Nordic Ecolabelling for Outdoor furniture, playground and park equipment



Version 4.0 • date – date



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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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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.

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, from raw material extraction to processing as waste. Materials include 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.

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

Proportion of recycled material	R=high P=high S= medium	Resource use and resource efficiency are a vital focus for requirements, in a drive to achieve a circular economy.
Durability	R=high P=high S= medium	In creating a circular economy, long service life is an important factor, along with resource efficiency, 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 (e.g. plastic and metal), for wood raw material to come from sustainable forestry and for the materials used to have a low climate impact (e.g. 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.

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

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)

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, see Chapter 14.
- 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 product parts used to a limited extent or that have a limited impact on health and environment, such as: nails, screws, nuts, bolts, washers and similar fasteners. Small plastic products such as plastic wedges, spacers and similar.	
COD	Chemical Oxygen Demand	
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	
Constituent substances and impurities	Constituent substances and impurities are defined as below unless stated otherwise in the requirement in question. Constituent substances: all substances in the chemical product, including additives (e.g. preservatives and stabilisers) from the ingredients. Substances known to be degradation products of the constituent substances (e.g. formaldehyde, acrylamine, in situ-generated preservatives) are also considered to be constituent substances. Impurities: residues from production, including raw materials production, that are found in a raw material or the finished chemical product equivalent to concentrations ≤ 100.0 ppm (≤ 0.01000% by weight, ≤ 100.0 mg/kg) in the chemical product. Examples of impurities include residues of the following: reagents including monomers, catalysts, by-products, "scavengers" (i.e. chemicals used to eliminate/minimise undesired substances) cleaning agents for production equipment, "carry-over" from other or previous production lines.	
Nanomaterials	The definition of nanomaterial follows the European Commission's definition of nanomaterial of 18 October 2011: "Nanomaterials: A natural, incidental or purposely manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for at least 50% of the particles in the number size distribution, one or more external dimensions are in the size range of 1–100 nm."	
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.	
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).	
Recycled metal raw material	Recycled metal raw material is defined here as both pre-consumer and post- consumer, see definition in ISO 14021	

4 Product description

O1 Description of the product

The applicant must provide the following information about the product that is to be Nordic Swan Ecolabelled:

- Trade name
- A description including an image/drawing of the product(s), the constituent materials and the percentage by weight of each constituent material.
- A description of production methods/treatment techniques.
- Suppliers of each material.

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.

Small parts such as screws are excluded from the calculation, as they fall within the triviality limit (section 3.2).

- Duly completed Appendix 1 or equivalent documentation.
- Product sheet, construction product declaration or technical description, if any such document has been drawn up for 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/fibre raw material, veneers and bamboo

This chapter covers requirements concerning solid wood, veneers, wood-based panels 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

The requirement applies to all product parts that contain solid wood, veneers and bamboo.

Woods on Nordic Ecolabelling's list of prohibited tree species (<u>http://www.nordic-ecolabel.org/wood/</u>) must not be used in outdoor furniture, playground and park equipment.

Declaration from the licence applicant/manufacturer/supplier that the requirement is fulfilled. Submit a duly completed Appendix 2.

Background

Updated requirement in line with Nordic Ecolabelling's new Forestry Requirements, version 3.

Under Nordic Ecolabelling's requirements, a number of tree species are not permitted for use in Nordic Swan Ecolabelled outdoor furniture, playground and park equipment.

The list is based on tree species that are relevant for Nordic Ecolabelling's criteria, i.e. woods that could potentially appear in Nordic Swan Ecolabelled products. The tree species on the list are stated with their scientific name and their most common trade names. The list of scientific/trade names is not exhaustive, as there may be more such names for the listed tree species that are included on the list. Based on the precautionary principle, closely related/similar tree species are featured on the list.

The criteria for placing tree species on the list are that the wood:

- Features on the IUCN Red List of Threatened Species¹, categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU) and relevant wood species that are Near Threatened (NT)
- Features on the CITES tree species list², Appendices I, II and III.
- Derives from unsustainable forestry, for example logging in HCVF, IFL areas in countries/regions with high levels of corruption.

The IUCN Red List of Threatened Species³ is the world's most comprehensive inventory of the global conservation status of biological species, including trees. It uses a clear set of criteria to evaluate the extinction risk of thousands of species and subspecies.

A large number of the tree species that are listed on the IUCN Red List and categorised as CR, EN and VU can also be found on CITES⁴. CITES is the Convention on International Trade in Endangered Species of Wild Fauna and Flora. CITES covers around 5,600 animal species and around 28,000 plant species, a number of which are tree species used for timber (mainly tropical woods). Depending on how far they are endangered, the species are listed in Appendices I, II or III.

There may also be other tree species, not currently covered by the IUCN's national red lists or CITES, that Nordic Ecolabelling believes may be worth prohibiting in Nordic Swan Ecolabelled products, due to a potential risk of unsustainable forest management, despite certification being in place. This may, for example, be the case for Siberian larch. Siberian larch is a much sought after wood for construction purposes due to its high quality. The tree species is widespread in the boreal climate region.

In recent years, there has been a growing focus on the legality and sustainability of European wood imports, in particular from tropical countries and countries

¹ http://www.iucnredlist.org/

² https://www.cites.org/sites/default/files/eng/com/pc/19/e19-11-05.pdf

³ <u>http://www.iucnredlist.org/</u>

⁴ https://www.cites.org/sites/default/files/eng/com/pc/19/e19-11-05.pdf, accessed 20 October 2015

with high levels of corruption. Environmental organisations have shed light on problems associated with the trade in and use of endangered tree species and trees from vulnerable areas of forest. The concern among organisations and consumers has been that using these woods contributes to the extinction of tree species and devastation of forest and other unique forest habitats. In part as a consequence of this, the EU adopted its Timber Regulation (995/2010/EG)⁵, which prohibits the marketing and sale of illegally felled trees in the EU. The aim of the EU Timber Regulation (EUTR) is to combat illegal logging and prevent the trade in illegally felled trees.

Nordic Ecolabelling positively supports EUTR's focus on combating illegal logging, but still sees some challenges when it comes to protecting endangered tree species and trees from vulnerable areas of forest, referred to as High Conservation Value Forestry (HCVF), such as biodiversity hotspots (e.g. rainforests) or Intact Forest Landscape (IFL). Rainforest conservation is also a central theme of the UN's climate negotiations aimed at regulating the Earth's climate.

The list of protected tree species can be viewed at www.nordicecolabeliing.org/wood/. The applicant must provide a declaration of compliance with the requirement that protected tree species are not used in Nordic Swan Ecolabelled products. Appendix 2 must be used. Nordic Ecolabelling may demand more documentation for a specific tree species.

O3 Wood from certified forestry

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

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

2. Suppliers of wood raw materials must be Chain of Custody certified by the FSC scheme or the PEFC scheme.

Suppliers who only supply product parts made of recycled material do not need to have Chain of Custody certification. For a definition of recycled material, see "Definitions".

3. At least 70% of the wood raw material must be certified by FSC or PEFC as originating from sustainable forestry or be classified as recycled material^{*}.

The remainder of the raw material must be covered by FSC/PEFC's control schemes or be classified as recycled material*.

The requirement must be documented as the amount of wood purchased on an annual basis. If the manufacturer of the product holds Chain of Custody certification in line with FSC/PEFC, certified credits (FSC and PEFC credits) must be deducted from the manufacturer's Chain of Custody account for the Nordic Swan Ecolabelled product.

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

- Name (wood type/species name) of the wood raw materials used.
- Valid Chain of Custody certificate under the FSC or PEFC schemes from suppliers. Suppliers who only supply recycled material do not need to have Chain of Custody certification.

⁵ http://ec.europa.eu/environment/forests/timber_regulation.htm

- Recycled raw material: Declaration from the supplier that the wood raw material has been recycled in line with the prescribed definition.
- If the supplier holds Chain of Custody certification, the manufacturer must demonstrate that certified wood raw material has been purchased. This is to be specified on an invoice with information on the proportion of certified wood raw material. A manufacturer who holds FSC/PEFC Chain of Custody certification must document compliance with the requirement, by showing the applicant/manufacturer's Chain of Custody account.

Background

The requirement has been updated in line with Nordic Ecolabelling's new Forestry Requirements. This generation requires that suppliers of wood raw materials must be Chain of Custody certified by FSC or PEFC. It remains the case that at least 70% of the wood raw material must be certified by FSC or PEFC as originating from sustainable forestry or be classified as recycled material.

Nordic Ecolabelling requires information to be provided about which tree species are used in Nordic Swan Ecolabelled products. The requirement makes it possible to check the Chain of Custody certificates in the supply chain (whether the stated tree species are covered by the Chain of Custody certificates in question) and provide information for future forestry-related requirements. If recycled material is used in the Nordic Swan Ecolabelled outdoor furniture, playground and park equipment, particularly in the form of fibre raw materials, it is not always possible to specify the species name of all the wood raw materials used. In this case, the requirement for documentation of recycled material must be complied with.

FSC, PEFC and EUTR. Together, the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC) schemes cover 98% of the world's total forest area that is certified as sustainably managed⁶, and jointly they are completely dominant in the global market for certified sustainable wood. The schemes cover both Forest Management certification of forests and subsequent Chain of Custody (CoC) certification, which documents the traceability of wood and products from certified forests. These schemes are generally considered by forest owners, the forest industry, manufacturers and dealers in wood products, not to mention public agencies, to be credible systems for ensuring sustainable forestry.

This all applies to imported wood as well as wood harvested in the EU. Nordic Ecolabelling recognises both FSC and PEFC as schemes that provide a sufficient guarantee of legal and sustainable forestry.

Chain of Custody certification. Nordic Ecolabelling requires that the applicant's suppliers must have Chain of Custody certification under the FSC/PEFC schemes. Requiring Chain of Custody certification contributes to traceability in the supply chain within FSC and PEFC's guidelines and control systems. Through CoC certification, the company shows how certified wood is kept separate from other wood in production, administration and storage, and this is checked annually by independent certification firms. A range of CoC certifications are available, which vary according to the minimum proportion of

⁶ UN: Forest Products – Annual market review 2011-2012, ch. 10.

certified wood and the method by which this is confirmed. Both the FSC and PEFC schemes permit several methods for verifying traceability. Nordic Ecolabelling accepts all the FSC and PEFC methods of verification. The requirement is documented by the applicant's suppliers submitting valid FSC/PEFC Chain of Custody certificates covering all the wood raw materials used in the Nordic Swan Ecolabelled outdoor furniture, playground and park equipment.

As mentioned above, Nordic Ecolabelling equates recycled material with virgin material from sustainable forestry. As such, recycled material that is not covered by any FSC/PEFC Chain of Custody certification may be included in Nordic Swan Ecolabelled products. Suppliers of recycled material will, in this case, be exempt from the requirement for Chain of Custody certification in line with the FSC/PEFC schemes.

It should be noted that the EU Timber Regulation, in contrast to Nordic Ecolabelling, does not define by-products from primary wood industries as residual products. Sawdust, shavings, chips, bark, etc. and residues from forestry such as bark, branches, roots, etc. are covered by the EU Timber Regulation and so are subject to requirements concerning traceability and legality.

Documentation is required to establish that the wood in question has the status of recycled material according to the definitions above.

Certified wood raw material. The applicant must document that at least 70% of the wood raw material (virgin material and/or recycled material) included in the Nordic Swan Ecolabelled product or product line is certified as coming from sustainable forestry according to FSC or PEFC, or is certified as recycled material. The remaining portion of the wood raw material must be FSC Controlled Wood or PEFC Controlled Sourced, or recycled material. The requirement must be documented as volume of wood purchased on an annual basis. The requirement that at least 70% of the wood raw material (virgin material and/or recycled material) must be certified as coming from sustainable forestry according to FSC or PEFC corresponds to FSC and PEFC's requirement limits for the use of their respective logos on products, e.g. "FSC mix" and "PEFC certified". In all, FSC and PEFC have five official logos. Further information on the use of logos can be found on the websites of FSC⁷ and PEFC⁸. This should all make it easier for manufacturers of Nordic Swan Ecolabelled products to document the requirement, since they can require FSC/ PEFC labelled products.

Recycled material is explicitly mentioned in the requirement, since both the FSC and PEFC schemes cover certified recycled material. As mentioned above, Nordic Ecolabelling equates recycled material with virgin material from sustainable forestry. As such, recycled material that is not covered by any FSC/PEFC Chain of Custody certification may be included in Nordic Swan Ecolabelled products. The amount of recycled material not covered by FSC/PEFC's Chain of Custody certification must meet the requirement concerning the proportion of wood raw material that is certified as coming from sustainable forestry according to FSC or PEFC.

⁷ http://welcome.fsc.org/understanding-the-fsc-labels.27.htm

⁸ http://www.pefc.co.uk/chain-of-custody-logo-use/pefc-label

Certification and accreditation. Certification (audits and approval of conformity with the standard, and of traceability and labelling) must be performed by an independent, competent and accredited third party and follow the relevant international guidelines for certification ("EN ISO/IEC 17065:2012: Conformity assessment — Requirements for bodies certifying products, processes and services.", "EN ISO/IEC 17021:2011 Conformity assessment — Requirements for bodies providing audit and certification of management systems" or equivalent).

Accreditation (i.e. audits and approval of a certification firm's work) is to be performed by a national or international body whose systems and procedures comply with relevant international guidelines for accreditation bodies ("EN ISO/IEC 17011:2004 Conformity assessment — Requirements for accreditation bodies accrediting conformity assessment bodies" or equivalent).

O4 Formaldehyde emissions from wood-based panels

The requirement relates to finished products comprising $\geq 10 \text{ wt\%}$ wood-based panels that contain formaldehyde-based additives or where the surface treatment contains formaldehyde.

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

One of the requirements below must be fulfilled for the panels being used:

1. The content of free formaldehyde, determined in line with ISO 12460-5 or an equivalent method approved by Nordic Ecolabelling, must not exceed an average of:

- 5 mg formaldehyde/100 g dry substance for MDF panels*
- 4 mg/100 g dry material for other types of panel
- The requirement applies to panels with a moisture content of H = 6.5%.

If the panels have a different moisture content within the range of 3-10%, the measured perforator value must be multiplied by the factor F, which is calculated using the following formula:

- For particleboard and OSB: F = -0.133 H + 1.86
- For MDF*: F = -0.121 H + 1.78

* HDF is treated as MDF and must comply with the same limit value.

2. **Formaldehyde emissions** determined in line with EN 717-1, must not exceed an average of:

- $0.124 \text{ mg/m}^3 \text{ air for MDF}^*$
- 0.07 mg/m³ air for other panels

As an alternative to test method EN 717-1, the methods and limit values in Table 1 may be used.

* HDF is treated as MDF and must comply with the same limit value.

	ISO 16000-9 (23°C/50% RH)	ASTM E1333 (25°C/50% RH)	JIS A 1460
MDF	0.05 mg/m²/h	0.09 ppm	0.90 mg/l
Other panels	0.03 mg/m ² /h	0.08 ppm	0.53 mg/l

Table 1Nordic Ecolabelling's limit values for formaldehyde emissions when using other
test methods.

3. Certification of wood-based panels. The following certificates may be used to document the requirement:

- E1 certificate for MDF panels.
- M1 certificate for MDF panels.
- CARB ATCM Phase II certificate for all types of wood-based panels.
- Certificate according to Indoor Air Comfort or Indoor Air Comfort Gold for all types of wood-based panels.
- Alternatives 1 and 2: Analysis report, including measurement method, measurement results and measurement frequency. Name of the accredited test institute/laboratory that performed the analyses.
- Alternative 3: Valid certificate for **wood-based panels**.
- Declaration from the manufacturer/supplier of the **wood-based panels** stating compliance with the requirement, Appendix 3.

Background

The requirement concerning formaldehyde emissions has been revised. This generation of the criteria includes a third alternative, allowing certain certifications for wood-based panels to be used as documentation, and the option of alternative test methods for formaldehyde emissions. The requirement levels for content and emissions of formaldehyde (alternatives 1 and 2 in the requirement) are identical with the previous generation of the criteria.

There are differentiated levels for formaldehyde content in MDF and in other types of panel. A slightly higher level is permitted in MDF, because this type of panel generally has a higher documented content of formaldehyde.

The formaldehyde content of wood-based panels remains unchanged from the previous version, but with the addition of factor F for OSB.

Formaldehyde is hazardous to health and can lead to health problems from the production and use of the products. Formaldehyde is a toxic and sensitising substance that has a carcinogenic effect and must therefore be avoided as far as possible.

Formaldehyde emissions from building panels are communicated within the EU using the classification system defined in the harmonised standard for wood-based panels, EN 13986, where the current lowest emission class is E1, with a level of 0.124 mg/m^3 and 0.09 ppm.

On this basis, together with the experience that Nordic Ecolabelling has gained around the level of formaldehyde emissions from wood-based panels, the view is that the requirements below are strict, but realistic for the product types covered by the requirement.

The level for MDF panels has been kept at 0.124 mg/m^3 , equivalent to level E1 when using EN 717-1. For other panel types, the level remains at 0.07 mg/m^3 .

Comparison with other testing methods and certifications

Nordic Ecolabelling wishes to recognise as many certification schemes as possible, where there is a professionally sound correlation to Nordic Ecolabelling's requirements (defined in relation to EN 717-1).

The table in the criteria document also describes the correlation to a number of certifications/standards. These include ASTM E1333 and JIS A 1460.

- The conversion to ASTM E1333 has been performed with the help of the SP Technical Research Institute of Sweden⁹
- The conversion to JIS A 1460 is based on the correlation 6.8561*[EN 717– 1] + 0.0463 = JIS A1460 (mg/L)
- After dialogue with the industry and the M1 organisation, it has been possible to find a correlation to Nordic Ecolabelling's requirements¹⁰. The concentration in the model room, C, which is required in EN 717-1, can be calculated via the area-specific emission rate (E) and the area-specific air flow (q): c = E/q. As a general rule, the factor q should appear from the test report and can thus be used for conversion, if necessary. According to the M1 organisation, building panels will typically be tested for walls, which will also be the worst-case scenario in relation to the size of q. The q factor will typically be 0.5 m3/m2/h. With M1's threshold value of 0.05 mg/m2/h, this will be equivalent to 0.10 mg/m3 (based on the emitting wall surface) in the reference space according to TS 16516 and test method ISO 16000-9.

If a wood-based panel has a product certificate which shows that a specific limit value for formaldehyde is fulfilled, this can be used for verification instead of an analysis report. The following certificates (which may be either a little stricter or less strict) correspond to Nordic Ecolabelling's requirement levels and all are accepted as proof of compliance with the requirement:

- E1 certificate for MDF panels
- M1 certificate for MDF panels
- CARB PHASE II certificate for all types of wood-based panels
- Certificate according to Indoor Air Comfort or Indoor Air Comfort Gold for all types of wood-based panels.

⁹ Corrected with the following factors: 1.24 = temperature correction from 23° C to 25° C, 1.1 = moisture correction from 45% to 50% RH, 1 = q = n/L (air change/loading in the EN717-1 chamber), 1.2 = edge sealing correction from EN717-1 to E1333, 1.173 = q for PB and PLW according to ASTM E1333, 1.905 = q for MDF according to ASTM E1333.

¹⁰ Dialogue with Laura Sariola from the M1 organisation and dialogue with accredited laboratories.

For other types of certificate and types of wood-based panels, documentation of fulfilment of the Nordic Ecolabelling requirements must be submitted, normally as an analysis report from emission testing.

O5 Energy requirement

The requirement covers products that contain $\geq 10 \text{ wt\%}$ 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 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 and wood-plastic composite materials

This chapter relates to solid wood and wood-plastic composite materials.

Wood preservatives must meet the chemical requirements in Chapter 11.

O6 Durability

The requirement only applies to solid wood and wood-plastic composite materials.

- The timber must be documented as having good durability, i.e. resistance to moisture and fungal attack. To provide sufficient durability, one of the methods/materials in Table 3 must be used.
- Impregnation with heavy metals and/or biocides is accepted only for products that are firmly anchored in the ground or other substrates and fall within user class UC 4.
- Nordic Swan Ecolabelled durable/resistant wood for outdoor use automatically meets this requirement.

Table 2Various 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	UC 3 and UC 4	Durability class DC 1 (very durable) or DC 2 (durable) as per EN 350
Preservative-treated, thermally and chemically	UC 3	NTR ABmod
in accordance with NTR	UC 4	NTR Amod
Preservative-treated, thermally and chemically modified wood <i>not</i> 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 timber	UC 4	NTR A

- \boxtimes State user class as per EN 335.
- \boxtimes 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.

- Declaration/document/drawing showing that the product that includes impregnated wood is firmly anchored in the ground or other substrate.
- 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.
- When using Nordic Swan Ecolabelled durable/resistant wood for outdoor use, state the producer, licence number and product name.

Background

The durability requirement has been revised. For example, the requirement does not differentiate between products that are permanently outdoors and those that are not permanently outdoors. The aim of the requirement is to ensure that Nordic Swan Ecolabelled products in solid wood and wood composite 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, as long as the wood preservative meets the chemical requirements. The reasons for this are primarily that good durability is achieved, the wood is maintenance free and impregnation poses little risk that the wood preservative will leach into the environment, either during production or use. To avoid unnecessary use of chemical wood preservative, it is permitted only in products that are firmly anchored in the ground or other substrate and fall within the user class UC 4.

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

Structural wood protection should always be taken into account, no matter which of the above alternatives is chosen, but it is not something for which Nordic Ecolabelling sets requirements. 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.

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.

Impregnation with wood preservative

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 user classes defined in EN 335. This generation of the criteria accepts wood protection classes NTR A and NTR AB, since these are tailored to user classes intended for outdoor use.

Modified wood

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 user 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.

7 High Pressure Laminate (HPL) panels

This chapter sets requirements on two levels, depending on whether the product contains $\geq 10 \text{ wt\% or} \geq 30 \text{ wt\% HPL}$ panels.

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 ≥ 10 wt% of the finished product

Where the product contains $\geq 10 \text{ wt\%}$ HPL, the chemical requirements in Chapter 11 must also be fulfilled for all the chemical products used in the manufacture of the HPL.

O7 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.

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 current and relevant. A wide variation in energy consumption has been detected in panel production. The industry EPD¹¹ 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.

O8 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/m³
- Limit value for phenol: 2 ppm or 8 mg/m³

and

- Limit value expressed in relation to a short-term value that does not exceed 15 min.:
- Limit value for formaldehyde: 1.0 ppm or 1.2 mg/m³
- Limit value for phenol: 4 ppm or 16 mg/m³
- Results from air measurements for phenol and formaldehyde over the past 12 months, including sampling schedule, test method and measurement frequency.

or

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

¹¹ ICDLI – International Committee of the Decorative Laminates Industry, 2010.

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 time¹².

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 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

¹² Arbejdstilsynets bekendtgørelse nr. 655 - 31. maj 2018 "Bilag 2 - Grænseværdier for luftforureninger m.v." <u>https://amid.dk/regler/bekendtgoerelser/graensevaerdier-stoffer-materialer-655/bilag-2/</u>

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

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

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

O9 Wood in paper

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

- The names of the woods used to manufacture the paper must be stated. Woods on Nordic Ecolabelling's list of prohibited tree species (http://www.nordic-ecolabel.org/wood/) must not be used. The requirement only applies to virgin fibre and thus not to recycled fibre.*
- 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 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:

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

Y = proportion of fibre raw material from certified forestry x = proportion of recycled fibre or by-products such as shavings, chips and sawdust

- * Recycled material is defined as pre-consumer and post-consumer 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.
- 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): Calculation by the paper manufacturer of the proportion of fibre raw material that needs to be FSC/PEFC certified and documentation of how this is being fulfilled.

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.

Under Nordic Ecolabelling's requirements, a number of tree species are not permitted for use in Nordic Swan Ecolabelled outdoor furniture, playground and park equipment. The list is based on tree species that are relevant for Nordic Ecolabelling's criteria, i.e. woods that could potentially appear in Nordic Swan Ecolabelled products. The tree species on the list are stated with their scientific name and their most common trade names. The list of scientific/trade names is not exhaustive, as there may be more such names for the listed tree species that are included on the list. Based on the precautionary principle, closely related/similar tree species are featured on the list.

The criteria for placing tree species on the list are that the wood:

- Features on the IUCN¹³ Red List of Threatened Species, categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU) and relevant wood species that are Near Threatened (NT)
- Features on the CITES tree species list¹⁴, Appendices I, II and III.
- Derives from unsustainable forestry, for example logging in HCVF, IFL areas in countries/regions with high levels of corruption.

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.

In the case of recycled fibre and by-products which do not come directly from sawmills, traceability back to the forest is not always available and thus there is reduced opportunity for documentation or certification. The environmental benefit from using recycled fibre and waste wood lies mainly in sparing the virgin wood raw material. Using recycled fibre for paper saves further resources, as it is more demanding to produce paper from virgin fibre than from recycled fibre.

O10 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 4. 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.

¹³ http://www.iucnredlist.org

¹⁴ https://www.cites.org/sites/default/files/eng/com/pc/19/e19-11-05.pdf

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

Table 3 Requirement levels for COD emissions for pulp and paper

- 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.
- 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.

O11 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 TPM/MGW produced on-site, the limit value for $P_{\rm fuel\ (total)}$ 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.

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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.

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 constituent substances used as additives in plastic and rubber or for surface treatment, see Chapter 11.

The requirements in this chapter (O12–O17) do not apply to plastic in woodplastic composite (WPC) materials. Instead, the requirements in Chapter 9 must be fulfilled.

O12 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 ≥ 100 g must be visibly labelled in accordance with ISO 11469 and ISO 1043.

Declaration from the plastic manufacturer/supplier. Appendix 7 can be used.

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.

O13 Polyvinyl chloride (PVC) and polyvinylidene chloride (PVDC)

The following must not contain PVC or PVDC:

- 1. Plastic parts in the product
- 2. Packaging for the product
- Declaration from the plastic manufacturer/supplier, Appendix 7
- Declaration from the packaging manufacturer/supplier, Appendix 8

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.

O14 Nitrosamines in rubber

The following limit values must be observed:Total level of nitrosamines: $\leq 0.01 \text{ mg/kg rubber}$.Total level of nitrosamine-forming substances: $\leq 0.1 \text{ mg/kg rubber}$.

Declaration from the rubber manufacturer, Appendix 7

Background

The requirement remains unchanged from the previous generation.

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.

O15 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, e.g. the seat of a swing.

The limit values for selected polycyclic aromatic hydrocarbons (PAH) as listed in Table 5 must be observed. The impurity limit of 100 ppm thus does not apply for this requirement.

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

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

 Table 4
 Limit values for selected PAHs in materials

Declaration from the plastic producer that the requirement is fulfilled, Appendix 7

 \boxtimes Report on the results for each of the different polymer materials, showing compliance.

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 constituent 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 20 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 20 wt% of the product, the following requirement must be fulfilled.

O16 Recycled/recovered plastic

Where products comprise more than 20% plastic by weight (wt%), at least 50% of this plastic must be recycled plastic*. Both pre- and post-consumer/industrial plastic may be counted towards the proportion of recycled plastic.

The recycled/recovered plastic must not be PVC or PVDC.

* See definition, section 3.2

- Duly completed declaration from the plastic manufacturer/supplier concerning recycled plastic, see Appendix 7.
- Calculation, from the applicant, of the proportion of recycled plastic in the finished product.

Background

The requirement level remains unchanged, requiring at least 50% recycled plastic by weight when the product comprises more than 20% plastic by weight.

However, the definition of recycled plastic has been amended. The change in the definition of recycled plastic now means that plastic waste from a company's own (internal) production (pre-consumer/industrial waste) can be counted as recycled plastic, if:

- the plastic waste from the production is not recycled in the same production process in which the material was created or if
- the material requires processing (e.g. in the form of sorting, remelting and granulating) before it can be reused in the same production process.

O17 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.
 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.

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 chlorinated¹⁵, 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

¹⁵ Report: Problematiske kemiske stoffer i plast, Danish Environmental Protection Agency 2014 <u>https://mst.dk/service/publikationer/publikationsarkiv/2014/dec/problematiske-kemiske-stoffer-i-plast/</u>

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.

9 Wood-plastic composite material (WPC)

O18 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/pre-industrial/pre-commercial plastic can be no more than 25%.
- d) The wood fibre must not originate from wood impregnated with biocides or heavy metals.
- WPC manufacturer shall submit the completed Appendix 9.
- \square The recycled plastic supplier shall submit the completed Appendix 10.

Background

Introduction

Wood-plastic composite (WPC) is a new material that has been added to these criteria. Nordic Ecolabelling has chosen to include WPC in the draft for consultation, despite there being varying opinions on whether WPC has a place in a circular economy. WPC provides an opportunity to use recycled postconsumer plastic collected from households, a product for which it is currently difficult to find a market. WPC can also be considered a barrier to recycling, since the plastic and wood are blended and cannot be separated out in the waste phase. Read more in the section "Differing views on the place of wood-plastic composites in a circular economy" below.

Wood-plastic composite (WPC)

The material 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. Generally speaking, the plastic raw material may be recycled or newly produced. The plastic component is crucial in determining the environmental impact of the composite material. Having recycled plastic raw material reduces the energy use and impact on the climate. However, the question of whether the recycled raw material is post-consumer or only pre-consumer also plays an important role. The wood fibre component accounts for much less of the environmental impact. The fibre comes from wood chips that are a by-product of the planing processes that produce planks in sawmills. Alternative uses for wood chips include pellets, briquettes, particleboard or incineration in thermal energy plants.

There are differences in the market for recycled plastic raw material, depending on whether the source is collected consumer packaging or plastic from commercial sources (retail, industry and agriculture). The latter category is called post-commercial or post-industrial. To make sure that it is relevant to Nordic Swan Ecolabel a composite material that cannot be separated into its original materials at end-of-life, it is proposed that the majority (60%) of the plastic used must be post-consumer plastic collected from households, i.e. not post-commercial, which is usually of a higher quality and thus easier to offload for recycling.

Differing views on the place of wood-plastic composites in a circular economy

Nordic Ecolabelling has chosen to include WPC in the draft for consultation and proposes the above requirements. The issue is very important for Nordic Ecolabelling and we are therefore reporting the arguments for and against allowing Nordic Swan Ecolabelled outdoor furniture, playground and park equipment to be made of WPC. Your responses to the consultation will play a key role in the final decision on the matter.

Advantages of WPC in Nordic Swan Ecolabelled outdoor furniture, playground and park equipment:

- It can be argued that composite material has a place in a circular economy, since WPC can theoretically be recycled into new composite material. It is not necessary for wood to become wood and plastic to become plastic. In today's society, the vast majority of materials and raw material flows (as well as many waste streams) are linear. Plastic is currently not fully recycled. There is thus potential in identifying product areas where the collected plastic of a slightly lower quality can be reused, instead of it being sent for incineration and energy recovery. The decision will be reviewed and amended if the take-back and material recovery of WPC is not introduced in a future where material streams are circular, or if it turns out that competition develops for recycled plastic as a raw material.
- It is more important to focus on linear flows in products that are turned over quickly than in products such as noise barriers in WPC that have a very long life. WPC has a long service life, which is key to a circular economy. In addition, WPC is maintenance-free and, when it meets Nordic Ecolabelling's proposed requirements, also free from substances that are harmful to health and the environment.

- 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. Nordic Ecolabelling sets strict requirements that only the best can be labelled.
- 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. There is potential for more material recovery from packaging waste and to reduce the amount of waste that is incinerated for energy recovery.
- Wood fibre and thermoplastic are strongly bonded together in the material. According to Nordic manufacturers of WPC, after 30 years outdoors in plank form, the material shows no sign of wear or crackling. This means that WPC is not any greater a source of microplastic dispersal than any solid plastic product used outdoors.

Disadvantages of WPC in Nordic Swan Ecolabelled outdoor furniture, playground and park equipment:

- WPC is by definition a barrier to recycling, since it is a composite material that cannot be separated at the end of its service life. As such, WPC is not in harmony with the strategy that the Nordic Swan Ecolabel will contribute to a circular economy. Although WPC can be sent for material recovery, it can only be turned into new WPC in a manufacturer-specific "closed loop" by the same manufacturer.
- In the revision of the criteria for outdoor furniture, Nordic Ecolabelling aims to tighten the requirements in favour of a circular economy, which includes trying to tighten the requirements concerning the proportion of recycled materials where non-recyclable raw materials such as fossil plastic and metals are concerned. It can therefore be seen as a step in the wrong direction to include a new material that may comprise a high proportion of fossil recycled plastic that cannot be subject to material recovery at end-of-life. As a general rule, recycled plastic should primarily be used for products that can have their materials recovered in order to promote circular flows.
- These criteria for outdoor furniture include requirements concerning the proportion of recycled plastic. In addition, there is a requirement aimed at ensuring that material recovery is possible for plastic after use, for example by allowing surface treatment only if it does not damage the prospect of material recovery for the plastic.

O19 Recycled plastic

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

- At least two rounds of sorting with NIR
- 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, separation, shredding and cleaning 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 and no harmful additives, and are therefore well-suited to recycling. They are also covered by the EU Directive on Packaging and Packaging Waste¹⁶ which restricts the content of heavy metals. In addition, some of it is food packaging, which is subject to its own specific restrictions.¹⁷

Plastic collected for mechanical recycling must be separated from other materials such as metal and cardboard. There is often 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 plastics with a higher melting point (e.g. 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.

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. Hence a ban on any presence of PVC and/or PVDC.

PET as a functioning circular material flow. It is important to preserve this flow and not damage it through competition.

¹⁶ Directive 94/62/EC of the European Parliament and of the Council of 20 December 1994 on Packaging and Packaging Waste

¹⁷ 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.

O20 Additives

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

Submit completed Appendix 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.

O21 Other requirements for WPC

- a) The products must be hollow and be labelled with information on:
- main component parts
- how to proceed with material recovery in the waste phase
- b) The products must be covered by at least a 30-year guarantee against rot.
- c) The 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.
- Image of the WPC profile showing the hollow internal structure.
- An image of the labelling stating the main component parts and information on material recovery. The labelling must be placed in the product sheet/technical documentation and on the actual WPC material/profile
- Warranty document that includes at least a 30-year guarantee against rot for the WPC material in question.
- Submit completed Appendix 9.

Background

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

WPC planks are usually hollow in order to save on material resources. WPC is marketed as maintenance-free and graffiti-resistant, with no need to be treated or painted. As such, the environmental impact during the use phase is practically non-existent. 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 and what to do with them in the waste phase facilitates future recycling.

10 Metal

O22 Proportion of recycled metal

The requirement covers products that $contain \ge 30$ wt% metal.

This metal must meet one of the following requirements:

1. 70% by weight of constituent aluminium and 70% by weight of constituent steel must be recycled. The smelting works must declare the proportion of recycled metal in its production. An annual average is acceptable.

There must be traceability along the supply chain from the smelting works to the finished product, so the proportion of recycled metal can be assured along the supply chain. This traceability can be demonstrated by presenting an invoice or a declaration from the supplier concerning the percentage of recycled content.

2. Aluminium and steel must jointly meet the following requirement concerning the percentage of recycled metal:

re Al * kgAl + re Steel * kgSteel $\geq 0,75$ * kgAl + 0,70 * kgSteel

where:

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

 re_{Al} and re_{Steel} are the proportion of recycled aluminium and steel, which is to be stated as a number between zero and one (corresponding to 0% to 100%). Pre- and post-consumer/industrial/commercial metal counts as recycled metal.

- The proportion of recycled metal in the product must be stated. Declaration from the smelting works concerning the proportion of recycled metal in their production (on an annual basis).
- Traceability along the supply chain is to be documented, for example in the form of a flowchart. The proportion of recycled metal in the supply chain must be documented, for example via information on an invoice or a declaration from the supplier. For aluminium, the percentage of recycled material can be documented using Hydro Circal certification.

Background

This generation contains a stricter requirement level for the proportion of recycled aluminium. The requirement concerning the proportion of recycled steel has also been tightened.

Nordic Ecolabelling wishes to set a strict requirement for the proportion of recycled metal in products of which metal is a major component. The production of metal, including mining, is associated with major environmental impacts relating to extraction of the raw material, amounts of waste, energy consumption and emissions from production. These are parameters for which Nordic Ecolabelling has little scope to set requirements. The use of recycled metal reduces the environmental impact significantly, and this is something that can be made subject to requirements. Nordic Ecolabelling does not believe that the requirement will stimulate any notable increase in society's recycling of metal. A high proportion of metal is already recycled, although the figures for the amount of metal recycled vary. The amount recycled will also depend on factors other than just demand, such as how easy it is to sort and deliver metal waste and how good end-users are at recycling. Nordic Ecolabelling is under no illusions about the challenges concerning the availability of recycled metal and its traceability. However, in a world with an ever-increasing focus on circularity, Nordic Ecolabelling believes that this is the way forward. Traceability along the production chain is also an asset in itself, and is important from several perspectives, including enabling suppliers to be chosen based on their environmental work, working conditions and quality, for example. Demanding traceability will hopefully encourage the industry to also place a greater emphasis on this. Hydro has launched its own traceability certification for a minimum of 75% recycled aluminium: Hydro Circal.¹⁸ There is currently only a small facility in Luxembourg that can deliver on this, but from 2020, the Azuqueca plant in Spain will be able to supply Hydro Circal with a production capacity of 25,000 tonnes¹⁹. The industry average for EU-produced aluminium is around 50% recycled, while for aluminium outside the EU it is around 40%.

There are two different production technologies for steel, one ore-based (BOF) and the other scrap-based (EAF). The current requirement of 20% recycled metal has no real effect, since all the plants, including the ore-based ones, will meet this as things stand today. It is therefore necessary to set a higher requirement to promote the use of recycled steel and traceability. In practice, this means that steel with more than 20% recycled material must come from plants with EAF technology. An overview from Eurofer shows that there are plants for EAF production all over Europe²⁰. An overview from the World Steel Association²¹ shows that within the EU 58% is produced with BOF and 41% with EAF technology. On a global basis, around 70% is produced with BOF and 30% with EAF technology.

11 Chemicals requirements

The requirements apply to all chemical products added to the product or material (e.g. 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.

Plastic and rubber do not need to meet requirements O23–O28. However, additives in plastic and rubber and surface coatings on plastic and rubber must meet requirements O24–O31.

¹⁸ <u>https://www.hydro.com/en/products-and-services/low-carbon-aluminium/hydro-circal-75r/</u> (accessed 17.10.2019)

¹⁹ <u>https://www.hydro.com/en/media/news/2018/hydro-to-increase-production-of-post-consumer-recycled-aluminium/</u>

²⁰ http://www.eurofer.org/About%20us/About%20Steel/EuropeanSteelMap.fhtml

²¹ https://www.worldsteel.org/en/dam/jcr:96d7a585-e6b2-4d63-b943-

⁴cd9ab621a91/World%2520Steel%2520in%2520Figures%25202019.pdf

Metal plating does not need to meet requirements O23–O31. Instead, it must meet requirements O32 and O33.

In addition to the general chemical requirements in section 11.1, chemicals in surface coatings 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 O28 concerning nanomaterial.

11.1 General chemical requirements

O23 Classification of chemical products

The chemical products used must not have a classification listed in Table 6 below.

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
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

Table 5Classification of chemical products

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

The following exemptions exist

- Formaldehyde, including with the classifications H350, H341, H311 and H331, is regulated in requirement O28. Formaldehyde emissions are dealt with in requirement O4 concerning wood-based panels, while emissions during production are governed by requirement O9 for HPL panels.
- An exception is made for the preservatives bronopol, CMIT/MIT and isothiazolinones, which are classified as an environmental hazard. Preservatives are regulated in requirement O27.
- 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/adhesive, 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 timelimited exemption that applies until 31.10.2021.
- Surface coatings classified as Toxic to aquatic life that are used on woodbased panels and wood are exempted. Surface treatment of wood and woodbased panels is covered in section 11.2.
- 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)).
- \square Chemical producer or supplier shall submit the completed Appendix 11 .

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.

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.

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 O4 and O8. 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 O28.

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 O8 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)²². 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 25686-28-6²³. 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.

²² Strategi for risikohåndtering af visse isocyanater (MDI og TDI), Danish Environmental Protection Agency 2014

²³ http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/mdi.html

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.

O24 CMR substances

The constituent substances^{*} must not have a classification listed in Table 7. *See Definitions, section 3.2.

Table 6 Non-approved classifications of constituent substances in chemical procession	ducts
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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.

Exception:

- Formaldehyde (H350, Carc. 1B and H341, Muta. 2). Formaldehyde content is regulated in requirement O28. In addition, formaldehyde emissions are dealt with in requirement O4 for wood-based panels, while emissions during production are governed by requirement O8 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 O8.
- The biocide propiconazole (H360, Repr. 1) in wood preservatives is subject to a time-limited exemption that applies until 31.10.2021.
- \square Chemical producer or supplier shall submit the completed Appendix 11 .
- Safety data sheet in accordance with the statutory requirements in the country of application, e.g. Annex II to REACH (Council Regulation (EC) no. 1907/2006) for all chemical products.

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.

For other exemptions, see requirement O23.

O25 Other prohibited substances in chemical products

The following $\!\!\!\!^*$ are not permitted as constituent substances in a chemical product.

• Substances categorised as Substances of Very High Concern (SVHC) and included on the Candidate List: <u>https://echa.europa.eu/candidate-list-table</u>.

- 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.
- Substances considered to be potential endocrine disruptors in categories 1 or 2 according to official EU lists. The EU's report on endocrine disruptors can be read in its entirety at http://ec.europa.eu/environment/chemicals/endocrine/pdf/final_report_2007.pdf (Annex L, page 238 onwards).
- Halogenated organic compounds with the following exceptions:

Bronopol, IPBC and CMIT/MIT (3:1), which are regulated in requirement O26.

- Bisphenol A, bisphenol S and bisphenol F.
- Alkylphenol ethoxylates (APEO) and other alkylphenol derivatives (substances that release alkylphenols on degradation).
- Butyl hydroxytoluene (BHT) and butyl hydroxyanisole (BHA).

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

- Phthalates.
- The heavy metals lead, cadmium, chromium (VI), mercury and their compounds.
- Organic tin compounds
- Volatile organic compounds (VOC) must not be present at a level of more than 1% by weight.

* See Definitions, section 3.2

- Safety data sheet in line with prevailing European legislation (Annex II to REACH (Regulation 1907/2006/EEC)).
- Chemical producer or supplier shall submit the completed Appendix 11.

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 in categories 1 or 2 according to official EU lists
- Bisphenol S and bisphenol F
- Organic tin compounds

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 declared²⁴.

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 heavy metals requirement has been simplified from previously prohibiting pigments and additives based on copper, lead, boron, creosote, tin, cadmium, chromium (VI) and mercury and their compounds to now prohibiting the heavy metals lead, cadmium, chromium (VI), mercury and their compounds.

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 wood-based panels and wood in requirement O30.

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.

²⁴ <u>https://www.retsinformation.dk/Forms/R0710.aspx?id=124428#Not1</u>

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

Human exposure to endocrine disrupting chemicals gives grounds for special concern.

The requirement refers to the EU's priority list of substances for further investigation of endocrine disrupting effects in category 1 or 2*.

The list can be found here:

http://ec.europa.eu/environment/endocrine/documents/final_report_2007.pdf (Annex L, page 238 onwards)

Short-chain chlorinated paraffins (C10–C13), medium-chain chlorinated paraffins (C14–C17) and halogenated flame retardants.

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. There is therefore a requirement that short-chain chlorinated paraffins (C10–C13), medium-chain chlorinated paraffins (C14–C17) and halogenated flame retardants must not be included in Nordic Swan Ecolabelled outdoor furniture, playground and park equipment.

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 have a tendency 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.

Per- and polyfluorinated compounds (PFC)

Per- and polyfluorinated compounds (PFC) are used in various industrial and consumer products, in which properties such as low surface energy, high chemical and thermal stability, low light refractive index, high electrical insulating capacity and good resistance to corrosion and external stresses are important.

Per- and polyfluorinated compounds (PFC) can be found in products such as paints and varnishes.

Certain per- and polyfluorinated compounds can be broken down into the very stable PFOS (perfluorooctane sulphonate) and PFOA (perfluorooctanoic acid) and similar substances. These substances are found all over the globe, from the large oceans to Arctic regions. PFOS has also been found in birds and fish and in their eggs. The substances are extremely persistent and are easily absorbed by the body²⁵. The substances in this group impact on the biological processes of the body and are suspected of being endocrine disruptors, carcinogenic and having adverse effects on the human immune system²⁶.

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 effects²⁷.

Butyl hydroxytoluene (BHT) and butyl hydroxyanisole (BHA)

BHT and BHA are antioxidants that are used in many different projects to protect materials such as plastics, polymers, paints, adhesives and other coatings.

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

http://publications.ki.se/xmlui/bitstream/handle/10616/41507/Thesis_Daniel_Borg.pdf?sequence=1 ²⁶ For example, Heilmann, C. et al, Persistente fluorbindelser reducerer immunfunktionen, Ugeskr Læger 177/7, 30.3 2015 OSPAP 2005: Hazardaus Substances Series, Berfluersectane Subsenate (PEOS)

²⁵ Borg, D., Tissue Distribution Studies and Risk Assessment Of Perfluoroalkylated and Polyfluoroalkylated Substances (PFASS), Doctoral thesis, Institute of Environmental Medicine (IMM), Karolinska Institutet, Stockholm, Sweden 2013

^{177/7, 30.3.2015} OSPAR 2005: Hazardous Substances Series, Perfluorooctane Sulphonate (PFOS), OSPAR Commission, 2005 (2006 Update), MST, 2005b: Environmental project no. 1013, 2005, More Environmentally Friendly Alternatives to PFOS-compounds and PFOA, Danish Environmental Protection Agency, 2005.

²⁷ 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.

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

BHA do not have an official harmonised classification and are not included on the EU's list of suspected endocrine-disrupting substances. BHA are generally self-classified as an environmental hazard in classes H410 and H400, and some are also classed as $\rm CMR^{28}$.

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 (e.g. 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.

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

²⁸ https://www.echa.europa.eu/fi/web/guest/brief-profile/-/briefprofile/100.004.439.

Organotin compounds

Organotin compounds 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.

O26 Preservatives in chemical products

The limit values for the level of preservatives in a chemical product, as stated in Table 8, must be fulfilled:

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%

Table 7 Limit values for stated preservatives

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.

- Safety data sheet in line with prevailing European legislation (Annex II to REACH (Regulation 1907/2006/EF)).
- The manufacturer or supplier of the chemical products shall submit the completed Appendix 11

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 Indoor paints and varnishes. Wood preservatives are exempted from the requirement concerning preservatives. Both the wood preservative and the product it is used on are intended for outdoor use and are subject to the stresses of wind and weather. One of the purposes of the

preservative is to prevent fungal growth, thus increasing the product's durability and so its service life.

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 algæ, 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.

O27 Free formaldehyde in chemical products

The level of free formaldehyde must meet the following:

- For adhesive products containing hardener ≤ 0.2000 wt% (2000 ppm) in the finished mix.
- For other chemical products $\leq 0.0200 \text{ wt\%}$ (200 ppm).

Resins/adhesives used in the production of HPL panels and laminate production are exempted from the requirement. They are covered instead by requirement O8.

- \boxtimes The raw material producer or supplier shall submit the completed Appendix 11 .
- Safety data sheet in line with prevailing European legislation (Annex II to REACH (Regulation 1907/2006/EEC)).

Background

In this generation of the criteria, the requirement has been tightened from previously permitting max 0.2 wt% to now only permitting 0.0200 wt% free formaldehyde in chemical products other than adhesive products. The requirement has thus been harmonised with generation 3 of the criteria for Chemical building products.

Formaldehyde is a toxic (H301, H311, H331) and allergenic substance (H317) which also has carcinogenic effects (H341 and H350) and should therefore be avoided or reduced as much as possible. Exposure to formaldehyde is minimal for end users of Nordic Swan Ecolabelled outdoor furniture, playground and park equipment, since the end user is not typically exposed to formaldehyde in liquid form (adhesives, surface coatings, additives in panels, hardeners, when used on/in the products). The end user may, however, risk exposure to formaldehyde emissions from products, where chemical products containing formaldehyde have been used. These criteria relate to outdoor furniture, playground and park equipment, which means that the products are used in locations with a high air change rate and the risk of formaldehyde emissions is therefore less critical. These criteria still contain formaldehyde requirements (in addition to this requirement, formaldehyde is covered in requirements O4 and O8), since formaldehyde should generally be restricted as much as possible and exposure among employees in the production chain of the Nordic Swan Ecolabelled products should be as low as possible.

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 solventbased.

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 O8.

O28 Nanomaterials in chemical products

Chemical products must not contain nanoparticles (from nanomaterials^{*}). The following are exempted:

- Pigments**
- Synthetic amorphous silica***
- Naturally occurring inorganic fillers****
- Polymer emulsions
- Aluminium oxide
- * See Definitions, section 3.2.

^{**}Nano-titanium dioxide is not considered to be a pigment, and is hence covered by the requirement.

*** This applies to traditional synthetic amorphous silica. Any surface coating must meet the chemical requirements in the criteria.

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

 \square The raw material producer or supplier shall submit the completed Appendix 11 .

Background

There is still great uncertainty as to how nanoparticles affect health and the environment.²⁹ Based on the precautionary principle, Nordic Ecolabelling wishes to take a restrictive attitude to the use of nanoparticles in ecolabelled products. Many nanoparticles can also have an antibacterial effect, and this is another area where Nordic Ecolabelling wishes to limit use, not least due to the risk of bacterial resistance. The requirement is based on the EU definition of nanoparticles.³⁰ Here there is also a requirement that raw materials covered by the EU definition of nanoparticles state this on the product data sheet, making this knowledge available to the chemical producer.

According to a report from 2012, the use of nanomaterials in furniture remains low, occurring mostly in various coatings.³¹ Product development is, however,

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

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

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

ongoing in this area. It is therefore relevant to have the requirement for the product group.

This requirement means that more recent nanomaterials which intentionally contain nanoparticles cannot be used. Examples of such nanoparticles are fullerenes, carbon nanotubes and nanometals.

Furniture manufacturers do, however, use nanomaterials that are not considered problematic. Hence, the requirement contains the following limitation:

- Polymer emulsions are not considered to be a nanomaterial. The European Commission's report to accompany the Second Regulatory Review on Nanomaterials from 2012 states that solid nanomaterials in the dispersant in a liquid phase (colloid) are to be deemed nanomaterials in accordance with the European Commission's recommendation. Nanoemulsions, on the other hand, are not covered by the definition. Polymers/monomers may occur in different phases and sizes, and so it has been decided to explicitly state that polymers are exempted from this nano requirement.
- Many pigments used to paint furniture are by definition nanoparticles. These are not considered to pose a risk to the end user of outdoor furniture and so are exempted from the requirement.
- Synthetic amorphous silica is a traditional ingredient in various chemical building products that may be used on outdoor furniture. These are exempted from the requirement. The exemption also applies to surface-modified colloidal silica, as long as it forms aggregates in the finished product.
- Naturally occurring inorganic fillers such as chalk, marble and limestone are also exempt from registration in accordance with Annex V, point 7 of REACH, see below, as long as these fillers are only mechanically processed (ground, screened, etc.) and not chemically modified.
- In the case of powder coating, it is common to use aluminium oxide in nano form to achieve good fluidisation properties. Aluminium oxide is not covered by the exemption for naturally occurring inorganic fillers in Annex V of REACH, since it is obtained from the chemical processing of bauxite.

11.2 Surface treatment of wood and wood-based panels

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

O29 Amount applied and application method

For each surface treatment system, the following information must be described by the manufacturer of the product: Name of surface treatment product, manufacturer of surface treatment product, amount applied (g/m²), number of layers and application method(s) used. When calculating applied quantities of environmentally hazardous substances and VOC in later requirements, the following efficiency rates* are to be applied:

- Automated spray with no recycling, 50%
- Automated spray with recycling, 70%
- Spray application, electrostatic, 65%
- Spray application, bell/disk, 80%
- Roller coating, Curtain coating, Vacuum coating, Dipping and Rinsing 95% * The efficiency rates are model values. Other efficiency rates may be applied if they can be documented.
- \boxtimes 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.

O30 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 $VOC \le 5 \text{ wt\% VOC}$
- 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:

Applied amount of the surface treatment chemical $\left(\frac{g}{m^2}\right)x$ share of VOC in the surface treatment chemical ((
$\Gamma(G)$ since a field source the second second second (0/)					

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, Appendix 13.
- Calculation from the manufacturer showing that alternative b) in the requirement is met, if the surface treatment system does not fulfil alternative a), Appendix 13.

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 m². 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.

O31 Amount of environmentally hazardous (EH) substances

The requirement covers the whole surface treatment system, and as such all the chemical products included in the system must meet one of the following alternatives:

- a) None of the chemical products may be classified as H410, H411 or H412 as per the CLP Regulation 1272/2008.
- b) The amount of added environmentally hazardous substances must make up, in total, no more than 90 g/m^2 of the treated surface.

For the calculation, the content of environmentally hazardous substances must be weighted according to the formula below, before the calculation of the total amount of added EH substances is performed.

100*H410 + 10*H411 + H412

Where:

 $\rm H410$ is the total concentration of constituent substances classified as H410 in the uncured surface treatment product, in percent

H411 is the total concentration of constituent substances classified as H411 in the uncured surface treatment product, in percent

 $\rm H412$ is the total concentration of constituent substances classified as H412 in the uncured surface treatment product, in percent

The total amount of added EH substances is calculated using the following formula:

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

	Preservatives are exempted from the calculation of environmentally hazardous substances. See requirement O27 regarding the amount of preservatives.
	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 the amount of constituent environmentally hazardous substances in each product, Appendix 13.
	Calculation from the manufacturer showing that alternative b) in the requirement is met, if the surface treatment system does not fulfil alternative a), Appendix 13.
\bowtie	The manufacturer of the outdoor furniture, playground or park equipment shall submit the completed Appendix 13.

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.

The weighting factors for calculating environmentally hazardous substances are based on the regulations concerning chemicals. Weighting factors are set according to the degree of environmental risk posed by the substances. H410 has the highest weighting factor of 100, as this is the most environmentally hazardous of the three. Then comes H411 with a factor of 10, followed by H412, the least harmful to the environment, with a factor of 1.

The introduction of this weighted formula for environmentally hazardous content has caused the limit value to be adjusted. The new limit value of 90 g/m² may, at first sight, appear high, but it should not be compared with the previous, unweighted limit value of 14 g/m². For comparison, the limit value in the criteria for Floor coverings, generation 5, stood at 7 g/m², and when the weighted formula was introduced in generation 6, this figure changed to 60 g/m².

The requirement has been formulated so that it offers two alternatives. The manufacturer can either choose to document that only chemical products without the stated environmental hazard classifications, as set out in the requirement, have been used. Or, the manufacturer can choose to document the use of a surface treatment system with a low total content of environmentally hazardous substances.

The limit value has been set at 90 g/m² based on licence data relating to the criteria for Furniture and fitments. The intention was to set a limit value based on information from manufacturers of outdoor furniture, playground and park equipment, but it has proven difficult to source information about the amount of surface treatment product applied to the treated surface in g/m^2 . For this draft version of the criteria, the decision has therefore been taken to try the same limit value as in Furniture and fitments. Any comments and data in this regard will be gratefully received.

The aim is not to tighten the requirement but introducing the weighted formula probably does represent a certain raising of the restrictions on surface treatment products containing substances classified as H410 or H411. Surface treatment

products cured with UV light contain environmentally hazardous substances in the form, for example, of acrylates or photoinitiators. The substances have environmentally hazardous properties in their uncured state, but not in the finished product. Nevertheless, Nordic Ecolabelling wishes to set a requirement concerning environmentally hazardous substances, since a large range of content has been seen across different surface treatment systems and a requirement limit is desired when exemptions are given for the hazard class Environmental hazard.

Preservatives are exempted from the calculation of environmentally hazardous substances in surface treatment systems. This is due to the CLP reclassification of several preservatives. The amount of preservative is covered, instead, in requirement O26.

11.3 Surface treatment of metal

All surface treatment of metal, such as powder coating, must meet requirement O33 and the general chemical requirements, section 11.1. Metal plating, e.g. hotdip galvanising, is however exempted from section 11.1 and requirement O33, and must instead fulfil requirement O32.

O32 Metal plating

Metal plating must not contain cadmium, lead, chromium, nickel or compounds of these. The plant must be drain free, i.e. there must be no emissions to a recipient watercourse/municipal treatment works.

Residual products must be sent for recycling or handled as hazardous waste.

- Declaration from the supplier/performer of the metal plating that the plant is drain free.
- The supplier/performer of the metal plating must state the recipient waste facility and give a description of how residual products from the plating are managed.
- \square The performer of the metal plating shall submit the completed Appendix 12 .

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, e.g. 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.

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.

Surface treatment and material recovery

There is nothing to suggest that plating and other surface treatments are a hindrance to a circular model for metals. 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 recycling³². 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.

O33 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 $VOC \le 5 \text{ wt\% VOC}$
- 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:

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

Efficiency of the surface treatment (%)

³² http://ec.europa.eu/environment/ecolabel/documents/technical report furniture.pdf

- 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, Appendix 13.
- Calculation from the manufacturer showing that alternative b) in the requirement is met, if the surface treatment system does not fulfil alternative a), Appendix 13.

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/m^2 . Account is taken here of the efficiency of the application method. This means that if a surface coating (e.g. 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.

O34 Surface treatment of plastic and rubber

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

- The chemical producer or supplier shall submit the completed Appendix 11.
- \square The performer of the surface treatment shall submit the completed Appendix 13.

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.

O35 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 $VOC \le 5 \text{ wt\% VOC}$
- 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:

Applied amount of the surface treatment chemical $\left(\frac{g}{m^2}\right)$	x share of VOC in the surface treatment chemical (%)
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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, Appendix 13.
Calculation from the manufacturer showing that alternative b) in the requirement is met, if the surface treatment system does not fulfil alternative a), Appendix 13.

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/m^2 . Account is taken here of the efficacy of the application method. This means that if a surface coating (e.g. 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.

12 Service life/use phase

O36 Guarantee

- The supplier must provide a 20-year product guarantee
- The guarantee period will commence from the date of purchase
- The guarantee must be communicated to the customer

Under a product guarantee, if a project proves to be faulty or does not work in normal use, the manufacturer will, within a reasonable timeframe, provide a replacement product, or repair or replace faulty or broken parts/materials by delivering repaired products/parts or replacement products/replacement parts to the location.

Description of the relevant guarantee for the product from the manufacturer/supplier of the outdoor furniture, playground or park equipment.

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

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. The guarantee period may vary depending on the material being used or on whether the parts are fixed or moving.

O37 Separability

The product must be designed so that the main constituent materials in a single product can be separated from each other.

An exemption is made, for example, for steel reinforced rope, where the steel reinforcement does not need to be separable from the rope, fixing and glued metal parts.

Description demonstrating that the main constituent 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 is considered a homogeneous material.

O38 Replacement parts

Replacement parts that are critical for the product's function must be available from the manufacturer, on request, during the guarantee period.

The option of purchasing replacement parts must be communicated to the customer.

Documentation showing that replacement parts and terms are communicated to the customer (purchase agreement, website, etc.).

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.

O39 Maintenance

The manufacturer/supplier must provide instructions on maintenance of the product during its service life. If specialist products are recommended, these must meet the chemical requirements, see Chapter 11.

For the product types listed below that are intended/sold for public use, the manufacturer/supplier must offer inspection and maintenance agreements that give purchasers the option of expanding their equipment purchase to include associated agreements.

Inspection and maintenance agreements must be available for:

- Playground equipment for public playgrounds in line with standard EN 1176-7
- Permanently installed outdoor fitness equipment in line with standard EN 16630
- Parkour equipment in line with standard EN 16899
- Copy of the maintenance instructions. If special maintenance products are recommended, the safety data sheet and Appendix 11 must be enclosed.
- For playground, outdoor fitness and parkour equipment for public use, submit the inspection and maintenance agreements that are offered.

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.

All the standards mentioned in the requirement contain guidance on inspection and maintenance of products intended for public use.

O40 Safety

The product must meet the 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, e.g. 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.

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 standards, an independent test institute must verify that the standard corresponds to the requirement levels above.

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.

- \boxtimes Information on the product's area of use, and whether it is for private or public use.
- Documentation of compliance with relevant standards (e.g. 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.

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 (e.g. 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, e.g. 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).

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 requirement levels 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".

13 Quality and regulatory requirements

Quality and regulatory requirements are general requirements that are always included in Nordic Ecolabelling's product criteria. The purpose of these is to ensure that fundamental quality assurance and applicable environmental requirements from the authorities are dealt with appropriately. They also ensure compliance with Nordic Ecolabelling's requirements for the product throughout the period of validity of the licence.

To ensure compliance with Nordic Ecolabelling requirements, the following procedures must be implemented.

O41 Responsible person and organisation

The company shall appoint a individual who is responsible for ensuring the fulfilment of the Nordic Ecolabelling requirements, one who is responsible for marketing and one who is responsible for finance, as well as a contact person for communications with Nordic Ecolabelling.

Organisational chart showing who is responsible for the above.

O42 Documentation

The licensee must archive the documentation that is sent in with the application, or in a similar way maintain information in the Nordic Ecolabelling data system.

 $\boldsymbol{\rho}$ Checked on site as necessary.

O43 Quality of the product

The licensee must guarantee that the quality of the Nordic Swan Ecolabelled product does not deteriorate during the validity period of the licence.

 \mathcal{P} The claims archive is checked on site.

O44 Planned changes

Written notice must be given to Nordic Ecolabelling of planned changes in products and markets that have a bearing on Nordic Ecolabelling requirements.

Procedures detailing how planned changes in products and markets are handled.

O45 Unplanned nonconformities

Unplanned nonconformities that have a bearing on Nordic Ecolabelling requirements must be reported to Nordic Ecolabelling in writing and journalled.

Procedures detailing how unplanned nonconformities are handled.

O46 Traceability

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

Description of/procedures for the fulfilment of the requirement.

O47 Legislation and regulations

The licensee shall ensure compliance with all applicable local laws and provisions at all production facilities for the Nordic Swan Ecolabelled product, e.g. with regard to safety, working environment, environmental legislation and site-specific terms/permits.

Signed application form.

Background

The requirements are unchanged. Quality and regulatory requirements are in principle always included in all Nordic Swan Ecolabel criteria.

14 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.

15 Changes compared to previous version

Below is a short list of the key changes compared with the previous generation of the criteria.

Comparison of the requirements for Outdoor furniture, playground and park equipment in generations 3 and 4 of the criteria.

Draft req. v 4	Req. v 3	Same req.	Change	New req.	Requirement heading
01	R1		Clarified.		Product description.
02–03	K2 + K4		Updated in line with Nordic Ecolabelling's new Forestry Requirements, version 3.		Prohibited tree species Wood from certified forestry
	R3	1	Removed		Use of biocides in felling
	R6		Included in General chemical requirements, Chapter 11		Chemical products and additives in wood- based panels
O4	R7		Requirement updated to include a number of alternative test methods. Requirement levels the same as in previous generation.		Formaldehyde emissions from wood- based panels
O5	R10		The requirement has been harmonised with the criteria for Construction and facade panels. New requirement limits for energy consumption during production of wood-based panels.		Energy requirement for wood-based panels
	R11		Removed		Emissions of COD, wet process
O6	R25		Requirement updated and text clarified.		Durability of wood
07	R16	X			Energy requirement for HPL panel production
O8	R17		Requirement levels unchanged. Test methods updated.		Emissions in the work environment during HPL production
09					Wood raw material in paper and/or pulp
O10	R14		Decor paper is exempt from requirement.		COD emissions from paper and pulp production
011	R15		Stricter reference values, changes to calculation of energy points and so total energy points. Decor paper is exempt from requirement.		Energy requirement for paper and pulp production
012	R32	x			Information and labelling, Plastic and rubber
O13	K32 + K39	X			Chlorinated plastic, PVC and polyvinyl chloride, PVDC
014	R34	X			Nitrosamines in rubber
O15			Limit values introduced for selected PAHs. Only applies to playground equipment for children and only to parts a child will come into contact with during normal use of the product, e.g. the seat of a swing.	X	PAH in plastic, silicone and rubber
O16	K36?	X			Recycled/recovered plastic
017	R36				Chemicals in recycled plastic
O18				X	WPC – Wood fibre and plastic

Draft req. v 4	Req. v 3	Same req.	Change	New req.	Requirement heading
O19				Х	WPC – Recycled plastic
O20				x	WPC – Additives
O21				Х	WPC – Other requirements
022	R29		Stricter requirement level for constituent proportion of recycled aluminium, steel and other metals.		Proportion of recycled metal
O23	R19		Requirement updated in line with CLP, expanded to include more chemical products, and text clarified.		Classification of chemical products
024	R21		Own requirement in this generation. Expanded ban on a number of hazard classes and categories.		CMR substances
O25	R21		Stricter requirement, now includes SVHC substances, PBT substances, vPvB substances and others.		Other prohibited substances in chemical products
O26	R21		Own requirement in this generation. Harmonised with the criteria for Nordic Swan Ecolabelled Chemical building products and Indoor paints and varnishes.		Preservatives in chemical products
027	R20		Stricter requirement limit for levels of free formaldehyde.		Free formaldehyde in chemical products
	R25		Covered by requirements in Chapter 11. Constituent substances must not be CRM classified.		Wood preservatives
O28	R22	Х			Nanomaterials in chemical products
O29	R26	X			Amount applied and application method
O30	R26	x			Added amount of volatile organic compounds (VOC)
O31	R26		Introduces new weighted formula for environmentally hazardous substances, and thus a new limit value.		Environmentally hazardous substances in surface coating
	R27		Covered by requirements in Chapter 11.		Maintenance products for wood
O32	K30–K31		New ban on Cd, Pb, Cr and Ni and compounds of these. Surface treatment with zinc is now included in this requirement		Metal plating
O33				X	Added amount of volatile organic compounds (VOC)
	R31		Included in requirement O32		Surface treatment with zinc
O34	R35	X			Surface treatment of plastic and rubber
O35				x	Added amount of volatile organic compounds (VOC)
O36		<u> </u>		X	Guarantee
037		<u> </u>		X	Separability
O38		ļ		X	Replacement parts
O39				X	Maintenance
040	R41	X			Safety
O41	R42	X			Responsible person and organisation

Draft req. v 4	Req. v 3	Same req.	Change	New req.	Requirement heading
O42	K43	Х			Documentation
O43	K44	Х			Product quality
O44	K45	Х			Planned non-conformities
O45	K46	Х			Unforeseen non-conformities
O46	K47	Х			Traceability
O47	K48	Х			Legislation and regulations