About Nordic Swan Ecolabelled

Outdoor furniture, playground and park equipment



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Nordic Ecolabelling

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Please, note that in this background document, there are larger, coherent sections of text in several different Scandinavian languages. The reason for this is that Nordic Ecolabelling criteria are developed in a Nordic co-operation, where all countries are involved in the process.

Nordic Ecolabelling considers this variation in languages to be a confirmation of the Nordic co-operation, which is the strength of the development of the Nordic Ecolabelling criteria.

This document is a translation of an original in Swedish. 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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It may be quoted from provided that Nordic Ecolabelling is stated as the source.

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What is Nordic Swan Ecolabelled outdoor furniture, playground and park equipment?

Based on a life cycle perspective, Nordic Ecolabelling sets requirements concerning ingoing substances, chemical products, wood preservation methods, service life and maintenance. Requirements are also set concerning the content of recycled raw material in the products. The product must be repairable and separable in order that constituent materials can be reused or recycled, in order to contribute to circular material flows.

Nordic Swan Ecolabelled outdoor furniture, playground and park equipment:

- Has a circular design that promotes the possibility of repair and recycling.
- Meets strict raw material requirements: Wood is legal, traceable, and at least 70% comes from certified sustainably managed forest. Plastic meets the requirement for a high proportion of recycled plastic or plastic made from renewable materials. Metal meets the requirement for a high proportion of recycled metal or metal made with lower climate footprints.
- Meets strict requirements for chemicals – e.g. no halogenated flame retardants, fluorides or nanoparticles have been added.
- Meets requirements that promote long product life.

Why choose the Nordic Swan Ecolabel?

- The licensee may use the Nordic Swan Ecolabel trademark for marketing. The Nordic Swan Ecolabel is a very well-known and well-reputed trademark in the Nordic region.
- The Nordic Swan Ecolabel is a simple way of communicating environmental work and commitment to customers.
- The Nordic Swan Ecolabel clarifies the most important environmental impacts and thus shows how a company can cut emissions, resource consumption and waste management.
- Environmentally suitable operations prepare for future environmental legislation.
- Nordic Ecolabelling can be seen as providing a business with guidance on the work of environmental improvements.
- The Nordic Swan Ecolabel covers not only environmental issues but also quality requirements, since the environment and quality often go hand in hand. This means that a Nordic Swan Ecolabel licence can also be seen as a mark of quality.

Outdoor furniture, playground and park equipment

What can carry the Nordic Swan Ecolabel?

Nordic Ecolabelling's criteria for Outdoor furniture, playground and park equipment allow the Nordic Swan Ecolabel to be applied to the following examples of products intended for outdoor use, primarily in a public environment, but also for private use:

- Outdoor furniture such as chairs, tables and benches.
- Play equipment for both conventional playgrounds and nature playgrounds. These include climbing frames, swings, playhouses, sand pits and slides.
- Outdoor gym and parkour equipment.
- Other outdoor products covered by these criteria include paling, railings, noise barriers, bins, flagpoles, bike racks, sheds for wood/bikes/waste/tools and bus shelters.

Outdoor furniture, playground and park equipment that is not mentioned above may be assessed, on request, by Nordic Ecolabelling and then included in the product group.

The following cannot be Nordic Swan Ecolabelled:

- Outdoor furniture containing stuffing or fabrics
- Safety surfacing for playgrounds and surfacing for sports facilities such as artificial grass pitches
- Bicycles and toys
- Outdoor furniture mainly comprising materials other than those for which the criteria set requirements i.e., concrete outdoor furniture
- Tools
- Swimming jetties
- Terrace and decking

Wood for terraces, facades and similar outdoor purposes can be Nordic Swan Ecolabelled according to our criteria for Durable/resistant wood for outdoor use.

Outdoor furniture, playground and park equipment

1 Environmental impact of outdoor furniture, playground and park equipment

Analysis of key areas

A MECO analysis has been conducted in order to clarify the environmental parameters and parts of a product's life cycle for which it is most relevant that Nordic Ecolabelling sets requirements in this product group. The analysis describes the environmental aspects Material, Energy, Chemicals and Other, from a life cycle perspective.

The results of the MECO analysis show that constituent materials have a major effect on the scale of a product's environmental impact over its life cycle.

The MECO analysis was also used as the basis for a collected RPS (Relevance, Potential and Steerability) analysis. Relevance is assessed on the basis of which environmental problems the product group causes and how extensive those problems are. Potential is assessed in terms of potential environmental benefits and steerability is a measure of how the environmental aspects can be tackled through ecolabelling. Nordic Ecolabelling uses the RPS analysis in order to ensure that requirements relate to the aspects that give the greatest environmental benefits.

The greatest environmental benefit is associated with the choice of constituent material and use of chemicals, plus durability/service life and quality. Raw materials from sustainable forestry and energy in the production of wood-based panels and HPL panels also have high environmental relevance. In terms of potential and steerability, there is scope to set requirements in all of the areas. Table 1 shows the areas that demonstrate a high overall RPS.

Table 1 **RPS analysis for outdoor furniture, playground and park equipment**

Area	RPS level (high-medium-low)	Comment
Materials	R=high P=high S=high	The choice of material is highly significant with regard to the scale of a product's environmental impact over its lifetime. Materials include i.e., wood, plastic, metal and HPL panels.
Sustainable forestry	R=high P=high S=high	There is a need to help ensure that forestry is run in a sustainable manner, not least in order to preserve biodiversity. Nordic Ecolabelling can play its part by setting requirements regarding forest certification schemes.
Chemicals	R=high P=high S= medium	Wood preservatives, maintenance products for wood, surface treatments for metal and other chemical products, such as adhesives, varnishes and paints, must meet stringent requirements concerning substances that are harmful to health and the environment.
Function and safety requirements	R=high P=high S=high	Safety, strength, stability and function are important areas in ensuring that the Nordic Swan Ecolabelled product offers a high level of quality and a long service life.
Energy	R=high P=high S= medium	Energy use depends to some extent on the choice of constituent materials and aspects of production such as the combination of different materials, drying processes and the use of any surface treatment or impregnation methods.
Proportion of recycled material	R=high P=high S= medium	Resource use, recycling and resource efficiency are a vital focus for requirements, in a drive to circular economy.

Outdoor furniture, playground and park equipment

Durability	R=high P=high S= medium	In creating a circular economy, long service life is an important factor, along with high quality and good durability.

Focus areas

Circular economy

The criteria focus on contributing to a circular economy and therefore there are requirements that the Nordic Swan Ecolabelled products must have a documented long service life. As far as possible, the material flows must be kept free from chemicals that are harmful to health and the environment, in order to avoid the circulation of hazardous chemicals.

A Nordic Swan Ecolabelled product in this product group is designed for material recovery. The various constituent materials used in one and the same product can be split apart. This is so that the materials can be separated out and reintroduced in "their" material cycle as far as possible. It is also important to have a high proportion of recycled raw material, for wood raw material to come from sustainable forestry and for the materials used to have a low climate impact (i.e., be renewable, recycled or require low energy consumption during production). The finished product gains a further extended service life by being repairable and having spare parts available. Making it possible to link a service and maintenance agreement to certain products is one way to ensure that they are taken care of correctly during their lifetime.

UN Sustainable Development Goals

The criteria contribute primarily to Goal 12: Responsible consumption and production. Nordic Swan Ecolabelled outdoor furniture, playground and park equipment is designed for a long service life and for recycling, with wood raw material from sustainable forestry and the use of recycled plastics and metals.

In addition, the criteria contribute to the following SDGs:

By reducing use of chemicals that are harmful to health and the environment to ensure low exposure for humans and the environment, Nordic Ecolabelling is contributing to Goal 3: Good health and well-being.

Setting requirements for the proportion of recycled material stimulates circular flows in the production process, which in the long term contributes to Goal 9: Industry, innovation and infrastructure. By ensuring back at the design stage that the product can be taken apart and repaired, Nordic Ecolabelling is contributing to a sustainable, circular flow.

Setting requirements concerning wood raw material from sustainable forestry, the inclusion of recycled plastic and metal and lower energy use means that Nordic Ecolabelling is contributing to Goal 13: Climate action.

Sustainable forest certification schemes help to combat degradation of natural habitats, stop biodiversity losses and protect and prevent the extinction of endangered species, as encompassed by Goal 15: Life on land.

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2 Other labels

The labels of relevance for the product group are FSC (Forest Stewardship Council) and PEFC (Programme for the Endorsement of Forest Certification), both of which are certification schemes for sustainable forestry.

The EU Ecolabel has had criteria for furniture since 2009. These criteria cover "free-standing or built-in units whose primary function is to be used for the storage, placement or hanging of items and/or to provide surfaces where users can rest, sit, eat, study or work, whether for indoor or outdoor use." It is thus possible to label certain outdoor furniture with the EU Ecolabel.

3 Justification of the requirements

This chapter presents proposals for new and revised requirements, and explains the background to the requirements, the selected requirement levels and changes compared with version 3 of the criteria. The appendices referred to are appendices in the criteria document "Nordic Ecolabelling for Outdoor furniture, playground and park equipment".

Before and during the revision of the criteria, contact has been made with suppliers, manufacturers and other stakeholders with a view to gathering opinions, knowledge and experience. Nordic Ecolabelling would like to thank everyone who contributed to the process.

3.1 Definition of the product group

The product group comprises outdoor furniture, playground and park equipment intended for outdoor use, primarily in public environments but also for private use. Any fitting for anchoring in the ground is not considered part of the outdoor furniture, playground and park equipment and is not covered by any requirements.

Below are some examples of the products that are covered:

- Outdoor furniture such as chairs, tables and benches.
- Play equipment for both conventional playgrounds and nature playgrounds. These include climbing frames, swings, playhouses, sand pits and slides.
- Outdoor gym and parkour equipment.
- Other outdoor products covered by these criteria include paling railings, noise barriers, bins, flagpoles, bike racks, sheds for wood/bikes/waste/tools and bus shelters.

The following cannot be Nordic Swan Ecolabelled:

- Outdoor furniture containing stuffing or fabrics
- Safety surfacing for playgrounds and surfacing for sports facilities such as artificial grass pitches
- Bicycles and toys

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- Outdoor furniture mainly comprising materials other than those for which the criteria set requirements i.e., concrete outdoor furniture
- Tools
- Swimming jetties
- Terrace and and decking

Wood for terraces, facades and similar outdoor purposes can be Nordic Swan Ecolabelled according to our criteria for Durable/resistant wood for outdoor use.

Materials subject to requirements in these criteria:

- solid wood, veneers, wood-based panels, high pressure laminate (HPL) panels and bamboo
- plastic and rubber
- metal
- wood-plastic composite (WPC)

Materials of which there are no requirements may be included with a maximum of 5 wt% of the product.

Anchoring in the ground is not included as part of outdoor furniture, play and park equipment and is not covered by requirements.

Relevant outdoor furniture, playground and equipment, and materials not mentioned above, that could be considered to fall within the definition may be assessed, on request, by Nordic Ecolabelling and then included in the product group.

Background

Below is a short explanation of why Nordic Ecolabelling has chosen not to include the following materials/products/areas in this generation of the criteria.

- Concrete: Nordic Ecolabelling considers the greatest potential for environmental and climate improvements to lie in setting requirements concerning the materials used to manufacture the product. The use of energy and thus the climate impact from the production of outdoor furniture, playground or park equipment is very small in comparison with the figures for concrete as a material. Unfortunately, there is still little potential to set requirements that involve concrete with a low climate footprint, see more in Chapter 15.
- Safety surfacing and surfacing for playgrounds and sports facilities: The basic reason why the criteria do not include outdoor surfacing materials is that Nordic Ecolabelling has found it difficult to determine whether one surfacing option is environmentally better than any other option on the market.

3.2 Definitions

Word/term	Definition
Triviality limit	Small parts such as: nails, screws, nuts, bolts, washers and plastic spacers if the parts together constitute a maximum of 5 wt% of the finished product. Materials with no requirements in the criteria may be included with a maximum of 5 wt% of the product.
Ingoing substances and impurities	Ingoing substances and impurities are defined below, unless stated otherwise in the requirements Ingoing substances: all substances in the chemical product, including additives (i.e., preservatives and stabilisers) in the raw materials. Substances known to be released from ingoing substances (i.e., formaldehyde, arylamine, in situ-generated preservatives) are also regarded as ingoing substances. Impurities: residuals, pollutants, contaminants etc. from production, incl. production of raw materials that remain in the raw material/ingredient and/or in the in the chemical product in concentrations less than 1000 ppm (0.1000 w-%, 1000 mg/kg) 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.
Recycled plastic	Recycled plastic is defined according to ISO 14021 in the following two categories: <u>Materials in the pre-consumer/commercial phase:</u> Material diverted from the waste stream during a manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it. Nordic Ecolabelling defines rework, regrind or scrap, that cannot be recycled directly in the same process, but requires a reprocessing (i.e., sorting, remelting and granulation) before it can be recycled, to be pre-consumer/commercial material. This is whether it is produced in-house or externally. <u>Materials in the post-consumer/commercial material phase:</u> Material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. This includes returns of material from the distribution chain.
Recycled wood or metal	Recycled material/recycled raw material is defined according to ISO 14021 in the following two categories: <u>Materials in the pre-consumer/commercial phase:</u> Material diverted from the waste stream during a manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it. <u>Materials in the post-consumer/commercial material phase:</u> Material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. This includes returns of material from the distribution chain.
Self-generated energy	Means energy (electrical and thermal) that is not purchased from an external supplier.
Renewable energy	Renewable energy comes from sources that are constantly renewed at a fast rate. Examples include hydro and wind power, wave energy, geothermal energy, solar energy and bioenergy, plus biofuels.
HCVF	High Conservation Value Forestry
IFL	Intact Forest Landscape

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Wood-based panels	This is board made by using a binder and/or adhesive to join together one or more of the following materials: wood fibre, debarked or cut sheets, wood waste from forests and plantations, sawn timber, residues from the paper or pulp industry and recycled wood. Wood-based materials may include hardboard, fibreboard, MDF (Medium Density Fibreboard), particleboard, OSB (Oriented Strand Board), plywood and panels of solid wood. The term "wood-based material" also includes composite materials made from wood-based panels coated with plastic, laminated plastic, metals or other coatings, and finished or semi-finished wood-based panels.
Wood preservative	In this context, wood preservative means an impregnation agent or primer that makes the wood resistant to fungal attack/rot.
Maintenance products	Products that the manufacturer/supplier recommends for wood products. The purpose of maintaining a wood product may be to retain its functionality, nourish it or retain a product's durability. Actions taken for aesthetic reasons such as retaining the original colour are also considered to be maintenance.
COD	Chemical Oxygen Demand
VAH	Volatile aromatic hydrocarbons (VAH) are aromatic compounds whose boiling point is max 250°C, measured at a standard pressure of 101.3 kPa. Volatility for paints and varnishes is instead defined as when the vapour pressure of the aromatic compound is at least 0.01 kPa at 293.15°K
VOC	Volatile organic compounds are defined as solvents with a boiling point < 250˚C at 101.3 kPa (1 atm).

4 Product description

O1 Description of the product

The applicant must provide the following information about the product:

- Trade name
- Type of product (i.e., bench, table, play equipment, fence, waste basket), and whether the product is for public use or for private use.
- Information if the product is firmly anchored (i.e., if the product is not removable at all or if special tools are required to move the product).
- A description including a picture/drawing of the product/products, which shows load-bearing structural parts (i.e., the parts whose primary task is to carry the product or transfer loads and conduct forces to the ground) and what materials these parts consist of.
- State materials * and wt% of each constituent material in the finished product.

- Small parts such as nails, screw, nut, bolt, washer and plastic spacers do not need to be stated if the parts together make up a maximum of 5 wt% of the finished product.

- Suppliers of each material.
- Description i.e., in the form of a flow chart, of production processes** including materials and which subcontractors perform which production steps i.e., surface treatment of wood or metal.

** The outdoor furniture, play or park equipment must consist of materials that are covered by these criteria. However, materials that are not covered may be included with a maximum of 5 wt% of the product.*

*** Description of the production process means an overall description of the production of the outdoor furniture, playing or park equipment, including materials and its subcontractors, as well as stating the subcontractors for central*

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production steps i.e., surface treatment. It is not necessary to describe the production process of the individual subcontractor.

☒ Product description and production processes according to the requirement.

☒ Product sheet, construction product declaration or technical description, if any such document has been drawn up for the product.

☒ Picture /drawing of the product/products, showing load-bearing structural parts (i.e., the parts whose primary task is to carry the product).

Background

The requirement is important for correct processing of the licence application and assessment of which requirements must be met for the product to be Nordic Swan Ecolabelled.

5 Solid wood, wood-based panels, veneers and bamboo

This chapter covers requirements concerning solid wood, wood-based panels, veneers and bamboo. Sheets of high-pressure laminate (HPL) are not covered by this chapter, and instead must meet the requirements in Chapter 7.

The chemicals used/added must comply with the requirements in Chapter 11.

Small details such as wedges, spacers and so on are exempted from the requirements in this chapter.

Nordic Swan Ecolabelled products automatically meet the requirements. Only the manufacturer, licence number and product name must be stated.

O2 Prohibited tree species

Tree species with restricted use in Nordic Ecolabelled outdoor furniture, playground and park equipment.

Nordic Ecolabelling's list of restricted tree species* consist of virgin tree species listed on:

a) CITES[1] (Appendices I, II and III)

b) IUCN red list[2], categorized as CR, EN and VU

c) Rainforest Foundation Norway´s tree list[3]

d) Siberian larch (originated in forests outside the EU)

Tree species listed on a) CITES (Appendices I, II and III) are not permitted to be used.

[1] https://www.cites.org/
[2] http://www.iucnredlist.org/
[3] https://www.regnskog.no/no/hva-du-kan-gjore/unnga-tropisk-tommer/tropiske-treslag

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Tree species listed on either b), c) or d) may be used if it meets all the following requirements:

- the tree species does not originate from an area/region where it is IUCN red listed, categorized as CR, EN or VU.
- the tree species does not originate from Intact Forest Landscape (IFL), defined in 2002 http://www.intactforests.org/world.map.html.
- the tree species shall originate from FSC or PEFC certified forest/plantation and shall be covered by a valid FSC/PEFC chain of custody certificates documented/controlled as FSC or PEFC 100% through the FSC transfer method or PEFC physical separation method. Tree species grown in plantation shall in addition originate from FSC or PEFC certified forest/plantation, established before 1994.

* The list of prohibited tree species is located on the website: http://www.nordic-ecolabel.org/certification/paper-pulp-printing/pulp--paper-producers/forestry-requirements-2020/

☒ Declaration from the applicant/manufacturer/supplier that tree species listed on a-d) are not used in Nordic Ecolabelled Outdoor furniture, playground and park equipment.

If species from the lists b), c) or d) is used:

☒ The applicant/manufacturer/supplier are required to present a valid FSC/PEFC Chain of Custody certificate that covers the specific tree species and demonstrate that the tree is controlled as FSC or PEFC 100% through the FSC transfer method or PEFC physical separation method.

☒ The applicant/manufacturer/supplier are required to document full traceability back to the forest/certified forest unit thereby demonstrating that;

- the tree does not originate from an area/region where it is IUCN red listed, categorized as CR, EN or VU;
- the tree species does not originate from Intact Forest Landscape (IFL), defined in 2002 http://www.intactforests.org/world.webmap.html;
- For plantations, the applicant/manufacturer/supplier are required to document that the tree species does not originate from FSC or PEFC certified plantations established after 1994.

Background

A number of tree species are restricted or not permitted for use in Nordic Swan Ecolabelled products. The list of prohibited species contains species on CITES list. The restricted tree species origin mostly from tropical forests and the reason for restriction is either that they are endangered, or they are key species in Intact Forest Landscape (IFL) areas. These species can be used in Ecolabelled products, if certain strict condition on origin, certification and traceability are met. The requirement applies only to virgin forest tree species.

Criteria for tree species found in the list are tree species listed on:

a) Tree species listed on CITES Appendices I, II and III.

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b) IUCN red list, categorized as critically endangered (CR), endangered (EN) and vulnerable (VU).

c) Regnskogsfondet[4] (Rainforest Foundation Norway) tree list

d) Siberian larch (originated in forests outside the EU)

CITES is an international convention for the control of trade (across borders) of wild fauna and flora. CITES includes around 5600 animal species and around 28.000 plant species wherein a part is relevant timber tree species (mainly tropical species). The tree species is, dependent on how threatened they are, listed in Appendix I, II or III. Species listed in Appendix I, are highly endangered and trade with these species is totally banned. For the remaining tree species, special permits for import and export is required (Appendices II and III). CITES is regulated by EU legislation (Council Regulation (EC) No 338/97) and trees with valid CITES permits are considered to be legally harvested under EUTR (EU Timber Regulation). Nordic Swan Ecolabel's ban on the use of tree species listed in CITES (Appendix I, II or III) goes beyond the EU legislation. CITES regulates trade in endangered species, and there are also challenges with corruption in the trade in wild animals and plants[5]. Therefore, Nordic Ecolabelling does not want to approve species on any of the appendices.

IUCN Red Lists are the world's most comprehensive inventory of the global conservation status of the planet's biological species, including trees. IUCN Red List has established clear criteria to assess the risk of extinction among thousands of species and subspecies according to the origin of the tree species. These criteria cover all countries and all species in the world. Nordic Swan Ecolabelling is aware that the IUCN's red list system only focuses on the extinction risk of species, and therefore is not designed for an overall assessment of whether a tree species can be provided with sustainable origin. However, the list is continually being updated and thereby is an important tool to estimate a specific tree species' conservation status on a global scale. Nordic Swan Ecolabel wishes to prohibit tree species listed as endangered (categories CR, EN and VU).

Regnskogfondet (Rainforest Foundation Norway) is an NGO in Norway that works to protect the world's remaining rainforests. Currently, Regnskogsfondet does not see any credible certification schemes working in the tropics, and therefore recommends full stop of buying tropical timber. Regnskogsfondet has developed a list of tropical tree species based on tree species found on the Norwegian market. This list works as a guide to comply with Norwegian guidelines regarding non-use of tropical wood in public construction. We consider this a pragmatic approach for handling tropical tree species on the Nordic market.

In addition, Siberian larch (originated in forests outside the EU) is on the tree list. Siberian larch is a coveted tree species in the construction industry due to its high quality. The tree species is widespread in the Eurasian northern boreal climate zone, and particularly the species Larix sibirica, Larix gmelinii, Larix cajanderi and Larix sukaczewii are widespread in the large areas of intact forest

[4] https://www.regnskog.no/no/hva-du-kan-gjore/unnga-tropisk-tommer/tropiske-treslag (visited January 2020)
[5] Addressing corruption in CITES documentation processes Willow Outhwaite, Research and Analysis Senior Programme Officer, TRAFFIC, 2020: https://www.traffic.org/site/assets/files/12675/topic-brief-addressing-corruption-in-cites-documentation-processes.pdf

landscapes (IFL) in Russia. Siberian larch is to be seen as an indicator species for boreal IFL-areas which are important to keep intact.

Exemption from the tree list.

Nordic Swan Ecolabelling is aware that tree species originating from b), c) or d) can originate from legal and sustainable forestry. Therefore, it is possible to use tree species listed on b), c) or d) if the applicant/manufacturer/supplier can demonstrate compliance with a number of strict requirements regarding certification and traceability.

Many of the tree species on the list are grown in countries which still have large areas of IFLs. These are important to protect due to biodiversity and climate. Many of these countries also have a high risk of corruption and the national legislation related to environment, human rights and ownership to land are weak and/or not controlled by the authorities. There are different views on whether certification is good enough to meet the challenges of forest management in land with a high risk of corruption and illegal logging. For instance, relevant challenges related to this have been published by Danwatch in a number of articles in 2018 [6],[7] and by redd-monitor.org in 2019[8]. Greenpeace International has ended its memberships in FSC on the grounds that the certification body is no longer meeting its aims of protecting forests and human rights[9]. Other environmental organisations like WWF support certification as an important tool for sustainable forestry in these countries. However, due to the uncertainty whether FSC and PEFC certification systems are good enough in protecting important areas of biodiversity and ethical aspects like human rights and land ownership in areas with a high risk of corruption, Nordic Ecolabelling have a precautionary approach and wants further documentation about the tree species and its origin.

In order to document full traceability of the tree species, the applicant/manufacturer/supplier must present a valid FSC/PEFC Chain of Custody certificate that covers the specific tree species and demonstrate that the tree is controlled as FSC or PEFC 100%, through the FSC transfer method or PEFC physical separation method. This means that Nordic Swan Ecolabelling does not accept the FSC percentage or credit control system as well as PEFC percentage system. Full traceability of the tree species back to the forest/certified forest unit, enables the applicant/manufacturer/supplier to document that the tree species does not come from an area/region where it is IUCN red listed, categorized as CR, EN or VU. Full traceability also makes it possible to document that the tree species does not come from Intact Forest Landscape (IFL), defined by Intactforest.org in 2002[10]. Intact forest has been monitoring IFL-areas since 2000 and has developed an online up to date mapping tool that shows the extent of IFL back to 2002. The monitoring results shows that the world's IFL are being

[6] https://danwatch.dk/undersoegelse/dokumentfalsk-og-millionboeder-danske-byggemarkeder-saelger-trae-forbundet-til-ulovlig-hugst-i-amazonas/
[7] https://danwatch.dk/undersoegelse/baeredygtighedsmaerke-er-ingen-garanti-for-baeredygtigt-trae/
[8] https://redd-monitor.org/2019/08/29/evicted-for-carbon-credits-new-oakland-institute-report-confirms-forced-evictions-for-green-resources-plantations-in-uganda/
[9] https://www.greenpeace.org/international/press-release/15589/greenpeace-international-to-not-renew-fsc-membership/
[10] http://www.intactforests.org/world.webmap.html, visited January 2020

degraded in an alarming speed, and that is the reason for Nordic Swan Ecolabelling referring back to 2002.

Plantation: Nordic Swan Ecolabelling believe, that responsibly run forest plantations can play a role in preserving natural IFLs by reducing the pressure to harvest the world's remaining natural forests. In order to secure that plantation has not replaced native ecosystems (forest/grasslands) within the last 25 years, tree species has to come from FSC or PEFC certified plantations that were established before 1994. 1994 is in line with FSCs international forest management standard (version 5.2), whereas PEFC is working with 2010.

O3 Wood from certified forestry

The requirement applies to all product parts that contain solid wood, wood-based panels, veneers and bamboo accounting for more than 10% by weight of the product.

1. Species name

The applicant must state the names (species name) of the wood / bamboo raw material used in the Nordic Swan Ecolabelled product.

2. Chain of custody certification

The applicant/manufacturer or the applicant's/manufacturer's suppliers of wood raw materials must be Chain of Custody certified by the FSC scheme or the PEFC scheme.

Applicant/manufacturer/suppliers using only recycled material in the wood-based panels used in the Nordic Swan Ecolabelled product, are exempted from the requirement to Chain of Custody certification. For a definition of recycled material, see section 3.2 Definitions.

For solid wood:

As an exception from the above, a subcontractor (i.e., 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 the requirements stated here. The subcontractor must guarantee that the certified wood is sold to the manufacturer of the Nordic Swan Ecolabelled product. The applicant must have an agreement with the subcontractor which describes how the subcontractor guarantees that the certified timber will be delivered to the applicant. The agreement shall state that the subcontractor is obliged to report to the applicant when changing wood supplier.

3. Certified material

<u>If the manufacturer of outdoor furniture, playground and park equipment is CoC</u>:

A minimum of 70% by weight of all wood raw material (virgin/recycled material) used in the Nordic Swan Ecolabelled product, must origin from forest managed according to sustainable forestry management principles that meet the requirments set out by FSC or PEFC chain of custody schemes and/or originate from recycled material*.

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

The manufacturer must provide evidence with a balance sheet from the company's accounting system showing correctly account for and allocated inputs and outputs of certified wood raw material, of recycled material and of any material from "controlled" sources, to their manufacturing facility and resulting Nordic Ecolabelled products.

If the supplier of solid wood / bamboo / wood-based panels is CoC:

A minimum of 70% by weight of all wood raw material (virgin/recycled material) used in the Nordic Swan Ecolabelled product, must origin from forest managed according to sustainable forestry management principles that meet the requirements set out by FSC or PEFC chain of custody schemes and/or originate from recycled material.

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

The manufacturer of outdoor furniture, playground and park equipment must submit documentation on the purchase of wood raw material (solid wood / bamboo or panels from the CoC-certified supplier which shows that the certification requirement of at least 70% certified is fulfilled and that the remaining share is covered by the control schemes (FSC controlled wood / PEFC controlled sources) or document that the material is recycled. This must be specified on the invoice / delivery note with certification claim. Recycled fibres that are not certified in accordance with FSC / PEFC must be covered by EN 643 delivery notes. The furniture manufacturer must ensure that the wood raw material specified on the invoice is used in the production of the Nordic Swan Ecolabelled product.

**Recycled material/raw material is defined according to ISO 14021, see section 3.2 Definitions.*

✉ Name (species name) of the wood raw materials/bamboo used in the Nordic Ecolabelled product.

✉ The applicant/manufacturer or the applicant's/manufacturer's supplier must present a valid FSC/PEFC Chain of Custody certificate covering all wood raw material/bamboo used in the Nordic Swan Ecolabelled product. Exempted from this requirement is applicant/manufacturers/suppliers using only recycled material.

✉ If the applicant/manufacturer of outdoor furniture, playground and park equipment is CoC-certified:

The applicant/furniture manufacturer shall provide audited accounting documents that demonstrate that at least 70 % of the materials allocated to the product originate from forests or areas managed according to sustainable forestry management principles that meet the requirements set out by FSC or PEFC chain of custody scheme and/or originate from recycled materials. If the product includes uncertified virgin material, proof shall be provided that the content of uncertified virgin material does not exceed 30 % and is covered by a verification system that ensures that it is legally sourced and meets any other requirement set out by FSC or PEFC with respect to uncertified material. In case of recycled material (not certified by FSC or PEFC) evidence shall be covered by EN 643 delivery notes.

✉ If the supplier is CoC- certified:
Documentation from the manufacturer of outdoor furniture, playground and park equipment on the purchase of wood raw material/bambo/wood-based panels from the CoC-certified supplier which shows that the certification

requirement of at least 70% certified is fulfilled and that the remaining share is covered by the control schemes (FSC controlled wood / PEFC controlled sources). This must be specified on the invoice/delivery note with certification claim. Recycled fibres that are not certified in accordance with FSC / PEFC must be covered by EN 643 delivery notes. The manufacturer of outdoor furniture, playground and park equipment must declare that the wood raw material that fulfils the requirement is used in the Nordic Swan Ecolabelled production.

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. 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 that the certified wood raw material is allocated i to the Nordic Swan Ecolabelled product. This ensures that FSC/PEFC credits are used for the Nordic Swan Ecolabelled production and that the credits 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 Swan 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 claims on the invoice or delivery note, showing that a minimum of 70% certified wood raw material has been purchased. Please note that Nordic Ecolabelling approves both the percentage system and the credit system for bookkeeping and sales of certified material.

It is also possible to not use a subcontractor that is CoC-certified. 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.

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%.

O4 Chemicals in wood-based panels with recycled materials

The requirement relates to finished products comprising of more than 5 wt% wood-based panels.

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 EPF's Standard for delivery conditions of recycled wood, 2002, or subsequent versions, or any equivalent documentation/test report i.e., documentation in accordance with the German waste wood ordinance, 2002 or later, showing compliance with the requirements of the standard.

Background

The requirement is made to provide better control over what types of recycled materials are being used and 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 common 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 several heavy metals and creosote. If it can be documented that the requirements of the German Waste

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Wood Ordinance, 2002 or later have been met, this will also be approved as documentation.

O5 Formaldehyde emissions from wood-based panels

The requirement relates to finished products comprising of more than 10 wt% wood-based panels.

The requirement does not include HPL panels, which instead must meet the requirements in Chapter 7.

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

a) The emission of formaldehyde shall on average not exceed 0.062 mg / m3 air in accordance with test method EN 717-1.

b) Emissions of formaldehyde shall on average not exceed 0.124 mg / m3 air according to test method EN 16516.

✉ 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

The requirement concerning formaldehyde emissions has been revised.

In the manufacture of wood-based panels, adhesive systems containing formaldehyde are often used. The development shows reduced emissions of formaldehyde from the finished panel. Formaldehyde is a toxic, sensitizing and carcinogenic substance that Nordic Ecolabelling wants to limit as far as possible both from a work environment point of view in manufacturing, but also to reduce emissions in the use phase.

Formaldehyde emissions from wood-based panels are communicated in the EU with a classification system, defined in the harmonized standard EN 13986. The current lowest emission class is E1 where the limit values are a maximum of 0.124 mg/m3 according to test method EN 717-1. Work is underway on a new common statutory lower limit value in the EU. Nordic Ecolabelling monitors this work and will review all criteria with requirements for formaldehyde emissions when the limit value has been decided.

On 1 January 2020, Germany introduced a new legal requirement which means that the reference method for measuring formaldehyde emission has been changed from the previous EN 717-1 to EN 16516. If the method EN 16516 is used, the limit value is the same as that for E1, 0.124 mg / m3. If, on the other hand, EN 717-1 is used as a method, the panel must meet a limit value of half E1 (0.062 mg / m3). The method EN 16516 was not included in the requirement in the consultation proposal, but as the new legal requirement in Germany will probably mean that this method will become standard for external testing in Europe, it has been added. Tests according to EN 16516 give a higher result than EN 717-1, but there is no exact correlation between the methods yet.

After the consultation, Nordic Ecolabelling has chosen to only refer to methods EN 717-1 and EN 16516 with the same limit values as the legal requirement in Germany. Other test methods can be approved if an independent third party (i.e., a test institute) has made a correlation. The change gives a stricter level for wood-based panels that are tested in accordance with EN 717-1, and it will be the largest tightening for MDF / HDF that previously had its own slightly higher limit value. It is unclear whether the requirement will be stricter for panels that are tested in accordance with EN 16516. Nordic Ecolabelling wishes to have the same limit values as the German legal requirement as a Nordic Ecolabelled furniture is otherwise not automatically legal in Germany.

O6 Energy requirement - wood-based panels

The requirement covers products that contain more than 10 wt% wood-based panels.

The requirement does not include HPL panels, which instead must meet the requirements in Chapter 7.

The consumption of energy, both electrical and thermal, is calculated as an annual average for either the production of the panel that will form part of the Nordic Swan Ecolabelled product or the entire operation. See Appendix 4 for the calculation's system limits.

Requirement level:

- Chipboard: max 7 MJ/kg panels produced
- Panels of wood fibre/veneer and laminated panels: max 11 MJ/kg panels produced

✉ Calculation showing that the requirement is fulfilled. The calculation must contain information on: quantity of panels produced, amount of electricity and energy consumed, and energy source.

Background

In this generation, the requirement has been harmonised with the criteria for Nordic Swan Ecolabelled construction and facade panels. There are new requirement limits concerning energy consumption during the production of wood-based panels.

There is an absolute requirement for energy use without any weighting for certified and recycled raw materials and fuel sources.

The requirement level is expressed as consumed MJ/kg panels, and thus purely focuses on energy consumption in panel production, incl. manufacture of main raw materials, such as machining and drying of wood, adhesive production and production of the raw materials in the adhesive. The system limit for the energy requirement for the wood-based panels also includes the production of main raw materials (without raw material extraction).

The reason for this is that for the wood-based panels, there is considered to be RPS (Relevance, Potential and Steerability) in having the energy requirement also include drying of the wood – both at the sawmill and by the panel manufacturer. It is estimated that the steerability is low compared to obtaining specific production data for both the adhesive manufacture and the raw materials in the adhesive. At the same time, it has not been possible to establish any

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potential in relation to energy efficient adhesive production. The requirement therefore provides an opportunity to use a table value for the adhesive of 15 MJ/kg adhesive.

This ensures that the adhesive is included in the energy calculation of the wood panel, which provides an incentive not to use more adhesive than necessary.

6 Durability of solid wood

This chapter relates to solid wood. Wood preservatives must meet the chemical requirements in Chapter 11.

O7 Durability and wood protection methods

The product must have a good durability, i.e. resistance to moisture and fungal attack.

- Structural wood protection: It must be described which design measures have been taken in the product to extend the life expectancy and limit the use of wood protection methods (i.e., impregnation, thermal or chemical modification).
- Nordic Swan Ecolabelled durable/resistant wood for outdoor use automatically meets this requirement.
- The timber falling within use class UC 3 or UC 4 as per EN 335 must be documented as having good durability i.e., resistance to fungal attack. To provide sufficient durability, one of the methods/materials in Table 2 must be used.

Wood protection methods other than those described in Table 2 can be used. In this case, test results and documentation for durability must be submitted, which are similarly described in Table 2. That tests and durability are similar must be verified by an independent qualified test institute.

- For impregnation with heavy metals and/or biocides:
  - For products that are firmly anchored in the ground or other substrates, NTR A is allowed for those parts of the product that fall within use class UC 4 as per EN 335. The parts must be NTR A-certified.
  - NTR AB is allowed for those parts of the products that fall within use sub-class UC 3.2 as per EN 335. I.e., parts that remain wet for long periods or where water can accumulate. The parts must be NTR AB-certified.
  - Wood preservatives must also meet the chemical requirements in Chapter 11.

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Table 2 **For wood parts that fall within use class UC 3 or UC 4 as per EN 335: Various methods for protecting wood and the requirements for documentation of durability that apply for each use class.**

Wood protection method	Use class as per EN 335	Required documentation of durability
Wood with natural durability (May not be treated with wood preservatives)	UC 3 and UC 4	Durability class DC 1 (very durable) or DC 2 (durable) as per EN 350
Preservative-treated, thermally and chemically modified wood classified in accordance with NTR	UC 3	NTR ABmod
	UC 4	NTR Amod
Preservative-treated, thermally and chemically modified wood *not* classified in accordance with NTR	UC 3	Approved testing in line with: - CEN/TS 15083-1 excluding testing with Coriolus versicolor after separate accelerated ageing in line with EN 73 and EN 84. - CEN/TS 12037 - Approved results must be assessed by an independent party with experience in the field.
	UC 4	Approved testing in line with: - CEN/TS 15083-1 including testing with Coriolus versicolor after separate accelerated ageing in line with EN 73 and EN 84. - ENV 807 - EN 252 for at least five years in three locations, two of which are in a Nordic country. - Approved results must be assessed by an independent party with experience in the field.
Preservative-treated impregnated wood	UC 3.2*	NTR AB
	UC 4	NTR A

* Please note that wood impregnated with class NTR AB is only allowed for use sub-class UC 3.2 as per EN 335.

✉ State use class as per EN 335 for the various wood parts in the product.

✉ Structural wood protection: Drawings and descriptions of the constructive wood protection. It must be described which design measures have been taken in the product to extend the life expectancy and limit the use of wood protection methods (i.e., impregnation, thermal or chemical modification).

✉ When using Nordic Swan Ecolabelled durable/resistant wood for outdoor use, state the producer, licence number and product name.

✉ For woods with natural durability: enclosed name of wood and durability class as per EN 350.

✉ For preservative-treated (impregnated or modified) timber: enclose NTR certificate.

✉ For thermally or chemically modified timber that is not NTR classified: enclose test reports and assessment of the results, verified by an independent party with experience in the field. Enclose a brief description of the experience in judging and assessing the durability of wood.

✉ For impregnated wood: Documentation/drawing of product, which shows which parts are NTR A and NTR AB impregnated. For products that are impregnated with NTR A send a declaration/document/drawing that shows that the product is firmly anchored in ground or other substrates and for the parts that are NTR

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A impregnated, a description/documentation that the parts belong to use class UC 4 as per EN 335. For parts that are NTR AB impregnated, a description/documentation must be sent that the parts belong to the use sub-class UC 3.2 as per EN 335. Attach the NTR certificate.

Background

The durability requirement has been revised. The aim of the requirement is to ensure that Nordic Swan Ecolabelled products with solid wood have good durability against moisture and biological attack, primarily by wood-decay fungi, since durability is a good indicator that the products will have a long service life.

As in the previous generation of the criteria, wood impregnated with chemical preservatives (usually copper salts and biocides) is permitted, but several tightenings have been introduced in this generation of criteria. See below in the section "Impregnation with wood preservative".

In addition to chemical wood preservative treatment, durability can be achieved by using wood species with high natural durability or by thermal or chemical modification.

Structural wood protection must always be taken into account, regardless of which of the above alternatives is chosen. Structural wood protection means trying to prevent rot attacks as far as possible through the design of the structure itself. The aim of this is primarily to avoid sources of moisture traps that expose the wood to much too high a moisture content for a prolonged period. Temporary dampness should be able to quickly dry out and the moisture level should be able to quickly return to normal levels.

Product durability and longevity

Chemically modified wood and impregnated wood have the highest durability and can be used both above ground and in contact with ground. Thermal treatment of wood changes the construction properties. Durability are very important factors in assessing the environmental impact of wood protection treatment methods as these are closely linked to the lifespan of the products and are thus important factors in the life cycle assessment. This requirement for durability of solid wood (O7) is therefore closely related to requirement O44 on the product's flexural strength, among other things, and therefore this thermal treatment is not recommended for load-bearing structures. In addition, thermally treated wood is not suitable for contact with ground.

NTR standard

The Nordic Wood Preservation Council (NTR) is a co-operation body for the Nordic industry associations in the field of wood protection. NTR has developed a common Nordic standard for impregnated wood which is supplemented with a system for approval of wood preservatives and quality control of impregnated wood[11].

Producers of impregnated wood can certify themselves according to this standard and may label their products with the NTR wood protection class that they fulfil.

[11] https://www.ntr-nwpc.com/om-ntr/om-ntr

Today, about 90% of the production of impregnated wood in the Nordic region are according to NTR standards[12].

Wood treated through impregnation with wood preservative is divided by the Nordic Wood Preservation Council (NTR) into four classes: NTR M, NTR A, NTR AB and NTR B. The classification is based on EN 351-1 and is linked to the use classes defined in EN 335. This generation of the criteria accepts wood protection classes NTR A and NTR AB. In addition, impregnation can only be used for certain parts of the product that are judged to be particularly exposed. NTR A is allowed for wooden parts with ground contact, i.e. use class UC 4 according to EN 335. NTR AB is only permitted for wooden parts that belong to the use sub-class UC 3.2 according to EN 335, i.e. parts that remain wet for long periods or where water can accumulate.

Since 2017, it has been possible to produce thermally or chemically modified wood according to the NTR standard. However, there is still no producer who is certified (2019).

Natural durability

Woods with natural durability must meet durability class DC 1 (very durable) or DC 2 (durable) as per EN 350. This standard divides the natural durability of heartwood from various wood species into five different classes, with DC 1 and DC 2 as the two highest durability classes. Woods that have natural durability must not be treated with wood preservative.

Modified wood

In the production phase, thermal modification has a significantly higher energy consumption compared with impregnated and chemically modified wood. The chemically modified wood uses wood from Radiatatallen, which grows in New Zealand and Chile, among other places. The thermally treated and traditionally impregnated wood is usually pine from the Nordic countries.

The Nordic Wood Preservation Council's system for modified wood (thermal and chemical) is similar to its system for wood treated with chemical wood preservative. Here, the wood protection classes are NTR Mmod, NTR Amod, NTR ABmod and NTR Bmod, in line with the use classes defined in EN 335.

If wood is not covered by NTR's wood protection classes, test results in line with established EN standards must be presented for the user class in question. Tests must be conducted and the test results judged and assessed by an independent third party with experience of durable wood.

Impregnation with wood preservative

Although impregnation with wood preservatives has some environmental challenges, they are allowed to a limited extent in these criteria. Only wood classified with NTR A or NTR AB is allowed and these are also limited to:

[12] https://www.ntr-nwpc.com/om-ntr/kvalitetskontroll-certifiering

- NTR A is permitted for wooden parts in direct contact with ground, i.e. use class UC 4 according to EN 335.
- NTR AB is only permitted for the wooden parts that belong to the use sub-class UC 3.2 according to EN 335. I.e. parts that remain wet for long periods or where water can accumulate.

These restrictions are made to allow impregnation with wood preservatives only for those parts of the product that have a high risk of rot and thus are most critical for the durability and longevity of the products. In order to further limit impregnation, the manufacturer in the design phase of the product must also assess the possibilities for structural wood protection in order to limit the use of wood protection methods (i.e., impregnation, thermal and chemical modification).

In addition, wood preservatives must meet the chemical requirements in Chapter 11.

The reason why impregnation is allowed is mainly that a good durability is achieved and that the wood becomes maintenance-free where maintenance usually requires the use of chemical products, often with added biocides. At the same time, impregnation has relatively little leaching of wood preservatives to the environment[13,14], both during manufacture and during use.

In addition, other important points are included in the assessment of allowing impregnation with wood preservatives to a limited extent in these criteria:

- Pine from the Nordic countries does not have natural durability and therefore requires some form of wood protection.
- For wood without natural durability, which are in direct contact with ground and/or is often exposed to rain, impregnation with wood preservatives is one of the most effective wood preservation methods.
- Energy consumption is low compared to other currently known wood protection methods.

As in previous criteria generation, wood impregnated with chemical wood preservatives (often copper salts and biocides) is permitted, but several tightenings have been introduced in this criteria generation. Wood preservatives must meet stricter chemical requirements. In addition, the area of use is limited.

According to the legislation of the EU countries, wood preservatives must comply with the EU Biocides Regulation. In addition, biocidal products, such as wood preservatives, must be approved by the authorities in each country.

The wood impregnating agents used today are most often based on copper compounds (toxic in high concentrations and harmful to the aquatic environment), boric acid (Toxic for reproduction

[13] Kängsepp, K. et al. 2011. Leaching of commonly used impregneation agents affected by wood properties.
[14] Morsing et. al. 2010: "Comparison of laboratory and semi-field tests for the estimation of leaching rates from treated wood - part 1: above ground (UC 3). IRG/WP 10-50274.

Repr. 1B) and biocides. In recent years, there have been several wood impregnating agents that do not contain boric acid. The biocides used also vary in the wood impregnating agents.

The biocides used today include propiconazole, IPBC (3-iodo-2-propynylbutylcarbamate), cyproconazole, DDAC (didecyldimethylammonium chloride), disodium tetraborate and others[15,16].

Biocides are generally classified as environmentally hazardous, as they are designed to fight living organisms such as fungi, bacteria and pests. Biocides can also be classified as, for example, toxic for reproduction or carcinogenic. In connection with the CLP Regulation, many substances are continuously given a stricter classification than they had before, including biocides. For example, the biocide propiconazole has been reclassified to H360D (toxic for reproduction category 1B) effective from May 2020.

Not all wood preservatives that are approved according to the legislation can be approved for Nordic Ecolabelled outdoor furniture, play and park equipment. Wood preservatives that are used must meet the chemical requirements in Chapter 11. This means, among other things, that they must not contain CMR substances, which i.e., excludes boron compounds and propiconazole.

7 High Pressure Laminate (HPL) panels

This chapter sets requirements on two levels, depending on whether the product contains more than 10 wt% or more than 30 wt% HPL panels.

Where the product contains more than 10 wt% HPL, the chemical requirements in Chapter 11 must also be fulfilled for all the chemical products used in the manufacture of the HPL.

Nordic Swan Ecolabelled HPL panels automatically meet the requirements. In this case, only the manufacturer, licence number and product name must be stated.

7.1 Requirement where HPL panels are more than 10 wt% of the finished product

O8 Energy requirement for HPL panel production

The energy used in the production of the HPL panel must not exceed the following limit values as an annual average:

- HPL panels ≤ 2 mm thick: 18 MJ/kg HPL produced
- HPL panels > 2 mm thick: 14 MJ/kg HPL produced

The requirement does not include energy used for resource extraction or production of constituent raw materials. Self-generated energy (see section 3.2 Definitions) and surplus energy that is sold on must be stated, but not included in the calculation.

[15] https://mst.dk/kemi/database-for-bekaempelsesmidler/bmd/
[16] https://apps.kemi.se/BkmRegistret/Kemi.Spider.Web.External/Anvaendningsomraade

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✉ Calculation showing that the requirement is fulfilled. The calculation must contain the number of panels produced (broken down according to the panels thickness), the amount of energy used and the type of energy.

Background

The requirement remains unchanged from the previous generation, since it has been judged to remain relevant.

A wide variation in energy consumption has been detected in panel production. The industry EPD[17] indicates an average variation of 50% among the 10 production systems covered by the EPD. This variation is mainly due to the material efficiency and energy efficiency of the HPL production system, and to different energy sources. At the same time, HPL production is a very homogeneous production type in terms of material composition.

The limited material variation stated in the industry EPD means that the variation in energy consumption in production is mainly due to energy efficiency in the actual panel production. The potential for energy improvements in panel production lies in reducing heat consumption by reusing process heat. Electricity and thermal energy are correlated in HPL production since, for example, a heat pump may use electricity but is capable of reducing heat consumption. A requirement has therefore been set for the total energy consumption, in order to permit flexible interaction between electricity and fuel consumption.

It is possible to make use of self-generated energy in HPL production, for example by collecting VOC emissions and later recovering the energy through combustion. Self-generated energy is not counted in the requirement, but must be indicated when documenting the requirement. The same applies to surplus energy from production which is sold to another user.

O9 Emissions in the work environment during HPL production

Production of HPL panels in one of the Nordic countries is assumed to meet the statutory requirements in that country. This requirement is to be verified when the HPL production takes place outside the Nordic region.

A test method as set out in EN 689 or EN 482, or an equivalent method that is approved by Nordic Ecolabelling, must be used.

Measurement results for the past 12 months are to be submitted for assessment of employees' individual exposure to formaldehyde and phenol.

The following limit values for emissions to air in the workplace must not be exceeded during the production of HPL panels:

- **Limit value expressed in relation to a reference period of 8 hours as a time-weighted average (TWA):**

Limit value for formaldehyde: 0.5 ppm or 0.6 mg/m^3

Limit value for phenol: 2 ppm or 8 mg/m^3

and

- **Limit value expressed in relation to a short-term value that does not exceed 15 min.:**

[17] ICDLI – International Committee of the Decorative Laminates Industry, 2010.

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Limit value for formaldehyde: 1.0 ppm or 1.2 mg/m^3

Limit value for phenol: 4 ppm or 16 mg/m^3

☒ Results from air measurements for phenol and formaldehyde over the past 12 months, including sampling schedule, test method and measurement frequency.

The analysis laboratory / test institute must meet the requirements in Appendix 1.

or

☒ Description showing that national statutory requirements are met for production in one of the Nordic countries.

Background

In this generation of the criteria, the test methods have been updated and the requirement reformulated for ease of comprehension. The requirement levels remain unchanged.

HPL panels consist of kraft paper and decor paper which are impregnated with phenolic and melamine resin. During the curing, drying and pressing process, methanol, formaldehyde and phenol evaporate from the laminate. These substances are harmful to health and the environment but can be cleaned from the exhaust air using a special incineration technique. It is therefore important to ensure that the emission level at the workplace is low and complies with the recommended limit values described by the Nordic authorities.

The limit value is the average concentration in the air which can be inhaled at the workplace during an eight-hour working day, but also includes short-term values. Short-term value means that even if the time-weighted average concentration does not exceed the limit value, the concentration in a time period of maximum 15 minutes must never exceed the limit value by a factor of 2.

In Denmark, the limit value for formaldehyde is also a ceiling value and must therefore never be exceeded at any time[18].

In the Nordic region, there are national emission values for both phenol and formaldehyde. These are either mandatory or, in some countries, advisory, but they may be made mandatory by official order. A limit value for phenol has also been defined in Commission Directive 2009/161/EU. However, this is not necessarily mandatory in all EU countries, and the requirement has therefore been laid down for all manufacture outside the Nordic region to ensure that the level in the EU Directives is satisfied as a minimum for phenol, and that the least stringent level from the Nordic authorities is complied with. The level chosen for the short-term value for formaldehyde, however, is the least stringent level for the Nordic countries that have a short-term level requirement.

Test methods in accordance with EN 689, EN 482 or equivalent method. The measurement is to be performed as an exposure measurement, for assessment of

[18] Arbejdstilsynets bekendtgørelse nr. 655 - 31. maj 2018 "Bilag 2 - Grænseværdier for luftforureninger m.v." https://amid.dk/regler/bekendtgoerelser/graensevaerdier-stoffer-materialer-655/bilag-2/

the individual employee's exposure to pollution. When taking these measurements, the sampling must:

- take place in the employee's inhalation zone
- take place under normal operational conditions, with normal ventilation, and include the stages in the various working processes that are particularly stressful
- be long enough to provide a representative average
- during planning, involve identifying any concentration variations that may occur during a working day/working process

7.2 Requirement where HPL panels are more than 30 wt% of the finished product

The requirements below relate only to kraft paper. Decor paper and any balance paper is exempt from the requirements.

Calculation sheet drawn up by Nordic Ecolabelling may be used to calculate energy.

O10 Wood in paper

The following requirements must be met for paper used in the production of HPL:

- The names of the species of trees used to manufacture the paper must be stated.

Tree species must live up to requirement O2.

- The paper manufacturer must hold Chain of Custody certification from FSC or PEFC.
- For certified wood fibre and/or recycled fibre*, one of the following three alternatives must be fulfilled on an annual basis:

  a) 70% of the fibre raw material in the paper must be certified by FSC or PEFC.

  b) The paper must be labelled FSC or PEFC Recycled. Alternatively, 70% of the fibre raw material must comprise of recycled fibre,

  c) If the fibre raw material in the paper comprises less than 70% recycled fibre, the proportion of fibre raw material that comes from certified areas of forest is to be calculated using the following formula:

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

Y = Proportion of fibre raw material from certified forestry
x = Proportion of recycled fibre

For all three alternatives it applies that the remaining proportion of fibre raw material must be covered by the FSC/PEFC control schemes (FSC controlled wood/PEFC controlled sources).

Outdoor furniture, playground and park equipment

** Recycled material is defined as per ISO 14021. See further definition in section 3.2.*

☒ Information on the names of the woods used and a declaration of compliance with the requirement concerning prohibited tree species (O2).

☒ Copy of the paper manufacturer's FSC or PEFC Chain of Custody certificate.

☒ Certified wood fibre alternative a): Invoice between the paper manufacturer and the laminate manufacturer showing that FSC/PEFC certified paper is being purchased.

☒ Certified wood fibre alternative b): Invoice between the paper manufacturer and the laminate manufacturer showing that paper labelled as FSC or PEFC Recycled is being purchased. Alternatively, a declaration from the paper manufacturer that the requirement concerning content of recycled fibre is fulfilled. Recycled fibre that is not FSC/PEFC certified must be covered by EN 643 delivery notes.

☒ Certified wood fibre alternative 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 i.e., invoices or delivery note.

Background

The requirement has been updated to include the new Forestry Requirements drawn up by Nordic Ecolabelling. Introduced in 2015, these include the requirement that a certain amount of wood must be certified, and that certain tree species must not be used in Nordic Swan Ecolabelled products.

Paper, paperboard and pulp are used in HPL panels. It is therefore judged that paper, paperboard and pulp have high environmental relevance for this product group. The environmental relevance is associated with ensuring sustainable cultivation of wood raw materials and with the possibility of using recycled fibre in paper, paperboard and pulp, thus reducing the use of virgin wood fibre. Even though wood fibre is a renewable raw material, it is important to ensure that virgin wood raw material comes from sustainably managed forests, in order to protect forest resources, biodiversity and socio-economic functions, etc. See more under requirement O2 and O3.

O11 COD emissions from paper and pulp production

Total emissions to water of oxygen-consuming substances, measured as COD, must not exceed the value stated in Table 3. COD is calculated by adding the COD from pulp (kg/ADt) + COD emissions from the paper machine (kg/ADt).

Where paper is manufactured using blends of chemical, recycled fibre and mechanical pulps, a weighted limit value is calculated from the proportions of the different pulp types.

Table 3 Requirement levels for COD emissions for pulp and paper

Pulp type	Total COD emissions (kg/ADt) for pulp and paper
Unbleached chemical pulp	14.0
CTMP pulp	19.0

TMP/Groundwood pulp	7.0
Recycled fibre pulp	4.0

✉ Information on which types of pulp have been used to manufacture the paper.

✉ Description of the sampling procedure, including measurement methods and measurement results over the past 12 months, from the manufacturers of the paper and pulp.

The analysis laboratory / test institute must meet the requirements in Appendix 1.

✉ Calculation from the manufacturers of the paper and pulp, showing that the total COD emissions fall below the relevant limit value in the requirement. When using pulp that has been checked based on Nordic Ecolabelling's current Basic Module for paper products, state the producer, the production location and the name of the pulp.

Background

The requirement remains unchanged from the previous generation. The requirement levels are based on the Best Available Techniques (BAT) Reference Document (BREF) for the Production of Pulp, Paper and Board, as published in 2014, which is the latest edition. Decor paper is exempt since it constitutes a minor part of the board.

The requirement applies to HPL panels that include paperboard or paper. The requirement levels are differentiated, depending on the type of paper or pulp involved, as this ensures greater steerability.

All pulp and paper production generates emissions to water in the form of oxygen-consuming substances (COD). Emissions to water comprise organic material from logs, bark and fibre, along with residues of cooking, bleaching and paper chemicals. The organic substances react with microorganisms as they consume oxygen. In aquatic environments, this can lead to low oxygen availability, and in some cases severely oxygen-poor environments.

O12 Energy requirement for paper and pulp production

The following total energy points (P) must be achieved for paper and pulp production:

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

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

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

$P_{electricity\ (total)}$ and $P_{fuel\ (total)}$ include energy points from both the paper production and the pulps that are used in the paper, see detailed explanation in Appendix 5.

✉ The pulp/paper manufacturer must submit calculations in line with Appendix 5, showing that the requirement limit has been met. Worst case calculations are to be included, to show that each pulp recipe fulfils the requirements, unless separate calculations are reported for each pulp mix.

Outdoor furniture, playground and park equipment

✉ When using pulp that has been checked based on Nordic Ecolabelling's applicable Base Module for paper, state the producer, the production location and the name of the pulp.

Background

The energy requirement is based on Nordic Ecolabelling's Basic Module (generation 5.0) for paper products. The requirement in this generation has been updated based on these principles and includes stricter reference values, as well as changes to the calculation of energy points and so total energy points.

In panels where the paper fraction forms a high proportion of the material composition, the paper makes a significant contribution to the panel's total energy impact. Relevance has therefore been identified for an energy requirement for both pulp and paper production for paper types present in the panel at more than 30 wt%. The energy requirement for paper has been taken from Nordic Ecolabelling's Basic Module for paper products and requires specific data and calculations from the paper manufacturer. Due to the high level of documentation, it has therefore been assessed that the requirement should only come into force for paper proportions above 30 wt%. This has been supplemented with a reference value for production of kraft paper in order to adapt the requirement to this product group. Appendix 5 gives a detailed description of the energy calculation.

For HPL panels, around 50-60% kraft paper and 2-15% decor paper is often used.

The principle behind the energy requirement in the Basic Module for paper products is that manufacturers of different pulp and paper types calculate specific values for both the electricity consumption and the fuel used in their production. This is done by totalling the energy consumption for the different subsidiary processes.

The applicable reference values for pulps are based on the values in the Basic Module for paper products, which in turn are based on BAT values from the BREF document. The proposed limit values in this generation are based on Nordic Ecolabelling's own licence data, public data and papers used in Nordic Swan Ecolabelled printing companies. They have then been adjusted to make them better tailored to this product group.

Along with comparison with the reference value, energy use is steered via a points limit. This limit score defines how much the paper's total energy consumption can exceed the optimum ratio. The points limit in generation 3 required that the average total energy consumption of the paper must be no more than 25% higher than when the energy use is at the level of the reference value. The new points limit of 2.5 still means that the score model allows for higher energy consumption in order to give the paper manufacturer flexibility.

8 Plastic and rubber

The requirements in this chapter must be fulfilled for the parts of the product that comprise plastic and/or rubber. Small plastic parts such as screws, nails and so on that weigh less than 100 g are not subject to the requirements below. For requirements concerning ingoing substances used as additives in plastic and rubber or for surface treatment, see Chapter 11.

The requirements in this chapter (O13–O18) do not apply to plastic in wood-plastic composite (WPC) materials. Instead, the requirements in Chapter 9 must be fulfilled.

O13 Information and labelling

State the types of plastic, additives and reinforcement that are included in the various plastic parts in the finished product.

Plastic parts weighing more than 100 g must be visibly labelled in accordance with ISO 11469 and ISO 1043.

An exemption may also be made if it is technically difficult to label i.e., 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.

✉ Declaration from the plastic manufacturer/supplier.

A description of any exemption that applies must be given in compliance with the requirement.

Background

The aim of the labelling is to ensure efficient sorting of the plastic after use and thus increase recycling of plastics. Manual sorting is in many cases replaced by near-infrared sorting (NIR) or sorting based on the plastic's density in flow processes. In cases where manual sorting is still used, labelling will make the sorting process easier. Since manual sorting mainly sorts out large parts, the limit for labelling has been raised from 50 to 100 g.

ISO 11469 is a system for the uniform labelling of plastic products, with plastics generically identified using the symbols and terms in ISO 1043.

O14 Chlorinated plastic

Chlorinated plastic i.e., polyvinyl chloride (PVC) and polyvinylidene chloride (PVDC) must not be used in the product.

✉ Declaration from the plastic manufacturer/supplier.

Background

The requirement has been updated and expanded to also include PVDC.

A number of factors feed into the environmental aspect of the requirement, including the chlorine content of the actual PVC molecule, additives that are harmful to health and the environment, and the manufacturing process used. PVC manufacture using the mercury method continues to generate a certain level of mercury emissions to water and air. Many manufacturers balance out too

much and too little dichloroethane and vinyl chloride monomers between different manufacturing sites. It is therefore difficult for them to maintain full traceability and guarantee that they do not supply plastic containing PVC and/or PVDC.

O15 Raw materials for bio-based polymers

Raw materials used in the production of bio-based polymers must meet the following requirements.

Palm oil and soy

Palm oil, soybean oil and soybean flour must not be used as raw materials for bio-based polymers.

Sugar cane

Raw materials from sugar cane must comply with a) or b) below:

a) Raw materials from sugar cane shall be waste* or residual products**. There must be traceability to the production/process where the residual production occurred.

b) Sugar cane must not be genetically modified (GMO)***.

   Sugar cane must also be certified according to a standard that meets the requirements in Appendix 2.

   The manufacturer of the bio-based polymer must be traceability certified (CoC, Chain of Custody Certified) according to the standard sugar cane is certified according to. Traceability must as a minimum be ensured by mass balance. Book- and Claim systems are not accepted.

   The producer of the bio-based polymer must document that certified raw materials have been purchased for the polymer production i.e., in the form of a specification on the invoice or delivery note.

Other raw materials

The name (in Latin and a Nordic or English language) and supplier of the raw materials used must be stated.

The raw materials must meet one of the following requirements:

a) Be waste* or residual products**. There must be traceability to the production /process, where the residual production occurred.

b) Primary raw materials i.e., maize must not be genetically modified (GMO)***. Geographical origin (country / state) must be stated.

**Waste in accordance with EU Directive 2018/2001/EC.*

***Residual products as defined in EU Directive 2018/2001/EC. Residual products come from agriculture, aquaculture, fishing and forestry, or there may be treatment of residues. A treatment of residual product means a substance that is not the end product(s) that a production process directly seeks to produce; it is not a primary aim of the production process and the process has not been deliberately modified to produce it. Examples of residual products are, for example, straw, bait, the non-edible part of maize, livestock manure and bagasse. Examples of processing residues are, for example, raw glycerol or brown lye from paper production. PFAD (Palm Fatty Acid Distillate) from palm oil is not considered a residual product and can therefore not be used.*

**** Genetically modified organisms are defined in EU Directive 2001/18/EC.*

Outdoor furniture, playground and park equipment

- ✉ Declaration by the polymer manufacturer that palm oil (incl. PFAD (Palm Fatty Acid Distillate)), soybean oil and soybean flour are not used as raw materials for the bio-based polymer.

- ✉ For waste and residual products: Documentation from the polymer producer, which shows that the requirement's definition of waste or residual products is followed, as well as traceability which shows where waste or residual product comes from.

- ✉ For sugar cane: Indicate which certification system sugar cane is certified according to. Copy of valid CoC certificate or certificate number for the current traceability standard. Documentation as an invoice or delivery note from the producer of bio-based polymer which shows that certified raw material has been purchased for the production of the polymer. Declaration that sugar cane is not genetically modified.

- ✉ For primary raw materials: Declaration from the polymer manufacturer that raw materials have not been genetically modified according to the definition in the requirement.

Background

The requirement is new in this generation of criteria.

In terms of resources and climate, it is positive to use renewable raw materials instead of fossil fuels. However, it is important that the cultivation of bio-based raw materials is sustainable. Establishment of palm oil plantations is one of the main reasons for deforestation of rainforests, and thus threatens the livelihoods of indigenous peoples, plants and animals. Rainforests are very important for biodiversity and are also important in regulating the climate. Soybeans are grown in areas that are often established at the expense of rainforests and forest waters in South America. Soy production is one of the biggest threats to the rainforest on the American continent, especially in the southern Amazon[19]. On the basis of this, palm oil, soybean oil and soy flour are banned as raw materials for bio-based polymers.

The most ideal is to use waste or residual products from i.e., agriculture, fishing, forestry or processing residual product defined in accordance with (EU) Renewable Energy Directive 2018/2001. By using waste or residual products as raw materials, you use parts that are not used as food. PFAD (Palm Fatty Acid Distillate) from palm oil is not considered a waste or residual product and may therefore not be used. PFAD occurs in the production of palm oil for the food industry, and there is rarely traceability in the processes in which PFAD occurs.

There are requirements for traceability, which shows where the waste or residual products comes from. In EU Directive 2018/2001/EC, “the point of collection” is described as the point where waste or residual product occurs for the first time (i.e., for used cooking oil, the starting point will be the restaurants or production sites that produce the fried food). The traceability of this requirement must start at the point where waste or residual product occurs for the first time.

Sugar cane is a relevant raw material for polymer production. Sugar cane is currently not as strongly associated with problems with deforestation of

[19] http://www.worldwildlife.org/industries/soy, (27.01.2016)

rainforest as mentioned above for palm and soybean oil, but there may also be challenges associated with this production. As bio-based plastic is still relatively new and the number of producers is relatively small, sugar cane is permitted as a raw material, but it is required that it be certified according to a sustainability standard that meets a number of requirements for i.e., protection of biological diversity. For all certification systems, there is a requirement for traceability at the mass balance level. Book and claim system will not be approved.

For other primary raw materials, there is a requirement that the name of the raw material, supplier and origin of the raw material must be stated. Primary raw materials incl. sugar cane must not be genetically modified. Genetic modification is a debated topic, and several countries have banned the cultivation of GMOs. Topics discussed are food safety, land use, lack of knowledge about effects under local agricultural/forest conditions and the risk of negative environmental and health impacts. Nordic Ecolabelling emphasizes the precautionary principle and regulations that have a holistic approach to GMOs. This means that sustainability, ethics and societal benefits must be emphasized together with health and the environment. We are not in principle against genetic engineering and GMOs per se, but are concerned about the consequences when genetically modified plants, animals and microorganisms spread in nature. Nordic Ecolabelling believes that GMOs should be assessed on a case-by-case basis. Research results have not clearly shown that current GMO crops contribute to the development towards sustainable agriculture with less use of pesticides, and there is a lack of research on the long-term effects of genetically modified plants, both environmental consequences and socio-economic consequences. There are possible adverse effects of GMOs along the entire value chain from research and development of the plants, via cultivation, to storage, use and waste management. In several of these phases, there is a lack of scientific studies, and there is a lack of overall assessments.

O16 Nitrosamines in rubber

The following limit values must be observed:

Total level of nitrosamines: ≤ 0.05 mg/kg rubber.

Total level of nitrosamine-forming substances: ≤ 1 mg/kg rubber.

✉ Declaration from the rubber manufacturer.

Background

The requirement has been changed from the previous generation.

Previously, the requirement was 0.01 mg/kg rubber for nitrosamines and 0.1 mg/kg vulcanized rubber, respectively, which corresponds to the levels in the EU Toys Directive and the safety standard EN 71-12 for toys for children under three years of age, which are intended to be put in his mouth. The requirement level has been lowered so that the requirement limits are now equivalent to the EU Toys Directive and the safety standard EN 71-12 for toys for children over the age of three, which are intended to be put in the mouth. This level is still strict, but more appropriate for the products in these criteria.

Nitrosamines are suspected of being carcinogenic. Nitrosamines are a by-product formed during the production of rubber. Nordic Ecolabelling wishes to apply the

precautionary principle and so sets a requirement limiting the level of nitrosamines in rubber in Nordic Swan Ecolabelled outdoor furniture, playground and park equipment.

O17 PAH in plastic, silicone and rubber

The requirement applies only to playground equipment for children and only to the parts that a child will come into contact with during normal use of the product i.e., the seat of a swing.

The limit values for selected polycyclic aromatic hydrocarbons (PAH) as listed in Table 4 must be observed. The impurity limit of 100 ppm thus does not apply for this requirement. In addition, the total content of PAHs shall be less than 0.5 mg/kg.

The PAH content may be determined using gas chromatography (GC) or mass spectrometry (MS).

Table 4 Limit values for selected PAHs in materials

Substance name	CAS no.	Limit value
Benzo[A]Pyrene	50-32-8	≤ 0.5 mg/kg
Benzo[E]Pyrene	192-97-2	≤ 0.5 mg/kg
Benzo[A]Anthracene	56-55-3	≤ 0.5 mg/kg
Dibenzo[A,H]Anthracene	53-70-3	≤ 0.5 mg/kg
Benzo[B]Fluoranthene	53-70-3	≤ 0.5 mg/kg
Benzo[J]Fluoranthene	205-82-3	≤ 0.5 mg/kg
Benzo[K]Fluoranthene	207-08-9	≤ 0.5 mg/kg
Chrysene	218-01-9	≤ 0.5 mg/kg
Total of all the above PAHs		**≤ 0.5 mg/kg**

✉ Declaration from the plastic producer that the requirement is fulfilled.

✉ Report on the results for each of the different polymer materials, showing compliance. The analysis laboratory/test institute must meet the requirements in Appendix 1.

Background

This is a new requirement for this generation of the criteria. Several of the PAHs are carcinogenic and classed as Carc.1B. PAHs can be found in plastic and rubber parts in a wide range of consumer products. They are present as impurities in some of the raw materials used to produce such products, namely in plasticising oils and in carbon black. The substances are not intentionally added to the products in question, and they have no specific function as ingoing ingredients of the plastic or rubber parts.

There is a REACH restriction (1272/2013 of 6 December 2013) that applies to products including toys and other items for young children, and this covers the eight PAHs. REACH prohibits the existence of one or more of the eight PAHs in concentrations above 0.5 mg/kg in plastic or rubber parts that a child might come into contact with. Outdoor playground equipment does not appear to be covered. The requirement in these criteria has the same limit value of 0.5 mg/kg for each of the REACH PAHs, but this requirement also asks for the submission of a test report documenting compliance with the limit level.

8.1 Requirement when plastic accounts for more than 10 wt% of the product

The different types of plastic that make up more than 1 wt% of the plastic material are to be added up. If the sum total exceeds 10 wt% of the product, the following requirement must be fulfilled.

O18 Recycled/biobased plastics

There are two different requirement limits depending on how much plastic is included in the product.

The recycled plastic must not be PVC or PVDC.

If wood plastic composite (WPC) is used in the product, plastic from WPC is not included in the calculations of the proportion of recycled plastic, see separate requirements for WPC in section 9.

Requirements if plastic is included with more than 10 wt% in the product:

- At least 50 wt% of the plastic in the product must consist of pre- or post-consumer/commercial recycled plastic *

or

- At least 50 wt% of the plastic in the product must be bio-based. The bio-based plastic must meet requirements O15.

Requirements if plastic is included with more than 30 wt% in the product:

- At least 50 wt% of the plastic in the product must consist of recycled plastic*. A minimum of 15 wt% of this must be post-consumer/commercial recycled plastic*. The requirement to a minimum of 15 wt% of post-consumer/commercial recycled plastic applies regardless of the total amount of recycled plastic in the product.

or

- At least 75 wt% of the plastic in the product must be bio-based. The bio-based plastic must meet requirements O15.

* *See definition, section 3.2.*

✉ Manufacturer of recycled or bio-based plastic must be stated.

✉ For recycled plastic:

- 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.
- Calculation that shows that the proportion recycled and if relevant the proportion of pre- and post-consumer/commercial plastic, as well as the proportion of bioplastic is met.

Outdoor furniture, playground and park equipment

✉ For bio-based plastic:

- Calculation that shows that the proportion of bioplastic is met. In addition, documentation according to requirement O15.

Background

The requirement is unchanged regarding that at least 50 wt% of the plastic in the product must be recycled when the product consists of more than 10 wt% of plastic. Alternatively, the possibility of using bio-based plastic has now been introduced.

If the product consists of more than 30 wt% of plastic, there is a new requirement that of the 50 wt% recycled plastic, then at least 15% of these must be post-consumer/commercially recycled plastic. The definition of pre-consumer/commercial and post-consumer/commercial is given in section 3.2.

Pre-consumer commercially recycled plastic is allowed here as outdoor furniture, play and park equipment most often require high quality plastic in order to have a long service life, which is an important environmental parameter. The quality of the collected household plastic is often not good enough as it is often too impure in terms of polymer composition. The Nordic suppliers of recycled plastic granules therefore work mainly with pre-consumer/commercially recycled plastic. By allowing pre-consume /commercially recycled plastic, furniture manufacturers and their suppliers will be open to using plastic fractions other than virgin plastic. If Nordic Ecolabelling can get more furniture manufacturers to work with recycled plastic and make good experiences with this, it is seen in itself as a positive effect.

With this requirement, Nordic Ecolabelling wants to stimulate circular material choices by using recycled and bio-based materials.

O19 Chemicals in recycled plastic

Recycled plastic must not contain:

- brominated and chlorinated flame retardants
- cadmium
- lead
- mercury
- chromium (VI)

Impurities up to 100 ppm are permitted.

In addition, there must be a procedure in place to ensure that the recycled plastic does not risk exceeding the limit value in future deliveries.

✉ Documentation in the form of a test report (method XRF, X-ray) from the supplier of the recycled plastic, showing that the requirement is fulfilled. The analysis laboratory / test institute must meet the requirements in Appendix 1. Alternatively, the requirement can be documented by traceability to the source, showing that these substances are not present.

✉ Description/procedure indicating how it is ensured that the recycled plastic does not risk exceeding the limit value in future deliveries.

Outdoor furniture, playground and park equipment

Background

The requirement has been expanded to include extra substances in addition to halogenated flame retardants and has been harmonised with the criteria for Furniture and fitments and Floor coverings. The requirement applies to chemicals present in the recycled plastic raw material and not chemicals added during regranulation. The requirement is to be documented in the form of a test report following the use of X-ray fluorescence (XRF) or traceability to the source, indicating that the stated substances are not present. The purpose of the requirement is to address the very worst substances. The ability to source documentation of this was investigated during the revision of the floor coverings criteria and in an internal investigation by Nordic Ecolabelling in conjunction with the amendment of the plastics requirement in generation 4 of Furniture and fitments. In this work, dialogue with flooring and furniture manufacturers and suppliers of recycled plastic demonstrated that practices vary in the industry when it comes to testing for substances in recycled plastic. Some manufacturers rely on questionnaires/declarations from their suppliers and follow these up with chemical analyses if it is judged likely that the plastic contains undesirable substances. Some manufacturers of recycled plastic have their own XRF (X-ray fluorescence spectrometer) equipment to test whether the plastic is able to meet given requirements (a level of 100 ppm is achievable). Although this will add to the burden of documentation, it is deemed reasonable to set such a requirement.

This generation of the criteria entails a change to the documentation requirement for halogenated flame retardants in recycled plastic. The previous generation of the criteria required a declaration from the plastic manufacturer/supplier. Now the plastic must be tested for brominated and chlorinated flame retardants. It is thus not necessary to test for all types of halogenated flame retardants which, in addition to brominated and chlorinated, may be types based on fluorine, iodine or astatine. The halogenated flame retardants typically used in plastic are brominated and chlorinated[20], and it is therefore considered reasonable to only test for these types of flame retardant. Testing for all types of halogenated flame retardants would also increase the cost of testing.

In addition, this generation of the criteria requires a procedure/description from the plastic manufacturer/supplier showing how the requirement concerning the content of halogenated flame retardants will be fulfilled for future deliveries. This requirement has been introduced since recycled plastic may come from many different sources and the content of halogenated flame retardants can therefore vary. The requirement can, for example, be documented by describing the sources of the plastic, the types of product from which the plastic originates and the typical use of brominated and chlorinated flame retardants, cadmium, lead, mercury and chromium IV in these product types. If tests for these substances are carried out, the requirement can be documented by having a procedure for how often and in which situations testing will be carried out.

Halogenated flame retardants and heavy metals can be harmful to health and the environment.

[20] Report: Problematiske kemiske stoffer i plast, Danish Environmental Protection Agency 2014 https://mst.dk/service/publikationer/publikationsarkiv/2014/dec/problematiske-kemiske-stoffer-i-plast/

9 Wood-plastic composite material (WPC)

O20 Wood fibre and plastic

The subsidiary requirements below must be fulfilled by the raw materials of plastic and wood fibre in the wood-plastic composite material:

a) The plastic raw material in WPC must be 100% recycled plastic.

b) The recycled plastic must not be PVC, PVDC or PET.

c) This plastic raw material must have the following composition/origin:

- The proportion of post-consumer plastic, where the source is collected consumer plastic packaging and similar, must be at least 60%.
- The proportion of pre-consumer/commercial plastic can be no more than 25%.
- The remaining proportion must be post-commercial plastic.

d) The wood fiber must be a by-product from another production i.e., planing in sawmills. In addition, the wood fibre must not originate from wood impregnated with biocides or heavy metals.

✉ From the manufacturer of WPC:

- For plastics: state the proportion of recycled plastic and types of recycled plastic according to the requirement and proportion of each type.
- For wood fiber: indicate the type of by-product and from which production it originated. Also certify that the wood fiber does not come from wood impregnated with biocides or heavy metals.

✉ From the supplier of recycled plastic raw material:

- Declaration that the plastic is 100% recycled and does not contain PVC, PVDC or PET. Indicate the proportion of post-consumer, pre-consumer / commercial and post-commercial plastic and describe sources and type of plastic, respectively.

Background

Wood-plastic composite (WPC) is a new material that has been added to these criteria.

Wood-plastic composite (WPC) is material that combines a plastic matrix with a plant-based filler and has properties that differ from those of the individual materials. The plant material is usually woodmeal, but may also be hemp or flax, for example. The plastic is almost always one of the olefins, polyethylene or polypropylene, or a blend of these. The wood fiber component accounts for a very small part of the environmental impact. What is used is cutter shavings, which is a by-product of planing processes in sawmills.

For the environmental impact of the composite material, the plastic component is crucial. In general, the plastic raw material can be recycled or newly produced. If the plastic raw material is recycled, energy use and climate impact are reduced.

But it also has great significance if the recycled raw material is post-consumer or just pre-consumer.

There are different views on whether the WPC has a place in the circular economy or not. WPC can be considered a dead end because plastic and wood are mixed and cannot be separated in the waste phase. WPC can be recycled into a new WPC, but since WPC can be made of many different types of polymeric materials, it requires that the individual product made in WPC returns to the specific manufacturer of that type of WPC, which is not immediately logistically possible to solve. It can therefore be seen as a step in the wrong direction to include a new material such as WPC in the criteria for outdoor furniture.

On the other hand, WPC provides the opportunity to use recycled post-consumer plastic that has been collected from households and that is difficult to find outlets for today.

There are differences in outlet for recycled plastic raw materials depending on whether the source is collected consumer packaging (i.e., post-consumer plastic) or plastic from businesses (trade, industry and agriculture). The latter fraction is called post-commercial or post-industrial. In order for it to be relevant for the Nordic Ecolabel to label a composite material that cannot be separated into its original materials at end-of-life, there is a requirement that the majority (60%) of the plastic used is post-consumer plastic from household-collected plastic i.e., not post-commercial which is usually of higher quality and thus easier to recycle as a plastic product.

The requirement hereby distinguishes between whether the recycled plastic is "pre-" or "post-" and also whether it is "consumer" or "commercial" and is thus specified to a greater extent than in the ISO standard 140221, see in section 3.2 Definitions.

Nordic Ecolabelling allows the use of WPC in this generation of criteria, with the following arguments.

- A Nordic Swan Ecolabelled WPC should comprise residual products (wood fibre) and recycled plastic. Nordic Ecolabelling’s requirements can help towards increased use of recycled raw material (collected consumer packaging) for which it is more difficult to find a market.
- WPC is maintenance-free and the environmental impact during the use phase is thus virtually non-existent.
- Furthermore, WPC, when it meets Nordic Ecolabelling's requirements, is also free of substances that are hazardous to health and the environment and has a long service life.
- The criteria for outdoor furniture include other materials that cannot be separated for material recovery and have to be sent for incineration instead, such as laminated materials and impregnated wood.
- It is possible to recycle WPC (e.g. after the use phase or from production waste) to new WPC at the manufacturer. However, there is no integrated fraction for WPC in today's Nordic waste systems.

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Nordic Ecolabelling will reassess this on an ongoing basis by revising the criteria. If and when post-consumer plastic can be included in clean recycling streams or otherwise recycled more efficiently than in the current situation, it will be assessed whether WPC should be allowed as a material in the Nordic Ecolabelled products.

O21 Recycled plastic

To ensure the cleanness and quality of the recycled plastic raw material, it must be handled in a recycling process that includes as a minimum:

- At least two rounds of sorting with NIR (Near-infrared technology)

and

- Sink and float separation step

Other separation and cleaning techniques for recycled plastic may be approved by Nordic Ecolabelling, if they are judged to give equivalent or better results.

✉ The supplier of the recycled plastic raw material must submit a process description showing that the recycling process includes sorting and separation in line with the requirement.

Background

The source of the plastic has a major impact on how clean and free from impurities it is. In Nordic Swan Ecolabelled WPC, the plastic must be consumer packaging, packaging from industry/business or plastic wrap. All these plastic products/materials have a short service life, no harmful additives and are therefore well-suited to recycling. They are also covered by the EU Directive on Packaging and Packaging Waste[21] which restricts the content of heavy metals. In addition, some of it is food packaging, which is subject to its own specific restrictions regarding a number of health and environment harmful substances.[22]

Plastic collected for mechanical recycling must be separated from other materials such as metal and cardboard. There is also a requirement for the plastic material to be separated into different types of plastic (PET, PE, PP, etc.). Further sorting may involve the material being sorted according to colour. A common sorting and separation process in plastic recycling operates as follows:

Near-infrared technology (NIR) and jets of air are used to sort the collected plastic material. Sometimes this step is supplemented with manual sorting. The material is then washed and further separation takes place in a sink and flow bath. This separation stage makes use of the different densities of different kinds of plastic. Heavier plastic such as ABS, polystyrene and PVC will sink. On the other hand, light types of plastic such as PP, LDPE and HDPE, whose density is lower than water, will float on the surface. Finally the assorted plastics are shredded into flakes. Sometimes the flakes are melted and passed through a melt filter to form strings, which are then cut into pellets. The melt filter captures

[21] Directive 94/62/EC of the European Parliament and of the Council of 20 December 1994 on Packaging and Packaging Waste
[22] Greater plastic recycling potential for selected product groups. Based on economics, supply, climate effect and presence of harmful substances. Report 6844, Swedish Environmental Protection Agency, September 2018.

plastics with a higher melting point (i.e., PVC) than the material that is meant to pass through.

Nordic Ecolabelling's minimum requirement is for incoming plastic to go through two rounds of NIR sorting and for sink and flow to be used as a separation technique.

O22 Additives

Chemicals added during WPC production, such as pigments, UV stabilisers and bonding agents, must meet the chemical requirements in Chapter 11.

✉ Declaration for all additives regarding the chemical requirements in Chapter 11.

✉ Safety data sheet as per relevant legislation for all additives.

Background

During manufacture, it is common for bonding agents (resins and adhesives) to be sprayed into the structure to bind together the plastic and wood fibre. In addition to these, pigments and UV stabilisers are also added. All the chemicals added during the manufacture of WPC must meet the chemical requirements in Chapter 11.

O23 Quality

Products consisting of or containing WPC must comply with the standard EN 15534-1, section 8 regarding durability. Parts of section 8 that are not relevant to the product need not be met (i.e., Resistance to termites). Levels/classes must be achieved according to the standard that is appropriate for the product.

In addition, the product and/or WPC-parts of the product must be complied with other sections of standard EN 15534-1 that are relevant. Levels/classes must be achieved according to standard EN 15534-1, which are suitable for the area of application of the product and/or WPC-parts in the product.

✉ Information about the product and if applicable the scope of use of the WPC-part, as well as a description of which sections of standard EN 15534-1 are relevant. In addition, test levels/classes must be stated, and it must be described why these are suitable for the product.

✉ Documentation for compliance with standard EN 15534-1 (i.e., test reports and information on test institute). Assessment of tests and results must be verified by an independent party with experience in the field.

Background

The requirement is new.

EN 15534-1 deals with test methods for WPC for characterization of compositions and products. The standard describes test methods for i.e., dimension of products and mechanical properties (impact resistance, extreme temperatures, flexibility). Section 8 deals with Durability with several subsections, i.e., 8.5 resistance against biological agents, where i.e., test methods for resistance against attack by fungi are described.

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Standard EN 15534-1 is relevant for products or parts that contain WPC regarding durability and overall quality. Requirement O44 also contains guarantee time requirements for parts of WPC.

O24 Other requirements for WPC

a) The products must be labelled with information about composite material and main component parts. The labelling must be placed in the product sheet/technical documentation and on the actual WPC material/profile.

b) The WPC-manufacturer must guarantee to take back production waste, returns, incorrect orders and so on in order to fully reintroduce these into the production of new wood-plastic composite. This service must be communicated to customers.

✉ An image of the labelling stating composite material and the main component parts. The labelling must be placed in the product sheet/technical documentation and on the actual WPC material/profile.

✉ Declaration from the WPC manufacturer where it is guaranteed that the manufacturer receives production waste, complaints, incorrect orders and the like to be recycled in the production of new wood plastic composite and how this is communicated to customers. Description of the process for recycling received production waste and the like in the manufacture of new wood plastic composite.

Background

Proposed new requirements for this generation of the criteria. The justification for the requirements is that the material must be resource-efficient and be designed for future material recovery.

Since the products have a long service life but have not been on the market for very long, there has been no take-back of end-of-life products on any great scale. Some manufacturers take back returns and incorrect orders and grind the material down to create raw material for the production of new WPC. Theoretically, WPC material can be ground down and made into new planks 4-5 times over. Labelling products with their origin facilitates future recycling.

10 Metal

O25 Metals that must not be used

The metals copper, tin, lead and cadmium are prohibited. However, metal alloys in stainless steel are allowed. Regarding metal plating, see requirement O37.

✉ A declaration from the applicant stating that these metals are not used.

Background

The requirement is new.

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The requirement is made as these metals can be harmful to the environment, health and/or create problems in the recycling of steel[23]. Therefore, these metals must not be used as materials in outdoor furniture, play and park equipment.

Metal alloys i.e., copper alloys, are used in stainless steel and are permitted in the requirement.

Impurities are also permitted as defined in section 3.2.

O26 Production of steel

The requirement applies if steel is included with more than 30 wt% in the product.

The requirement can be met by documenting A) High proportion recycled or B) iron ore-based production:

A) High proportion recycled

A minimum of 75 wt% of the steel must be recycled*.

The supply chain must be specified, and there must be traceability through the supply chain from the smelter to the finished product, so that the amount of recycled steel is secured through the supply chain.

**Recycled steel is defined as both pre- and post-consumer/commercial, according to definitions in ISO 14021, see section 3.2.*

Or

B) Iron ore-based production

The requirement for iron ore-based production can be met by point 1 or 2 below:

1. Steel production based on new technologies with reduced greenhouse gas emissions

Steel used in the Nordic Ecolabelled product comes from steel production sites that have implemented one of the following technologies:

- direct electrolysis of iron ore;
- blast furnace top gas recycling with carbon capture and storage
- direct smelting reduction processes
- hydrogen steelmaking in shaft furnaces using H_2 produced via water electrolysis (i.e., using renewable electricity sources);

Or

[23] EU-27 Steel Scrap Specification, May 2007: https://www.euric-aisbl.eu/facts-figures/standards-specifications

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2. Steel production - traditional methods

The Nordic Ecolabelled product manufacturer must buy steel from a producer (of ore-based steel) who has energy and climate calculations with time-limited reduction targets for energy consumption and greenhouse gas emissions. The result of the calculations must be transparent where it must be stated which assumptions form the basis for the calculation (i.e., factors used in the calculation, system limits, use of databases, etc.).

In addition, one of the points below must be met:

- A minimum of 50% by weight of the steel included in the Nordic Ecolabelled product must come from production sites that are certified according to the standard Responsible Steel, version 1.0, 2019 or later versions.
- Emissions to air and water must be within the emission values stated as BAT-AEL in the BREF document for iron and steel production. The parameters that are included in the requirement, as well as limit values are given in Tables 1 and 2 in Appendix 3.
- The steel producer must have introduced at least 2 of the energy efficiency measures stated as BAT in the BREF document for iron and steel production. The measures are listed in Table 3 in Appendix 3.

Recycled steel:

✉ The proportion of recycled steel in the product must be stated.

✉ The smelter must declare the amount of recycled steel in production. The annual average for the smelter is approved.

✉ Traceability in the supply chain must be documented i.e., in the form of a flow chart, so that the amount of recycled steel is secured through the supply chain. This can be done i.e., by information on invoices or accounting from the steel supplier that shows the amount of recycled that is purchased and how much is sold. There must be an agreement between the supplier and the manufacturer of the Nordic Swan Ecolabelled product that it is sold recycled steel to the manufacturer of the Nordic Swan Ecolabelled product.

Ore-based steel:

✉ Point 1: State which smelter (s) the steel comes from, as well as a brief description of which technology is used.

✉ Point 2: Energy and climate calculation with reduction targets, where it is clear which assumptions form the basis for the calculation.

✉ Valid Responsible Steel certificate from the manufacturer of steel / smelter. Overview from the supplier / manufacturer of the constituent steel part which shows which smelters are certified according to the standard and which shows that the requirement of a minimum of 50% certified is met.

✉ Declaration from the steel producer that the emission levels are within the stated values in the tables, as well as information of the emission values. Nordic Ecolabelling may request additional documentation for emission values.

✉ Description of how energy efficiency is worked on in production, which shows which BAT measures have been implemented.

Background

The requirement has been changed by now requiring either a high proportion of recycled or fulfilling requirements for iron ore-based steel production and primary aluminium production. The limit for when the requirement is to be met has been lowered from 50% by weight of metal in the product in the previous generation and from the limit in the consultation document where it was 30% by weight of metal. Now the limits for when the requirements are to be met are 30% by weight for steel and 10% by weight for aluminium in the product. This is because aluminium weighs significantly less than steel.

Using recycled metal significantly reduces the environmental impact and provides a significant climate benefit. Among other things, this is highlighted in the taxonomy work in the EU[24]. Nordic Ecolabelling is aware that the availability of recycled metal and traceability can be a challenge. But in a world with an increasing focus on circular economy, Nordic Ecolabelling believes that there will be an increased focus on this in the future. Traceability in the production chain is also a value in itself, and is important for several aspects i.e., it provides opportunities to select suppliers based on i.e., environmental work, working conditions and quality. Demand for traceability will hopefully contribute to the industry also placing increased focus on this. For Al, Hydro has launched its own traceability certification with a minimum of 75% recycled Al, Hydro Circal. Currently, there is a smaller plant in Luxembourg that can supply this, but from 2020, the Azuqueca plant in Spain will be able to supply Hydro Circal with a production capacity of 25,000 tonnes. The industry average for EU-produced Al is approx. 50% recycled, while for Al outside the EU it is approx. 40%. The big environmental benefit comes from the use of post-consumer recycled aluminium. Nordic Ecolabelling therefore requires that a certain proportion of the recycled material must be post-consumer.

In this version of the criteria, Nordic Ecolabelling has for the first time introduced requirements for iron ore-based steel production and primary aluminium production. Requirements for metal can therefore be met either by including a high proportion of recycled, or that several requirements for primary metal production are met. The requirement model is based on a mandatory requirement to the steel / aluminium producer to have an energy and greenhouse gas calculation with defined reduction targets. In addition, for aluminium, it must be documented that the metal has not been produced with the Söderberg process. This is an older production method that is less energy efficient and has higher emissions of fluoride. This technique has been partially phased out, and new plants do not use this technology, but it is still in use worldwide. Using pre-baked anodes is an environmentally better production technique. Certification with Responsible Steel or ASI is something that Nordic Ecolabelling see as positive initiatives for a more sustainable metal production. These are independent certification systems with a focus on both economic, social and environmental aspects. Production of steel and aluminum also produces emissions to air and water, and Nordic Ecolabelling wishes to limit this by requiring that the emissions be within the BAT-AEL values specified in the BREF documents for the respective metal. For aluminium, the requirement can also be fulfilled by documenting direct emissions of greenhouse gases and energy efficiency in the electrolysis process, where the limits are based on values stated

[24] Taxonomy report, technical annex, EU technical expert group on sustainable finance, March 2020.

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in the EU taxonomy report. Direct emissions are to be calculated according to the methodology used for EU-ETS benchmarks. Please note that these values may change based on the final outcome of the EU taxonomy work. For steel, the requirement can also be met if the steel comes from a manufacturer who has adopted new technologies that significantly reduce the climate impact from production. The technologies are similar to those stated in the EU's technical annex to the taxonomy report[25].

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 Europe[26]. According to the World Steel Association[27] 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.

O27 Production of aluminium

The requirement applies if aluminium is included with more than 10 wt% in the product.

The requirement can be met by documenting A) High proportion recycled or B) Primary aluminium production.

A) High proportion recycled

A minimum of 75% by weight of aluminium must be recycled*. The proportion of pre- and post-consumer/commercial must be stated and at least 30% by weight must be post-consumer/commercial.

Aluminium from primary production must not come from production using the Söderberg process.

The supply chain must be specified, and there must be traceability through the supply chain from the smelter to the finished product, so that the amount of recycled is secured through the supply chain.

**Recycled metal is defined as both pre- and post-consumer/commercial, according to definitions in ISO 14021, see section 3.2.*

Or

B) Primary aluminium production

The following mandatory requirements must be met:

[25] EU technical expert group on sustainable finance, Taxonomy Report: Technical Annex, March 2020: https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy-annexes_en.pdf
[26] http://www.eurofer.org/About%20us/About%20Steel/EuropeanSteelMap.fhtml
[27] https://www.worldsteel.org/en/dam/jcr:96d7a585-e6b2-4d63-b943-4cd9ab621a91/World%2520Steel%2520in%2520Figures%25202019.pdf

1. The furniture manufacturer shall purchase aluminium from a primary aluminium producer who has energy and climate calculations with time-limited reduction targets for energy consumption and greenhouse gas emissions. The result of the calculations must be transparent where it must be stated which assumptions form the basis for the calculation (i.e., factors used in the calculation, system limits, use of databases, etc.).

2. Pre-baked anodes must be used in the production.

In addition, at least one of the following requirements must be met:

- A minimum of 50% by weight of aluminium included in the product must be certified according to ASI Performance standard. The furniture manufacturer must document that the proportion of certified aluminium in the product is at least 50% by weight. The documentation can be done on an annual basis.
- Emissions to air must be within the emission values stated as BAT-AEL in the BREF document for the production of aluminium. The parameters that are included in the requirement, as well as limit values are specified in Tables 4, 5 and 6 in Appendix 3.
- The direct climate-affecting emissions for primary aluminium production must not exceed 1,514 tonnes of CO2e/ton of aluminium produced.
- Electricity consumption for electrolysis must not be higher than 15.29 MWh / ton produced aluminium.

Recycled aluminium:

✉ The proportion of recycled aluminium in the product must be stated.

✉ The producer of aluminium must declare the amount of recycled aluminium in the production and provide an overview of the share that is pre and post-consumer, which shows that a minimum of 30% by weight is post-consumer. Annual average for production is approved. The traceability of the supply chain must be documented i.e., in the form of a flow chart, so that the share recovered is secured through the supply chain. This can be done i.e., by information on invoices or accounts from the supplier of Al which shows the amount of recycled that is purchased and how much is sold. There must be an agreement between the supplier and the manufacturer of the Nordic Swan Ecolabelled product that it is sold recycled to the manufacturer of the Nordic Swan Ecolabelled product. The requirement can be documented with a valid Hydro Circal certificate.

Primary production:

✉ Energy and climate calculations with reduction targets, where it is clear which assumptions form the basis for the calculation.

✉ Declaration from the manufacturer of aluminium that pre-baked anodes are used in the production.

✉ ASI certification: Valid ASI traceability certificate from aluminium supplier. Documentation showing that the proportion of certified aluminium is at least 50% by weight on an annual basis. The documentation must be supported by

claims on the invoice or delivery note that show that the furniture manufacturer buys certified aluminium.

✉ Emissions to air: Declaration from the aluminium manufacturer that the emission levels are within the values given in the tables, as well as an indication of the emission values. Nordic Ecolabelling may request additional documentation for emission values.

✉ Direct emissions of greenhouse gases: Declaration that the requirement is met, as well as calculation and indication of direct emissions in tonnes of CO2e/ton of aluminium produced.

✉ Electricity consumption electrolysis: Declaration that the requirement is met, as well as calculation and indication of electricity consumption in MWh/ton produced aluminium.

Background

See under requirement O26.

11 Chemicals requirements

The requirements apply to all chemical products added to the product or material (i.e., in wood-based panels, HPL and WPC). The requirements apply whether the chemical use occurs in the licensee's own production/assembly process or is accounted for by suppliers.

The requirements apply to chemical products such as adhesives, varnishes, wood preservatives, surface coatings, maintenance products, primers, oils, binders and other similar products.

The requirements do not cover process or auxiliary chemicals such as lubricant oils and cleaning agents.

Metal plating does not need to meet requirements O28–O33. Instead, it must meet requirement O37.

Plastic and rubber: additives in plastic i.e., pigments, stabilizers, plasticizers and UV hardeners must meet requirements O29 and O30. Surface treatment of plastic and rubber must meet requirements O28–O33 and section 11.4. The requirements do not apply to chemicals and substances used in the production of polymers i.e., monomers.

In addition to the general chemical requirements in section 11.1, chemicals for surface treatment of wood, wood-base panels, HPL, metal, plastic and rubber must comply with sections 11.2–11.4.

Nordic Swan Ecolabelled products and products that carry the EU Ecolabel automatically meet the requirements in this chapter. Only the manufacturer, licence number and product name must be stated. In the case of EU Ecolabelled products, however, documentation must be submitted for requirement O33 concerning nanomaterial.

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11.1 General chemical requirements

The requirements cover all chemical products that are added to materials (i.e., in wood-based panels, HPL and WPC) that make up more than 5 wt% of the product or are used in the manufacture, final assembly or surface treatment of the product. The requirements apply regardless of whether the use of chemicals takes place in the company's own production/assembly or with subcontractors.

O28 Classification of chemical products

The chemical products used must not have a classification listed in Table 5 below.

Table 5 Classification of chemical products

CLP Regulation 1272/2008:		
Hazard statement	**Hazard class and category**	**Hazard code**
Toxic to aquatic life	Toxic to aquatic life, Acute 1 Toxic to aquatic life, Chronic 1 Toxic to aquatic life, Chronic 2	H400 H410 H411
Harms public health and the environment by destroying ozone in the upper atmosphere	Hazardous to the ozone layer	H420
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
Respiratory sensitisation	Resp. Sens. 1, 1A or 1B	H334
Carcinogenic	Carc. 1A or 1B Carc. 2	H350 H351
May cause genetic defects	Muta. 1A or 1B Muta. 2	H340 H341
Toxic for reproduction	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362

The classification covers all combinations of stated exposure routes and stated specific effect. For example, H350 also covers classification H350i.

The following exemptions exist:

- Exception is made for adhesives with formaldehyde classified H350 or H341. Free formaldehyde is regulated in requirement O32. Formaldehyde emissions are regulated in requirement O5 regarding wood-based panels and emissions during production are regulated in requirement O9 for HPL panels.

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- An exception is made for resins in High Pressure Laminate (HPL) classified as H341, H301 or H331 with max 10 wt% phenol.

Phenol emissions during the production of HPL panels are dealt with in requirement O9.

- In the case of resin in High Pressure Laminate (HPL) and laminate, an exception is made for methanol (H301, H311, H331 and H370) in concentrations of max 10 w%.
- Wood preservatives are exempted from the ban on the hazard classes Toxic to aquatic life and Acute toxicity. In this context, wood preservative means an impregnation agent or primer that makes the wood resistant to fungal attack/rot.
- The biocide propiconazole (H360) in wood preservatives is subject to a time-limited exemption that applies until 31.10.2021.
- UV curing surface treatment products classified as environmentally hazardous are exempted if requirement O36 is met.
- Prohibition of classification H334 only applies to surface treatment products. All other types of chemical products are exempted.
- Wood-based panels are subject to an exemption for adhesive products classified as H351 due to MDI (methyl diphenyl diisocyanate).

☒ Safety data sheet in line with prevailing European legislation (Annex II to REACH (Regulation 1907/2006/EEC)).

☒ A declaration from the chemical producer or supplier of the chemical product.

Background

Nordic Ecolabelling seeks to ensure that the health and environmental impact of the products is as low as possible. Therefore, requirements are made for the prohibition of specific classifications of the products.

In this generation of the criteria, the requirement has been updated in line with the CLP Regulation 1272/2008, and the section has been expanded to include more chemical products, for example additives in plastic. The wording has also been reformulated, in part to make the exemptions clearer.

The exemption for adhesive products in wood-based panels has been changed from exempting all isocyanates to only exempting methylene diphenyl diisocyanate (MDI).

Preservatives are exempted because they provide effective resistance to fungal growth and thus extend the service life of wood.

The classification H420 (Hazardous to the ozone layer, harms public health) has been added to the requirement.

The classification H334 (Respiratory sensitization) has been added to the requirement, but only applies to surface treatment products.

Propiconazole is a biocide that is used in wood preservatives. In the 13th amendment to the CLP Regulation, propiconazole (CAS no. 60207-90-1) has had its classification changed to also include the CMR classification H360D

(reprotoxic category 1B). The reclassification will become binding from May 2020. Finding an alternative biocide is a time-consuming process and therefore a time-limited exemption is introduced.

Brief background on adhesives

Outdoor furniture and playground equipment manufacturers use adhesives for various purposes. It may be in building panels or glulam, for lamination or to glue product components together. There are thus also various types of adhesive in use.

This requirement contains an exemption for formaldehyde, which is primarily used in adhesives for wood-based panels and HPL panels. Formaldehyde content is instead dealt with in requirements O5 and O9. To ensure that these adhesives do not cause problematic formaldehyde emissions, tough emission requirements have been applied to the finished panel or the production process. Formaldehyde is also subject to requirement O32.

Phenol in resins
Resins for HPL production may contain slightly higher concentrations of phenol, formaldehyde and methanol. These substances are necessary to cure the HPL panels but requirement O9 in the criteria ensures that emissions of formaldehyde and phenol are minimal in the finished panel. Phenol (CAS: 108-95-2) has the classification Muta. 2 H341 and H373; H301/311/314/331. Muta. 2 H341 applies when phenol makes up ≥ 1 wt% of the product. Phenol can account for up to 10 wt% of resins for HBO production, thus triggering the classification Muta. 2 H341. For HPL products, it is therefore necessary to exempt phenol-containing resins from the ban on products classified as Muta. 2 H341.

Methylene diphenyl diisocyanate (MDI)
Adhesives for wood-based panels often use methylene diphenyl diisocyanate (MDI), but also toluene 2,4-diisocyanate (TDI), which is more volatile than MDI, making exposure more likely. In addition, TDI has greater toxicity on inhalation (H330) and is classified as H351 (May cause cancer) and H412 (environmental hazard: harmful to aquatic life with long-lasting effects)[28]. MDI is not classified as an environmental hazard. The memo "Strategy for risk management of certain isocyanates (MDI and TDI)" from the Danish Environmental Protection Agency in 2014 gives substitution of volatile TDI with less volatile MDI as an alternative.

It is therefore necessary to make an exception for the ban on the classification H351, since this classification is triggered if the chemical product exceeds the concentration limit of ≥ 1 wt%. The use of adhesive with MDI exceeds this concentration limit. The exemption covers methylene diphenyl diisocyanate (MDI) and the following related compounds: CAS nos. 101-68-8, 5873-54-1, 2536-05-2, 26447-40-5, 9016-87-9, 17589-24-1, 31107-36-5 and 25686-28-6[29]. MDI reacts as the panel cures, and once this process has been completed, none of the chemical is emitted from the panel during the use phase.

[28] Strategi for risikohåndtering af visse isocyanater (MDI og TDI), Danish Environmental Protection Agency 2014
[29] http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/mdi.html

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Methanol
It is necessary to make an exception for methanol, since formaldehyde-based adhesives often contain methanol as a stabiliser. Formaldehyde is unstable and in an aqueous solution, and the solution therefore contains a stabiliser that reduces the tendency to polymerise. The solution can be stabilised by adding 10-15% methanol.

H334

Prohibition of classification with H334 only applies to surface treatment products. By adding this classification to the requirement, the Nordic Ecolabel can be used as a verification for Upphandlingsmyndigheten's (public procurement in Sweden) requirements without additional information being required.

UV curing surface treatment
Exemption is made for UV curing surface treatment products that are classified as environmentally hazardous if requirement O36 is meet. UV products have several advantages as they provide a durable surface and contain a low amount of solvents. Later requirements are placed on the amount of VOC applied, which promotes water-based UV products. UV products contain acrylates, and more and more acrylates are classified as environmentally hazardous or receive stricter classifications. Acrylates and photo initiators are two important components for UV products to cure. The acrylates change properties in the hardening and bind to the surface coating, so they do not pose an environmental hazard in the finished furniture. To make demands on i.e., the maximum amount of environmentally hazardous substances applied means that only UV products with a lower concentration of acrylates would meet the requirement. This has negative consequences as it leads to longer curing time and more energy-intensive curing. A surface that has not hardened becomes less resistant, which makes the Nordic Ecolabel's requirements for wear resistance of surfaces difficult to meet.

O29 CMR substances

The ingoing substances* must not have a classification listed in Table 6.

**See Definitions, section 3.2.*

Table 6 Non-approved classifications of ingoing substances in chemical products

CLP Regulation 1272/2008:		
Hazard statement	**Hazard class and category**	**Hazard code**
Carcinogenic	Carc. 1A or 1B Carc. 2	H350 H351
May cause genetic defects	Muta. 1A or 1B Muta. 2	H340 H341
Toxic for reproduction	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362

The classification covers all combinations of stated exposure routes and stated specific effect. For example, H350 also covers classification H350i.

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Exception:

- Formaldehyde (H350, Carc. 1B and H341, Muta. 2). Formaldehyde content is regulated in requirement O32. In addition, formaldehyde emissions are dealt with in requirement O5 for wood-based panels, while emissions during production are governed by requirement O9 for HPL panels.
- Glyoxal (H341, Muta. 2) in liquid chemical products with pH > 8.
- Methylene diphenyl diisocyanate (MDI) (H351, Carc. 2) for adhesive products in wood-based panels.
- Resin containing phenol (H341, Muta. 2) with max 10 wt% phenol. Phenol emissions during the production of HPL panels are dealt with in requirement O9.
- The biocide propiconazole (H360, Repr. 1) in wood preservatives is subject to a time-limited exemption that applies until 31.10.2021.
- Titanum dioxide (TiO_2) (H351, Carc. 2)
- The dispersant trimethylol propane (TMP) (self-classified as H361) is allowed up to 1% in pigments and the exception is time-limited until 2022-05-31.
- Photo initiators classified H351, H341 or H361.
- Mequinol classified H361.
- The hardener in 2-component UV products can be exempted from the requirement if the following is met: it must be documented that the workers are not exposed to the components i.e., by using safety equipment when mixing or that the mixing takes place automatically without exposure of the workers and that the application of the finished two-component system is done in a closed system.

✉ A declaration from the chemical producer or supplier of the chemical product.

✉ For additives to plastic/rubber: Declaration from the plastic/rubber manufacturer that the requirement is met.

Background

This generation of the criteria contains the following changes to the requirement concerning CMR substances:

- For carcinogenic substances, category Carc. 2 has been added.
- For mutagenic substances, category Muta. 1A has been added.
- For substances that are toxic for reproduction, categories Repr. 2 and Lact. have been added.

As such, the requirement has been tightened to also include the classifications H350, H351, H340, H341, H360, H361 and H362, and all variants of the classification. For example, H350 also covers classification H350i.

Carcinogenic, mutagenic and reprotoxic (CRM) substances

Substances that may cause cancer, change genetic material or interfere with reproduction (known as CMR substances in categories 1A and 1B) are prioritised

substances within the EU's chemical legislation, due to their inherently dangerous properties. It is therefore of central importance to considerably reduce, and in the long term move away entirely from, the use of CMR substances. It is not permitted to use CMR substances in chemical products that are accessible to consumers, but they do occur in other products.

Chemical products must therefore not contain any substances that are carcinogenic, mutagenic or reprotoxic (CMR). Nor may chemical products contain substances that are suspected of being carcinogenic, mutagenic or reprotoxic.

Wood preservatives

Nordic Ecolabelling wishes to minimise the use of substances that are harmful to health and the environment. Wood preservatives contain substances that are harmful to both health and the environment. The requirement in this version has therefore been tightened such that wood preservatives used for impregnation must not contain substances classified as CRM. This means that wood preservatives containing boric acid and chromium (III) oxide, for example, cannot be used.

Exemptions for CRM substances

Glyoxal (CAS no. 107-22-2) is used in paints. Glyoxal is classified as H341, Muta. 2, but when the pH is above 8 in a commonly occurring solution, glyoxal reacts irreversibly to produce glycolic acid (CAS no. 79-14-1). Glycolic acid is not classified as H341, but is classified as H332, H314 and H318.

Propiconazole is a biocide that is used in wood preservatives. In the 13th amendment to the CLP Regulation, propiconazole (CAS no. 60207-90-1) has had its classification changed to also include the CMR classification H360D (reprotoxic category 1B). The reclassification will become binding from May 2020. Finding an alternative biocide is a time-consuming process, which is why this has been introduced.

Titanium dioxide (TiO2): On 18 February 2020, the decision taken by the European Commission to classify TiO2 as suspected carcinogen (category 2) upon inhalation was published in accordance with the CLP Regulation. The classification has met with criticism because the risk that gives rise to the hazardous property according to CLP applies to inhalation and powder form and not the chemical substance itself. The classification of titanium dioxide as carcinogenic by inhalation applies only to mixtures in powder form containing at least 1% titanium dioxide particles, which are in the form of or incorporated into particles with an aerodynamic diameter of ≤ 10 µm. This means that if TiO2 or TiO2 mixtures do not exist in this specific form, the classification does not apply. The classification means that the use of TiO2 as a raw material goes against the Ecolabelling's definition of ingoing substances. Liquids and certain solid mixtures are not classified, and this is the reason why Nordic Ecolabelling has made an exception for the use of titanium dioxide in wet and solid products.

Trimethylolpropane (TMP), self-classified as H361fd: TMP aims to increase the dispersibility of pigments and counteract lumps. This means that less paint needs to be used to cover a surface and give a decorative layer. There is a time-

limited exception of up to 1% in pigments until 2022-05-31 to give raw material producers and licensees time to look for alternative dispersants.

Mequinol and hardener in 2-component UV products: Mequinol is used as a diluent in binders for UV surface treatments and have recently been classified as CMR category 2, either as a harmonized classification or self-classification. There are currently no good substitutes and exemptions have therefore been given.

Exemptions have also been introduced for the hardener in 2-component UV products if it can be documented that workers are not exposed, and the application takes place in closed systems. After curing, the hardener no longer has these properties. Nordic Ecolabelling generally wants to limit the use of chemicals with these properties as much as possible, but in some cases, it is difficult to find good substitutes. As these are industrial processes that take place under controlled conditions, the consumer will not be exposed to these substances.

For other exemptions, see requirement O28.

O30 Other prohibited substances in chemical products

The following* are not permitted as ingoing substances in a chemical product.

**See Definitions, section 3.2.*

- Substances on the Candidate List: https://echa.europa.eu/candidate-list-table.
- Substances that have been evaluated in the EU to be PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative), in accordance with the criteria in Annex XIII of REACH, plus substances that have not yet been investigated but that meet these criteria.
- Endocrine disruptors:
  - 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. See the following link: http://ec.europa.eu/environment/chemicals/endocrine/strategy/being_en.htm (Annex L, page 238 onwards)
  - Substances on the EU member state initiative "Endocrine Disruptor Lists", List I and III. See the following links:

    https://edlists.org/the-ed-lists/list-i-substances-identified-as-endocrine-disruptors-by-the-eu and

    https://edlists.org/the-ed-lists/list-iii-substances-identified-as-endocrine-disruptors-by-participating-national-authorities
- Halogenated organic compounds with the following exceptions:
  - Bronopol, IPBC and CMIT/MIT (3:1), which are regulated in requirement O31.
  - 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.

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    - Epoxy acrylate used in UV curing coatings.
- Butyl hydroxytoluene (BHT) and butyl hydroxyanisole (BHA).

An exemption is given for BHT in UV curing lacquers and paints. 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.

- Bisphenol A, bisphenol S and bisphenol F with the following exceptions:
    - Bisphenol A used in the production of epoxy acrylate.
    - Residual monomer of bisphenol A in powder coating.
- Alkylphenol ethoxylates (APEO) and other alkylphenol derivatives (substances that release alkylphenols on degradation).
- Phthalates.
- Pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds
- Volatile aromatic hydrocarbons (VAH) must not be more than 1 wt% of the chemical product.

✉ A declaration from the chemical producer or supplier of the chemical product.

✉ For additives to plastic/rubber: Declaration from the plastic/rubber manufacturer that the requirement is met.

Background

The requirement has been tightened to include a ban on:

- SVHC substances on the EU's Candidate List
- PBT substances
- vPvB substances
- Potential endocrine disruptors lists
- Bisphenol S and bisphenol F
- Butyl hydroxytoluene (BHT) and butyl hydroxyanisole (BHA).

In addition, the following changes have been introduced since the last generation of the criteria:

This generation of the criteria has dropped the specific ban on PFOA (perfluorooctanoic acid and salts/esters thereof) and PFOS (perfluorooctane sulphonate and compounds thereof) in this requirement. PFOA and PFOS remain prohibited but are covered by the ban on halogenated organic compounds.

In this generation of the criteria, the specific ban on the biocides chlorophenols (their salts and esters) and dimethyl fumarate has been removed from this requirement. Chlorophenols are a fungicide used to combat fungal growth on wood (blue stain). Chlorophenols (their salts and esters) are still prohibited but are covered by the ban on halogenated organic compounds. Dimethyl fumarate (DMF) is a mould and fungus killing agent that can be used to protect furniture

or shoes etc. during long transport. DMF can cause serious allergic reactions and is currently regulated in the EU through a ban on imports and sales of goods that contain over 0.1 mg/kg or where DMF has been declared[30].

In this generation of the criteria, the specific ban on the aziridine and polyaziridines has been removed from this requirement. However, these remain prohibited. Aziridine and polyaziridines are, for example, classified as H350 (carcinogenic) and H340 (mutagenic), and thus are covered by the ban on CMR substances (carcinogenic, mutagenic and reprotoxic).

In this generation of the criteria, the requirement concerning volatile organic compounds (VOCs) has been removed from this requirement. In the previous generation of the criteria, there was a VOC requirement for adhesives and wood preservatives used on products that are not left permanently outdoors. In this generation, the product group definition has been changed, so that it primarily relates to products that are permanently outdoors. There is still a VOC requirement concerning surface coatings on metal (requirement O39), plastic (requirement O42) and wood-based panels and wood (requirement O35).

Justification of requirement
The aim of the list is to ban the substances that are not excluded in other requirements, but which are associated with environmental and/or health risks. Some substances are included for the sake of clarity, which may mean that the substances appear in several places in the list. For example, certain fluorine compounds are on the SVHC list on the Candidate List.

SVHC substances on the EU Candidate List
The requirement has been expanded to include a ban on the use of Substances of Very High Concern (SVHC) on the Candidate List in the chemical composition. Article 57 of REACH defines the criteria used for assessing substances as Substances of Very High Concern (SVHC). The link to the list is here: http://echa.europa.eu/sv/candidate-list-table.

PBT substances and vPvB substances
PBT substances and vPvB substances are substances with innate properties which are undesirable in Nordic Swan Ecolabelled products.

PBT substances are persistent, bioaccumulative and toxic.

vPvB substances are very persistent and very bioaccumulative.

Endocrine disrupting chemicals
At present, endocrine disrupting properties are not a hazard classified according to the CLP Regulation. In addition, harmonized scientific criteria for the identification of endocrine disruptors across different parts of EU legislation are lacking. Few endocrine disruptors have been identified in the legislation so far, compared to the number of potential substances with such properties. Under these circumstances, Nordic Ecolabelling excludes identified and potential endocrine disruptors listed on the "Endocrine Disruptor Lists" at www.edlists.org, which is based on the EU member state initiative. A substance

[30] https://www.retsinformation.dk/Forms/R0710.aspx?id=124428#Not1

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listed in List I and/or III is excluded. Licensees are responsible for keeping track of updates on the lists, so that their branded products meet the requirement through the validity of the license. Nordic Ecolabelling acknowledges the challenges associated with new substances that are introduced in List III. We will evaluate the circumstances and possibly decide on a transition period from case to case. Nordic Ecolabelling continues to exclude potential endocrine disruptors on the European Commission's list of substances that are prioritized for evaluation, categories 1 and 2 (updated ranked priority list in the DHI study 2007 https://ec.europa.eu/environment/ chemicals/endocrine/pdf/final_report_2007.pdf). Substances on the 2007 list are excluded if the substance has since been evaluated and found not to be endocrine disrupting under EU legislation. In this way, Nordic Ecolabelling ensures a restrictive policy on endocrine disruptors.

Halogenated organic compounds

Halogenated organic compounds (compounds of chlorine, bromine, fluorine or iodine) include many substances that are harmful to health and the environment, very toxic to aquatic life, carcinogenic or harmful to health in other ways. Halogenated organic compounds are not readily biodegradable, which increases the risk of harmful effects from the substances. Halogenated organic compounds include i.e., chlorinated paraffins, halogenated flame retardants, per- and polyfluorinated compounds (PFC), which must not be included in Nordic Swan Ecolabelled outdoor furniture, playground and park equipment.

Regarding exemptions:

- Pigments in paint: 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 surface treatment products. 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.

Butyl hydroxytoluene (BHT) and butyl hydroxyanisole (BHA)
BHT and BHA are new to the list of prohibited substances.

BHT and BHA are antioxidants that are used in many different projects to protect materials such as plastics, polymers, paints, adhesives and other coatings. BHA is used i.e., in wood plastic composite (WPC).

BHA do not have an official harmonised classification. BHA are generally self-classified as an environmental hazard in classes H410 and H400, and some are also classed as CMR[31].

Butylhydroxytoluene (BHT, CAS nr. 128-37-0) 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 paints. 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. If BHT receives a harmonized official classification that is not allowed in these criteria, then the exemption is no longer valid.

Bisphenol A, bisphenol F and bisphenol S
Bisphenol A (BPA) is used, for example, in the following relevant areas and products: various plastic and epoxy mixes, paints, varnishes, adhesives (binder, hardener) and polyol for the production of polyurethane. Bisphenol A may be released into the environment from the production process, and the substance has certain endocrine effects in both fish and snails. The main source of terrestrial exposure is the spreading of sludge from wastewater treatment plants. Since Bisphenol A has certain endocrine disrupting effects in animal trials, the use of this substance is prohibited in these criteria.

This generation of the criteria also includes a ban on bisphenol S (BPS) and bisphenol F (BPF), since studies show that these are just as hormonally active as bisphenol A (BPA) and have endocrine disrupting effects[32].

Bisphenol A is included as a monomer in all epoxy powder coatings and residues may be above 100 ppm. Epoxy powder coatings do not contain any solvents and

[31] https://www.echa.europa.eu/fi/web/guest/brief-profile/-/briefprofile/100.004.439.
[32] Bisphenol S and bisphenol F: A Systematic Review and Comparison of the Hormonal Activity of Bisphenol A Substitutes. Rochester, J.P and Bolden, A.L, Environmental Health Perspectives, 5. March 2015.

there is very little spillage during painting, Nordic Ecolabelling therefore wishes to approve this type of paint and Bisphenol A used in the manufacture of epoxy powder coatings is therefore not covered by the requirement.

Bisphenol A is also used in the manufacture of epoxy acrylate and it is clarified that Bisphenol A is in this case exempt from the requirement, see more above under "Epoxy acrylate in UV-curing surface treatment products".

Alkylphenol ethoxylates (APEO) and other alkylphenol derivatives

Alkylphenol ethoxylates and alkylphenol derivatives, i.e. substances that release alkylphenols on degradation, must not be used in Nordic Swan Ecolabelled outdoor furniture, playground and park equipment. APEOs are sometimes found in binders, dispersants, thickeners and so on. APEOs have a number of problematic properties relating to health and the environment.

APEOs are not readily biodegradable, they tend to bioaccumulate, and they are found in high concentrations in wastewater sludge. The degradation products of APEO, alkylphenol and APEO with one or two ethoxy groups are very toxic to aquatic life. Some alkylphenols are suspected of being endocrine disruptors.

Phthalates
Phthalates are mainly used as softeners for PVC, but can also be used as stabilisers, film formers, emulsifiers, lubricants, binders and many other functions, in which they end up occurring in numerous products such as adhesives, personal care products (i.e., denaturing products for perfume spirit), toys, packaging and much more.

Some phthalates are on the EU's Priority List of substances that require further investigation for endocrine disrupting effects – and some have already been shown to have endocrine disrupting effects. Phthalates have also received huge amounts of media attention and can therefore be undesirable in ecolabelled products for many reasons.

Pigments and additives based on Heavy metals
Heavy metals have a negative impact on the environment. This makes it relevant to ensure that metal raw materials used in the product group do not contain the heavy metals lead, cadmium, chromium (VI) and mercury, and their compounds.

Lead is a toxic heavy metal that is accumulated in nature and in human beings. This means that even small quantities of lead can be harmful to health.

Cadmium and cadmium compounds are acutely and chronically toxic for human beings and animals. Most cadmium compounds are also carcinogenic.

Chromium (III) and chromium (VI) are used for i.e., chrome plating, paints and pigments. Chromium (III) is essential, since living organisms require chromium. The different types of chromium have different effects. All chromium compounds are toxic. Chromium (VI) has particularly harmful effects, as it is carcinogenic and allergenic.

Mercury occurs as inorganic and organic chemical compounds and is one of the most dangerous environmental toxins. Mercury is a threat to the environment

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and to human health. Organic mercury compounds are particularly toxic. Mercury compounds are extremely toxic to aquatic life and to mammals.

Tin may occur in organotin compounds which can be found in paints and may have undesirable effects on health and the environment. The most thoroughly investigated organotin compound is tributyltin (TBT), which accumulates in the food chain and has endocrine disrupting effects on marine organisms.

Volatile aromatic hydrocarbons (VAH)
Volatile aromatic hydrocarbons (VAH) have harmful effects on health and the environment and may cause damage to DNA.

Volatile organic compounds in which one or several benzene rings are included are called volatile aromatic hydrocarbons (VAH), and are very stable.

The expression “aromatic hydrocarbons” describes, among other things, benzene, toluene, mixed xylenes, orthoxylene, paraxylene and metaxylene (commonly known as BTX). Benzene is used to make styrene, cumene and cyclohexane. Most toluene is used to make benzene, phenol and toluene diisocyanate.

O31 Preservatives in chemical products

The limit values for the level of preservatives in a chemical product, as stated in Table 7, must be fulfilled:

Tabel 7 Limit values for stated preservatives

Preservative	Limit value
Bronopol	≤ 0.05 wt%
IPBC (iodopropynyl butylcarbamate)	≤ 0.45 wt%
Blend (3:1) of CMIT/MIT (5 chloro-2-methyl-4-isothiazolinone-3-one / 2-methyl-4-isothiazolinone-3-one)	≤ 0.0015 wt%
MIT (2-methyl-2H-isothiazol-3-one)	≤ 0.01 wt%
Total amounts of isothiazolines	≤ 0.15 wt%

Wood preservatives are exempted from the requirement concerning preservatives. In this context, wood preservative means an impregnation agent or primer that makes the wood resistant to fungal attack/rot. Paint and oil that may be applied after priming or impregnation are not exempt from this requirement.

✉ Safety data sheet in line with prevailing European legislation (Annex II to REACH (Regulation 1907/2006/EF)).

✉ A declaration from the chemical producer or supplier of the chemical product.

Background

The requirement has been revised compared with the previous generation of the criteria. It has been harmonised with the criteria for Nordic Swan Ecolabelled Chemical building products and the criteria for Indoor paints and varnishes. Wood preservatives are exempted from the requirement concerning preservatives as one of the purposes of the preservative is to prevent fungal growth, thus increasing the product’s durability and so its service life.

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Preservatives are added to liquid products to prevent bacterial growth in the products, in which case they are known as “in-can preservatives”. The composition of the products may also affect the need for preservatives. In some products preservatives are also added as “film preservatives”, i.e. so that the final film is not attacked by algal, mould, etc.

Effective preservation often requires a mix of different preservatives.

The limits are based on the fact that although larger amounts of IPBC are required than isothiazolinone to achieve the same preservative effect, IPBC is less allergenic than isothiazolinone. The limit for IPBC is therefore higher than for isothiazolinone.

O32 Free formaldehyde in chemical products

Adhesives: The content of free formaldehyde in adhesives must not exceed 0.2000% by weight (2000 ppm). The requirement applies to the adhesive before any mixture with a hardener.

Surface treatment: The content of free formaldehyde in each individual chemical product must not exceed 0.2000% by weight (2000 ppm).

Other chemical products: The content of free formaldehyde (from formaldehyde not intentionally added or from formaldehyde-releasing substances) must not exceed 0.0200% by weight (200 ppm) in the chemical product.

Resins used in the production of wood-based panels and HPL panels are exempted from the requirement. They are covered instead by requirement O5 and O9.

✉ A declaration from the chemical producer or 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 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. Nordic Ecolabelling does not want to request a specific test for this, because that would be too extensive and costly for each chemical product. However, Nordic Ecolabelling can ask for a test if there is any uncertainty about the declaration.

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 to the amount of free formaldehyde in the glue, in the mixture or in dried glue, but not for what occurs when the adhesive is applied to a surface. This is 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.

For wood-based panels, the content of free formaldehyde in the employed chemical products will depend on factors such as which adhesive system is being used. Generally speaking, all the adhesives are water-based, rather than solvent-based.

Resins/adhesives used in the manufacture of wood-based panels must meet later chemical requirements where there are no requirements for free formaldehyde but instead formaldehyde emission.

Resins used for impregnation in HPL and laminate production generally have a high formaldehyde content. Free formaldehyde may be present at around 1 wt%. Also, formaldehyde oligomers (synthetic polymer) may be present at a percentage by weight of over 50 wt%. Normally the resins are used in open water-based baths, so it has been decided to lay down a specific requirement for emissions from HPL production, see requirement O9.

O33 Nanomaterials in chemical products

The chemical product must not have nanomaterials* as ingoing substances**.

The following substances are exempted from the requirement:

- Pigments***
- Naturally occurring inorganic fillers****
- Synthetic amorphous silica*****
- Aluminium oxide

** Nanomaterials/-particles are defined according to EU commission recommendation on the definition of nanomaterial (2011/696/EU)*

(https://eur-lex.europa.eu/legal-content/SV/TXT/PDF/?uri=CELEX:32011H0696&from=EN):
'Nanomaterial' means a natural, incidental or 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 the number size distribution, one or more external dimensions is in the size range 1 nm-100 nm.

*** See Definitions, section 3.2.*

**** This exemption does not apply to pigments added for other purposes than imparting colour.*

***** Applies to filler subject to Annex V, clause 7 of REACH.*

****** This exemption applies to non-modified synthetic amorphous silica.*

✉ Declaration from the supplier/manufacturer of the chemical product that the requirement is fulfilled.

Background

Due to their small size and large surface area nanoparticles are usually more reactive and may have other properties compared to larger particles of the same material. There is concern among public authorities, scientists, environmental organisations and others about the lack of knowledge regarding the potential

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detrimental effects on health and the environment.[33,34,35,36,37,38,39,40,41] Surface coatings and other modifications can also alter their properties. Nordic Ecolabelling takes the concerns about nanomaterials seriously and applies the precautionary principle to exclude nanomaterials/-particles in the products. The European Commission recommendation for a definition of nanomaterials of 18 October 2011 (2011/696/EU)[42] is used.

Most nanomaterials on the market today have either been in use for decades, or are more recently engineered nanoforms of previously existing materials.[43] For example, nanoparticles of carbon black and amorphous silica (SiO_2) have been used for the last century. Titanium dioxide, TiO_2, has long been used as a colourant in the bulk form, but is now manufactured as nanomaterial for other purposes.[44] Other types of engineered nanomaterials are expected to come onto the market in the future.[45]

Within the product group outdoor furniture, playground and park equipment, nanomaterials are among others used for impregnation or sealing of surfaces such as wood or metal, in order to create hydrophobic, self-cleaning, corrosion-resistant and antibacterial/biocidal surfaces. These effects can be created by addition of nanometals such as silver and copper, or titanium dioxide.

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[33] UNEP (2017) Frontiers 2017 Emerging Issues of Environmental Concern. United Nations Environment Programme, Nairobi. https://wedocs.unep.org/bitstream/handle/20.500.11822/22255/Frontiers_2017_EN.pdf?sequence=1&isAllowed=y

[34] Parliamentary Assembly of the Council of Europe (2017 (2013)) Nanotechnology: balancing benefits and risks to public health and the environment. http://semantic-pace.net/tools/pdf.aspx?doc=aHR0cDovL2Fzc2VtYmx5LmNvZS5pbnQvbncveG1sL1hSZWYvWDJILURXLWV4dHIuYXNwP2ZpbGVpZD0xOTczMCZsYW5nPUVO&xsl=aHR0cDovL3NlbWFudGljcGFjZS5uZXQvWHNsdC9QZGYvWFJlZi1XRC1BVC1YTUwyUERGLnhzbA==&xsltparams=ZmlsZWlkPTE5NzMw

[35] Larsen PB, Mørck TAa, Andersen DN, Hougard KS (2020) A critical review of studies on the reproductive and developmental toxicity of nanomaterials. European Chemicals Agency.

[36] SCCS (Scientific Committee on Consumer Safety) (2019) Guidance on the Safety Assessment of Nanomaterials in Cosmetics. SCCS/1611/19. https://ec.europa.eu/health/sites/health/files/scientific_committees/consumer_safety/docs/sccs_o_233.pdf

[37] Mackevica A, Foss Hansen S (2016) Release of nanomaterials from solid nanocomposites and consumer exposure assessment - a forward-looking review. Nanotoxicology 10(6):641–53. doi: 10.3109/17435390.2015.1132346

[38] BEUC – The European Consumer Organisation et. al (2014) European NGOs position paper on the Regulation of nanomaterials. www.beuc.eu/publications/beuc-x-2014-024_sma_nano_position_paper_caracal_final_clean.pdf

[39] SweNanoSafe. Nationell plattform för nanosäkerhet. https://swenanosafe.se/ (2020-05-06)

[40] BEUC – The European Consumer Organisation. Nanotechnology. www.beuc.eu/safety/nanotechnology (2020-05-06)

[41] Azolay D and Tuncak B (2014) Managing the unseen – opportunities and challenges with nanotechnology. Swedish Society for Nature Conservation. www.naturskyddsforeningen.se/sites/default/files/dokument-media/rapporter/Rapport-Nano.pdf

[42] https://eur-lex.europa.eu/legal-content/SV/TXT/PDF/?uri=CELEX:32011H0696&from=EN

[43] EU observatory for nanomaterials and European Chemicals Agency (2019) What are next generation nanomaterials and why are regulators interested in them? Information note. https://euon.echa.europa.eu/documents/23168237/24095696/190919_background_note_next_gen_materials_en.pdf/b9178324-5a69-2e4b-1f2b-aac2c2845f45

[44] European commission, COMMISSION STAFF WORKING PAPER, Types and uses of nanomaterials, including safety aspects, Accompanying the [..] second regulatory review of nanomaterials, SWD(2012) 288 final

[45] EU observatory for nanomaterials and European Chemicals Agency (2019) What are next generation nanomaterials and why are regulators interested in them? Information note. https://euon.echa.europa.eu/documents/23168237/24095696/190919_background_note_next_gen_materials_en.pdf/b9178324-5a69-2e4b-1f2b-aac2c2845f45

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Polymer dispersions can technically be considered nanomaterials: The EU Commission's follow-up report to the other "Regulatory Review on Nanomaterials" from 2012[46] states that solid nanomaterials dispersed in a liquid phase (colloid) should be considered nanomaterials according to the EU Commission recommendation. Polymer dispersions are not exempt from the requirement as they are not considered relevant for outdoor furniture, playground and park equipment.

The requirement has the following exemptions:

Pigments

Pigments are finely ground, insoluble particles that are used to give products a specific colour. There are no substitutes that can fulfil pigments' function as colourants in paints, ink, textile dye, masterbatch etc. and many pigments consist partly or entirely of nanoparticles. Thus, nano-sized pigments are exempted. Although clear evidence-based conclusions of the safety of nano-pigments cannot be drawn,[47] the release by weathering of facades is very limited, and the nanoparticles are most likely mainly embedded in the paint matrix rather than released as single nanoparticles.[48],[49]

Pigments impart colour by selective absorption and scattering of light. Paint pigments consist of particles of individual crystals up to aggregates of multiple crystals[50]. It is generally more efficient to use pigments with smaller particles than larger ones to obtain the same colour.

Inorganic pigments used in the paint industry that may occur in nano-size include carbon black and iron oxides.[51] The carbon black used in paint is very finely ground and has a particle size of around 10–30 nm.[52] Iron oxide pigment may entirely comprise particles of nano size, or only a fraction of the particles may be nano. Inorganic nano pigments are also added to products for a wide range of purposes other than colouring. Nano-titanium dioxide is for example used to impart self-cleaning effect in paints.

Naturally occurring inorganic fillers

Traditional fillers are permitted.

Naturally occurring fillers from for example chalk, marble, dolomite and lime are exempted from registration according to appendix V, point 7 in REACH, see below, as long as these fillers only are physically processed (milled, sieved and so on) and not chemically modified. They are also exempted from registration in the

[46] Communication from the commission to the european parliament, the council and the european economic and social committee, Second Regulatory Review on Nanomaterials, COM(2012) 572 final
[47] Hynes J, Novotný T, Nic M, Kocurkova L, Prichystalová R, Brzicová T, Bernatikova S (2018) Literature study on the uses and risks of nanomaterials as pigments in the European Union. European Chemicals Agency.
[48] Mackevica A, Hansen, SF (2016) Release of nanomaterials from solid nanocomposites and consumer exposure assessment – a forward-looking review. Nanotoxicology, 10(6), 641–653. https://doi.org/10.3109/17435390.2015.1132346
[49] Nowack B, Hincapié I, Sarret G, Larue C, Legros S (2013) Environmental fate of nanoparticles from façade coatings. NanoHouse Dissemination report Nº 2013-03. https:// DOI: 10.13140/2.1.2206.3040
[50] Coatings Handbook; Thomas Brock, Michael Groteklaes, Peter Mischke; 2000
[51] Industrial Organic Pigments; W. Herbst, K. Hunger; Third edition 2004; pp. 120–124
[52] Coatings Handbook; Thomas Brock, Michael Groteklaes, Peter Mischke; 2000; p. 128

Danish Environmental Protection Agency's draft to the Order on a register of mixtures and articles that contain nanomaterials and the requirement for producers and importers to report to the register[53].

In REACH directive (1907/2006/EF[54]) it is in article 2, point 2, point 7b:

"The following shall be exempted from Titles II, V and VI:
(Title II covers the registration of substances, Title V covers downstream user and Title VI covers evaluation)
(b) substances covered by Annex V, as registration is deemed inappropriate or unnecessary for these substances and their exemption from these Titles does not prejudice the objectives of this Regulation;"

Annex V Exemptions from the obligation to register in accordance with article 2(7)(b):
"The following substances which occur in nature, if they are not chemically modified.
Minerals, ores, ore concentrates, cement clinker, natural gas, liquefied petroleum gas, natural gas condensate, process gases and components thereof, crude oil, coal, coke."

An exemption has been added for inorganic fillers as long as they are covered by appendix V, point 7 in REACH.

Synthetic amorphous silica

Synthetic amorphous silica (SAS) is an intentionally manufactured silicon dioxide (SiO_2) form that has been used in industrial, consumer and pharmaceutical products for decades[55]. SAS is a nanomaterial, under the European Commission definition [56] and is exempted from the requirement due to a lack of alternative substances.

Aluminium oxide is usually used in powder coating in order to get good fluidisation properties. There Studies have investigated the risks associated with nanoparticles in paint, laquers and sealants i.e., the NANOKEM- and NanoHouse projects. The conclusion in both projects was that wear and tear of painting does not lead to release of free nanoparticles, but only particles fixed in a matrix of paint.

11.2 Surface treatment of wood, wood-based panels and HPL panels

Chemical products used for surface treatment must also meet the general chemical requirements, section 11.1.

[53] Link to Miljøstyrelsens consultation: http://hoeringsportalen.dk/Hearing/Details/16910 (visited 20/1-14)
[54] Link to REACH-directive: http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_396/l_39620061230en00010849.pdf
[55] https://www.asasp.eu/images/Publications/Nano_-_SAS_factsheet_-_201209.pdf
[56] COMMISSION RECOMMENDATION of 18 October 2011 on the definition of nanomaterial (2011/696/EU)

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O34 Quantity applied and application method

The requirement applies to surface-treated parts of wood, wood-based panels or HPL that make up more than 5 wt% of the product.

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

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

b) If alternative b) in later requirement O35 is used, state 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 VOCs in subsequent requirement O35:

- 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.

✉ Description from the manufacturer concerning each surface treatment system used.

Background

The requirement remains unchanged, but with clarification that the manufacturer must also state the name and producer of the chemical products used in each surface treatment system. The other details on amount applied, number of layers and application method were required in the previous generation of the criteria and are needed to calculate the applied amount of environmentally hazardous substances and VOC in subsequent requirements.

O35 Added amount of volatile organic compounds (VOC)

The requirement applies to surface-treated parts of wood, wood-based panels or HPL that make up more than 5 wt% of the product.

Within each surface treatment system, the total content of volatile organic compounds in surface treatment products must fulfil one of the following alternatives:

a) Total level of VOC ≤ 5 wt% VOC

b) Total amount of added VOC ≤ 35 g/m^2.

For both alternatives, it is the VOC content of the chemical products in their uncured form that must meet the requirement. If the products require dilutions, the calculation is to be based on the content in the dilutive product.

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The applied amount of VOC according to alternative b) is calculated using the following formula:

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

☒ Safety data sheet in accordance with Annex II of REACH (Regulation 1907/2006/EC) for each chemical product in the surface treatment system.

☒ Declaration from the manufacturer of the chemical products in the surface treatment system, detailing how much VOC is in each product.

☒ Calculation from the manufacturer showing that alternative b) in the requirement is met, if the surface treatment system does not fulfil alternative a), see example of calculation in Appendix 6.

Background

In this generation of the criteria, the requirement has been amended to harmonise with Nordic Ecolabelling's other product groups, such as Floor coverings, Construction and facade panels, and Furniture and fitments.

A new requirements limit has been introduced for alternative a). If the total VOC content in all the applied products within a surface treatment system amounts to less than 5 wt% VOC, it is not necessary to perform calculations in grams per m^2. This is because products with such a small total content of VOC will meet the set requirements and an exemption from the calculation requirement will not reduce the level of environmental protection. The requirement limit for alternative b) remains unchanged.

The reason for setting VOC requirements is that these compounds contribute to tropospheric (near ground level) ozone, amongst other things. The requirement applies to the surface treatment product when it is applied to outdoor furniture or playground equipment. In order to protect production workers and consumers from substances that are harmful to health, requirements have been set to exclude the use of the most harmful surface treatment products. A significant portion of the environmental impact associated with paints and varnishes comes from VOC emissions.

O36 UV curing surface treatment system

UV curing surface treatment products must be applied to the material during a controlled closed process where no discharge to recipient takes place. Spills and residual waste, residues from cleaning) must be collected in containers that are approved for hazardous waste and handled by a waste contractor.

☒ Description of the process and how waste and residual waste are handled, including information about who receives the residual waste from the performer of the surface treatment.

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Background

There is an exemption for UV curing products in the requirement above that limits the use of chemical products classified as environmentally hazardous. UV curing products are often classified as environmentally hazardous due to the content of acrylates. The acrylates change properties in the hardening and bind to the surface coating, so they do not pose an environmental hazard in the finished furniture. Instead, it is important that no emissions of uncured product that have the environmentally hazardous properties occur. Requirements are therefore set for the application, which must take place during a controlled closed process where no discharges to recipient take place.

11.3 Surface treatment of metal

All surface treatment of metal must meet requirement O38 and O39 and the general chemical requirements, section 11.1. Metal plating i.e., hot-dip galvanising, is however exempted from section 11.1, requirement O38 and O39, and must instead fulfil requirement O37.

O37 Metal plating

- Metal plating must not contain cadmium, lead, chromium or nickel. Impurities as defined in section 3.2 are permitted.
- The plant must be drain free, i.e. there must be no emissions to a recipient watercourse/municipal treatment plant*.
- Residual products must be sent for recycling or handled as hazardous waste.
- Zinc used for hot-dip galvanizing must contain a maximum of 0.005% lead and no additional lead may be added to the galvanizing bath.

** For hot-dip galvanizing, limited amounts of rinsing baths may be diverted to a municipal treatment plant.*

✉ Declaration from the performer of the metal plating that the metal plating does not contain cadmium, lead, chromium or nickel.

✉ Declaration from the performer of the metal plating that the plant is drain free. If limited amounts of rinsing baths are diverted from hot-dip galvanizing: information that these amounts are limited and that it is led to the municipal treatment plant.

✉ The performer of the metal plating must state the recipient waste facility and give a description of how residual products from the plating are managed.

✉ For hot dip galvanizing:

- From zinc supplier: Product data sheet or similar documentation for the lead content in zinc.
- From the performer of the metal plating: Declaration that no additional lead is be added to the galvanizing bath.

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Background

The requirement has been revised. An expanded ban on surface coatings containing nickel and chromium has been introduced. Requirements for Zinc plating has been tightened compared with the previous generation. One stipulation is that the plating plant must be drain free. The purpose of this is to reduce the discharge of undesirable substances to wastewater treatment plants and on to recipient watercourses. A drain free plant often has a combination of different separation methods i.e., ion exchange, batch detoxification and evaporation. The water is recycled, and separated salts are dealt with as liquid and solid waste. Surface plating with zinc is still permitted, since the product is outdoor furniture, playground and park equipment intended for outdoor use and is thus subject to a high degree of wear.

Surface treatment – general
Metals might be given a surface treatment for decorative purposes, to increase their hardness and durability, to prevent corrosion or to improve adhesion, ready for other treatments such as painting. Surface treatment extends the service life of metals, but also has an environmental impact, chiefly in the form of high energy and water use, plus emissions to water. Six metals are of greatest concern due to their impact on health and/or the environment: cadmium, lead, nickel, chromium, copper and zinc.

It is most common to surface treat regular carbon steel, as it needs such treatment to become resistant to corrosion. Aluminium and stainless steel are corrosion resistant even without any surface treatment[57].

The latest BAT reference document (BREF) for surface treatment of metals is from 2006, with a revision expected in 2020.

Hot-dip galvanisation
The residual products formed are the “ash” (primarily zinc oxide) that forms on the surface of the galvanising bath, and “hard zinc”, iron-zinc particles that are fragments of the reaction product and float on top of the bath. Both these products are dealt with at the hot-dip galvanising plant and sent for recycling.

In the Nordic countries, zinc is used in the galvanizing bath of qualities that contain a maximum of 0.005% lead. In countries outside the Nordic region, lead is actively added, and the lead content is normally 0.6-0.7% and up to 1%.

Emissions of rinsing baths in limited quantities is allowed because the galvanizing plants have slightly different production methods. Only discharges of rinsing water in limited quantities are permitted and only rinsing water diverted to the municipal treatment plant. Before hot-dip galvanizing, the goods undergo degreasing, pickling to remove oxides and fluxing to protect the surface and make it reactive. Between bites and flux you always need to rinse, otherwise the flux will be destroyed. The rinsing water needs to be changed after a while. Some of the water can be used to top up in other process baths, which reduces the wastewater and means that some plants in principle have zero emissions. Some plants also need a rinsing step between degreasing and pickling, for example if you have a lot of processing emulsions on the goods. This is common if you have a robot-based production. There are some chemical manufacturers that sell both

[57] http://www.syf.se/Filer/Guide_ytbeh_v0.pdf

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degreasing and bites that work together and where rinsing is not needed, but these products are unfortunately not suitable for all hot dip galvanizers.

Surface treatment and material recovery
During the development of the EU Ecolabel's latest criteria for furniture, decision 2016/1332/EU, stakeholders stated that surface treatment of metals was no obstacle to recycling[58]. The smelting works sort the metal into different categories and may specialise in different types of metals that they accept. If it is not possible to use it for other things, it will usually be used in reinforcement steel. Chrome-plated steel is often used to produce stainless steel.

There is, however, something in the phrase "the purer, the better". Extra technology (processing technology), energy and chemical consumption is required if the metal contains a coating/alloys.

It is difficult to see how Nordic Ecolabelling can set any requirements that ensure better material recovery in this area. There is nothing to suggest that chrome plating or powder coating is preferable in a material recovery process.

O38 Quantity applied and application method

The requirement applies to surface-treated parts of metal that make up more than 5 wt% of the product.

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

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

b) If alternative b) in later requirement O39 is used, state 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 VOCs in subsequent requirement O39:

- 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.

** The amount of application and the number of layers is not necessary to state for powder coating.*

[58] http://ec.europa.eu/environment/ecolabel/documents/technical_report_furniture.pdf

✉ Description from the manufacturer concerning each surface treatment system used.

Background

See under requirement O34

O39 Added amount of volatile organic compounds (VOC)

The requirement applies to surface-treated parts of metal that make up more than 5 wt% of the product.

Within each surface treatment system, the total content of volatile organic compounds in surface treatment products must fulfil one of the following alternatives:

a) Total level of VOC ≤ 5 wt% VOC

b) Total amount of added VOC ≤ 35 g/m².

For both alternatives, it is the VOC content of the chemical products in their uncured form that must meet the requirement. If the products require dilutions, the calculation is to be based on the content in the dilutive product.

The applied amount of VOC according to alternative b) is calculated using the following formula:

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

✉ Safety data sheet in accordance with Annex II of REACH (Regulation 1907/2006/EC) for each chemical product in the surface treatment system.

✉ Declaration from the manufacturer of the chemical products in the surface treatment system, detailing how much VOC is in each product.

✉ Calculation from the manufacturer showing that alternative b) in the requirement is met, if the surface treatment system does not fulfil alternative a), see example of calculation in Appendix 6.

Background

This is a new requirement in this generation of the criteria, with two alternative ways to fulfil the requirement. In alternative a), if the total VOC content in all the applied products within a surface treatment system amounts to less than 5 wt% VOC, it is not necessary to perform calculations in grams per m². In alternative b), the added amount is calculated in g/m². Account is taken here of the efficiency of the application method. This means that if a surface coating (i.e., varnish) is applied using a method with low efficiency that generates more waste, it is permitted to contain only a small level of organic solvent. If the surface coating is applied using a more highly effective method, which generates little or no waste, a higher proportion of organic solvent is permitted. The limit value for the amount added is set at 35 g/m², which is the same value as for the surface treatment of wood and wood-based panels.

The reason for setting VOC requirements is that these compounds contribute to tropospheric (near ground level) ozone, amongst other things. The requirement applies to the surface treatment product when it is applied to outdoor furniture

or playground equipment. In order to protect production workers and consumers from substances that are harmful to health, requirements have been set to exclude the use of the most harmful surface treatment products. A significant portion of the environmental impact associated with paints and varnishes comes from VOC emissions.

11.4 Surface treatment of plastic and rubber

Any surface treatment of plastic and rubber must meet the general chemical requirements, Chapter 11.1.

The requirements apply to surface-treated parts of plastic or rubber that make up more than 5 wt% of the product.

O40 Surface treatment of plastic and rubber

Surface treatment of plastic and rubber must not make it impossible to recycle that plastic/rubber.

✉ A declaration from the chemical producer or supplier of the chemical product.

✉ A declaration from the performer of the surface treatment.

Background

The requirement remains unchanged from the previous generation.

The purpose of the requirement is to make the most of this material resource and facilitate the recycling of plastic/rubber based on today's available technologies.

O41 Quantity applied and application method

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

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

b) If alternative b) in later requirement O42 is used, state 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 VOCs in subsequent requirement O42:

- 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%

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

✉ Description from the manufacturer concerning each surface treatment system used.

Background

See under requirement O34

O42 Added amount of volatile organic compounds (VOC)

Within each surface treatment system, the total content of volatile organic compounds in surface treatment products must fulfil one of the following alternatives:

a) Total level of VOC ≤ 5 wt% VOC

b) Total amount of added VOC ≤ 35 g/m².

For both alternatives, it is the VOC content of the chemical products in their uncured form that must meet the requirement. If the products require dilutions, the calculation is to be based on the content in the dilutive product.

The applied amount of VOC according to alternative b) is calculated using the following formula:

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

✉ Safety data sheet in accordance with Annex II of REACH (Regulation 1907/2006/EC) for each chemical product in the surface treatment system.

✉ Declaration from the manufacturer of the chemical products in the surface treatment system, detailing how much VOC is in each product.

✉ Calculation from the manufacturer showing that alternative b) in the requirement is met, if the surface treatment system does not fulfil alternative a), see example of calculation in Appendix 6.

Background

This is a new requirement in this generation of the criteria, with two alternative ways to fulfil the requirement. In alternative a), if the total VOC content in all the applied products within a surface treatment system amounts to less than 5 wt% VOC, it is not necessary to perform calculations in grams per m². In alternative b), the added amount is calculated in g/m². Account is taken here of the efficacy of the application method. This means that if a surface coating (i.e., varnish) is applied using a method with low efficiency that generates more waste, it is permitted to contain only a small level of organic solvent. If the surface coating is applied using a more highly effective method, which generates little or no waste, a higher proportion of organic solvent is permitted. The limit value for the amount added is set at 35 g/m², which is the same value as for the surface treatment of wood and wood-based panels.

The reason for setting VOC requirements is that these compounds contribute to tropospheric (near ground level) ozone, amongst other things. The requirement applies to the surface treatment product when it is applied to outdoor furniture

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or playground equipment. In order to protect production workers and consumers from substances that are harmful to health, requirements have been set to exclude the use of the most harmful surface treatment products. A significant portion of the environmental impact associated with paints and varnishes comes from VOC emissions.

12 Packaging

O43 Packaging

The requirement applies to disposable packaging used for packaging of the individual product.

The following materials are prohibited in packaging:

- chlorinated polymers/plastics such as PVC
- metal*

* *Exceptions are given for staples.*

The following applies to cardboard/paper and plastic:

- A minimum of 75% by weight of cardboard and paper must consist of recycled* material.
- Plastic that is used must be able to be recycled in today's recycling systems.

* *See definition in section 3.2.*

✉ Description showing that no disposable packaging is used

Or

✉ Declaration from the manufacturer of the furniture/fitment that PVC or metal has not been used in the packaging.

✉ For cardboard/paper: declaration from the supplier of the cardboard and paper packaging that a minimum of 75% by weight consists of recycled material.

✉ For plastic: state the type of plastic used in the packaging.

Background

For a ban on chlorinated plastic, see O14 (PVC is also banned in the product).

Nordic Ecolabelling does not want metal to be used for packaging as metal production is associated with a large climate and environmental impact, see more under section 10. Exceptions are for any staples that can be used to staple cardboard or plastic together.

Nordic Ecolabelling generally wants to stimulate the use of recycled materials and materials that can be recycled. Cardboard and paper can be recycled, but not all types of plastic can. Examples of plastic types where there are good material recycling systems today are Polyethylene (PE), Polypropylene (PP) and Polyethylene terephthalate (PET). Degradable/compostable plastic cannot be recycled in current systems, which means that i.e., PLA plastic cannot be used.

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13 Service life / use phase

O44 Guarantee and product design

A: For products that are firmly anchored (i.e., that equipment is required to release and move the product) the following must be met:

Applies to products such as park benches, fences, playground equipment and fitness equipment.

1. Guarantee period* (minimum) for load-bearing structural parts (i.e., those parts whose primary function is to carry the product or to transfer loads and conduct forces to the ground):

- Load-bearing structural parts in solid wood: 10 years.
- Load-bearing structural parts in solid wood, which are impregnated with heavy metals and/or biocides: 15 years.
- Load-bearing structural parts in other materials (for WPC, however, the requirements in point C apply): 20 years.
- Spring in metal, which is firmly anchored in the ground and supporting the product: 5 years.

2. Product design:

The product must be designed so that parts, which are not described in the above requirements for load-bearing structural parts, can be replaced.

Alternatively, if parts cannot be replaced, a guarantee* of at least 20 years must be given. For solid wood, however, a guarantee* of at least 10 years must be given.

For all wood parts that are impregnated with heavy metals and/or biocides, a guarantee of at least 15 years must also be given against rot, regardless of whether the parts can be replaced or not.

B: For products that are not firmly anchored (i.e., are movable without the need for equipment to release the product) the following must be met:

Applies to products such as movable chairs, tables and benches.

The supplier must provide at least a 10-year guarantee * for the main materials, i.e. the types of materials (e.g .pine, plastic, steel, HPL boards) that make up 30 wt% or more of the product.

For all wood parts that are impregnated with heavy metals and/or biocides, however, at least a 15-year guarantee must be given against rot, regardless of what wt% the parts have of the product.

C: For products containing Wood Plastic Composite (WPC), the following requirements must also be met:

The supplier must provide a guarantee of at least 30 years for all parts that consist of wood plastic composite (WPC).

** By guarantee is meant that if a part proves to be faulty or does not work in normal use, the manufacturer must, within a reasonable timeframe, provide a replacement product, or repair or replace faulty or broken parts by delivering repaired products/parts or replacement products/replacement parts to the location. The guarantee can be provided that the part is used and maintained according to the manufacturer's recommendations.*

☒ Description of the guarantee for the products parts covered by the requirement from the supplier of the product.

☒ Documentation showing that how the guarantee period and terms are communicated to the customer (purchase agreement, website, etc.).

☒ Description of how the product parts can be replaced.

Background

This is a new requirement. In order to contribute to a circular economy, the Nordic Swan Ecolabelled products must have a long service life.

Products that are firmly anchored, i.e. equipment required to release and move the product is, for example, playground equipment, fitness equipment, park benches and the like. For these products, the load-bearing structural parts (i.e., the parts whose primary task is to carry the product or transfer loads and conduct forces to the ground) must have a guarantee period, which depends on the material, as these parts are more difficult to replace and therefore important for the products total service life. In order to extend the life of the product, there are also requirements that the other parts must be replaceable or have a minimum guarantee period. Wood has a lower guarantee period than other materials, as they often have a lower durability than i.e., metal. However, as wood is a renewable material and other materials often have higher energy consumption during production, Nordic Ecolabelling wants that wood can be used.

Products that are removable without the need to use equipment to release and move the product, there is a requirement for a minimum 10-year guarantee for the main materials in the product. Main materials are defined as material types (i.e., pine, plastic, steel, HPL sheets) regardless of treatment (i.e., lacquered, painted, galvanized) that make up 30 wt% or more of the product. These products often have a more slender construction than firmly anchored products, which can affect the life expectancy of the product. However, for wood parts that are impregnated with heavy metals and/or biocides, other requirements apply, see below.

For all wooden parts, which are impregnated with heavy metals and/or biocides, a minimum 15-year guarantee must be given against rot, however, for load-bearing construction parts a general guarantee period of at least 15 years. This applies regardless of what weight% the parts make up of the product. With impregnation a good durability is achieved, see more under requirement O7.

Wood Plastic Composite (WPC) is marketed as maintenance-free, graffiti resistant and does not need to be impregnated or painted. The products are durable. Wood fiber and plastic are tightly bound in the material. According to

Nordic manufacturers of WPC, the material after 30 years outdoors as a plank shows no signs of wear or cracking.

O45 Separability

The product must be designed so that the materials that consist of 5 wt% or more of the product can be separated from each other.

Exceptions are given for steel-reinforced ropes, plastic with embedded metal bushings and connecting parts (which connect a functional part to the product's structure i.e., to connect a climbing net, swing, etc.) which consist of several materials.

HPL, WPC and wood-based panels are considered here as a material.

✉ Description demonstrating that the different materials in the product can be separated from each other.

Background

This is a new requirement. In order to contribute to a circular economy, the Nordic Swan Ecolabelled products must be recyclable and/or their materials recoverable as far as possible. It is important to lay the foundation for recycling or material recovery right from the design phase. The different constituent materials used in one and the same product must be separable from each other, in order that the materials can be entered into their own material stream for recycling at end-of-life.

In this context, WPC, HPL and wood-based panel are considered a homogeneous material.

O46 Replacement parts

Replacement parts must be available from the manufacturer, on request, for at least ten years after the product has gone out of production.

Replacement parts that are essential for the product's function must be offered. Spare part does not have to be identical to original part but must be able to replace original part and provide the same function.

The possibility to buy replacement parts must be clearly communicated to customers via the website. In addition, ordering replacement parts must be user-friendly and easy for the customer.

✉ Description from the applicant showing that replacement parts are offered for at least ten years after the product has gone out of production and a list of which replacement parts are offered.

✉ Documentation that shows how the possibility to buy replacement parts is communicated to the customer and that ordering is user-friendly.

Background

This is a new requirement. In order to contribute to a circular economy, the Nordic Swan Ecolabelled products must have a long service life. It should be possible to repair them in the event of a fault and if parts break. Access to replacement parts is important with regard to repairs.

Outdoor furniture, playground and park equipment

O47 Maintenance

The manufacturer/supplier must provide instructions on maintenance of the product during its service life. If specialist products (i.e., oil, varnish or paint) are recommended, these must meet the chemical requirements, see Chapter 11.

For playground equipment, permanently installed fitness equipment and parkour equipment, there must also be instructions for inspection and maintenance of the equipment regarding safety and durability. The guide must at least contain information about:

- how often different parts must be inspected.
- how to inspect different parts.
- how to maintain different parts.
- after which time period parts may need to be replaced.

✉ Copy of the maintenance instructions. If special maintenance products are recommended, the safety data sheet in line with prevailing European legislation (Annex II to REACH, Regulation 1907/2006/EEC) and declaration that the chemical requirements in Chapter 11 are meet, must be enclosed.

✉ Copy of instructions for inspection and maintenance of playground equipment, permanently installed fitness equipment and parkour equipment.

Background

The requirement is new. In order to contribute to a circular economy, the Nordic Swan Ecolabelled products must have a long service life, and regular care and maintenance is a key factor in this. It is important to follow the inspection and maintenance instructions as a preventive measure, particularly for products intended for public use, which are subject to greater use, and thus greater wear, than products used privately. However, the time intervals and the type of maintenance required may vary, depending on the type of product involved and the constituent materials.

O48 Safety

The product must meet the or those safety, durability and stability requirements below that are relevant to the product's area of use.

Outdoor furniture

Outdoor furniture intended/sold for private use must, as a minimum, meet the requirement level for private (domestic) use, as set out in EN 581-1, EN 581-2 and EN 581-3.

If the product is intended/sold for public use, the product must be tested according to the requirement levels that are relevant for public (contract) use, as set out in EN 581-1, EN 581-2 and EN 581-3.

Playground equipment for public playgrounds

Playground equipment for public playgrounds i.e., in parks and schools, must meet the relevant safety levels as set out in the following standards: EN 1176-1 and EN 1176-7 for all products, plus EN 1176 for the specific item of playground equipment.

Outdoor furniture, playground and park equipment

Standard	Area
EN 1176-1	General safety requirements
EN 1176-2	Swings
EN 1176-3	Slides
EN 1176-4	Cableways
EN 1176-5	Carousels
EN 1176-6	Rocking equipment
EN 1176-7	Guidance on installation, inspection, maintenance and operation
EN 1176-11	Spatial network

Playground equipment for private use

Playground equipment for private use must meet the key requirements in the Toy Safety Directive 2009/48/EC, as amended. This can be documented in accordance with the harmonised standard EN 71-1 (Mechanical and physical properties).

If the product meets the requirements in a standard other than the above EN standard, an independent test institute must verify that the standard corresponds to standard EN 71-1 .

Permanently installed outdoor fitness equipment

Outdoor gyms must be permanently installed and meet the standard EN 16630.

Parkour equipment

Must meet the standard EN 16899.

✉ Information on the product's area of use, and whether it is for private or public use.

✉ Documentation of compliance with relevant standards (i.e., test reports and information on the test institute).

Background

It is important for Nordic Swan Ecolabelled outdoor furniture, playground and park equipment to have a high standard of safety, strength, stability and durability.

In this generation of the criteria, the requirement has been updated to the latest standards, with the addition of standards for fitness equipment and parkour equipment for outdoor use.

Outdoor furniture

Outdoor furniture for private use must at least meet the requirement level for private use set out in EN 581-1, EN 581-2 and EN 581-3.

If the product is intended/sold for public use, the product must be tested according to the requirement levels that are relevant for public (contract) use.

Outdoor furniture, playground and park equipment

The definition of outdoor furniture for contract use is: “outdoor furniture intended for non-private use in places with public access”.

Playground equipment for public playgrounds

Safety and durability can be divided into several factors:

- Construction of the playground equipment.
- Installation in the playground.
- Maintenance, inspection.
- Any necessary supervision during use (i.e., small children must not be allowed to climb too high).

The standard drawn up for playground equipment, EN 1176, contains safety requirements, specific requirements for individual playground equipment and guidelines on assembly, inspection, maintenance and operation.

Playground equipment for public playgrounds i.e., in parks and schools, must meet the relevant safety levels as set out in the following standards:

Standard	Area
EN 1176-1	General safety requirements
EN 1176-2	Swings
EN 1176-3	Slides
EN 1176-4	Cableways
EN 1176-5	Carousels
EN 1176-6	Rocking equipment
EN 1176-7	Guidance on installation, inspection, maintenance and operation
EN 1176-11	Spatial network

In the previous generation of the criteria, natural playgrounds were subject not only to EN 1176 but also the Danish standard DS 1500 “Naturlegeredskaber – Legepladselementer – Sikkerhedskrav og prøvningsmetoder”. DS 1500 has now been withdrawn and replaced with EN 1176-1.

This generation of the criteria also adds EN 1176-11 “Additional specific safety requirements and test methods for spatial network”.

This generation of the criteria specifies that EN 1176-1 and EN 1176-7 must be complied with, in addition to any EN 1176 standard for the specific type of playground equipment.

Playground equipment for private use

Playground equipment for private use must meet the key requirements in the Toy Safety Directive 2009/48/EC, as amended. This can be achieved by documenting compliance with the harmonised standard EN 71-1 (Mechanical and physical properties).

Outdoor furniture, playground and park equipment

If the product meets the requirements in a standard other than the above EN standards, an independent test institute must explain how the standard relates to the standard above.

Permanently installed outdoor fitness equipment

Permanently installed outdoor fitness equipment has been added to this generation of the criteria. The fitness equipment must be permanently installed and must comply with standard EN 16630 “Permanently installed outdoor fitness equipment – Safety requirements and test methods”.

Parkour equipment

Parkour equipment has been added to this generation of the criteria. Parkour equipment must meet standard EN 16899 “Parkour equipment – Safety requirements and test methods”.

14 Licence maintenance

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

O49 Customer complaints

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

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

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

Background

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

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

O50 Traceability

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

Outdoor furniture, playground and park equipment

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

✉ Please upload your routine or a description.

Background

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

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

15 Areas without requirements

Below is a short explanation of why Nordic Ecolabelling has chosen not to include the following materials/products/areas in this generation of the criteria.

- Concrete: Nordic Ecolabelling considers the greatest potential for environmental and climate improvements to lie in setting requirements concerning the materials used to manufacture the product. The use of energy and climate impact associated with the production of outdoor furniture, playground or park equipment is very small in comparison with the figures for concrete as a material. Unfortunately, it is currently difficult, using steerable and specific requirements, to differentiate concrete with a lower climate footprint from concrete with a higher climate footprint.
- Safety surfacing and surfacing for playgrounds and sports facilities: The reason for not including outdoor surfacing in the criteria is that Nordic Ecolabelling has found it difficult to separate out an environmentally friendly surfacing product.
- Renewable energy in production plants: Energy used during production of the product is generally low in comparison to the energy consumed in the manufacture of the constituent materials. Energy requirements therefore primarily relate to the constituent materials, in terms of which materials are permitted and requirements concerning recycled material.
- Use of biocides in felling: In this case, the supply chain can be long, which makes it difficult to trace any use of biocides. Traceability is vital in being able to set relevant requirements and obtain reliable verification.