Nordic Ecolabelling for

Panels for exterior use

Version 2.0 •

CONSULTATION

Nordic Ecolabelling

Content

Contact information

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

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What is a Nordic Swan Ecolabel panel or cladding for exterior use?

Nordic Swan Ecolabelled panels and cladding for exterior use have a reduced environmental and climate impact throughout their lifecycle – and strict requirements for materials, chemicals and quality promoting circular economy.

Nordic Swan Ecolabelled panels and cladding for exterior use:

- Are made of a high proportion of renewable and/or recycled materials and/or responsible sourced virgin mineral raw materials.
- Wood-based panels consist of timber that is legally harvested and certified under a traceability system. Furthermore, at least 70% of the timber is sourced from certified forestry.
- Meet strict requirements for chemicals used in production and for surface treatment. This means, for example, that per- and polyfluoroalkyl substances (PFAS) and halogenated flame retardants cannot be added.
- Have reduced climate impact which is achieved by meeting strict requirements for energy consumption.
- Are of good quality and properties are documented. This means that the panels and cladding comply with harmonised standards in accordance with the Construction Products Regulation (EU/305/2011) or voluntary CE marking according to ETA.
- Have an expected lifespan of at least 50 years.

Why choose the Nordic Swan Ecolabel?

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

What can carry the Nordic Swan Ecolabel?

The product group includes panels or cladding for exterior use designed to provide protection from the weather, aka outer climate shield of a building.

Panels or cladding are mounted on to the outside of the building construction without any relevant loadbearing function for building structures. Panels designed for use in production of outdoor furniture, playgrounds, and exterior design is also part of the criteria.

The products must fall into one of the categories below:

1. Panels made from renewable raw materials according to EN 13986 suitable for service class 3 (exterior use).
2. Panels based on renewable raw materials other than wood.
3. Laminate such as HPL (High Pressure Laminate) or compact laminate according to the EN 438 series.
4. Wood plastic composite (WPC) according to EN 15534
5. Cement-based panels according to EN 12467, category A (exterior use).
6. Mineral wool panels (where the main function is not thermal insulation).
7. Boards or planks use for cladding, either of surface treated solid wood according to EN 14915 suitable for use class 3 or consisting of the panel types indicated in any of the other points.

A maximum of 10% by weight of the panel or cladding may consist of materials that are not required by the criteria. This allows panels to contain a limited amount of materials for which there are no requirements.

If the panel is sold with a unique fixing system/installation bracket/support frame (often in aluminium) this is part of the criteria. Screws, bolts, small mounting brackets, clips and similar is not part of the criteria.

The product group does not include the following products:

- Panels and mouldings for interior use. Panel and mouldings for interior use can be labelled according to criteria for 010 Panels and mouldings for interior use*.

- Solid wood with naturally long durability (no surface treatment), chemically or thermally modified wood may be Nordic Swan Ecolabelled. according to criteria for 086 Durable wood for outdoor use*

- Pressure-impregnated solid wood with metals such as chromium, copper or arsenic.

- Panels or cladding materials used/marked for outdoor deking or fencing. Several types of materials for deking or fencing can be labelled according to criteria for 086 Durable wood for outdoor use or 073 Outdoor furniture, playground and part equipment*

- Hard covering products such as tiles, block, slab, slates (roof or wall slates), clinker made of natural stone, agglomerated stone, ceramic, fired clay or precast concrete/cement. Hard covering products can be labelled according to EU Ecolabel criteria for Hard Covering products*

- Masonry units defined in the EN 771 series and clay roof tiles and fittings defines in EN 1304.
- Magnesium oxide panels.
- Fully prefabricated wall elements e.g., wall systems complete with structural framing, water/air/vapor barrier(s), insulation, and interior/exterior panels.
- Glass-, aluminium-, steel-, plastic- and sandwich panels and cladding. The function of a sandwich panel is often also insulating against cold or heat.

* *See https://www.nordic-ecolabel.org/product-groups*

If there is a desire for ecolabelling other types of panels than those covered by the product group definition, an assessment may be made as to whether these can also be included. Nordic Ecolabelling will determine which new products may be included in the product group.

Nordic Ecolabelling determines whether a product can be Nordic Swan Ecolabelled and under which criteria a product can apply for a licence.

How to apply

Application and costs

For information about the application process and fees for this product group, please refer to the respective national web site. For contact information see page 2.

What is required?

The application consists of an application form/web form and documentation showing that the requirements are fulfilled.

In this criterion document each requirement is marked with the letter O (obligatory requirement) and a number. All requirements must be fulfilled to be awarded a licence.

The text describes how the applicant shall demonstrate fulfilment of each requirement. There are also icons in the text to make this clearer. These icons are:

✉	Enclose
⇪	Upload
🡅	Upload
🡇	Download
🖱	State data in electronic application
🔧	Requirement checked on site

Licence validity

The Nordic Swan Ecolabel licence is valid providing the criteria are fulfilled and until the criteria expire. The validity period of the criteria may be prolonged or adjusted, in which case the licence is automatically prolonged and the licensee informed.

Revised criteria shall be published at least one year prior to the expiry of the present criteria. The licensee is then offered the opportunity to renew their licence.

On-site inspection

In connection with handling of the application, Nordic Ecolabelling normally performs on-site inspection visit/-s to ensure adherence to the requirements. For such an inspection, data used for calculations, original copies of submitted certificates, test records, purchase statistics, and similar documents that support the application must be available for examination.

Queries

Please contact Nordic Ecolabelling if you have any queries or require further information. See contact information first in this document. Further information and assistance (such as calculation sheets or electronic application help) is available. Visit the relevant national website for further information.

1.1 Definitions

The first time a term is used in the document, it is written in bold font or with a reference to this definition list.

Word/Term	Definition
ADt	ADt is dry, solid content of pulp and paper. ADt for pulp is 90%, while ADt for paper means a solid content of 94%.
Agglomerated stone	An industrial product manufactured from mixture of aggregates of various sizes and natures (generally coming from natural stones), sometimes mixed with other compatible materials, additions, and resin binder.
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora. CITES is an international convention for the control of trade (across borders) in wild fauna and flora at risk of extinction.
CoC	Chain of Custody – certification that ensures traceability in the supply chain.
COD	Chemical oxygen demand. A measure of how much oxygen is used during chemical degradation of organic matter.
CMR substances	Substances classified as Carcinogenic, Mutagenic, or toxic for Reproduction (CMR substances).
Decor paper	Decor papers enable surface upgrades for wood-based substrates for use in the production of furniture, laminate flooring, and other interior and exterior design panels.
EPD	A product specific EPD according to the standard ISO 14025 and EN 15804 is a third-party verified document based on product category rules (PCR) and life cycle assessment (LCA).

Expected lifespan	The expected lifespan/technical lifespan of a product under a set of given conditions for the use of the product.
Fibre-cement flat sheets	Defined in EN 12467.
FSC	Forest Stewardship Council. Certification scheme for forestry and traceability in the supply chain.
IFL	Intact Forest Landscape. Continuous propagation of natural ecosystems within the zone with current forest spread, showing no sign of significant human activity. The area is large enough to maintain all-natural biodiversity, including viable populations of widespread species.
Ingoing substances and impurities	**Ingoing substances:** All substances in the chemical product regardless of amount, including additives (e.g., preservatives and stabilisers) from the raw materials. Substances known to be released from ingoing substances (e.g., formaldehyde, arylamine, in situ-generated preservatives) are also regarded as ingoing substances. **Impurities:** Residues from production, incl. raw material production, which remain in the chemical product at concentrations below 1000 ppm (0.1000% by weight). Examples of impurities are residues of reagents incl. residues of monomers, catalysts, by-products, scavengers (i.e., chemicals that are used to eliminate/minimise undesirable substances), detergents for production equipment and carry-over from other or previous production lines.
IUCN	International Union for Conservation of Nature. IUCN's Red List is the world's most comprehensive overview of the global conservation status of the planet's species, including trees.
Laminate	Laminate means a process in which paper is used in the product, e.g. HPL or compact laminate.
Lignocellulose raw materials	Lignocellulose refers to plant dry matter (biomass), so called lignocellulosic biomass such as straw, hemp, linen, and bagasse.
Mineral wool	Insulation wool manufactured from molten rock, slag, or glass.
Nanomaterial	'Nanomaterial' means a natural, incidental or manufactured material consisting of solid particles that are present, either on their own or as identifiable constituent particles in aggregates or agglomerates, and where 50 % or more of these particles in the number-based size distribution fulfil at least one of the following conditions: (a) one or more external dimensions of the particle are in the size range 1 nm to 100 nm; (b) the particle has an elongated shape, such as a rod, fibre or tube, where two external dimensions are smaller than 1 nm and the other dimension is larger than 100 nm; (c) the particle has a plate-like shape, where one external dimension is smaller than 1 nm and the other dimensions are larger than 100 nm.
PEFC	Programme for the Endorsement of Forest Certification. Certification scheme for forestry and traceability in the supply chain.
VOC	Organic compounds with a steam pressure exceeding 0.01kPa, at 20°C. For products under EU Directive (2004/42/EC) in which steam pressure is not indicated: Organic substances with an initial boiling point that is lower than or equal to 250°C measured at a normal pressure of 101.3 kPa.
Recycled materials	Recycled materials are defined according to ISO 14021 in the following two categories: "Pre-consumer/commercial" is defined as material diverted from the waste stream during a manufacturing process.

	”Post-consumer/commercial” is defined as material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose. This includes returns of material from the distribution chain. Materials that are approved as input in FSC Recycled and which are covered by the term Reclaimed in FSC are regarded as recycled material.
Self-generated energy	Self-generated energy refers to energy (electricity and heat) not purchased from an external supplier. For example, if the panel production has an energy surplus that is sold as electricity, steam or heat, the sold amount can be deducted from the energy consumption. Internally produced fuel sources and residual products are not regarded as self-generated energy.
SVHC substances	Candidate list of Substances of Very High Concern published by the European Chemicals Agency (ECHA).
Wood based panels	Example of wood-based panels according to EN 13986: • Particleboard • MDF (Medium Density Fibreboard) • HDF (High Density Fibreboard) • Plywood • OSB (Oriented Stranded Board) • Flaxboard • LVL (Laminated Veneer Lumber), structural LVL is CE marked according to EN 14374 • SWP (Solid Wood Panel), • Cement bonded particleboard
WPC	Wood Plastic Composite. WPCs are composite materials made of wood fibre/wood flour and thermoplastics such as PE, PP, PVC, or PLA.

1.2 Overview of the requirements

The criteria are mainly divided into requirement areas where some of the requirements apply to all panel types, while others only apply to certain panel types. The table below provides an overview of the requirements that must be met for the different panel types:

Requirement area	Requirement	Number of requirements	Responsible for the documentation
Description of product and production process	General requirements	O1	Product manufacturer
Quality			
Product requirements	Quality and properties	O2	Product manufacturer
Raw materials			
Wood raw materials	Wood, cork, and bamboo	O3 O4	Product manufacturer/Subcontractor Product manufacturer
	Recycled wood raw material	O5	Product manufacturer/Subcontractor
Lignocellulose raw materials	Lignocellulose raw materials	O6	Product manufacturer/Subcontractor

Paper	Ecolabelled paper	O7	Product manager
	Raw materials, chemicals, and emissions in manufacturing of pulp and paper	O8-O11	Product manufacturer/Subcontractor
Wood Plastic Composite	Wood fibre and plastic	O12	Product manufacturer
	Chemicals and additives in plastic	O13-O14	Product manufacturer/supplier of recycled plastic
Mineral raw materials	Responsible sourcing	O15	Product manufacturer
	Heavy metals	O16	Supplier of mineral raw materials
Cement-based and mineral wool-based panels	Recycled raw materials	O17	Product manufacturer
	Chemicals in recycled mineral wool?	O18	Product manufacturer/supplier of recycled mineral wool
Metal	Aluminium	O19	Supplier of aluminium
Chemicals			
Chemicals in production	Classification of chemical products	O20	Manufacturer/supplier of chemical products
	Classification of ingoing substances	O21	Manufacturer/supplier of chemical products
	Prohibited substances	O22	Manufacturer/supplier of chemical products
	Nanomaterials	O23	Manufacturer/supplier of chemical products
	Preservatives	O24	Manufacturer/supplier of chemical products
	VOCs in adhesives	O25	Manufacturer/supplier of chemical products
	Free formaldehyde	O26	Manufacturer/supplier of chemical products
Chemicals - surface treatment	Plastic foiling	O27	Product manufacturer
	Ecolabelled products	O28	Product manufacturer
	Classification of chemical products	O29	Manufacturer/supplier of chemical products
	UV curing surface treatment system	O30	Manufacturer/supplier of chemical products
	Classification of ingoing substances	O31	Manufacturer/supplier of chemical products
	Prohibited substances	O32	Manufacturer/supplier of chemical products
	Nanomaterials	O33	Manufacturer/supplier of chemical products
	Preservatives	O34	Manufacturer/supplier of chemical products
	Free formaldehyde	O35	Manufacturer/supplier of chemical products
Chemicals - application method	Application method and quantity applied – surface treatment	O36	Supplier/performer of surface treatment
	Volatile organic compounds (VOC)	O37	Supplier/performer of surface treatment

Emissions			
Emissions from production - COD	Emissions of COD from wet processes	O38	Product manufacturer
Emissions from production – working environment	Emissions to air from production – HPL and compact laminate	O39	Product manufacturer
	Emissions of dust	O40	Product manufacturer
Climate and energy			
Pulp and paper	Pulp and paper production included in HPL and compact laminate	O41	Manufacturer of pulp and paper
Laminate	Laminate	O42	Laminate manufacturer
Wood-based panels	Wood-based panels	O43	Panel manufacturer and wood suppliers (drying process)
Panels made from lignocellulose raw materials	Panels - other lignocellulose raw materials	O44	Product manufacturer
Solid wood	Solid wood panels and cladding	O45	Product manufacturer
Wood Plastic Composite (WPC)	Wood plastic composite	O46	Product manufacturer
Mineral wool-based panels	Mineral wool-based panels	O47	Product manufacturer
Cement	Cement	O48	Manufacturer of cement
Cement-based panels	Cement-based panels	O49	Product manufacturer
Circularity			
Durability		O50	Product manufacturer
Information to costumer	Information	O51	Product manufacturer
Take back system	Take back system	O52	Product manufacturer
Innovation			
	Innovation requirements	O53	Product manufacturer
Other requirements			
	Maintenance of the Nordic Swan Ecolabel licence	O54-O55	Product manufacturer/licensee

1.3 Product information

This chapter contains product specification such as description of the product, material composition and production methods/process.

O1 Description of the product

Applicants must provide the following information about the product:

- Trade name(s), brand name(s) and ID numbers.
- Description of the product(s) and materials/raw materials included. The total weight of the product and the weight of the constituent materials/raw materials must be stated.

- Description of production methods/treatment techniques.
- Description of subcontractors, including the name of their business, production site, contact and the production steps carried out.
- Names of chemical products used in the production and any surface treatment (including products used by any subcontractors).

✉ Description of the points above.

✉ Product sheets or equivalent information. A flow chart is recommended to explain the production process.

1.4 Quality

O2 Quality and properties

Products covered by a harmonised standard

Products covered by a harmonised standard in accordance with the Construction Products Regulation (EU/305/2011) must document the features and functions with which the product is marketed by a declaration of performance (DoP) and example of CE marking.

Products not covered by harmonised standard

Products not covered by a harmonised product standard must document the features and functions of the product with one of the following options:

- voluntary CE marking and declaration of performance according to an ETA (European Technical Assessment), or
- as an alternative to an ETA, the properties of the product can be declared via a third-party verification of the product's performance. The third-party verification must be approved by Nordic Ecolabelling.

✉ For products covered by a harmonised product standard, state which product standard(s) the product is covered by and submit example of CE marking and the declaration of performance (DoP).

✉ For products that are not covered by a harmonised standard, a declaration of performance must be submitted in accordance with an ETA or other third-party verification of the product's performance.

1.5 Raw materials

The requirements in this chapter concern requirements for raw materials used in panels.

The requirements only apply to raw materials that are included by **more than 5 wt%** of the panel.

Panels consisting of different types of raw materials need to comply with the specific raw material requirements e.g., a cement-based panel must comply with requirements for wood raw materials and cement.

1.5.1 Wood raw materials

O3 Prohibited and restricted tree species

Nordic Ecolabelling's list of tree species* consists of virgin woods listed on:

a) CITES (Appendices I, II and III)

b) IUCN Red List, categorised as CR, EN and VU

c) Rainforest Foundation Norway's tree list:

d) Siberian larch (from forests outside the EU)

Exemptions

*Eucalyptus and Acasia used in production of fibreboards and particle boards are exempted from the list (note**).*

Use of tree species listed on a) CITES (Appendices I, II and III) is not permitted.

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

- the tree species does not originate from an area/region where it is on the IUCN Red List, categorised as CR, EN or VU
- the tree species does not originate from an Intact Forest Landscape (IFL), as defined in 2002 http://www.intactforests.org/world.map.html.
- the tree species shall originate from FSC or PEFC certified forests/plantations and shall be covered by a valid FSC/PEFC Chain of Custody (CoC) certificate documented/controlled as FSC or PEFC 100% through the FSC transfer method or PEFC physical separation method.
- tree species grown in plantations shall in addition not originate from plantations established on areas converted from forest after 1994.

* *https://www.nordic-swan-ecolabel.org/pulp-paper-declaration-portal/what-can-be-declared/forestry-requirements/forestry_requirements_2020/*

** *Regarding wood chips, fibre raw materials from eucalyptus/acacia must be a minimum of 70% certified.*

☒ Enter the names of the tree species included in the product.

☒ Declaration from the applicant/manufacturer/supplier that tree species listed on a)–d) are not used in the product.

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

☒ Valid FSC/PEFC Chain of Custody certificate from supplier/applicant/manufacturer covering the specific tree species and documenting that the wood is controlled as FSC or PEFC 100% through the FSC transfer method or PEFC physical separation method.

☒ The applicant/manufacturer/supplier shall document full traceability back to the certified forest unit and document the following:

- the wood does not originate from an area/region where it is on the IUCN Red List, categorised as CR, EN or VU.

- the tree species does not originate from an Intact Forest Landscape (IFL), as defined in 2002: http://www.intactforests.org/world.webmap.html

- for plantations, the applicant/manufacturer/supplier must document that the tree species does not originate from plantations established on areas converted from forest after 1994.

O4 Traceability and certification

The requirement applies to wood raw material, cork and bamboo used in the product.

Species name

The applicant/manufacturer must state the name (species name) of the wood raw material/bamboo/cork used in the product.

Chain of Custody certification

All wood raw material and bamboo used in Nordic Swan Ecolabelled products must be covered by a valid Chain of Custody certificate in accordance with FSC/PEFC schemes.

The applicant or product manufacturer must have Chain of Custody certification under the FSC/PEFC schemes.

Certified wood raw material, bamboo, and cork

A minimum of 70% by weight/volume of the wood raw material, bamboo and cork used in the Nordic Swan Ecolabelled product must come from forests that are managed in accordance with sustainable forestry management principles established by FSC and PEFC and/or be recycled raw material*.

The remaining proportion of wood raw material in all wood-based panels must be covered by FSC/PEFC's control schemes (FSC controlled wood/PEFC controlled sources) or be recycled material.

The applicant/manufacturer must create a designated product group for Nordic Swan Ecolabelled products in their accounting system to control and meet the required certified content in Nordic Swan Ecolabelled products.

* *See Terms and definitions.*

✉ The names (species names) of the wood raw material, bamboo and cork that are used.

✉ The applicant/manufacturer must provide valid FSC/PEFC CoC certification that includes all wood raw material, bamboo and cork used in the Nordic Swan Ecolabelled product.

✉ The applicant/manufacturer shall provide audited accounting documents showing that at least 70% of the material in the Nordic Swan Ecolabelled product or production line is from forests or areas that are managed in accordance with sustainable forestry management principles that meet the requirements of the FSC or PEFC scheme. If the product or production line includes uncertified material, evidence must be provided that the content of uncertified material does not exceed 30% and is covered by a verification system that ensures that it is legally harvested and meets any other requirements laid down by FSC or PEFC regarding uncertified material.

✉ An applicant/manufacturer who only uses recycled material in the Nordic Swan Ecolabelled product, which is not FSC/PEFC certified, must provide documentary evidence that the material is recycled, e.g., an invoice.

O5 Chemicals – recycled material in wood-based panels

Recycled material in wood-based panels must meet the requirements of the European Panel Federation's (EPF) Standard for delivery conditions of recycled wood[1].

This means that the recycled materials and the panel must not include:

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

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

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

✉ Certification or declaration of compliance with the EFP's Standard for delivery conditions of recycled wood. Alternative, test of the final panel/cladding showing compliance with the requirement.

1.5.2 Lignocellulose raw materials (other than wood)

This requirement concerns panels made from lignocellulose raw materials such as straw, flax, or hemp.

O6 Lignocellulose raw materials (other than wood)

The species name (Latin and English/Nordic language) and geographic origin (country) must be stated for the lignocellulose material.

The lignocellulose raw materials must be waste* or residual products* from other production systems, e.g., straw from grain production.

** Waste and residues as defined in EU Directive 2018/2001/EC. Examples of residual products include straw, chaff, and the non-edible part of maize.*

✉ Name and geographic origin of the lignocellulose raw materials.

✉ Description of the raw material showing that it is a residual or waste product.

1.5.3 Paper and cellulose fibre

The requirements in this chapter comprise raw materials, chemical and emissions in production of pulp and paper used in panels. Pulp and paper are

[1] Regulation - European Panel Federation (europanels.org), visited December 2023

used in several types of panels such as kraft- and decor paper in HPL/ compact laminate.

O7 Ecolabelled paper

If the paper is Ecolabelled with Nordic Swan Ecolabel or EU Ecolabel*, all requirements in this chapter 3.6.3 is fulfilled.

** Valid licence according to Nordic Swan Ecolabel Basic module gen. 3, copy- and printing paper gen. 5 or EU Ecolabel EU11 2019/70 - or later valid generations.*

✉ Nordic Swan Ecolabel or EU Ecolabelled paper: Submit name of paper, manufacturer, and licence number. Appendix 3 may be used.

O8 Prohibited and restricted tree species (pulp and paper)

Nordic Ecolabelling's list of tree species* consists of virgin woods listed

on:

a) CITES (Appendices I, II and III)

b) IUCN Red List, categorised as CR, EN and VU

c) Rainforest Foundation Norway's tree list:

d) Siberian larch (from forests outside the EU)

Exemptions

*Eucalyptus and Acasia used in pulp and paper production are exempted from the list (note**).*

Use of tree species listed on a) CITES (Appendices I, II and III) is not permitted.

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

- the tree species does not originate from an area/region where it is on the IUCN Red List, categorised as CR, EN or VU
- the tree species does not originate from an Intact Forest Landscape (IFL), as defined in 2002 http://www.intactforests.org/world.map.html.
- the tree species shall originate from FSC or PEFC certified forests/plantations and shall be covered by a valid FSC/PEFC Chain of Custody (CoC) certificate documented/controlled as FSC or PEFC 100% through the FSC transfer method or PEFC physical separation method.
- tree species grown in plantations shall in addition not originate from plantations established on areas converted from forest after 1994.

* *https://www.nordic-swan-ecolabel.org/pulp-paper-declaration-portal/what-can-be-declared/forestry-requirements/forestry_requirements_2020/*

** *Regarding pulp, fibre raw materials from eucalyptus/acacia must be a minimum of 70% certified.*

✉ Enter the names of the tree species included in the product. Appendix 3 may be used.

✉ Declaration from the applicant/manufacturer/supplier that tree species listed on a)–d) are not used in the product.

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

✉ Valid FSC/PEFC Chain of Custody certificate from supplier/applicant/manufacturer covering the specific tree species and documenting that the wood is controlled as FSC or PEFC 100% through the FSC transfer method or PEFC physical separation method.

✉ The applicant/manufacturer/supplier shall document full traceability back to the certified forest unit and document the following:

- the wood does not originate from an area/region where it is on the IUCN Red List, categorised as CR, EN or VU.

- the tree species does not originate from an Intact Forest Landscape (IFL), as defined in 2002: http://www.intactforests.org/world.webmap.html

- for plantations, the applicant/manufacturer/supplier must document that the tree species does not originate from plantations established on areas converted from forest after 1994.

O9 Traceability and certification of wood raw materials (pulp and paper)

Species name

The applicant/manufacturer of the panel (containing pulp or laminate) or pulp/paper supplier must state the name (species name) of the fibre raw material used in the pulp/paper.

Chain of Custody certification

All wood raw material used in the pulp or paper must be covered by a valid Chain of Custody certificate in accordance with FSC/PEFC schemes.

The manufacturer/supplier of the pulp or laminate must have valid FSC/PEFC CoC certification.

Certified fibre raw material

A minimum of 70% by weight/volume of the fibre raw material used in the pulp or laminate must come from forests that are managed in accordance with sustainable forestry management principles that meet the requirements of the FSC or PEFC Chain of Custody schemes, and/or be recycled raw material*.

The remaining proportion shall be covered by FSC/PEFC's control schemes (FSC controlled wood/PEFC controlled sources) or be recycled material*.

* *See Terms and definitions.*

✉ Name (species name) of the fibre raw material used. Appendix 3 may be used.

✉ The manufacturer/supplier of the pulp and laminate must present a valid FSC/PEFC CoC certificate, which includes all fibre raw material used in the pulp or laminate.

✉ The panel manufacturer must document that pulp or laminate is purchased from a CoC FSC/PEFC certified subcontractor and provide documentation that the certification requirement of at least 70% certified raw materials has been met, and the remaining proportion is covered by FSC/PEFC's control schemes (FSC controlled wood/PEFC controlled sources. This must be specified on the invoice/delivery note with certification claim.

✉ Valid Nordic Swan Ecolabel and/or EU Ecolabel licence certificate for paper.

O10 Chemicals in the manufacture of pulp and paper

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

✉ Declaration from the manufacture of pulp and paper that the requirement is met. Appendix 3 may be used.

O11 COD emissions from the production of paper and pulp

COD (Chemical Oxygen Demand) emissions to water must be less than the stated COD value in the table below. A description of the preparation and analysis methods is provided in Appendix 3.

The COD is calculated by adding up COD emissions from pulp and paper:

COD mass (kg/ADt) + COD emissions paper machine (kg/ADt).

For paper produced from mixtures of chemical, recycled fibre and mechanical pulps, a weighted limit value is calculated from the proportion of the various pulp types. In the weighted calculation, the percentage of COD emissions from the paper machine must be set to 1 kg/ADT. For example, for 60% unbleached chemical mass and 40% recycled pulp, the calculation is: (14–1 x 0.6) + (4–1 x 0.4) = 7.8 + 1.2 = 9.0 kg/ADT.

Pulp types	Total COD emissions for both pulp and paper (kg/ADt)
Unbleached chemical pulp	14.0
CTMP pulp	19.0
TMP/groundwood pulp	7.0
Recycled fibre pulp	4.0

✉ Information about the types of pulp used in the production of paper. Appendix 3 may be used.

✉ If pulp that has been checked in accordance with Nordic Ecolabelling's Basic Module for paper is used: Description of the producer, production site and name of the pulp.

✉ Description of the sampling procedure including measurement methods and measurement results in the last 12 months from the producers of the paper and pulp.

✉ Calculation from the producers of the paper and pulp showing that the total emissions of COD are below the relevant limit value in the requirement.

1.5.4 Wood-plastic composite material (WPC)

O12 Wood fibre and plastic

The raw materials of plastic and wood fibre in the wood-plastic composite material must meet the following requirements:

Plastic:

The plastic raw material used WPC panels (final product) must consist of:

- Minimum 60% post-consumer recycled plastic* and
- Minimum 100% total recycled plastic*. The min. 60% post-consumer recycled plastic may be included in the 100%.

Recycled plastic must not contain:

- re-worked granulate from reprocessing processes that have obtained an EFSA** or FDA*** approval.

Virgin and recycled plastic must not contain:

- PVC or PVDC.

The traceability of the recycled plastic must be documented with either a) or b) below:

a) Global Recycled Standard certificate or Recycled Claim Standard certificate showing that the plastic is recycled, or other equivalent certification approved by Nordic Ecolabelling.

b) By giving the name of the recycled raw material producer, by documenting that the feedstock used is recycled material and by stating the share of recycled material included in the raw material, see definition in requirement.

Wood fibre:

The wood fibre raw material used in WPC panels (final product) must consist of:

- 100% recycled materials and
- Wood fibre must not originate from wood impregnated with biocides or heavy metals.

** See Terms and definitions.*

*** In line with Commission Regulation (EC) No 282/2008 of 27 March 2008 on recycled plastic materials and articles intended to come into contact with foods.*
**** In line with the Code of Federal Regulations Title 21: Food and Drugs, PART 177 – Indirect food additives: polymers*

✉ Declaration from the manufacturer of the recycled plastic that the plant is not EFSA or FDA approved, and free of PVC or PVDC, see requirement.

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

✉ b) Documentation in the form of an invoice or delivery note from the manufacturer of the panel or cladding which shows that recycled plastic has been purchased to produce the product. Documentation in form of a statement from the recycled material producer, showing type plastic used is recycled material and showing the share of recycled raw material contained in the raw material.

✉ Declaration from the manufacturer/supplier of recycled wood fibre raw materials that the wood fibre is defined as recycled materials and that the wood fibre is not from wood impregnated with biocides or heavy metals.

✉ Documentation (calculation) from the applicant showing that the requirement for share of recycled plastic and wood fibre has been reached.

O13 Chemicals in recycled plastic used in WPC

The used recycled plastic must not contain the following substances:

- halogenated flame retardants
  cadmium
- lead
- mercury
- chromium IV
- arsenic
- phthalates
- polycyclic aromatic hydrocarbons (Benzo[A]Pyrene, Benzo[E]Pyrene, Benzo[A]Anthracene, Dibenzo[A,H]Anthracene, Benzo[B]Fluoranthene, Benzo[J]Fluoranthene, Benzo[K]Fluoranthene, Chrysene)

Impurities up to 100 ppm are permitted.

✉ A test report (XRF, X-ray fluorescence or equivalent method) from the supplier of the recycled composite material showing compliance with the requirement.

✉ Alternatively, the requirement can be document with traceability to the source to substantiate that these substances are not included.

O14 Additives - prohibited substances

Additives in the list below must not be added to plastic (both virgin and recycled plastic). The requirement applies to additives actively added to the polymer raw material in the master batch or compound in production of plastic. The requirement also covers substances that are added during re-compounding of recycled plastic raw materials.

- CMR substances - Carcinogenic, Germ cell mutagenicity, Reproductive toxicity category 1A or B or category 2
  - An exemption is made for titanium dioxide (CAS No. 13463-67-7) classified H351
  - An exemption is made for 1,1,1-Trimethylolpropane (TMP, CAS No. 77-99-6) classified H361
- Substances on the Candidate List*
- Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH**.
- Endocrine disruptors:
  - Substances considered to be potential endocrine disruptors in category 1 or 2 on the EU's priority list of substances for further evaluation of their role in endocrine disruption. See the following link:
    http://ec.europa.eu/environment/chemicals/endocrine/strategy/being_en.htm (Annex L, page 238 onwards)
  - Substances on the EU member state initiative "Endocrine Disruptor Lists", List I and III. See the following links: https://edlists.org/the-ed-lists/list-i-substances-identified-asendocrine-disruptors-by-the-eu

and https://edlists.org/the-ed-lists/list-iii-substances-identified-asendocrine-disruptors-by-participating-national-authorities

- Halogenated organic compounds with the following exceptions:
  - Halogenated organic pigments that comply with the Council of Europe recommendation "Resolution AP (89) 1 on the use of colorants in plastic materials coming into contact with food", point 2.5
- Butylhydroxytoluene (BHT, CAS No. 128-37-0)
- Aziridine and polyazidirines
- Short-chain chlorinated paraffins (C10-C13) and medium-chain chlorinated paraffins (C14-C17).
- Perfluoroalkyl and polyfluoroalkyl substances (PFASs)
- Alkylphenols, alkylphenol ethoxylates (APEO) and other alkylphenol derivates (APD)***.
- Brominated flame retardants.
- Phthalates****
- Pigments and additives based on lead, cadmium, arsenic, chromium (VI), mercury and their compounds.
- Bisphenols and bisphenol derivatives
  - Bisphenol A used in the production of epoxy acrylate is not covered by the requirement.
  - Assessment of regulatory needs: Bisphenols. ECHA – 16 December 2021: Section 2.1: Bisphenols for which further EU RRM is proposed – restriction https://echa.europa.eu/documents/10162/c2a8b29d-0e2d-7df8-dac1-2433e2477b02

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

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

**** Alkylphenol derivative.*

***** Phthalates are esters of 1,2 benzenedicarboxylic acid (orthophthalic acid)*

✉ Safety data sheet for additives in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

✉ A declaration from the plastics manufacturer.

1.5.5 Mineral raw materials

The requirement in this chapter covers sourcing of virgin mineral raw materials and content of heavy metals in the mineral raw materials. The requirements apply to virgin minerals such as natural stones, limestone, volcanic rocks, and silica used in panels such as cement-based -and mineral wool-based panels.

O15 Responsible sourcing of virgin mineral raw materials

The licensee must:

- have a supply chain policy/code of conduct for responsible sourcing of mineral raw materials such as natural stones, limestone, volcanic rocks, and silica. The policy must concern biodiversity and deforestation risk - reducing impact to biodiversity along the whole supply chain. The policy must be both public and communicated to the supply chain.
- have a process to identify all specific mining operations (quarries) where the minerals are extracted from.
- ensure that virgin mineral raw materials used in panels come from mining operations (quarries) with documented biodiversity management and rehabilitation plans.

✉ The most recent version of the public policy and a description of how it is communicated to the supply chain.

✉ List of mining operations supplying virgin minerals to the ecolabelled panel.

✉ Documentation/description of the supplying mining operations biodiversity management and rehabilitation plans.

O16 Heavy metals

Virgin mineral raw materials or mineral biproducts must not exceed the quantities of heavy metals indicated in the table below in accordance with indicated test method:

Heavy metal	Partial opening of the test sample EN 259 Maximum content mg/kg	Total opening of the test sample EN 13656 Maximum content mg/kg
Arsenic	10	30
Lead	56	56
Cadmium	1,6	10
Mercury	1,4	1,4
Chrome (total)	300	300

✉ The declaration from the raw materials producer/-refiner, containing measurement results, measurement methods and measurement frequency. For the description of the measurement method, see Appendix 1.

1.5.6 Cement based- and mineral wool façade panels

The requirements in this chapter comprise cement based- and mineral wool façade panels/cladding.

O17 Cement based- and mineral wool-based facade panels

Mineral wool panels:

At least 50% by weight of the raw materials in the product must consist of recycled materials*

Cement based panels:

At least 30% by weight of the raw materials in the product must consist of renewable and/or recycled materials*

The requirement may be documented as an annual average of the production of Nordic Swan Ecolabelled mineral wool façade panels.

* *See terms and definitions*

✉ Documentation (calculation) from the applicant showing that the requirement for share of recycled materials has been reached.

O18 Chemicals in recycled mineral wool

The used recycled mineral wool must not contain the following substances:

- halogenated flame retardants
- cadmium
- lead
- mercury
- chromium IV
- arsenic
- phthalates
- asbestos
- polycyclic aromatic hydrocarbons (Benzo[A]Pyrene, Benzo[E]Pyrene, Benzo[A]Anthracene, Dibenzo[A,H]Anthracene, Benzo[B]Fluoranthene, Benzo[J]Fluoranthene, Benzo[K]Fluoranthene, Chrysene)

Impurities up to 100 ppm are permitted.

✉ A test report (XRF, X-ray fluorescence or equivalent method) from the supplier of the recycled composite material showing compliance with the requirement.

✉ Alternatively, the requirement can be document with EUCEB certification (European Certification Board of mineral products) or traceability to the source to substantiate that these substances are not included.

1.5.7 Metal - aluminium

The requirement in this chapter applies to aluminium used in fitting system/installation bracket used for fixing panels on facades. Only relevant if the panel is sold together with a unique fitting system/installation bracket in aluminium. Screws, bolts, small mounting brackets, clips and similar is not part of the criteria.

O19 Production of aluminium

The requirement can be met by documenting either A) High proportion recycled or B) Primary aluminium production. (B consist of 4 alternatives):

A) High proportion recycled

A minimum of 75% by weight of aluminium must be recycled.

Recycled aluminium is defined as both pre- and post-consumed, cf. definition in ISO 14021.

The requirement can be verified either by:

- A signed agreement between the aluminium supplier and the manufacturer of the Nordic Swan Ecolabelled product stating that the requirement is met, or
- eBVD or EPD based on product-specific data/data from the aluminium producer´s own production specifically stating the content of recycled aluminium in the product, or
- Valid Hydro Circal certificate.

Or

B) Primary aluminium production

The requirement can be met by one of the 4 alternatives (1-4) below:

The requirement can be verified using either: direct traceability through the supply chain, mass balance approach[2] or by all major suppliers[3].

1. Aluminium production – active sustainability strategy

Aluminium used in the Nordic Swan Ecolabelled product comes from a primary aluminium producer who has an active sustainability strategy focusing on reducing energy consumption and greenhouse gas emissions. The strategy for reducing energy consumption and greenhouse gas emissions shall be quantitative and time-based, and they shall be determined by the company management.

Or

2. Aluminium production – low direct climate effecting emissions

Aluminium used in the Nordic Swan Ecolabelled product comes from a primary aluminium producer whose direct climate-affecting emissions from primary aluminium production does not exceed 1,5 tonnes of CO2e/ton of aluminium produced.

or

3. Aluminium production – low electricity consumption for electrolysis

Aluminium used in the Nordic Swan Ecolabelled product comes from a primary aluminium producer whose electricity consumption for electrolysis does not exceed 15.3 MWh / ton produced aluminium.

or

4. Aluminium production – ASI certified site

A minimum of 50% by weight of aluminium used in the Nordic Swan Ecolabelled product comes from a production site that are certified to the ASI Performance standard[4].

[2] In case of several potential aluminium producers, the supplier of the metal components can verify the requirement by using a mass balance approach if there is an account documenting the annual volumes purchased from the individual aluminium producers. The volumes must correspond to volumes sold to the producer of Nordic Swan Ecolabelled product (e.g., cannot sell a larger volume than the corresponding quantity purchased from the individual aluminium producers)
[3] All major suppliers are compliant with one of the 3 alternatives. Major suppliers are here defined as suppliers delivering 75% of the total volume (w/w) of aluminium components in the Nordic Swan Ecolabelled product.
[4] https://aluminium-stewardship.org/asi-standards/asi-performance-standard (visited November 2022)

High proportion recycled (A):

☒ Alternative 1: There must be a signed agreement between the producer of aluminium/supplier of aluminium and the manufacturer of the Nordic Swan Ecolabelled product stating that the requirement is met. The declaration from the supplier of aluminium can be based on purchase records/average data from several aluminium suppliers.

☒ Alternative 2: eBVD or EPD can be used as documentation if these are based on product-specific data/data from the aluminium producer´s own production and specifically state the content of recycled aluminium in the product.

☒ Alternative 3: Valid Hydro Circal certificate[5].

Primary aluminium production (B):

Alternative 1:

☒ Enclose latest sustainability strategy report or equivalent documentation from the producer of primary aluminium showing fulfilment of the requirement. The producer of primary aluminium can also present specific targets from annual business report with reference to specific numbers and assumptions. Average numbers from the producer of primary aluminium with several steel melting plants is accepted.

☒ Information on type of traceability used to document the requirement.

Alternative 2:

☒ Declaration that the requirement is met, as well as calculation and indication of direct emissions in tonnes of CO2e/ton of aluminium produced.

☒ Information on type of traceability used to document the requirement.

Alternative 3:

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

☒ Information on type of traceability used to document the requirement.

Alternative 4:

☒ Enclose valid ASI Performance certificate from the primary aluminium producer.

☒ Information from the supplier/manufacturer of the constituent aluminium part about which aluminium parts are from certified aluminium production (purchase records).

☒ Information from the supplier/manufacturer of the constituent aluminium parts on type of traceability used to document the requirement.

☒ Documentation from the manufacturer of the Nordic Swan Ecolabelled product that the requirement for share of purchased aluminium from certified aluminium producers is fulfilled – e.g., invoices or other documentation from suppliers.

[5] https://www.hydro.com/en-DK/about-hydro/publications/certificates/ (November 2022)

1.6 Chemicals

The requirements in this chapter apply to chemical products, used in the production of the Nordic Swan Ecolabelled product, such as adhesives, resins, and waxes, surface treatments and surface treatment system. The chapter is divided into 3 sub-sections:

- Requirements concerning chemicals in the production of the Nordic Swan Ecolabelled product, such as adhesives, resins and waxes, Section 1.6.1
- Requirements concerning chemical products used for surface treatment*, Section 1.6.2
- Requirements concerning surface treatment systems, Section 1.6.3.

* *Lamination (thin layer of laminate < 2 mm) on another panel is not considered to be surface treatment. For a wood-based panel with laminate, both elements must fulfil the requirements for the relevant panel type individually, i.e., the wood-based panel and laminate must both meet the requirements for chemicals in Sections 1.6.1.*

Chemical products used in the manufacture of paper, and to print patterns on the decor paper, are not covered by these requirements. Auxiliary substances such as lubricants and detergents are also not covered by these requirements.

Definitions

The requirements in the criteria document apply to all ingoing substances in the chemical product. Impurities are not regarded as ingoing substances and are therefore exempt from the requirements. Ingoing substances and impurities are defined as below, unless stated otherwise.

- **Ingoing substances**: All substances in the product, including additives (e.g., preservatives and stabilisers) in the raw materials. Substances known to be released from ingoing substances (e.g., formaldehyde, arylamine, in situ-generated preservatives) are also regarded as ingoing substances.
- **Impurities**: Residues from production, incl. raw material production, which remain in the chemical product at concentrations below 1000 ppm (0.1000% by weight).

Examples of impurities are reagent residue incl. residues of monomers, catalysts, by-products, “scavengers” (i.e., chemicals used to eliminate/minimise undesirable substances), cleaning agents for production equipment and “carry-over” from other/previous production lines.

1.6.1 Chemicals used in the production of panels

The requirements in this chapter concern chemicals used in the production of the Nordic Swan Ecolabelled product itself such as adhesives, resins, or additives.

O20 Classification of chemical products

Chemical products used in the production of the Nordic Swan Ecolabelled product must not be classified in accordance with the table below.

CLP Regulation 1272/2008		
Hazard statement	**Hazard class and category**	**Hazard code**
Toxic to the environment	Aquatic Acute 1 Aquatic Chronic 1 Aquatic Chronic 2 Ozone	H400 H410 H411 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/repeated exposure	STOT SE 1 STOT RE 1	H370 H372
Carcinogenic[1]	Carc. 1A or 1B Carc. 2	H350 H351
Germ cell mutagenic[1]	Mut. 1A or 1B Mut. 2	H340 H341
Reproductive toxicity[1]	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362

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

Note that responsibility for correct classification lies with the manufacturer.

Exemptions apply for:

- Classification H351 for adhesive products containing methylene diphenyl diisocyanate (MDI).
- Classifications H350, H341, H301, H311 and H331 for adhesive products and resins containing formaldehyde (CAS no. 50-00-0). Formaldehyde emissions are regulated in a separate requirement.
- Classifications H341, H301 and H331 for resins containing a maximum of 10% by weight of phenol (CAS no. 108-95-2).
- Classifications H301, H311, H331 and H370 for resins containing a maximum of 10% by weight of methanol (CAS no. 67-56-1).
- Classifications H351 and H361 for resins containing melamine (CAS no. 108-78-1).
- UV curing products are exempted from classification H411 under the following conditions: There must be a controlled closed process where no discharge to recipient takes place. Spillage and general waste (e.g., cleaning residue) must be collected in containers approved for hazardous waste and handled by a waste contractor.

✉ A declaration from the chemical manufacturer or supplier. Appendix 4 may be used.

✉ A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

✉ Exemption for UV curing products: Description of the process and how waste and general waste are handled, including information about who receives the general waste.

O21 Classification of ingoing substances

Ingoing substances in the chemical product used in production must not be classified as in the table below.

CLP Regulation 1272/2008		
Hazard statement	**Hazard class and category**	**Hazard code**
Carcinogenic[1]	Carc. 1A or 1B Carc. 2	H350 H351
Germ cell mutagenic[1]	Mut. 1A or 1B Mut. 2	H340 H341
Reproductive toxicity[1]	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362
Endocrine disruption for human health	ED HH 1 ED HH 2	EUH380 EUH381
Endocrine disruption for the environment	ED ENV 1 ED ENV 2	EUH431 EUH431
Persistent, Bioaccumulative and Toxic properties Very Persistent, Very Bioaccumulative properties	PBT vPvB	EUH440 EUH441
Persistent, Mobile, and Toxic properties Very Persistent, Very Mobile properties	PMT vPvM	EUH450 EUH451

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

Exemptions apply for:

- Adhesive containing methylene diphenyl diisocyanate (MDI) classified as H351.
- Adhesive and resin containing formaldehyde (CAS no. 50-00-0) classified as H350 and H341.
- Resin containing maximum 10% by weight of phenol (CAS no. 108-95-2) classified as H341.
- Resin containing melamine (CAS no. 108-78-1) classified as H351 and H361.
- Titanium dioxide (CAS no. 13463-67-7) classified as H351.
- 1,1,1-Trimethylolpropane (TMP, CAS no. 77-99-6) classified as H361.

✉ A declaration from the chemical manufacturer or supplier. Appendix 4 may be used.

✉ A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

O22 Prohibited substances

The chemical product used in production must not contain the following substances:

- Substances on the Candidate List*
  - Exemption applies to melamine (CAS No. 108-78-1)
- Substances that have been judged in the EU to be PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative)**
- Halogenated organic compounds.
  - Exemptions apply for Bronopol, IPBC and CMIT/MIT (3:1). These are set out in requirement O24.
- Per- and polyfluoroalkyl substances (PFASs), e.g., PFOA and PFOS
- Butylhydroxytoluene (BHT, CAS No. 128-37-0)
- Aziridine and polyazidirines
- Bisphenols and bisphenol derivatives
  - Bisphenol A used in the production of epoxy acrylate is not covered by the requirement.
  - Assessment of regulatory needs: Bisphenols. ECHA – 16 December 2021: Section 2.1: Bisphenols for which further EU RRM is proposed – restriction https://echa.europa.eu/documents/10162/c2a8b29d-0e2d-7df8-dac1-2433e2477b02
- APEO (alkylphenol ethoxylates) and APD (alkylphenol derivatives/alkylphenols) ***
- Phthalates****
- Pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds
- Endocrine disruptors: Substances on the EU member state initiative “Endocrine Disruptor Lists”, List I, List II and List III, see following links:

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

List II: https://edlists.org/the-ed-lists/list-ii-substances-under-eu-investigation-endocrine-disruption

List III: https://edlists.org/the-ed-lists/list-iii-substances-identified-as-endocrine-disruptors-by-participating-national-authorities

Substances that are transferred to one of the corresponding sub-lists “Substances no longer on list” and that no longer feature on Lists I–III are not prohibited. However, this does not apply to the substances listed in Sub-List II that were evaluated based on regulations or directives that do not have provisions for identifying endocrine disruptors (e.g., the Cosmetics Regulation). These substances may have endocrine disrupting properties. Nordic Ecolabelling will assess these substances on a case-by-case basis, based on the background information provided in Sub-List II.

** The Candidate List can be found on the ECHA website: http://echa.europa.eu/candidate-list-table*

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

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

***** Phthalates are esters of 1,2-benzenedicarboxylic acid (orthophthalic acid).*

✉ A declaration from the manufacturer/supplier of the chemical product. Appendix 4 may be used.

✉ A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

O23 Nanomaterials

The chemical product must not contain nanomaterials*.

Exemptions apply for:

- Pigments. This exemption does not include pigments added for purposes other than colouring.
- Naturally occurring inorganic fillers**.
- Synthetic amorphous silica (SAS)***.
- Polymer dispersions.

** Nanomaterials/-particles are defined according to the EU Commission Recommendation on the Definition of Nanomaterial (2022/C 229/01).*
*** This applies to fillers covered by Annex V point 7 in REACH.*

**** This applies to non-modified synthetic amorphous silica and surface-treated pyrogenic silica, as long as the silica particles form aggregates or agglomerates in the end product. For surface treated nanoparticles, the surface treatment must meet the chemical requirements in O31 (Classification of ingoing substances) and O32 (Prohibited substances).*

✉ A declaration from the chemical manufacturer that the chemical product does not contain any nanomaterial. Appendix 4 may be used.

O24 Preservatives

The content of preservatives in the chemical product must meet the following limit values:

Preservative	Limit value
Bronopol	≤ 500 ppm (0.05% by weight)
IPBC (iodopropynyl butylcarbamate)	≤ 2000 ppm (0.20% by weight)
Mixture (3:1) of CMIT/MIT (5 chloro-2-methyl-4-isothiazolin-3-one / 2-methyl-4-isothiazolin-3-one)	≤ 15 ppm (0.0015% by weight)
MIT (2-methyl-2H-isothiazol-3-one)	≤ 100 ppm (0.01% by weight)
Total amount of isothiazolinones	≤ 500 ppm (0.05% by weight).

✉ A declaration from the chemical manufacturer or supplier. Appendix 4 may be used.

✉ A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

O25 Volatile organic compounds in adhesives

Volatile organic compounds (VOC), including volatile aromatic compounds (VAH), may be present in the adhesive to a maximum of 3% by weight.

VAHs may be present in the adhesive to a maximum of 0.1% by weight.

Resin used in the production of laminate (HPL and compact laminate) is exempted from the requirement.

Volatile organic compounds (VOC), see terms and definitions.

✉ Declaration from the adhesive manufacturer/supplier that the requirement is fulfilled. Appendix 4 may be used.

O26 Free formaldehyde

The content of free formaldehyde (from formaldehyde not deliberately added or from formaldehyde-releasing substances) must not exceed 0.02% by weight (200 ppm) in the chemical product.

For adhesive products, up to 0.2% by weight (2000 ppm) of free formaldehyde is permitted.

✉ A declaration from the manufacturer/supplier of the chemical product that the requirement is fulfilled. For adhesive products used for load-bearing structures a declaration must also be sent in by the panel producer that describes how the workers are protected from exposure when the adhesive and hardener is mixed and applied. Appendix 4 may be used.

1.6.2 Surface treatment

The requirements in this chapter apply to surface treatment* products such as lacquers, oils, paints, and stains. There are also requirements for foiling with plastic. Any filler used is also covered by these requirements.

** Lamination (thin layer of laminate < 2 mm) on another panel is not considered to be surface treatment. For a wood-based panel with laminate, both elements must fulfil the requirements for the relevant panel type individually, i.e., the wood-based panel and laminate must both meet the requirements for chemicals in Sections 1.6.1.*

O27 Plastic foiling

The type of plastic used for wrapping the surface must be stated.

Foiling with chlorinated plastics such as PVC is not permitted.

Adhesives used for foiling must fulfil the requirements in Sections 1.6.1.

✉ State plastic type for foiling.

O28 Ecolabelled products

If the chemical product is Ecolabelled with Nordic Swan Ecolabel or EU Ecolabel*, all requirements in this chapter 1.6.2 is fulfilled.

Solid wood used for cladding:

Nordic Swan Ecolabel or EU Ecolabel* paint or varnish must be used for any surface treatment of solid wood used for cladding.

** Valid licence according to Nordic Swan Ecolabel Paint and varnishes gen. 4 or EU Ecolabel EU44 2014/312 - or later valid generations.*

✉ Nordic Swan Ecolabel or EU Ecolabelled paint or varnish: Submit name of product, manufacturer, and licence number.

O29 Classification of chemical products

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

CLP Regulation 1272/2008		
Hazard statement	**Hazard class and category**	**Hazard code**
Toxic to the environment*	Aquatic Acute 1 Aquatic Chronic 1 Aquatic Chronic 2 Ozone	H400 H410 H411 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/repeated exposure	STOT SE 1 STOT RE 1	H370 H372
Respiratory sensitisation	Resp. Sens. 1, 1A or 1B	H334
Carcinogenic[1]	Carc. 1A or 1B Carc. 2	H350 H351
Germ cell mutagenic[1]	Mut. 1A or 1B Mut. 2	H340 H341
Reproductive toxicity[1]	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362

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

* *Exceptions are made for UV curing surface treatment products classified as environmentally hazardous if requirement O30 is fulfilled.*

Note that responsibility for correct classification lies with the manufacturer.

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

✉ Declaration from the manufacturer of the chemical products used in the surface treatment (system). Appendix 5 may be used.

O30 UV curing surface treatment system

UV curing surface treatment products must be applied to the material in a controlled closed process where no discharge to recipient takes place. Spillage and general waste (e.g., cleaning residue) must be collected in containers approved for hazardous waste and handled by a waste contractor.

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

O31 Classification of ingoing substances

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

CLP Regulation 1272/2008		
Hazard statement	**Hazard class and category**	**Hazard code**
Carcinogenic[1]	Carc. 1A or 1B Carc. 2	H350 H351
Germ cell mutagenic[1]	Mut. 1A or 1B Mut. 2	H340 H341
Toxic for reproduction[1]	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362
Endocrine disruption for human health	ED HH 1 ED HH 2	EUH380 EUH381
Endocrine disruption for the environment	ED ENV 1 ED ENV 2	EUH431 EUH431
Persistent, Bioaccumulative, and Toxic properties Very Persistent, Very Bioaccumulative properties	PBT vPvB	EUH440 EUH441
Persistent, Mobile, and Toxic properties Very Persistent, Very Mobile properties	PMT vPvM	EUH450 EUH451

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

Exemptions apply for:

- Photo initiators classified as H351, H341 or H361
- Titanium dioxide (CAS no. 13463-67-7) classified as H351
- 1,1,1-Trimethylolpropane (TMP, CAS no. 77-99-6) classified as H361
- Trimethylolpropane triacrylate (TMPTA) with CAS 15625-89-5 classified as Carc 2, H351
- Mequinol (CAS no. 150-76-5) classified as H361
- The hardener in two-component UV products can be exempted from the requirement if the following is met: it must be documented that the workers are not exposed to the components, e.g., by using safety equipment when mixing or that the mixing takes place automatically without exposure of the workers and that the application of the finished two-component system is done in a closed system.

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

✉ A declaration from the manufacturer of the chemical product(s) used in the surface treatment. Appendix 5 may be used.

✉ Exemption for two-component products: description of the application system and how workers are protected from exposure.

O32 Prohibited substances

The chemical product must not contain the following substances:

- Substances on the Candidate List*
- Substances that have been judged in the EU to be PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative)**
- Halogenated organic compounds with the following exceptions:
  - The preservatives bronopol, IPBC and CMIT/MIT (3:1). These are addressed in a separate requirement, see O45.
  - Halogenated organic pigments that comply with the Council of Europe recommendation "Resolution AP (89) 1 on the use of colourants in plastic materials coming into contact with food", point 2.5
  - Epoxy acrylate used in UV curing surface treatment products
- Per- and polyfluoroalkyl substances (PFASs), e.g., PFOA and PFOS
- Aziridine and polyazidirines
  - An exemption is made for aziridines/polyaziridines if the substance is not classified as carcinogenic, mutagenic or reprotoxic from any manufacturer or in ECHA.
- Bisphenols and bisphenol derivatives
  - Bisphenol A used in the production of epoxy acrylate is not covered by the requirement.
  - Assessment of regulatory needs: Bisphenols. ECHA – 16 December 2021: Section 2.1: Bisphenols for which further EU RRM is proposed – restriction https://echa.europa.eu/documents/10162/c2a8b29d-0e2d-7df8-dac1-2433e2477b02
- APEO (alkylphenol ethoxylates) and APD (alkylphenol derivatives)/alkylphenols ***
- Phthalates****
- Pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds
- Volatile aromatic hydrocarbons (VAH). They are permitted in the chemical product as an impurity at a level of not more than 1% by weight
- Endocrine disruptors: Substances on the EU member state initiative "Endocrine Disruptor Lists", List I, List II and List III. See links below.
  - An exemption is made for BHT that is included in UV curing lacquers and paints. If BHT receives a harmonised classification that means the substance does not meet the requirements in the criteria document, the exemption will lapse.

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

List II: https://edlists.org/the-ed-lists/list-ii-substances-under-eu-investigation-endocrine-disruption

List III: https://edlists.org/the-ed-lists/list-iii-substances-identified-as-endocrine-disruptors-by-participating-national-authorities

Substances that are transferred to one of the corresponding sub-lists "Substances no longer on list" and that no longer feature on Lists I–III are not prohibited. However, this does not apply to the substances listed in Sub-List II that were evaluated on the basis of regulations or directives that do not have provisions for identifying endocrine disruptors (e.g., the Cosmetics Regulation). These substances may have endocrine disrupting properties. Nordic Ecolabelling will assess these substances on a case-by-case basis, based on the background information provided in Sub-List II.

** The Candidate List can be found on the ECHA website: http://echa.europa.eu/candidate-list-table*

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

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

***** Phthalates are esters of 1,2-benzenedicarboxylic acid (orthophthalic acid).*

✉ Safety data sheet for each chemical product used in surface treatment in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

✉ Declaration from the manufacturer of the chemical product(s) used in the surface treatment. Appendix 5 may be used.

O33 Nanomaterials

The chemical product must not contain nanomaterials*.

Exemptions apply for:

- Pigments. This exemption does not include pigments added for purposes other than colouring.
- Naturally occurring inorganic fillers**.
- Synthetic amorphous silica (SAS)***.
- Polymer dispersions.

** Nanomaterials/-particles are defined according to the EU Commission Recommendation on the Definition of Nanomaterial (2022/C 229/01).*
*** This applies to fillers covered by Annex V point 7 in REACH.*

**** This applies to non-modified synthetic amorphous silica and surface-treated pyrogenic silica, as long as the silica particles form aggregates or agglomerates in the end product. For surface treated nanoparticles, the surface treatment must meet the chemical requirements in O31 (Classification of ingoing substances) and O32 (Prohibited substances).*

✉ A declaration from the chemical manufacturer that the chemical product does not contain any nanomaterial. Appendix 5 may be used.

O34 Preservatives

The content of preservatives in the chemical product must meet the following limit values:

Preservative	Limit value
Bronopol	≤ 500 ppm (0.05% by weight)
IPBC (iodopropynyl butylcarbamate)	≤ 2000 ppm (0.20% by weight)
Mixture (3:1) of CMIT/MIT (5 chloro-2-methyl-4-isothiazolin-3-one / 2-methyl-4-isothiazolin-3-one)	≤ 15 ppm (0.0015% by weight)
MIT (2-methyl-2H-isothiazol-3-one)	≤ 100 ppm (0.01% by weight)
Total amount of isothiazolinones	≤ 500 ppm (0.05% by weight).

✉ A declaration from the chemical manufacturer or supplier. Appendix 5 may be used.

✉ A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation (EC) No. 1907/2006).

O35 Free formaldehyde

The content of free formaldehyde in each individual chemical product used for surface treatment must not exceed 0.02% by weight (200 ppm).

✉ Declaration from the manufacture of the chemical product(s) in the surface treatment system. Appendix 5 may be used.

1.6.3 Surface treatment system

O36 Application method and quantity applied – surface treatment

The following information must be given for each surface treatment system used:

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

b) Quantity applied (g/m^2), number of coats and application method(s) used

c) The following efficiency rates must be used when calculating VOC quantities in subsequent requirements:
   - Automated spray with no recycling: 50%
   - Automated spray with recycling: 70%
   - Spray application, electrostatic: 65%
   - Spray application, bell/disk: 80%
   - Roller coating: 95%
   - Curtain coating: 95%
   - Vacuum coating: 95%
   - Dipping: 95%
   - Rinsing: 95%

The efficiency rates are standard values. Other efficiency rates may be used if they can be documented.

✉ Description from the performer of the surface treatment of each surface treatment system used, in line with the requirement.

O37 Quantity of applied volatile organic compounds (VOC)

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

a) The total VOC content must not exceed 5% by weight, or

b) The total amount of VOCs applied must not exceed 10 g/m² treated surface.

The total amount of VOCs in option b) is calculated using the following formula:

$$\frac{\text{Applisert mengde av overflatebehandlingsprodukt } \left(\frac{\text{g}}{\text{m}^2}\right) \times \text{Andel VOC i overflatebehandlingsproduktet } (\%)}{\text{Overflatebehandlingens virkningsgrad}(\%)}$$

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

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

☒ Declaration from the manufacturer/supplier of the chemical products in the surface treatment system, detailing the quantity of VOCs in each product.

☒ A calculation from the performer of the surface treatment showing that alternative b) in the requirement is met if the surface treatment system does not meet alternative a).

1.7 Emissions

1.7.1 Emissions from the production – COD

O38 Emissions of COD from wet processes

The requirement covers wet processes in panel production.

COD (Chemical Oxygen Demand) emissions to water must be maximum 20 g COD/kg product (unfiltered sample).

A description of the preparation and analysis methods is given in Appendix 1.

☒ Measurement results including information on sampling programmes and measurement methods for the past 12 months and measurement frequency.

1.7.2 Emissions from the production – working environment

O39 Emissions to air from production of laminate in HPL, compact laminate and panels based on resin binder

Laminate or panels produced with resins containing formaldehyde and phenol must adhere to the following hygienic limit values for emissions to air in the workplace (gate to gate at the laminate production site)*:

- The average value during an 8-hour period must not exceed:
- 0.3 ppm (0.37 mg/m³) for formaldehyde
- 2 ppm (8 mg/m³) for phenol.

- The average value during a reference period of 15 minutes must not exceed:
- 0.6 ppm (0.74 mg/m^3) for formaldehyde
- 4 ppm (16 mg/m^3) for phenol.

** If the legislation in the country in question has lower limit values than those stated in the requirement, the legal limit values must be fulfilled.*

✉ Test report showing compliance with the requirement. The report shall contain information about measurements, sampling programmes, measurement methods and measurement frequency. For analysis methods, see Appendix 1.

✉ Alternative documentation showing the legal requirements of the country in which production takes place. If the legislation in the individual country has lower limit values than those stated in the requirement, no further documentation is necessary.

O40 Emissions of dust

The following limit values for emissions to indoor air must not be exceeded during the manufacture of panels/cladding in relation to the working environment.

The requirement relates to panels/cladding in which the content of mineral raw materials or wood raw materials individually accounts for more than 5% by weight of the panel/cladding:

- Mineral dust, inert: 10 mg/m^3
- Mineral dust, inert, breathable: 5 mg/m^3
- Mineral wool: 1 fibre/cm^3
- Wood dust, breathable: 2 mg/m^3
- Organic dust, total: 5 mg/m^3

If the legislation in the individual country has a lower limit value than stated in the requirement, the legal limit value must be complied with

✉ Test report showing compliance with the limit value. The report shall contain information about measurements, sampling programmes, measurement methods and measurement frequency. For analysis methods, see Appendix 1.

✉ Alternative documentation showing the legal requirement in the country where production takes place. If the legislation in the individual country has lower limit values than those stated in the requirement, no further documentation is necessary.

1.8 Climate and energy

This chapter contains requirements for the energy consumption in the production of the different types of panels and specific type of raw materials used in the panels.

The energy consumption is calculated as MJ/kg product produced, and encompasses all energy used from **gate to gate** (phase A3 in EPDs) at the panel production site. Energy consumption also needs to be calculated for specific type

of raw materials such as pulp/paper, resin/glue, laminate, cement, and mineral wool used in panels.

The requirements must be documented in the form of energy consumed (actual energy used in production) without the use of primary energy factors.

The requirement may be documented either just for the specific production of the ecolabelled panel or for the company's total annual production.

System boundary for the requirement: Energy consumption for extraction of raw materials, transports of raw materials or any surface treatment is not part of the energy requirement. The energy requirements do not apply to raw materials that are included by less than **5 wt%** of the panel.

Further descriptions of how the energy calculation should be carried out can be found in Appendices 6.

1.8.1 Panels made from renewable raw materials

The requirements apply to energy consumption in the production of; kraft paper and paper pulp used in HPL, compact laminate, wood-based panels and panels made from other lignocellulose raw materials.

O41 Energy consumption in the production of kraft paper and pulp that is included in HPL and compact laminate

The requirement covers pulp and paper used in the production of kraft paper.

The requirement does not cover the production of decor paper.

The following requirements must be met:

$P^*_{electricity(total)} < 2.5$

$P^*_{fuel(total)} < 2.5$

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

** P is the energy score for the paper and pulp production. The energy scores from the production of both the paper and the pulps are included in $P_{electricity(total)}$ and $P_{fuel(total)}$. A more detailed description of how the calculation should be carried out can be found in Appendix 2.*

TMP/GW = Thermomechanical pulp/groundwood

✉ If pulp that has been checked in accordance with Nordic Ecolabelling's Basic Module for paper is used: Description of the producer, production site and name of the pulp.

✉ Calculation from the producers of the paper and pulp showing that the point limit is fulfilled. A calculation sheet has been developed for the energy calculation, which can be obtained from Nordic Ecolabelling.

O42 Energy consumption – laminate production

Energy consumption in the production of laminate must not exceed the following limit values:

Panel type	Energy consumption MJ/kg panel
Compact laminate HPL ≥ 2 mm included	8 MJ/kg
Other types of laminate ≤ 2 mm HPL ≤ 2 mm included	11 MJ/kg

A detailed description of how to perform the calculation is given in Appendix 6.

✉ Calculation showing compliance with the requirement. The calculation must contain information about the quantity of panels produced, electricity and fuel consumed, and which fuel sources have been used.

O43 Energy consumption – wood-based panels

Energy consumption in the production of these panels must not exceed the limit values given in the table below:

Panel type	Energy consumption MJ/kg panel
Particleboard	6,5 MJ/kg
MDF and HDF	9 MJ/kg
Wood-based panels – wet process	13 MJ/kg
OSB	9 MJ/kg
Plywood	9 MJ/kg
LVL	9 MJ/kg
SWP	5 MJ/kg

If a type of wood-based panel is laminated, the wood-based panel must fulfil the requirement limit here, while the laminate must fulfil the requirements for laminate in O41.

A detailed description of how to perform the energy calculation is given in Appendix 6.

✉ Calculation showing compliance with the requirement. The calculation must contain information about the quantity of panels produced, electricity and fuel consumed, and which fuel sources have been used.

O44 Energy consumption – panels made from other lignocellulose raw materials

Energy consumption in the production of panels based on other renewable raw materials, such as straw, linen or hemp, must not exceed 1 MJ/kg.

A detailed description of how to perform the calculation is given in Appendix 6.

✉ Calculation showing compliance with the requirement. The calculation must contain information about the quantity of panels produced, electricity and fuel consumed, and which fuel sources have been used.

O45 Energy consumption - Solid wood panels and cladding

The energy consumption in production of solid wood panels/cladding must not exceed 1350 MJ/m^3.

The requirement includes energy use (electricity and heat) from gate to gate at the production site e.g., drying, sawing, shaping/profiling, planning, surface

treatment and packaging. Any drying and sawing occurring with subcontractors must be included in the calculation. Energy consumption is calculated as an annual average for either just the ecolabelled production or for the whole production site that is relevant for Nordic Swan Ecolabelled panels.

✉ Calculation showing compliance with the requirement. The calculation must include information about suppliers, the quantity from each supplier and the consumption of electricity and fuel, as well as the fuel sources used.

1.8.2 Panels made from mineral- and non-renewable raw materials

The requirements apply to energy consumption in the production of; materials based on wood plastic composite (WPC), mineral wool-based panels, cement, and cement-based panels.

O46 Energy consumption - Wood plastic composite (WPC)

The energy consumption in production of panels made of WPC must not exceed 3 MJ/kg.

The requirement includes energy use (electricity and heat) from gate to gate at the production site e.g., pumping, mixing, extrusion, injection-/compressing moulding, cooling, surface treatment, cutting and packaging. For more information, see Appendix 6.

✉ Calculation showing compliance with the requirement. The calculation must contain information about the quantity of panels produced, electricity and fuel consumed, and which fuel sources have been used.

O47 Energy consumption - mineral wool-based panel (incl. facing/finishing)

Production of mineral wool-based panels must comply with a) energy consumption in production of mineral wool-based panels and b) use of fossil fuels.

a) Energy consumption
   - The energy consumption in production of mineral wool-based panels must not exceed 17 MJ/kg panel.

The requirement includes energy use (electricity and heat) from gate to gate at the production site e.g., cutting, facing the mineral wool, surface coating and packaging. Manufacturing of mineral wool or fleece/glass fleece and transport is not part of the requirement.

b) Fossil fuels
   - Fossil oil and coal must not be used as fuels for production of process heat in the production of mineral wool-based panels.

Necessary use of fossil oil e.g., in planned maintenance stops, emergency maintenance stops, as a reserve and tip fuel (peak load fuel) or at start-ups for regulation of the combustion temperature in a heat and co-generation boiler is allowed. Use of natural gas and liquid petroleum gas (LPG) is allowed in the production.

✉ A) Calculation showing compliance with the requirement. The calculation must contain information about the quantity of panels produced, electricity and fuel consumed, and which fuel sources have been used.

✉ B) The manufacturer of mineral wool-based panels shall confirm that fossil oil and/or coal are not used as fuel to produce process heat in the production of panels.

O48 Energy consumption - Cement

Cement defined according to EN 197-1 must comply with the requirement a) global warming potential (GWP) and b) fossil fuels:

a) **The total global warming potential (GWP)**

- The total global warming potential (GWP) from cradle-to-gate shall not exceed the values given in table below.

Table 1: Limit values for product-specific emissions for cement. Product specific GWPtot for the cradle to gate system boundary (A1-A3)

Cement/hydraulic binder type	GWPtot
White cement clinker	0.973 tCO^2e/tonne white cement clinker
Grey cement clinker	0.722 tCO^2e/tonne grey cement clinker
Lime	0.746 tCO^2e/tonne lime

b) **Fossil fuels**

- Fossil oil and coal must not be used as fuels* for production of process heat in the production of cement.

Necessary use of fossil oil e.g., in planned maintenance stops, emergency maintenance stops, as a reserve and tip fuel (peak load fuel) or at start-ups for regulation of the combustion temperature in a heat and co-generation boiler is allowed.

** Use of natural gas and liquefied petroleum gas (LPG) is allowed.*

✉ A) Product-Specific Type III Environmental Product Declaration (EPD) in accordance with EN 15804+A2 & ISO 14025 / ISO 21930 and PCR/c-PCR showing that the GWP limit is met.

✉ B) The cement manufacturer shall confirm that fossil oil and/or coal are not used as fuels to produce process heat in the production of cement.

✉ Documentation from the licensee showing that the specific cement is used in the product.

O49 Energy consumption - cement-based panels

The energy consumption in production of fibre cement flat sheets must not exceed 2 MJ/kg panel.

The requirement includes energy use (electricity and heat) from gate to gate at the production site e.g., pumping, refining, forming, pressing, drying, cutting, and packaging. Manufacturing of cement and transport is not part of the requirement.

✉ Calculation showing compliance with the requirement. The calculation must contain information about the quantity of panels produced, electricity and fuel consumed, and which fuel sources have been used.

1.9 Circularity

The requirements in this chapter concern resource efficiency that have the function to increase the circularity of panels and cladding. These requirements deal with durability/expected lifespan, instructions, maintenance, and take-back systems.

O50 Durability - expected lifespan

The durability or expected lifespan of the panel must be at least 50 years.

Surface treated solid wood: The expected lifespan of the product shall relate to its declared technical performance and to any maintenance to provide the declared performance during the expected lifespan.

By durability/expected lifespan is meant the stated service life (reference service life, RSL) in technical documents such as EPDs, ETAs or other third- party verified declarations.

✉ A declaration of durability/expected lifespan of the panel must be submitted in accordance with an EPD, ETA or other third-party verification of the product's performance.

O51 Information for consumers

Consumer means both private consumers and professional operators.

The following product information should accompany the product and/or be available for download on the manufacturer's website:

- Product information such as materials used in the panel, colour, and surface structure.
- Specify the standards by which the product is tested.
- How the product is to be stored and handled before installation, e.g., at the construction site.
- Instructions for assembly (installation manual) and instructions for any surface treatment after installation.
- Information for care and maintenance.
- In case of pre-surface treated solid wood cladding - recommendation to use relevant ecolabelled paint to obtain proper maintenance to ensure durability.
- Information related to reparability.
- Information related to end-of-life of the products.

The information must be available in the language of each country in which the Nordic Swan Ecolabelled product is marketed.

✉ Product information intended for customers.

O52 Take back system

The manufactures of panels or cladding must:

- offer a system for taking back products, e.g., old used panels, incorrect deliveries, faulted product, panels not used in the construction process and so on,

or

- be in a process/test/pilot face to establish a system for taking back products, e.g., old used panels, incorrect deliveries, faulted product, panels not used in the construction process and so on.

✉ Description of the offered take back system or planed/tested take back system.

1.10 Innovation

The requirement in this chapter covers various areas where Nordic Ecolabelling sees an opportunity to promote manufacturers that contribute to innovation, e.g., by using bio-based raw materials for adhesive production; to the circular economy or reduced greenhouse gas emissions; and to measures concerning biodiversity. One of the points must be fulfilled, and the manufacturer can decide which measure they wish to fulfil. This offers flexibility. Nordic Ecolabelling would also like to provide signals as to what may become mandatory in the next revision of the criteria.

O53 Innovation in production

The applicant/producer must fulfil at least one of the following 12 options:

Area	Requirement options
Chemicals	Adhesives and/or surface treatment products, such as paints, lacquers, or stains, used in the production of the Nordic Swan Ecolabelled product are Nordic Swan Ecolabelled.
	No adhesives based on urea-formaldehyde or isocyanate are used in the production of the Nordic Swan Ecolabelled product.
	None of the ingoing substances that are contained in the chemical products used in the production of the Nordic Swan Ecolabel product are classified as SVHC or CMR.
Raw materials and biodiversity	A minimum 100% by weight of the wood raw material, bamboo and cork used in the Nordic Swan Ecolabelled product (production line) comes from forests that are managed in accordance with sustainable forestry management principles/recycled wood raw material as defined by FSC or PEFC and is covered by a valid Chain of Custody certificate in accordance with the FSC/PEFC schemes.
	A minimum 55% by weight of the plastic used in the Nordic Swan Ecolabelled WPC panel (production line) is post-consumer* recycled raw material.
	A minimum 25% by weight of the raw materials used in the Nordic Swan Ecolabelled mineral wool-based façade panels (production line) is post-consumer* recycled raw materials.
	A minimum 15% by weight of the raw materials used in the Nordic Swan Ecolabelled cement-based panels (production line) is post-consumer* recycled raw materials.
Climate	The production (production line) of the Nordic Swan Ecolabelled product, is fossil-free*. ** Fossil-free means that the energy used for the production of heat, steam or pressure on the production line is not based on fossil energy sources such as oil, diesel and natural gas. Electricity is not covered by the requirement.*
	Energy consumption in the production of the Nordic Swan Ecolabelled product is at least 10% lower than the limit values specified in section 3.9.
	The manufacturer has its own energy production, e.g., solar panels, solar collectors, or its own wind turbine, which is used for the manufacturing of the Nordic Swan Ecolabelled panels or cladding. This does not apply to heat pumps.

End of life - circular economy	The manufacturer of panels has a fully operational take-back system where: - new panels contain min. 5% post-consumer recycled material from reprocessed own products collected via the system.
	The manufacturer of panels provides a service of selling reused panels directly or has undergone a new surface treatment.

✉ Documentation in relation to the above-mentioned alternatives in the requirement.

2 Licence maintenance

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

O54 Customer complaints

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

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

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

O55 Traceability

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

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

✉ Please upload your routine or a description.

Regulations for the Nordic Ecolabelling of products

When the Nordic Swan Ecolabel is used on products the licence number shall be included.

More information on graphical guidelines, regulations and fees can be found at www.nordic-swan-ecolabel.org/regulations

Follow-up inspections

Nordic Ecolabelling may decide to check whether exterior panels and cladding fulfils Nordic Ecolabelling requirements during the licence period. This may involve a site visit, random sampling, or similar test.

The licence may be revoked if it is evident that exterior panels and cladding does not meet the requirements.

Random samples may also be taken in-store and analysed by an independent laboratory. If the requirements are not met, Nordic Ecolabelling may charge the analysis costs to the licensee.

Criteria version history

Nordic Ecolabelling adopted generation 2.0 of the criteria for exterior panels and cladding on XX on DAY MONTH YEAR. The criteria are valid until DAY MONTH YEAR.

New criteria

As part of any future evaluation of the criteria, it will be relevant to consider the following:

- Product definition - new types of panels and cladding for exterior use.
- Resources/use of raw materials.
- Energy consumption in both production of relevant raw materials and production of panels.
- End of life

Appendix 1 Laboratories and methods for testing and analysis

General requirements for test and analysis laboratories

Tests must be carried out in a correct and competent way. The analysis laboratory/test institute must be impartial and professional.

If accreditation is not separately required, the test and/or analysis laboratory must comply with the general requirements of the EN ISO 17025 standard for the quality control of test and calibration laboratories or have official GLP status.

The applicant's own testing laboratory may be approved for analysis and testing if:

- the authorities monitor the sampling and analysis process, or if
- the manufacturer has a quality management system encompassing sampling and analysis and has been certified to ISO 9001 or ISO 9002, or if
- the manufacturer can demonstrate agreement between a first-time test conducted at the manufacturer's own laboratory and testing carried out in parallel at an independent test institute, and that the manufacturer takes samples according to a set sampling plan.

Test method for COD emissions (wet process) O38

COD content shall be tested in accordance with ISO 6060 (Water quality — Determination of the chemical oxygen demand) or equivalent. If another analysis method is used, the licensee must show that it is equivalent. An analysis of PCOD or BOD may also be used as verification if a correlation with COD can be demonstrated. The method for measuring TOC is ISO 8245 Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC).

Sample frequency: Emissions to water are calculated as the annual average value and are based on at least one representative daily sample per week. Alternatively, a sampling frequency set by the authorities may also be approved.

Sampling: Water samples must be taken after the process wastewater has been treated in any internal water treatment plant. The flow at the time of sampling must be indicated. If the process wastewater is externally purified with other wastewater, the analysis result should be reduced by the documented efficiency of the COD in the external water treatment plant. The analyses must be carried out on unfiltered and un-sedimented samples in accordance with standard ISO 6060.

Working environment – emissions to air

Air measurements must be carried out in accordance with standardised test methods in this area, such as EN 689 Workplace exposure – Measurement of exposure by inhalation to chemical agents – Strategy for testing compliance with occupational exposure limit values; EN 482 Workplace exposure – Procedures for

the determination of the concentration of chemical agents – Basic performance requirements; or equivalent method approved by Nordic Ecolabelling.

EN 14042 Workplace atmospheres – Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.

Appendix 2 Energy requirements for paper and pulp production

Energy calculation guidelines

Use of energy in the form of fuel and electricity is subject to requirements. Through information on the actual energy consumption during production in relation to set reference values, an energy point is calculated.

The energy calculation covers the entire paper product; both the paper production and the pulps used. Fillers in paper and transport of raw materials as well as within the factory area shall not be included in the energy calculation.

Non-integrated pulp mill

Electricity

The calculations must include both purchased and on-site produced electricity.

Electricity = on-site produced electricity + purchased electricity - sold electricity.

The calculation of electricity consumption must be based on invoices and readings from electricity meters. On-site produced electricity is documented using readings from electricity meters. The requirement covers all processes from debarking to drying the pulp. An exemption applies to electricity for offices or lighting in the factory area. The average electricity consumption can be used for all pulps if the pulp mill only produces pulps of equivalent quality using the same type of process.

Fuel

The calculation must include both purchased fuel and fuel produced at the plant, divided into renewable and fossil fuels. The pulp producer must report the fuel used for on-site generated electricity and should deduct the fuel for electricity before reporting it to the paper manufacturer. The paper manufacturer deducts the fuel consumption from internally produced electricity using a factor of 1.25 in its own energy calculation.

Fuel pulp = fuel produced at the plant + purchased fuel - sold fuel * (sold fuel and/or heat/0,8)

The amount of fuel purchased must be adjusted to the quantities at the start and end of the current year. Consumption of internally produced fuel from bark, shavings and other wood residues is calculated using the thermal values for the fuels used or measured.

* *Excess energy*

Excess energy sold in the form of electricity, steam or heat is subtracted from the total consumption. The amount of fuel used to produce electricity or heat is calculated by dividing the sold electricity or heat by 0.8. This is equivalent to an average efficiency for the total production of electricity and heat.

Alternatively, the actual efficiency of the plant in the conversion of fuel to heat energy can be used.

Verification

An overview of the factory's energy supply system showing the number of boilers, with information about the boiler effect and which fuel is used.

Report on the amount of purchased, on-site produced and sold electricity.

Report on the amount of purchased, on-site produced and sold fuel/heat.

Conversion factors and efficiency must be stated if thermal energy has been re-calculated to fuel.

The calculation sheet produced by Nordic Ecolabelling can be used.

Non-integrated paper mill

Electricity

The calculations must include both purchased and on-site produced electricity.

Electricity = on-site produced electricity + purchased electricity - sold electricity.

The calculation of electricity consumption must be based on invoices and readings from electricity meters. On-site produced electricity is documented using readings from electricity meters. The requirement covers all processes from pulping to drying the base paper. An exemption applies to electricity for offices or lighting in the factory area. The average electricity consumption can be used for all paper if the paper mill only produces paper of equivalent quality using the same type of process.

Fuel

All purchased fuel must be included in the calculations, divided into fossil and renewable fuels.

Fuel paper = purchased fuel - sold heat converted to excess energy*

The amount of purchased fuel must be adjusted to the quantities at the start and end of the current year.

* *Excess energy*

Excess energy sold in the form of electricity, steam or heat is subtracted from the total consumption. The amount of fuel used to generate electricity or heat that is sold off is calculated by dividing the sold electricity or heat by 0.8. The coefficient of 0.8 is equivalent to the average energy efficiency for total heat and electricity production. Alternatively, the actual energy efficiency of the plant in the conversion of fuel to heat energy can be used.

Verification

An overview of the paper machinery's energy supply system showing the number of boilers, with information about the boiler effect and which fuel is used.

Report on the amount of purchased, on-site produced and sold electricity.

Report on the amount of purchased, on-site produced and sold fuel/heat

Conversion factors and efficiency must be stated if thermal energy has been re-calculated to fuel.

The calculation sheet produced by Nordic Ecolabelling can be used.

Steam

If excess steam from another production process is used (e.g. from another industry), the energy content of the steam must be included in the calculation. In this case, Table 1, the steam table should be used. If steam from electric boilers is used, the energy content must be converted to fuel in the same way, but the energy content must be multiplied by 1.25.

Energy calculation, paper production

Energy score for paper production

Energy scores for $P_{paper(electricity)}$ and $P_{paper(fuel)}$ for paper production are calculated using the following formulas:

$$P_{paper\_electricity} = \frac{Electricity_{consumed}}{Electricity_{reference}}$$

$$P_{paper\_fuel} = \frac{Fuel_{consumed} - 1.25 \cdot in - house\ generated\ electricity}{Fuel_{reference}}$$

The following reference values for kraft paper must be used:

$Electricity_{reference}$ = 1600 kWh/ADt

$Fuel_{reference}$ = 2100 kWh/ADt

Verification

Calculation of energy score. The calculation sheet produced by Nordic Ecolabelling can be used.

Energy score when a mixture of different pulp types are used

The following formulas are used to calculate the energy score when a mixture of different pulp types is used:

$$P_{pulp\_electricity} = \sum_{i=1}^{n} P_{pulp\_electricity\_i} \cdot pulp_i$$

$$P_{pulp\_fuel} = \sum_{i=1}^{n} P_{pulp\_fuel\_i} \cdot pulp_i$$

$Pulp_i$ is the percentage of the individual pulp relative to the total pulp mixture. Due to wastage and differences in water content, the sum total of the pulp may

be greater than 1. P pulp(electricity)i is the energy score for electricity for pulp i. P pulp(fuel)i is the energy score for fuel for pulp i.

Verification

Calculation of energy score. The calculation sheet produced by Nordic Ecolabelling can be used.

Total energy score for paper and pulp production

The total energy score for both electricity and fuel consumption for the paper production, including pulp production, is calculated using the formulas below:

$$P_{electriciy} = P_{electriciy\_pulp} + P_{electriciy\_paper}$$

$$P_{fuel} = P_{fuel\_pulp} + P_{fuel\_paper}$$

The amount of fuel used to produce electricity in the pulp mill must be deducted by the paper manufacturer from the values received from the pulp producer using a factor of 1.25.

Worst case calculations must be included to show that each pulp recipe meets the requirements if no specific calculations are reported for each pulp mixture.

Verification

The documentation must include calculations with sub-totals. The base values used for consumed fuel and electricity must be stated. Worst case calculations must be included to show that each pulp recipe meets the requirements if no specific pulp-mixture calculations are reported for each pulp mixture present. The calculation sheet produced by Nordic Ecolabelling can be used.

Energy score for pulp production

Energy scores for P pulp(electricity) and P pulp(fuel) for paper production are calculated using the following formulas:

$$P_{pulp\_electricity\_i} = \frac{Electricity_{consumed}}{Electricity_{reference}}$$

$$P_{pulp\_fuel\_i} = \frac{Fuel_{consumed} - 1.25 \cdot in - house\ generated\ electricity}{Fuel_{reference}}$$

The table below shows the reference values for electricity and fuel:

Table 1 Reference values pulp

Process	Fuel kWh/t, Ref. value	Electricity kWh/t, Ref. value
Bleached chemical pulp	3600	650
Dried, bleached chemical pulp	4600	700
Unbleached chemical pulp	3200	550
Dried, bleached chemical pulp	4200	600
NSSC	3200	700

Dried NCCS	4100	750
CTMP	N/A	1500
Dried CTMP	900	1500
DIP	300	450
Dried DIP	1200	500
TMP	N/A	2200
Dried TMP	900	2250
Slip	N/A	2000
Dried slip	900	2050

Verification

Calculation of energy score. The calculation sheet produced by Nordic Ecolabelling can be used.

Table 2 Steam table

Enthalpy in gauged steam, h´´, as a function of absolute pressure, p or temperature, t. Enthalpy is divided by an efficiency of 0.9 and added to the heat consumption.

p Bar	t 0C	h´´ KJ/kg	p bar	t 0C	h´´ KJ/kg
0.50	81.3	2646.0	16.0	201.4	2791.7
0.60	86.0	2653.6	17.0	204.3	2793.4
0.80	93.5	2665.8	18.0	207.1	2794.8
1.00	99.6	2675.4	19.0	209.8	2796.1
1.20	104.8	2683.4	20.0	212.4	2797.2
1.40	109.3	2690.3	22.0	217.2	2799.1
1.60	113.3	2696.2	24.0	221.8	2800.4
1.80	116.9	2701.5	26.0	226.0	2801.4
2.00	120.2	2706.3	28.0	230.1	2802.0
2.50	127.4	2716.4	30.0	233.0	2802.3
3.00	133.5	2724.7	32.0	237.5	2802.3
3.50	138.9	2731.6	34.0	240.9	2802.1
4.00	143.6	2737.6	36.0	244.1	2801.7
4.50	147.9	2742.9	38.0	247.3	2801.1
5.00	151.8	2717.5	40.0	250.3	2800.3
6.00	158.8	2755.5	45.0	257.4	2797.7
7.00	165.0	2762.0	50.0	263.9	2794.2
8.00	170.4	2767.5	55.0	269.9	2789.9
9.00	175.4	2772.1	60.0	275.6	2785.0
10.00	179.9	2776.2	65.0	280.8	2779.5
11.00	184.0	2779.7	70.0	285.8	2773.5
12.00	188.0	2782.7	80.0	295.0	2759.9
13.00	191.6	2785.4	90.0	303.3	2744.6
14.00	195.0	2787.8	100.0	311.0	2727.7
15.00	198.3	2789.9	110.0	318.1	2709.3

Source: Thermal Engineering Data, which refers to Schmidt, E.: Properties of water and Steam in Sl.Units, 1969. Springer-Verlag and R. Oldenbourg 1969.

Appendix 3 Declaration by the manufacturer of pulp and paper

To be used in conjunction with an application for a licence for the Nordic Swan Ecolabel of Panels and cladding for exterior use.

Pulp and paper are used in several types of panels such as kraft- and décor paper used in HPL/compact laminate.

Product name (pulp):
Product name (paper):
Manufacturer (pulp and/or paper):

O7 Ecolabelled paper	**Yes**	**No**
Is the paper certified with Nordic Swan Ecolabel or EU Ecolabel? **If yes**, please state valid licence number:		
O8 Tree species - restrictions	**Yes**	**No**
Are any of the prohibited and restricted wood species (listed in the list of prohibited and restricted tree species) used in the pulp and paper? Eucalyptus and Acacia used for pulp and paper production is exempted from the list. The list of prohibited and restricted tree species is located on the website: Forestry requirements 2020 (nordic-swan-ecolabel.org) **If yes**, please state tree species/trade name/scientific name:		
O9 Traceability and certification of wood raw materials		
Please state the name (species name/scientific name) of the fibre raw materials used in the production of pulp/paper:		
	Yes	**No**
The pulp and paper manufacturer must be Chain of Custody certified according to FSC or PEFC. All fibres used in the pulp and paper shall be covered by valid Chain of Custody certificate issued by FSC or PEFC. Are the pulp and paper covered by valid Chain of Custody certificate issued by FSC or PEFC? **Please present** valid FSC/PEFC Chain of Custody certificate covering alle fibre raw materials used in the pulp/paper (e.g., via link to website).		
Minimum 70% of the fibre raw material that is used in the paper shall originate from forestry certified under the FSC or PEFC schemes or be labelled FSC or PEFC recycled. The remaining proportion of fibre raw material must be covered by the FSC/PEFC control schemes (FSC controlled wood/PEFC controlled sources). **Please enclose** documentation that the paper is labelled with FSC/PEFC or e.g., third party-controlled balance sheet from CoC credit account system or a rolling average of the certification percentage on a product line showing that the quantity of certified fibre raw material in the paper is met. **Comments:**		
O10 Chemical used in the manufacture of pulp and paper	**Yes**	**No**
Chemicals use in the manufacture of pulp and paper must meet the requirements contained in the Chemical Module for Nordic Ecolabelling of paper, Version 3 or later. The criteria is located on the website: https://www.nordic-swan-ecolabel.org/criteria/copy-and-printing-paper-044/		

Overview of chemical requirements for pulp and paper:

Chemicals	Requirements, Chemical Module, generation 3
All production chemicals - Classification (O1) - Prohibited substances (O2)	O1 and O2
Cleaning agents and dispersants	O3
Deinking chemicals	O4
Biocidal products and slimicides	O5
Retention agents and flocculants	O6
Wet strength agents	O7
Foam inhibitors and defoamers	O8
Paper colourants - Metals (O9) - Amines and phthalates (O10)	O9 and O10
Adhesives	O11
Starch - GMO	O12

Does the pulp and paper comply with the chemical requirements? **Comments:**		

O11 COD emissions from the production of pulp and paper	**Yes**	**No**

COD (Chemical Oxygen Demand) emissions to water must be less than the stated COD value in the table below.
The COD is calculated by adding up COD emissions from both pulp and paper:
COD mass (kg/ADt) + COD emissions paper machine (kg/ADt).

For paper produced from mixtures of chemical, recycled fibre and mechanical pulps, a weighted limit value is calculated from the proportion of the various pulp types. In the weighted calculation, the percentage of COD emissions from the paper machine must be set to 1 kg/ADT.
For example, for 60% unbleached chemical mass and 40% recycled pulp, the calculation is: (14–1 x 0.6) + (4–1 x 0.4) = 7.8 + 1.2 = 9.0 kg/ADT

Pulp types	Total COD emissions for both pulp and paper (kg/ADt)
Unbleached chemical pulp	14.0
CTMP pulp	19.0
TMP/groundwood pulp	7.0
Recycled fibre pulp	4.0

Does the pulp and paper comply with the COD requirement? **Please enclose** documentation/calculation showing that the total emissions of COD are below the relevant limit values indicated in the table a bow. **Comments:**		

Test method for COD emissions

COD content shall be tested in accordance with ISO 6060 (Water quality — Determination of the chemical oxygen demand) or equivalent. If another analysis method is used, the licensee must show that it is equivalent. An analysis of PCOD or BOD may also be used as verification if a correlation with COD can be demonstrated. The method for measuring TOC is ISO 8245 Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC).

Sample frequency:
Emissions to water are calculated as the annual average value and are based on at least one representative daily sample per week. Alternatively, a sampling frequency set by the authorities may also be approved.
Sampling: Water samples must be taken after the process wastewater has been treated in any internal water treatment plant. The flow at the time of sampling must be indicated. If the process wastewater is externally purified with other wastewater, the analysis result should be reduced by the documented efficiency of the COD in the external water treatment plant. The analyses must be carried out on unfiltered and unsedimented samples in accordance with standard ISO 6060.

We declare that the requirements have been met and that the information provided is correct. In the event of any change to the composition of the product, that impacts the product's fulfilment of the requirements, a new declaration of fulfilment of the requirements is to be submitted to Nordic Ecolabelling.

Signature of pulp/paper manufacturer

Place and date:	Company name/stamp:
Person responsible:	Signature of responsible person:
Phone:	E-mail:

Appendix 4 Chemicals used in production of panels and cladding

To be used in conjunction with an application for a license for the Nordic Swan Ecolabel of Panels and Cladding for exterior use.

Declaration is made by the chemical manufacturer or supplier based to the best of their knowledge at the given time and available knowledge on the chemical product with reservations for new advances/knowledge. Should such new knowledge arise, the undersigned is obliged to submit an updated declaration to Nordic Ecolabelling.

This declaration shall be filled for chemical products used in the production of the Nordic Swan Ecolabelled panels and cladding for exterior use, such as adhesives, resins, and waxes, surface treatments and surface treatment system.

Chemical products used in the manufacture of paper, and to print patterns on the decor paper, need not be declared. Neither need auxiliary substances such as lubricants and detergents be declared.

Name of chemical product:

Function of the chemical product:

Ingoing substances in the raw material/ingredient (chemical name, CAS No., amount in weight-%):

The requirements in the criteria document and accompanying appendices apply to all ingoing substances in the Nordic Swan Ecolabelled product. Impurities are not regarded as ingoing substances and are exempt from the requirements. Ingoing substances and impurities are defined below, unless stated otherwise in the requirements.

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

Impurities: *Residues from production, incl. raw material production, which remain in the chemical product at concentrations below 1000 ppm (0.1000% by weight).*

Examples of impurities are residues of reagents incl. residues of monomers, catalysts, by-products, scavengers (i.e. chemicals that are used to eliminate/minimise undesirable

substances), detergents for production equipment and carry-over from other or previous production lines.

O20 Classification of chemical products used in the production	**Yes**	**No**
Does the chemical product contain substances classified with any of the hazard phrases below? Including all combinations of stated exposure routes and stated specific effect. *For example, H350 also covers classification H350i.*		
H400 – Toxic to the environment, Aquatic Acute 1		
H410 – Toxic to the environment Aquatic Chronic 1		
H411 – Toxic to the environment Aquatic Chronic 2		
H420 – Toxic to the environment Ozone		
H300 – Acute toxicity; Acute Tox 1 or 2		
H310 – Acute toxicity; Acute Tox 1 or 2		
H330 – Acute toxicity; Acute Tox 1 or 2		
H301 – Acute toxicity; Acute Tox 3		
H311 – Acute toxicity; Acute Tox 3		
H331 – Acute toxicity; Acute Tox 3		
H370 – Specific organic toxicity, STOT SE 1		
H372 – Specific organic toxicity, STOT RE 1		
H350 – Carcinogenic, Carc. 1A or 1B		
H351 – Carcinogenic, Carc. 2		
H340 – Germ cell mutagenic, Mut. 1A and 1B		
H341 – Germ cell mutagenic, Mut. 2		
H360 – Reproductive toxicity, Repr. 1A or 1B		
H361 – Reproductive toxicity, Repr 2		
H362 – Reproductive toxicity, Lact.		
The following are exempted from the requirement: - Classification H351 for adhesive products containing methylene diphenyl diisocyanate (MDI). - Classifications H350, H341, H301, H311 and H331 for adhesive products and resins containing formaldehyde (CAS no. 50-00-0). Formaldehyde emissions are regulated in a separate requirement.		

- Classifications H341, H301 and H331 for resins containing a maximum of 10% by weight of phenol (CAS no. 108-95-2).
- Classifications H301, H311, H331 and H370 for resins containing a maximum of 10% by weight of methanol (CAS no. 67-56-1).
- Classifications H351 and H361 for resins containing melamine (CAS No. 108-78-1).
- UV curing products are exempted from classification H411 under the following conditions: There must be a controlled closed process where no discharge to recipient takes place. Spillage and general waste (e.g., cleaning residue) must be collected in containers approved for hazardous waste and handled by a waste contractor.

If yes, please state the CAS no., chemical name, and level (in ppm, % by weight or mg/kg). Also state whether the substance is contained in the form of an impurity or an added substance or if the above-mentioned exceptions apply.

O21 Classification of ingoing substances	**YES**	**NO**
Does the chemical product contain substances classified with any of the hazard phrases below? Including all combinations of stated exposure routes and stated specific effect. *For example, H350 also covers classification H350i.*		
H350 – Carcinogenic, Car 1A and 1B		
H351 – Carcinogenic, Carc. 2		
H340 – Germ cell mutagenic, Mut. 1A or 1B		
H341 – Germ cell mutagenic, Mut. 2		
H360 – Reproductive toxicity, Repr. 1A and 1B		
H361 – Reproductive toxicity, Repr. 2		
H362 – Reproductive toxicity, Lact.		
EUH380 - Endocrine disruption for human health, ED HH1		
EUH381 - Endocrine disruption for human health, ED HH2		
EUH431 - Endocrine disruption for the environment, ED ENV 1		
EUH431 - Endocrine disruption for the environment, ED ENV 2		
EUH440 - Persistent, Bioaccumulative and Toxic properties, PTB		
EUH411 - Very Persistent, Very Bioaccumulative properties, vPvB		
EUH450 - Persistent, Mobile and Toxic properties, PMT		
EUH451 - Very Persistent, Very Mobile properties, vPvM		

The following are exempted from the requirement: - Adhesive containing methylene diphenyl diisocyanate (MDI) classified as H351. - Adhesive and resin containing formaldehyde (CAS no. 50-00-0) classified as H350 and H341. Formaldehyde emissions are regulated in a separate requirement. - Resin containing maximum 10% by weight of phenol (CAS no. 108-95-2) classified as H341. - Resin containing melamine (CAS no. 108-78-1) classified as H351 and H361. - Titanium dioxide (CAS no. 13463-67-7) classified as H351. - 1,1,1-Trimethylolpropane (TMP, CAS no. 77-99-6) classified as H361.

If yes, please state the CAS no., chemical name, and level (in ppm, % by weight or mg/kg). Also state whether the substance is contained in the form of an impurity or an added substance or if the above-mentioned exceptions apply.

O22 Prohibited substances	**YES**	**NO**
Does the chemical product contain any of the following substance groups?		
Substances on the Candidate List The Candidate List can be found on the ECHA website: http://echa.europa.eu/candidate-list-table - Exemption applies to melamine (CAS No. 108-78-1)		
Substances that have been judged in the EU to be PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative) PBT and vPvB in accordance with the criteria in Annex XIII of REACH		
Halogenated organic compounds - Exemptions apply for bronopol, IPBC, MIT and CMIT/MIT (3:1). These are addressed in a separate requirement, see requirement O24).		
Per- and polyfluoroalkyl substances (PFASs), e.g., PFOA and PFOS		
Butylhydroxytoluene (BHT, CAS No. 128-37-0)		
Aziridine and polyazidirines		
Bisphenols and bisphenol derivatives - Bisphenol A used in the production of epoxy acrylate is not covered by the requirement. - Assessment of regulatory needs: Bisphenols. ECHA- 16 December 2021: Section 2.1: Bisphenols for which further EU RRM is proposed – restriction https://echa.Europa.eu/documents/10162/c2a8b29d-0e2d-7df8-dac1-2433e2477b02		
APEO (alkylphenol ethoxylates) and APD (alkylphenol derivatives/alkylphenols) Alkylphenol derivatives are defined as substances that release alkyphenols when they break down.		
Phthalates - Phthalates are esters of 1,2-benzenedicarboxylic acid (orthophthalic acid).		
Pigments and dditives based on lead, tin, cadmium, chromium VI and mercury, and their compounds.		
Endocrine disruptors: Substances on the EU member state initiative “Endocrine Disruptor Lists”, List I, List II and List III, see following links: List I: https://edlists.org/the-ed-lists/list-i-substances-identified-as-endocrine-disruptors-by-the-eu List II: https://edlists.org/the-ed-lists/list-ii-substances-under-eu-investigation-endocrine-disruption List III: https://edlists.org/the-ed-lists/list-iii-substances-identified-as-endocrine-disruptors-by-participating-national-authorities Substances that are transferred to one of the corresponding sub-lists “Substances no longer on list” and that no longer feature on Lists I–III are not prohibited. However, this does not apply to the substances listed in Sub-List II that were evaluated on the basis of regulations or directives that do not have provisions for identifying endocrine disruptors (e.g., the Cosmetics Regulation). These substances may have endocrine disrupting properties. Nordic Ecolabelling will assess these substances on a case-by-case basis, based on the background information provided in sub-List II.		

If yes, please state the CAS no., chemical name, and level (in ppm, % by weight or mg/kg). Also state whether the substance is contained in the form of an impurity or an added substance or if the above-mentioned exceptions apply.

O23 Nanomaterials	**YES**	**NO**
Does the chemical product contain nanomaterials/-particles? Nanomaterials/-particles are defined according to the EU Commission Recommendation on the Definition of Nanomaterial (2022/C 229/01): 'Nanomaterial' means a natural, incidental, or manufactured material consisting of solid particles that are present, either on their own or as identifiable constituent particles in aggregates or agglomerates, and where 50 % or more of these particles in the number-based size distribution fulfil at least one of the following conditions: (a) one or more external dimensions of the particle are in the size range 1 nm to 100 nm; (b) the particle has an elongated shape, such as a rod, fibre or tube, where two external dimensions are smaller than 1 nm and the other dimension is larger than 100 nm; (c) the particle has a plate-like shape, where one external dimension is smaller than 1 nm and the other dimensions are larger than 100 nm.		
The following are exempted from the requirement: - Pigments. This exemption does not include pigments added for purposes other than colouring. - Naturally occurring inorganic fillers in accordance with annex V point 7 in REACH. - Synthetic amorphous silica (SAS). This applies to non-modified synthetic amorphous silica and surface-treated pyrogenic silica, as long as the silica particles form aggregates or agglomerates in the end product. For surface treated nanoparticles, the surface treatment must meet the chemical requirements in O31 (Classification of ingoing substances) and O32 (Prohibited substances). - Polymer dispersions		

If yes, please state the CAS no., chemical name, and level (in ppm, % by weight or mg/kg). Also state whether the substance is contained in the form of an impurity or an added substance or if the above-mentioned exceptions apply.

O24 Preservatives		**YES**	**NO**
Please state if content of preservatives exceeds the limit values below			
Preservative:	Limit value		
Bronopol	< 500 ppm (0.05% by weight)		
IPBC (iodopropynyl butylcarbamate)	< 2000 ppm (0.20% by weight)		
Mixture (3:1) of CMIT/MIT (5 chloro-2-methyl-4-isothiazolin-3-one / 2-methyl-4-isothiazolin-3-one)	≤ 15 ppm (0.0015 % by weight)		
MIT (2-methyl-2H-isothiazol-3-one)	≤ 100 ppm (0.01 % by weight)		
Total amount of isothiazolinones	≤ 500 ppm (0.05% by weight).		

If yes, state the CAS no. (where possible), chemical name and level (in ppm, % by weight or mg / kg) for each preservative.

O25 Volatile organic compounds in aditives	**YES**	**NO**
Does the additive contain any VOC (volatile organic compound) and/or VAH (volatile aromatic compound)? Volatile organic compounds (VOC), including volatile aromatic compounds (VAH), may be present in the adhesive to a maximum of 3% by weight. VAHs may be present in the adhesive to a maximum of 0.1% by weight. Does the additive comply with the requirement? VOC are defined as organic compounds with a steam pressure exceeding 0.01kPa, at 20°C. For products under EU Directive (2004/42/EC) in which steam pressure is not indicated: Organic substances with an initial boiling point that is lower than or equal to 250°C measured at a normal pressure of 101.3 kPa		
The following are exempted from the requirement: Resin used in the production of laminate is exempted from the requirement.		

If yes, please state the CAS no., chemical name, and level (in ppm, % by weight or mg/kg). Also state whether the substance is contained in the form of an impurity or an added substance or if the above-mentioned exceptions apply.

O26 Free formaldehyde	**Yes**	**NO**
Does the content of free formaldehyde (from formaldehyde not deliberately added or from formaldehyde-releasing substances) exceed 0.02% by weight (200 ppm) in the chemical product? For adhesive products, up to 0.2% by weight (2000 ppm) of free formaldehyde is permitted. The requirement applies to the pure adhesive before mixing with any hardener.		

If yes, please specify source of formaldehyde, i.e., actively added or because of release or decomposition from another substance and theoretical amount of formaldehyde in the product. Please state also if the above-mentioned exceptions apply.

Signature of chemical product manufacturer

Date	Company
Signature by contact person	

Name of contact person	Phone

Appendix 5 Chemicals used in surface treatment

To be used in conjunction with an application for a license for the Nordic Swan Ecolabel of Panels and Cladding for exterior use.

Declaration is made by the chemical manufacturer or supplier based to the best of their knowledge at the given time and available knowledge on the chemical product with reservations for new advances/knowledge. Should such new knowledge arise, the undersigned is obliged to submit an updated declaration to Nordic Ecolabelling.

This declaration shall be filled for surface treatment products used in the production of the Nordic Swan Ecolabelled panels and cladding for exterior use such as lacquers, oils, paints, stains and foiling with plastic. Any filler used shall also be declared.

Lamination (thin layer of laminate < 2 mm, including melamine) on another panel is not considered to be surface treatment.

Name of chemical product:

Function of the chemical product:

Ingoing substances in the raw material/ingredient (chemical name, CAS-number, amount in weight-%):

The requirements in the criteria document and accompanying appendices apply to all ingoing substances in the Nordic Swan Ecolabelled product. Impurities are not regarded as ingoing substances and are exempt from the requirements. Ingoing substances and impurities are defined below, unless stated otherwise in the requirements.

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

Impurities: *Residues from production, incl. raw material production, which remain in the chemical product at concentrations below 1000 ppm (0.1000% by weight).*

Examples of impurities are residues of reagents incl. residues of monomers, catalysts, by-products, scavengers (i.e. chemicals that are used to eliminate/minimise undesirable substances), detergents for production equipment and carry-over from other or previous production lines.

O29 Classification of chemical products used in the production	**YES**	**NO**
Does the chemical product contain substances classified with any of the hazard phrases below? Including all combinations of stated exposure routes and stated specific effect. *For example, H350 also covers classification H350i.*		
H400 – Toxic to the environment Aquatic Acute 1		
H410 – Toxic to the environment Aquatic Chronic 1		
H411 – Toxic to the environment Aquatic Chronic 2		
H420 – Toxic to the environment Ozone		
H300 – Acute toxicity; Acute Tox 1 or 2		
H310 – Acute toxicity; Acute Tox 1 or 2		
H330 – Acute toxicity; Acute Tox 1 or 2		
H301 – Acute toxicity; Acute Tox 3		
H311 – Acute toxicity; Acute Tox 3		
H331 – Acute toxicity; Acute Tox 3		
H370 – Specific organic toxicity, STOT SE 1		
H372 – Specific organic toxicity, STOT RE 1		
H350 – Carcinogenic, Carc. 1A or 1B		
H351 – Carcinogenic, Carc. 2		
H340 – Germ cell mutagenic, Mut. 1A and 1B		
H341 – Germ cell mutagenic, Mut. 2		
H360 – Reproductive toxicity, Repr. 1A or 1B		
H361 – Reproductive toxicity, Repr 2		
H362 – Reproductive toxicity, Lact.		

The following are exempted from the requirement: - UV curing products are exempted from classification as environmentally hazardous under the following conditions: There must be a controlled closed process where no discharge to recipient takes place. Spillage and general waste (e.g., cleaning residue) must be collected in containers approved for hazardous waste and handled by a waste contractor.		

If yes, please state the CAS no., chemical name, and level (in ppm, % by weight or mg/kg). Also state whether the substance is contained in the form of an impurity or an added substance or if the above-mentioned exceptions apply.

O31 Classification of ingoing substances	**YES**	**NO**
Does the chemical product contain substances classified with any of the hazard phrases below? Including all combinations of stated exposure routes and stated specific effect. *For example, H350 also covers classification H350i.*		
H350 – Carcinogenic, Carrc, 1A and 1B		
H351 – Carcinogenic, Carc. 2		
H340 – Germ cell mutagenic, Mut. 1A or 1B		
H341 – Germ cell mutagenic, Mut. 2		
H360 – Reproductive toxicity, Repr. 1A and 1B		
H361 – Reproductive toxicity, Repr. 2		
H362 – Reproductive toxicity, Lact.		
EUH380 - Endocrine disruption for human health, ED HH1		
EUH381 - Endocrine disruption for human health, ED HH2		
EUH431 - Endocrine disruption for the environment, ED ENV 1		
EUH431 - Endocrine disruption for the environment, ED ENV 2		
EUH440 - Persistent, Bioaccumulative and Toxic properties, PTB		
EUH411 - Very Persistent, Very Bioaccumulative properties, vPvB		
EUH450 - Persistent, Mobile and Toxic properties, PMT		
EUH451 - Very Persistent, Very Mobile properties, vPvM		
The following are exempted from the requirement: - Photo initiators classified H351, H341 or H361 - Titanium dioxide (CAS no. 13463-67-7) classified as H351. - 1,1,1-Trimethylolpropane (TMP, CAS no. 77-99-6) classified as H361. · Trimethylolpropane triacrylate (TMPTA) with CAS 15625-89-5 classified as Carc 2, H351 - Mequinol (CAS no. 150-76-5) classified as H361		

- The hardener in two-component UV products can be exempted from the requirement if the following is met: it must be documented by the panel manufacturer that the workers are not exposed to the components, e.g. by using safety equipment when mixing or that the mixing takes place automatically without exposure of the workers and that the application of the finished two-component system is done in a closed system.

If yes, please state the CAS no., chemical name, and level (in ppm, % by weight or mg/kg). Also state whether the substance is contained in the form of an impurity or an added substance or if the above-mentioned exceptions apply.

O32 Prohibited substances	**YES**	**NO**
Does the chemical product contain any of the following substance groups?		
Substances on the Candidate List The Candidate List can be found on the ECHA website: http://echa.europa.eu/candidate-list-table		
Substances that have been judged in the EU to be PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative) PBT and vPvB in accordance with the criteria in Annex XIII of REACH		
Halogenated organic compounds. Exemptions apply for: - Bronopol, IPBC, MIT and CMIT/MIT (3:1). These are addressed in a separate requirement, see requirement O45). - Halogenated organic pigments that comply with the Council of Europe recommendation “Resolution AP (89) 1 on the use of colourants in plastic materials coming into contact with food”, point 2.5 - Epoxy acrylate used in UV curing surface treatment products		
Per- and polyfluoroalkyl substances (PFASs), e.g., PFOA and PFOS		
Butylhydroxytoluene (BHT, CAS No. 128-37-0)		
Aziridine and polyazidirines - An exemption is made for aziridines/polyaziridines if the substance is not classified as carcinogenic, mutagenic or reprotoxic from any manufacturer or in ECHA.		
Bisphenols and bisphenol derivatives - Bisphenol A used in the production of epoxy acrylate is not covered by the requirement. - Assessment of regulatory needs: Bisphenols. ECHA- 16 December 2021: Section 2.1: Bisphenols for which further EU RRM is proposed – restriction https://echa.Europa.eu/documents/10162/c2a8b29d-0e2d-7df8-dac1-2433e2477b02		
APEO (alkylphenol ethoxylates) and APD (alkylphenol derivatives/alkylphenols) Alkylphenol derivatives are defined as substances that release alkyphenols when they break down.		
Phthalates - Phthalates are esters of 1,2-benzenedicarboxylic acid (orthophthalic acid).		
Pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds.		
Endocrine disruptors: Substances on the EU member state initiative “Endocrine Disruptor Lists”, List I, List II and List III, see following links: List I: https://edlists.org/the-ed-lists/list-i-substances-identified-as-endocrine-disruptors-by-the-eu List II: https://edlists.org/the-ed-lists/list-ii-substances-under-eu-investigation-endocrine-disruption List III: https://edlists.org/the-ed-lists/list-iii-substances-identified-as-endocrine-disruptors-by-participating-national-authorities Substances that are transferred to one of the corresponding sub-lists “Substances no longer on list” and that no longer feature on Lists I–III are not prohibited. However, this does not apply to the substances listed in Sub-List II that were evaluated on the basis of regulations or directives that do not have provisions for identifying endocrine disruptors (e.g., the Cosmetics Regulation). These substances may have endocrine disrupting properties. Nordic Ecolabelling will assess these substances on a case-by-case basis, based on the background information provided in sub-List II.		

- An exemption is made for BHT that is included in UV curing lacquers and paints. If BHT receives a harmonised classification that means the substance does not meet the requirements in the criteria document, the exemption will lapse.		

If yes, please state the CAS no., chemical name, and level (in ppm, % by weight or mg/kg). Also state whether the substance is contained in the form of an impurity or an added substance or if the above-mentioned exceptions apply.

O33 Nanomaterials	**YES**	**NO**
Does the chemical product contain nanomaterials/-particles? Nanomaterials/-particles are defined according to the EU Commission Recommendation on the Definition of Nanomaterial (2022/C 229/01): 'Nanomaterial' means a natural, incidental, or manufactured material consisting of solid particles that are present, either on their own or as identifiable constituent particles in aggregates or agglomerates, and where 50 % or more of these particles in the number-based size distribution fulfil at least one of the following conditions: (a) one or more external dimensions of the particle are in the size range 1 nm to 100 nm; (b) the particle has an elongated shape, such as a rod, fibre or tube, where two external dimensions are smaller than 1 nm and the other dimension is larger than 100 nm; (c) the particle has a plate-like shape, where one external dimension is smaller than 1 nm and the other dimensions are larger than 100 nm.		
The following are exempted from the requirement: - Pigments. This exemption does not include pigments added for purposes other than colouring. - Naturally occurring inorganic fillers in accordance with annex V point 7 in REACH. - Synthetic amorphous silica (SAS). This applies to non-modified synthetic amorphous silica and surface-treated pyrogenic silica, as long as the silica particles form aggregates or agglomerates in the end product. - Polymer dispersions		

If yes, please state the CAS no., chemical name, and level (in ppm, % by weight or mg/kg). Also state whether the substance is contained in the form of an impurity or an added substance or if the above-mentioned exceptions apply.

O34 Preservatives		**YES**	**NO**
Please state if content of preservatives exceeds the limit values below			
Preservative:	Limit value:		
Bronopol	< 500 ppm (0.05% by weight)		
IPBC (iodopropynyl butylcarbamate)	< 2000 ppm (0.20% by weight)		
Mixture (3:1) of CMIT/MIT (5 chloro-2-methyl-4-isothiazolin-3-one / 2-methyl-4-isothiazolin-3-one)	≤ 15 ppm (0.0015 % by weight)		
MIT (2-methyl-2H-isothiazol-3-one)	≤ 100 ppm (0.01 % by weight)		
Total amount of isothiazolinones	≤ 500 ppm (0.05% by weight).		

If yes, state the CAS no. (where possible), chemical name and level (in ppm, % by weight or mg / kg) for each preservative.

O35 Free formaldehyde	**Yes**	**NO**
Does the content of free formaldehyde (from formaldehyde not deliberately added or from formaldehyde-releasing substances) exceed 0.02% by weight (200 ppm) in the chemical product? For adhesive products, up to 0.2% by weight (2000 ppm) of free formaldehyde is permitted. The requirement applies to the pure adhesive before mixing with any hardener.		

If yes, please specify source of formaldehyde, i.e., actively added or because of release or decomposition from another substance and theoretical amount of formaldehyde in the product. Please state also if the above-mentioned exceptions apply.

Signature of chemical product manufacturer

Date	Company
Signature by contact person	
Name of contact person	Phone

Appendix 6 Energy calculations

Energy calculation for production of panels made from renewable raw materials; wood- and lignocellulose based panels and laminate.

The following applies to the energy calculation in the production of wood- and lignocellulose panels and cladding and laminate:

1. Energy consumption is calculated as an annual average for either just the ecolabelled production or for the whole enterprise that is relevant for Nordic Swan Ecolabelled panels and laminate.

2. Energy consumption calculated as MJ/kg per panel/product must include the primary panel production and production of the main raw materials contained in the panel/product. The main raw materials are raw materials that make up more than 5% by weight of the finished panel/product (e.g., wood fibre and adhesive).

3. Processes included in the calculation:

   Chipping, refining, drying, blending (production of any adhesive; see 4), forming, pressing, any lamination of the panel, cooling, trimming, sanding, and packaging. If any drying process of the wood raw materials takes place at subcontractors (sawmills) this should be part of the calculations.

4. In the case of the production of chemical products, for example adhesive, the energy accounts must be based on data for production. The energy content of the raw material must not be included in the calculation. In exceptional cases a standard value of 15 MJ/kg (solution for use) for adhesive may be used, broken down as 12 MJ/kg for fuel and 3 MJ/kg for electricity purchased from an outside supplier (4:1).

Example of a calculation using the standard value for adhesives:

A panel contains 12% adhesive (solution for use). This represents 0.12 kg of adhesive solution for use per kilogram of panel. Applying the standard value in the calculation of energy points for adhesive results in 0.12 kg adhesive/ kg panel x 15 MJ/ kg adhesive = 1.8 MJ/ kg panel.

5. Energy consumption in the production of laminate (compact laminate and HPL) includes the production of resin/glue, the process of handling paper (dipping in resin/drying process), stacking of paper/laminate, pressing, heating, cooling, trimming, sanding and packaging. Production of paper has its own requirement.

6. The calculation includes the actual energy consumed (electricity and heat) in production without the use of primary energy factors. Self-produced energy and excess energy that is sold off should be stated but does not count as consumed energy in the calculation.

System boundary for the requirement: Energy consumption for obtaining raw material, transport of raw materials to sawmill/panel and any surface treatment (paint) is not included in the calculation.

Energy calculation for production of panels made from mineral- and non renewable raw materials; panels made from wood plastic composite, cement-based panels and mineral wool panels.

The following applies to the energy calculation in the production of panels made from wood plastic composite (WPC), mineral wool-based panels and cement base panels and production of the raw material cement.

1. Energy consumption is calculated as an annual average for either just the ecolabelled production or for the whole production site that is relevant for Nordic Swan Ecolabelled panels.
2. The energy consumption is calculated as MJ/kg product produces, and encompasses all energy used from **gate to gate** (phase A3 in EPDs) at the panel production site. Separate energy consumption also needs to be calculated for production of the following raw materials: cement, mineral wool, paper, and laminate (if they comprise more than 5 wt% of the plate).
3. Processes included in the calculation:

   Raw material preparation (crushing/grinding/chipping), refining, blending, forming, heating, pressing, gluing/laminating different types of material layers together, facing the panels (paint), cooling, trimming, and packaging.
4. The calculation includes the actual energy consumed (electricity and heat) in production without the use of primary energy factors. Self-produced energy and excess energy that is sold off should be stated but does not count as consumed energy in the calculation.
5. **System boundary for the requirement:** Energy consumption for extraction of raw materials and transports of raw materials is not part of the energy requirement. The energy requirement for production of raw materials do not apply to raw materials that are included by less than **5 wt%** of the panel.