification

The documentation must include calculations with sub-totals. The base values used for consumed fuel and electricity must be stated. Worst case calculations must be included to show that each pulp recipe meets the requirements if no specific pulp-mixture calculations are reported for each pulp mixture present. The calculation sheet produced by Nordic Ecolabelling can be used.

Energy score for pulp production

Energy scores for $P_{pulp(electricity)}$ and $P_{pulp(fuel)}$ for paper production are calculated using the following formulas:

$$P_{pulp_electricity_i} = \frac{Electricity_{consumed}}{Electricity_{reference}}$$

$$P_{pulp_fuel_i} = \frac{Fuel_{consumed} - 1.25 \cdot in-house\ generated\ electricity}{Fuel_{reference}}$$

The table below shows the reference values for electricity and fuel:

Table 1 Reference values pulp

Process	Fuel kWh/t, Ref. value	Electricity kWh/t, Ref. value
Bleached chemical pulp	3600	600
Dried, bleached chemical pulp	4600	600
Unbleached chemical pulp	3200	550
Dried, bleached chemical pulp	4200	550
NSSC	3200	700
Dried NCCS	4100	700
CTMP	N/A	1500
Dried CTMP	900	1500
DIP	300	450
Dried DIP	1200	450
TMP	N/A	2200
Dried TMP	900	2200
Slip	N/A	2000
Dried slip	900	2000

Verification

Calculation of energy score. The calculation sheet produced by Nordic Ecolabelling can be used.

Table 2 Steam table

Enthalpy in gauged steam, h'' , as a function of absolute pressure, p or temperature, t. Enthalpy is divided by an efficiency of 0.9 and added to the heat consumption.

p Bar	t 0C	h'' KJ/kg	p bar	t 0C	h'' KJ/kg
0.50	81.3	2646.0	16.0	201.4	2791.7
0.60	86.0	2653.6	17.0	204.3	2793.4
0.80	93.5	2665.8	18.0	207.1	2794.8
1.00	99.6	2675.4	19.0	209.8	2796.1
1.20	104.8	2683.4	20.0	212.4	2797.2
1.40	109.3	2690.3	22.0	217.2	2799.1
1.60	113.3	2696.2	24.0	221.8	2800.4
1.80	116.9	2701.5	26.0	226.0	2801.4
2.00	120.2	2706.3	28.0	230.1	2802.0
2.50	127.4	2716.4	30.0	233.0	2802.3
3.00	133.5	2724.7	32.0	237.5	2802.3
3.50	138.9	2731.6	34.0	240.9	2802.1
4.00	143.6	2737.6	36.0	244.1	2801.7
4.50	147.9	2742.9	38.0	247.3	2801.1
5.00	151.8	2747.5	40.0	250.3	2800.3
6.00	158.8	2755.5	45.0	257.4	2797.7
7.00	165.0	2762.0	50.0	263.9	2794.2
8.00	170.4	2767.5	55.0	269.9	2789.9
9.00	175.4	2772.1	60.0	275.6	2785.0
10.00	179.9	2776.2	65.0	280.8	2779.5
11.00	184.0	2779.7	70.0	285.8	2773.5
12.00	188.0	2782.7	80.0	295.0	2759.9
13.00	191.6	2785.4	90.0	303.3	2744.6
14.00	195.0	2787.8	100.0	311.0	2727.7
15.00	198.3	2789.9	110.0	318.1	2709.3

Source: Thermal Engineering Data, which refers to Schmidt, E.: Properties of water and Steam in SI.Units, 1969. Springer-Verlag and R. Oldenbourg 1969.

Appendix 3 Azo dyes and aromatic amines

Carcinogenic aromatic amines	CAS no
4-aminobiphenyl	92-67-1
Benzidine	92-87-5
4-chloro-o-toluidine	95-69-2
2-naphthylamine	91-59-8
o-amino-azotoluene	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'-dimethoxybenzidine	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-xylydine	95-68-1
2,6-xylydine	87-62-7
4,4'-methylene-bis-(2-chloro-aniline)	101-14-4
2-amino-5-nitroanisole	97-52-9
m-nitroaniline	99-09-2
2-amino-4-nitrophenol	99-57-0
m-phenylenediamine	108-45-2
2-amino-5-nitrothiazole	121-66-4
2-amino-5-nitrophenol	121-88-0
p-aminophenol	123-30-80
p-phenetidine	156-43-4
2-methyl-p-phenylenediamine; 2,5-diaminotoluene	615-50-9
2-methyl-p-phenylenediamine; 2,5-diaminotoluene	95-70-5
2-methyl-p-phenylenediamine; 2,5-diaminotoluene	25376-45-8
6-chloro-2,4-dinitroaniline	3531-19-9