Nordic Ecolabelling for

Outdoor furniture, playground and park equipment



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Nordic Ecolabelling

Contents

1 Environmental communication guideline for Nordic Swan Ecolabel outdoor furniture, playground and park equipment 4
2 What can carry the Nordic Swan Ecolabel? 5
3 How to read this criteria document 6
4 Requirements 7
4.1 Description of the product and the production 9
4.2 Solid wood, wood-based panels, veneers and bamboo 10
4.3 Durability of solid wood 14
4.4 High Pressure Laminate (HPL) panels 16
4.4.1 Requirement where HPL panels are more than 10 w% of the finished product 16
4.4.2 Requirement where HPL panels are more than 30 w% of the finished product 17
4.5 Plastic and rubber 19
4.5.1 Requirement when plastic accounts for more than 10 w% of the product 22
4.6 Wood-plastic composite material (WPC) 26
4.7 Metal 28
4.8 Chemical requirements 33
4.8.1 General chemical requirements 33
4.8.2 Surface treatment of wood, wood-based panels and HPL panels 39
4.8.3 Surface treatment of metal 40
4.8.4 Surface treatment of plastic and rubber 42
4.9 Circular economy and functional requirements 44
4.10 Licence maintenance 47
5 Future criteria 48
6 Criteria version history 48
7 How to apply and regulations for the Nordic Ecolabelling 48

Appendix 1 Laboratories and methods for testing and analysis
Appendix 2 Guidelines for standard, renewable commodities
Appendix 3 Metal – BAT-EAL for energy efficiency in steel production
Appendix 4 System limits for calculation of energy consumption in the manufacture of wood-based panels
Appendix 5 Energy requirement for paper and pulp production
Appendix 6 Example calculation Surface treatment of wood, wood-based panels, metal, plastic and rubber

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Contact information

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

Denmark

Ecolabelling Denmark

www.svanemaerket.dk

Iceland

Ecolabelling Iceland

www.svanurinn.is

Finland

Ecolabelling Finland

https://joutsenmerkki.fi/

Norway

Ecolabelling Norway

www.svanemerket.no

Sweden

Ecolabelling Sweden

www.svanen.se

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It may be quoted from provided that Nordic Ecolabelling is stated as the source.

1 Environmental communication guideline for Nordic Swan Ecolabel outdoor furniture, playground and park equipment

Nordic Swan Ecolabel outdoor furniture, playground and park equipment have a reduced environmental and climate impact throughout their life cycle. Nordic Ecolabelling has assessed all the relevant environmental aspects throughout the life cycle of these products and made strict requirements concerning the topics and processes in the life cycle where ecolabelling can have the greatest effect. This is described in the chapter "Environmental impact of outdoor furniture, playground and park equipment " in the background document.

Nordic Swan Ecolabelled outdoor furniture, playground and park equipment:

- Have a circular design that promotes repair, recycling and use of renewable and/or recycled materials.
- Meet requirements for that at least 70% of the wood is sourced from certified forestry.
- Meet requirements for at least 75% recycled plastic or 30% post-consumer recycled plastic when high share of plastic content in the product.
- Meet requirements for maximum energy use in the production of wood-based panels.
- Meet strict requirements for chemicals – e.g. no PFAS, halogenated flame retardants or nanoparticles have been added.
- Have a long lifespan. This is documented through tests of strength, durability and safety.

2 What can carry the Nordic Swan Ecolabel?

Product group definition

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

Below are some examples of the products that are covered:

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

The following cannot be Nordic Swan Ecolabelled:

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

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

Materials subject to requirements in these criteria:

- Solid wood, veneers, wood-based panels, high pressure laminate (HPL) panels and bamboo
- Plastic and rubber
- Metal
- Wood-plastic composite (WPC)

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

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

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

3 How to read this criteria 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:

- Upload
- Requirement checked on site

Before a licence is issued, the Nordic Ecolabelling organization will normally pay an inspection visit to the applicant and/or the manufacturer. If necessary, multiple inspection visits can be made.

All information submitted to Nordic Ecolabelling is treated confidentially. Suppliers can send documentation directly to Nordic Ecolabelling, and this will also be treated confidentially.

4 Requirements

This chapter presents all the requirements and the chosen requirement levels.

The background to the requirements, the chosen requirement levels and the changes compared with generation 4 of the criteria, is explained in the background document.

Definitions

Table 1 Definitions

Terms	Definition/ Explanation
Triviality limit	Small parts such as: nails, screws, nuts, bolts, washers and plastic spacers if the parts together constitute a maximum of 5 w% of the finished product. Materials with no requirements in the criteria may be included with a maximum of 5 w% of the product.
Ingoing substances and impurities	Ingoing substances and impurities are defined below, unless stated otherwise in the requirements. Ingoing substances: all substances in the chemical product, including additives (i.e., preservatives and stabilisers) in the raw materials. Substances known to be released from ingoing substances (i.e., formaldehyde, arylamine, in situ-generated preservatives) are also regarded as ingoing substances. Impurities: residuals, pollutants, contaminants etc. from production, incl. production of raw materials that remain in the raw material/ingredient and/or in the in the chemical product in concentrations less than 1000 ppm (0.1000 w%, 1000 mg/kg) in the chemical product. Examples of impurities are residues of the following: residues or reagents incl. residues of monomers, catalysts, by-products, scavengers, and detergents for production equipment and carry-over from other or previous production lines.
Outdoor furniture for contract use	Outdoor furniture intended for non-private use in places with public access.
Recycled plastic	Recycled plastic is defined according to ISO 14021 in the following two categories: Materials in the pre-consumer/commercial phase: Material diverted from the waste stream during a manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it. Nordic Ecolabelling defines rework, regrind or scrap, that cannot be recycled directly in the same process, but requires a reprocessing (i.e., sorting, remelting and granulation) before it can be recycled, to be pre-consumer/commercial material. This is whether it is produced in-house or externally. Materials in the post-consumer/commercial material phase: Material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. This includes returns of material from the distribution chain.

Recycled wood or metal	Recycled material/recycled raw material is defined according to ISO 14021 in the following two categories: Materials in the pre-consumer/commercial phase: Material diverted from the waste stream during a manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it. Materials in the post-consumer/commercial material phase: Material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. This includes returns of material from the distribution chain.
Self-generated energy	Energy (electrical and thermal) not purchased from an external supplier.
Renewable energy	Renewable energy originate from sources constantly renewed at a fast rate. Examples include hydro and wind power, wave energy, geothermal energy, solar energy and bioenergy, plus biofuels.
HCVF	High Conservation Value Forestry
IFL	Intact Forest Landscape
Wood-based panels	This is board made by using a binder and/or adhesive to join together one or more of the following materials: wood fibre, debarked or cut sheets, wood waste from forests and plantations, sawn timber, residues from the paper or pulp industry and recycled wood. Wood-based materials may include hardboard, fibreboard, MDF (Medium Density Fibreboard), particleboard, OSB (Oriented Strand Board), plywood and panels of solid wood. The term “wood-based material” also includes composite materials made from wood-based panels coated with plastic, laminated plastic, metals or other coatings, and finished or semi-finished wood-based panels.
Wood preservative	In this context, wood preservative means an impregnation agent or primer that makes the wood resistant to fungal attack/rot.
Maintenance products	Products that the manufacturer/supplier recommends for wood products. The purpose of maintaining a wood product may be to retain its functionality, nourish it or retain a product’s durability. Actions taken for aesthetic reasons such as retaining the original colour are also considered to be maintenance.
Nanomaterials	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.
COD	Chemical Oxygen Demand
VAH	Volatile aromatic hydrocarbons (VAH) are aromatic compounds whose boiling point is max 250°C, measured at a standard pressure of 101.3 kPa. Volatility for paints and varnishes is instead defined as when the vapour pressure of the aromatic compound is at least 0.01 kPa at 293.15°K
VOC	Volatile organic compounds are defined as solvents with a boiling point < 250˚C at 101.3 kPa (1 atm).

4.1 Description of the product and the production

The outdoor furniture, playground and park equipment and their manufacturing process and the suppliers/production chain must be described to know which requirements apply for the product.

O1 Description of the product

The applicant must provide the following information about the product:

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

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

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

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

*** Description of the production process means an overall description of the production of the outdoor furniture, playground or park equipment, including materials and its subcontractors, as well as stating the subcontractors for central production steps i.e., surface treatment. It is not necessary to describe the production process of the individual subcontractor.*

- ☐ Product description and production processes according to the requirement.
- ☐ Product sheet, construction product declaration or technical description, if any such document has been drawn up for the product.
- ☐ Picture /drawing of the product/products, showing load-bearing structural parts (i.e., the parts whose primary task is to carry the product).

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

This chapter covers requirements concerning solid wood, wood-based panels, veneers and bamboo. Sheets of high-pressure laminate (HPL) are not covered by this chapter but must instead meet the requirements in 4.4 High Pressure Laminate (HPL) panels.

The chemicals used/added must comply with the requirements in 4.8 Chemical requirements.

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

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

O2 Prohibited and restricted tree species

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

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

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

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

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

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

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

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

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

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

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

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

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

- The applicant/manufacturer/supplier are required to present a valid FSC/PEFC Chain of Custody certificate that covers the specific tree species and demonstrate that the tree is controlled as FSC or PEFC 100% through the FSC transfer method or PEFC physical separation method.
- The applicant/manufacturer/supplier are required to document full traceability back to the forest/certified forest unit thereby demonstrating that;
  - the tree does not originate from an area/region where it is IUCN red listed, categorized as CR, EN or VU;
  - the tree species does not originate from Intact Forest Landscape (IFL), defined in 2002 http://www.intactforests.org/world.webmap.html;
  - for plantations, the applicant/manufacturer/supplier must document that the tree species does not originate from plantations established on areas converted from forest after 1994.

O3 Traceability and certification

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

1. Species name

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

2. Chain of custody certification

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

Applicant/manufacturer/suppliers using only non-FSC/PEFC certified recycled material in the wood-based panels used in the Nordic Swan Ecolabelled product, may be exempted from the requirement to Chain of Custody certification. For a definition of recycled material, see Table 1 Definitions.

For solid wood:

As an exception from the above, a subcontractor (i.e., a carpentry workshop) of the applicant that does not have CoC certification may also be approved. This is subject to a guarantee from the subcontractor that the wood raw materials are purchased from a CoC certified supplier of wood that can prove that the wood raw materials comply with the requirements stated here. The subcontractor must guarantee that the certified wood is sold to the manufacturer of the Nordic Swan Ecolabelled product. The applicant must have an agreement with the subcontractor which describes how the subcontractor guarantees that the certified timber will be delivered to the applicant. The agreement shall state that the subcontractor is obliged to report to the applicant when changing wood supplier.

3. Certified material

If the manufacturer of outdoor furniture, playground and park equipment is CoC:

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

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

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

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

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

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

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

**Recycled material/raw material is defined according to ISO 14021, see Table 1 Definitions.*

- Name (species name) of the wood raw materials/bamboo used in the Nordic Swan Ecolabelled product.
- The applicant/manufacturer or the applicant’s/manufacturer’s supplier must present a valid FSC/PEFC Chain of Custody certificate covering all wood raw material/bamboo used in the Nordic Swan Ecolabelled product. Exempted from this requirement is applicant/manufacturers/suppliers using only recycled material.
- If the applicant/manufacturer of outdoor furniture, playground and park equipment is CoC-certified:

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

- If the supplier is CoC- certified:

Documentation from the manufacturer of outdoor furniture, playground and park equipment on the purchase of wood raw material/bamboo/wood-based panels from the CoC-certified supplier which shows that the certification requirement of at least 70% certified is fulfilled and that the remaining share is covered by the control schemes (FSC controlled wood / PEFC controlled sources). This must be specified on the invoice/delivery note with

certification claim. Recycled fibres that are not certified in accordance with FSC / PEFC must be covered by EN 643 delivery notes. The manufacturer of outdoor furniture, playground and park equipment must declare that the wood raw material that fulfils the requirement is used in the Nordic Swan Ecolabelled production.

O4 Chemicals in wood-based panels containing recycled materials

The requirement applies to finished products containing more than 5 w% wood-based panels.

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

This means that the materials must not come from

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

Table 2 Limit values for chemicals in recycled wood

Substance/compund	Limit value (mg/kg recycled wood)
Arsenic (As)	25
Cadmium (Cd)	50
Chromium (Cr)	25
Copper (Cu)	40
Lead (Pb)	90
Mercury (Hg)	25
Fluorine (F)	100
Chlorine (Cl)	1000
Pentachlorophenol (PCP)	5
Creosote (Benzo(a)pyrene)	0.5

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

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

O5 Energy requirement - wood-based panels

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

The requirement does not include HPL panels, which instead must meet the requirements in section 4.4 High Pressure Laminate (HPL) panels.

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

Requirement level:

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

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

4.3 Durability of solid wood

This chapter relates to solid wood. Wood preservatives must meet the chemical requirements in section 4.8 Chemical requirements.

O6 Durability and wood protection methods

Solid wood must have a good durability performance, i.e. resistance to moisture and fungal attack. To ensure adequate quality for the intended use, the following applies to solid wood:

- Structural wood protection: It must be described which design measures have been taken in the product to extend the life expectancy and limit the use of wood protection methods (i.e., impregnation, thermal or chemical modification).
- Nordic Swan Ecolabelled biological durable wood for outdoor use automatically meets this requirement.
- The timber falling within use class UC 3 or UC 4 as per EN 335:
  - To ensure adequate quality for the intended use, the use class (UC) must as a minimum fulfil the corresponding durability performance and test methods in Table 3. The test(s) must be performed by an accredited laboratory and be accompanied by a separate statement or certificate that confirms the achieved durability performance of the product(s).

Wood protection methods other than those described in Table 3 can be used. In this case, test results and documentation for durability must be submitted. That the durability is similar and sufficient for the specific use class, must be verified by an independent qualified test institute or an independent wood protection professional body.

- For impregnation with heavy metals and/or biocides:
  - For products that are firmly anchored in the ground or other substrates, NTR A and NTR A GL are allowed for those parts of the product that fall within use class UC 4 as per EN 335. The parts must be NTR A or NTR A GL-certified.
  - NTR AB and NTR AB GL are allowed for those parts of the products that fall within use sub-class UC 3.2 as per EN 335. I.e., parts that remain wet for long periods or where water can accumulate. The parts must be NTR AB or NTR AB GL-certified.
  - Wood preservatives must also meet the chemical requirements in chapter 4.8.

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

Wood protection method	Use class as per EN 335	Test procedure	Durability performance
Heartwood with natural durability (may not be treated with wood preservatives)	UC 3	EN 350	Median % mass loss (ML) ≤ 10% (corresponding to DC 2)
	UC 4	EN 350	Median % mass loss (ML) ≤ 5% (corresponding to DC 1)
Thermally and chemically modified wood not classified in accordance with NTR	UC 3	EN 113-2 after separating accelerated ageing in line with EN 73 or EN 84.	Median % mass loss (ML) ≤ 10% (corresponding to DC 2)
		Field test EN 12037:2022 or EN 330	Must perform equivalent or better than reference.
	UC 4	EN 113-2 after separating accelerated ageing in line with EN 73 or EN 84. ENV 807 soft rot test.	EN 113-2: Median % mass loss (ML) ≤ 5% (corresponding to DC 1) ENV 807: validate test
		Field test EN 252 for at least five years in three locations, two of which are in a Nordic country.	Must perform equivalent or better than reference.
Thermally and chemically modified wood classified in accordance with NTR[4]	UC 3		NTR B mod or NTR AB mod
	UC 4		NTR A mod
Preservative-treated impregnated wood	UC 3.2*		NTR AB or NTR AB GL
	UC 4		NTR A or NTR A GL

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

- State use class as per EN 335 for the various wood parts in the product.
- Structural wood protection: Drawings and descriptions of the constructive wood protection. It must be described which design measures have been taken in the product to extend the life expectancy and limit the use of wood protection methods (i.e., impregnation, thermal or chemical modification).
- When using Nordic Swan Ecolabelled durable/resistant wood for outdoor use, state the producer, licence number and product name.
- For woods with natural durability: enclose name of wood and durability class as per EN 350.
- For impregnated or modified wood: enclose NTR certificate.

[4] www.nwpc.eu

- For thermally or chemically modified timber that is not NTR classified: enclose test reports and assessment of the results, verified by an independent party with experience in the field. Enclose a brief description of the experience in judging and assessing the durability of wood.
- For impregnated wood: Documentation/drawing of product, which shows which parts are NTR A/NTR A GL or NTR AB/NTR AB GL impregnated. For products that are impregnated with NTR A/NTR A GL send a declaration/document/drawing that shows that the product is firmly anchored in ground or other substrates and a description/documentation that the parts belong to use class UC 4 as per EN 335. For parts that are NTR AB/NTR AB GL impregnated, a description/documentation must be sent that the parts belong to the use sub-class UC 3.2 as per EN 335. Enclose the NTR certificate.

4.4 High Pressure Laminate (HPL) panels

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

Where the product contains more than 10 w% HPL, the chemical requirements in section 4.8 must also be fulfilled for all the chemical products used in the manufacture of the HPL.

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

4.4.1 Requirement where HPL panels are more than 10 w% of the finished product

O7 Energy requirement for HPL panel production

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

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

The requirement does not include energy used for resource extraction or production of constituent raw materials. Self-generated energy (see Table 1 Definitions) and surplus energy that is sold on must be stated but not included in the calculation.

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

O8 Emissions to the work environment from HPL production

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

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

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

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

- Limit value expressed in relation to a reference period of 8 hours as a time-weighted average (TWA):
  - Limit value for formaldehyde: 0.5 ppm or 0.6 mg/m^3
  - Limit value for phenol: 2 ppm or 8 mg/m^3

and

- Limit value expressed in relation to a short-term value that does not exceed 15 min.:
  - Limit value for formaldehyde: 1.0 ppm or 1.2 mg/m^3
  - Limit value for phenol: 4 ppm or 16 mg/m^3

☐ Results from air measurements for phenol and formaldehyde over the past 12 months, including sampling schedule, test method and measurement frequency. The analysis laboratory/test institute must meet the requirements in Appendix 1.

or

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

4.4.2 Requirement where HPL panels are more than 30 w% of the finished product

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

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

O9 Wood in paper

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

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

Tree species must live up to requirement O2.

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

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

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

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

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

Y = Proportion of fibre raw material from certified forestry

x = Proportion of recycled fibre

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

** Recycled material is defined as per ISO 14021. See further definition in Table 1.*

- Information on the names of the woods used and a declaration of compliance with the requirement concerning prohibited tree species (O2).
- Copy of the paper manufacturer's FSC or PEFC Chain of Custody certificate.
- Certified wood fibre alternative a): Invoice between the paper manufacturer and the laminate manufacturer showing that FSC/PEFC certified paper is being purchased.
- Certified wood fibre alternative b): Invoice between the paper manufacturer and the laminate manufacturer showing that paper labelled as FSC or PEFC Recycled is being purchased. Alternatively, a declaration from the paper manufacturer that the requirement concerning content of recycled fibre is fulfilled. Recycled fibre that is not FSC/PEFC certified must be covered by EN 643 delivery notes.
- Certified wood fibre alternative c): Paper manufacturer's calculation of the percentage of fibre raw material that is FSC/PEFC certified and recycled, and documentation showing that paper with the certified amount is purchased. This should be specified in i.e., invoices or delivery note.

O10 COD emissions from paper and pulp production

Total emissions to water of oxygen-consuming substances, measured as chemical oxygen demand (COD), must not exceed the value stated in Table 4. COD is calculated by adding the COD from pulp (kg/ADt) + COD emissions from the paper machine (kg/ADt).

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

Table 4 Requirement levels for COD emissions for pulp and paper

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

- Information on which types of pulp have been used to manufacture the paper.
- Description of the sampling procedure, including measurement methods and measurement results over the past 12 months, from the manufacturers of the paper and pulp.

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

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

O11 Energy requirement for paper and pulp production

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

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

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

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

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

- The pulp/paper manufacturer must submit calculations in line with Appendix 5 in the criteria document, showing that the requirement limit has been met. Worst case calculations are to be included, to show that each pulp recipe fulfils the requirements, unless separate calculations are reported for each pulp mix.
- When using pulp that has been checked based on Nordic Ecolabelling's applicable Base Module for paper, state the producer, the production location and the name of the pulp.

4.5 Plastic and rubber

The requirements in this chapter must be fulfilled for the parts of the product that comprise plastic and/or rubber. Small plastic parts such as screws, nails and so on that weigh less than 100 g are not subject to the requirements below. For requirements concerning ingoing substances used as additives in plastic and rubber or for surface treatment, see section 4.8.

The requirements in this section (O12–O18) do not apply to plastic in wood-plastic composite (WPC) materials. Instead, the requirements in section 4.6 must be fulfilled.

O12 Information and labelling

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

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

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

- Declaration from the plastic manufacturer/supplier.

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

O13 Chlorinated plastic

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

T̄ Declaration from the plastic manufacturer/supplier.

O14 Raw materials for bio-based polymers

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

Palm oil and soy

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

Sugar cane

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

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

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

Sugar cane must also be certified to Bonsucro standard, version 5.1 or later version or certified according to a standard that meets the requirements in Appendix 2 in the criteria document.

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

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

Other raw materials

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

The raw materials must meet one of the following requirements:

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

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

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

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

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

- Declaration by the polymer manufacturer that palm oil (incl. PFAD (Palm Fatty Acid Distillate)), soybean oil and soybean flour are not used as raw materials for the bio-based polymer.
- For waste and residual products: Documentation from the polymer producer, which shows that the requirement's definition of waste or residual products is followed, as well as traceability which shows where waste or residual product comes from.
- For sugar cane: Indicate which certification system sugar cane is certified according to. Copy of valid CoC certificate or certificate number for the current traceability standard. Documentation as an invoice or delivery note from the producer of bio-based polymer which shows that certified raw material has been purchased for the production of the polymer. Declaration that sugar cane is not genetically modified.
- For primary raw materials: Declaration from the polymer manufacturer that raw materials have not been genetically modified according to the definition in the requirement.

O15 Nitrosamines in rubber

The following limit values must be fulfilled:

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

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

- Declaration from the rubber manufacturer.

O16 PAH in plastic, silicone and rubber

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

The limit values for selected polycyclic aromatic hydrocarbons (PAH) as listed in Table 5 must be observed. The impurity limit of 1000 ppm thus does not apply for this requirement. In addition, the total content of PAHs shall be less than 0.5 mg/kg.

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

Table 5 Limit values for selected PAHs in materials

Substance name	CAS No.	Limit value
Benzo[A]Pyrene	50-32-8	≤ 0.5 mg/kg
Benzo[E]Pyrene	192-97-2	≤ 0.5 mg/kg
Benzo[A]Anthracene	56-55-3	≤ 0.5 mg/kg
Dibenzo[A,H]Anthracene	53-70-3	≤ 0.5 mg/kg
Benzo[B]Fluoranthene	205-99-2	≤ 0.5 mg/kg
Benzo[J]Fluoranthene	205-82-3	≤ 0.5 mg/kg
Benzo[K]Fluoranthene	207-08-9	≤ 0.5 mg/kg
Chrysene	218-01-9	≤ 0.5 mg/kg
Total of all the above PAHs		**≤ 0.5 mg/kg**

- Declaration from the plastic producer that the requirement is fulfilled.
- Report on the results for each of the different polymer materials, showing compliance. The analysis laboratory/test institute must meet the requirements in Appendix 1 in the criteria document.

4.5.1 Requirement when plastic accounts for more than 10 w% of the product

If the total sum of plastic parts exceeds 10 w% of the product, the following requirement must be fulfilled for the plastic parts.

O17 Recycled and biobased plastics

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

The recycled plastic must not be PVC or PVDC.

If wood plastic composite (WPC) is used in the product, plastic from WPC is not included in the calculations of the proportion of recycled plastic, see separate requirements for WPC in section 4.6 Wood-plastic composite material (WPC).

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

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

or

- At least 50 w% of the plastic in the product must be bio-based. The bio-based plastic must meet requirement O14.

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

- At least 75 w% of the plastic in the product must consist of recycled plastic. A minimum of 20 w% of this must be post-consumer/commercial recycled plastic. The requirement to a minimum of 20 w% of post-consumer/commercial recycled plastic applies regardless of the total amount of recycled plastic in the product.

or

- At least 30 w% of the plastic in the product must consist of post-consumer/commercial recycled plastic

  or

- At least 75 w% of the plastic in the product must be bio-based. The bio-based plastic must meet requirement O14.

- Manufacturer of recycled or bio-based plastic must be stated.
- For recycled plastic:
  - Description and documentation from manufacturers of recycled raw materials showing that the plastic is recycled in compliance with the requirement's definition or has Global Recycled Standard certification or EuCertPlast certification, showing

that the raw materials are recycled, or other equivalent certification approved by Nordic Ecolabelling.

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

For bio-based plastic:

- Calculation that shows that the proportion of bioplastic is met. In addition, documentation according to requirement O14.

O18 Chemical substances in recycled plastic

Recycled plastic must be tested for harmful substances, and the presence of these substances must not exceed the limits specified in the table below. This requirement must be documented either for the plastic components before any surface treatments containing recycled material or for the recycled plastic raw material (granules).

The following are exempt from testing:

- Recycled PET from bottles originally approved for contact with food. Recycled plastic raw material must not come from production lines that are EFSA* or FDA** approved as food contact material or marketed as compatible with these.
- Recycled plastic from production lines where the whole production chain is known and where it can be shown that the plastic does not contain substances above the limits set out in the table below.

**In line with Commission Regulation (EC) No 2022/1616 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.*

The requirement must be documented at the time of application, as well as when any change of material is made after the licence has been granted, minimum when changing of the supplier of recycled plastic, significant changes to the sources of the recycled plastic or recycling processes (e.g. washing or sorting).

Procedure:

The applicant must have a procedure for testing to ensure ongoing compliance with the requirement, including when new tests are assessed as necessary. The procedure shall as a minimum describe:

- title of person who is responsible for compliance of the procedure.
- that new testing of recycled plastic raw material is necessary when changing of the supplier of recycled plastic, significant changes to the sources of the recycled plastic or recycling processes (e.g. washing or sorting).
- that Nordic Ecolabelling must be contacted in case of a test showing non-compliance with the substance limits in this requirement.

Table 6 Substances, limits and test methods

Substance/substance group	Max. limit for plastic part of the product that contain recycled plastic	Test method
Metals		Recognised migration/extraction standards such as EN 16711-2 with EN ISO 105-E04 or an equivalent method
Lead (Pb)	10 mg/kg	
Cadmium (Cd)	10 mg/kg	
Mercury (Hg)	1.0 mg/kg	
Chromium (Cr VI)	1 mg/kg	
Arsenic (As)	10 mg/kg	
Antimony (Sb)	100 mg/kg	
Phthalates		ISO 8124-6, EN 14602, EN ISO 14389 or equivalent method
Sum of: • 1,2-Benzenedicarboxylic acid, di-C6-10 alkyl esters, CAS No. 68515-51-5 • 1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters or mixed decyl and hexyl and octyl diesters, CAS No. 68515-51-5 and 68648-93-1 • 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP), CAS No. 71888-89-6 • 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP), CAS No. 68515-42-4 • 1,2-Benzenedicarboxylic acid, di-C8-10-branched alkyl esters, C9-rich, CAS No. 68515-48-0 • 1,2-Benzenedicarboxylic acid, di-C9-11-branched alkyl esters, C10-rich, CAS No. 68515-49-1 • 1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear (DHxP), CAS No. 68515-50-4 • 1,2-Benzenedicarboxylic acid, dipentyl ester, branched and linear, CAS No. 84777-06-0 • 1,2-Benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters, CAS No. 68648-93-1	0.1 % w/w	

• Benzyl butyl phthalate (BBP), CAS No. 85-68-7 • Bis(2-ethylhexyl) phthalate (DEHP), CAS No. 117-81-7 • Bis(2-methoxyethyl) phthalate (DMEP), CAS No. 117-82-8 • Dibutyl phthalate (DBP), CAS No. 84-74-2 • Dicyclohexyl phthalate (DCHP), CAS No. 84-61-7 • Dihexyl phthalate (DHP), CAS No. 84-75-3 • Diisobutyl phthalate (DIBP), CAS No. 84-69-5 • Di-iso-decylphthalate (DIDP), CAS No. 26761-40-0 • Diisohexyl phthalate (DIHxP), CAS No. 71850-09-4 • Di-iso-nonylphthalate (DINP), CAS No. 28553-12-0 • Diisopentyl phthalate (DPP) CAS No. 605-50-5 • Di-n-octylphthalate (DNOP), CAS No. 117-84-0 • Dipentyl phthalate (DMP), CAS No. 131-18-0 • n-pentyl-isopentyl phthalate, CAS No. 776297-69-9		
PAHs (polycyclic aromatic hydrocarbons)		AfPS GS 2019:01 PAK, EN ISO 16190 or equivalent method
Benzo[a]Pyrene (CAS No. 50-32-8)	1 mg/kg	
Benzo[e]Pyrene (CAS No. 192-97-2)	1 mg/kg	
Benzo[a]Anthracene (CAS No. 56-55-3)	1 mg/kg	
Dibenzo[a,h]Anthracene (CAS No. 53-70-3)	1 mg/kg	
Benzo[b]Fluoranthene (CAS No. 205-99-2)	1 mg/kg	
Benzo[j]Fluoranthene (CAS No. 205-82-3)	1 mg/kg	
Benzo[k]Fluoranthen (CAS No. 207-08-9)	1 mg/kg	
Chrysen (CAS No. 218-01-9)	1 mg/kg	
Bisphenols		OEKO-TEX® test method M-40, adapted method based on EN ISO 11936 or equivalent method
Bisphenol-A (CAS No. 80-05-7)	10 mg/kg	
Bisphenol-B (CAS No. 77-40-7)	200 mg/kg	
Bisphenol-S (CAS No. 80-09-1)	200 mg/kg	
Bisphenol-F (CAS No. 620-92-8)	200 mg/kg	
Bisphenol-AF (CAS No. 216-036-7)	200 mg/kg	
Phenolic byproducts		Adapted method based on EN ISO 11936
Benzophenone (CAS No. 119-61-9)	30 mg/kg	

Flame retardants		EN IEC 62321, EN ISO 17881 or equivalent method
Brominated flame retardants (such as: Polybrominated diphenyl ethers (PBDEs), Tetrabromobisphenol A (TBBPA), Hexabromocyclododecane (HBCD), Polybrominated biphenyls (PBBs) etc.)	50 mg/kg	
PFAS (Per- and polyfluoroalkyl substances)		EN 14582 or equivalent method
PFAS given as total fluorine (TF)	50 mg/kg	

Please note that the substances in the table above do not constitute an exhaustive list of substances that ensure compliance with legislation.

- Short description of used testing approach including the migration media used.
- Test reports showing that the requirement is met. The analysis laboratory must fulfil the requirements in Appendix 1.
- When using an exception for material from PET bottles: The plastic raw material supplier must document that the bottles are originally approved for contact with food and that the raw material is not from production lines that are EFSA or FDA approved.
- When using an exception for material from production lines with known production chain: The plastic supplier must send description of the production lines, the type of products produced and how it can be shown that the plastic does not contain substances above the limits.
- Submit written procedure for testing of chemical substances in recycled plastic including description of when new tests are assessed as necessary.

4.6 Wood-plastic composite material (WPC)

O19 Wood fibre and plastic

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

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

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

c) This plastic raw material must have the following composition/origin:
   - The proportion of post-consumer plastic, where the source is collected consumer plastic packaging and similar, must be at least 60%.
   - The proportion of pre-consumer/commercial plastic can be no more than 25%.
   - The remaining proportion must be post-commercial plastic.

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

- From the manufacturer of WPC:
  - For plastics: state the proportion of recycled plastic and types of recycled plastic according to the requirement and proportion of each type.
  - For wood fiber: indicate the type of by-product and from which production it originated. Also certify that the wood fiber does not come from wood impregnated with biocides or heavy metals.
- From the supplier of recycled plastic raw material:
  - Declaration that the plastic is 100% recycled and does not contain PVC, PVDC or PET. Indicate the proportion of post-consumer, pre-consumer / commercial and post-commercial plastic and describe sources and type of plastic, respectively.

O20 Recycled plastic

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

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

and

- Sink and float separation step

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

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

O21 Additives

Chemicals added during WPC production, such as pigments, UV stabilisers and bonding agents, must meet the chemical requirements in section 4.8.

- Declaration for all additives according to the chemical requirements.
- Safety data sheet as per relevant legislation for all additives.

O22 Quality

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

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

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

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

O23 Other requirements for WPC

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

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

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

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

4.7 Metal

Production requirements for steel and aluminium apply if the metals are included in the product with more than respectively 30 w% and 10 w%. Small metal parts such as screws, nails and so on that weigh less than 100 g are not subject to the requirements below.

O24 Metals that must not be used

The metals copper, tin, lead, and cadmium are prohibited. However, metal alloys in stainless steel are allowed. Regarding metal plating, see requirement O36.

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

O25 Production of steel

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

The requirement can be met by documenting either A) High proportion recycled or B) Virgin steel production (B consist of 3 alternatives):

A) High proportion recycled

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

**Recycled steel is defined as both pre- and post-consumer/commercial, according to definitions in ISO 14021, see Table 1.*

The requirement can be verified either by:

- A signed agreement between the steel 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 steel producer´s own production specifically stating the content of recycled steel in the product.

or

B) Virgin steel production

The requirement can be met by one of the 3 alternatives (1-3) below:

The requirement can be verified using either: direct traceability through the supply chain, mass balance approach[5] or by all major suppliers[6].

1. Steel produced from traditional methods

Steel used in the Nordic Swan Ecolabelled product comes from a steel producer who:

- has implemented at least 2 of the energy efficiency measures stated as BAT in the BREF document for iron and steel production (2013 or later version). The energy efficiency measures are listed in Table 1 in Appendix 3 and
- 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. Steel production - Responsible steel certified production site

A minimum of 50 w% of the steel used in the Nordic Swan Ecolabelled product comes from a production site that are certified according to the standard Responsible Steel[7], version 1.0, 2019 or later versions.

or

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

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

- direct electrolysis of iron ore
- blast furnace top gas recycling with carbon capture and storage
- direct smelting reduction processes
- hydrogen steelmaking in shaft furnaces using green H_2.

Recycled steel:

☐ Alternative 1: Signed agreement/declaration between the steel supplier and the manufacturer of the Nordic Swan Ecolabelled product stating that the requirement is met. The declaration from the steel supplier can be based on purchase records/average data from several steel suppliers or

[5] In case of several potential steel 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 individuals steel 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 steel producers)

[6] 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 steel components in the Nordic Swan Ecolabelled product.

[7] Overview of certified steel producers, https://www.responsiblesteel.org/certification/issued-certificates/

- Alternative 2: eBVD or EPD based on product-specific data/data from the steel producer´s own production stating the content of recycled steel in the product.

Virgin steel production:

Alternative 1:

- Enclose latest sustainability strategy report or equivalent documentation from the steel producer showing fulfilment of the requirement. The steel producer can also present specific targets from annual business report with reference to specific numbers and assumptions. Average numbers from steel producers with several steel melting plants is accepted.
- Description of which energy efficiency measures stated as BAT have been implemented at the production site.
- Information on type of traceability used to document the requirement.

Alternative 2:

- Enclose valid Responsible Steel certificate from the steel producer.
- Information from the supplier/manufacturer of the constituent steel part about which metal parts are from certified metal production (purchase records).
- Information from the supplier/manufacturer of the constituent steel 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 steel from certified steel producers is fulfilled – e.g., invoices or other documentation from suppliers.

Alternative 3:

- State the name of the steel producer and production site where the steel comes from, as well as a brief description of which technology is used.
- Information on type of traceability used to document the requirement.

O26 Production of aluminium

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

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

A) High proportion recycled

A minimum of 75 w% of aluminium must be recycled*.

**Recycled metal is defined as both pre- and post-consumer/commercial, according to definitions in ISO 14021, see Table 1.*

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[8] or by all major suppliers[9].

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 CO_2e/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 w% of aluminium used in the Nordic Swan Ecolabelled product comes from a production site that are certified to the ASI Performance standard.[10]

Recycled aluminium:

- 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 steel suppliers.

[8] 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)

[9] 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.

[10] https://aluminium-stewardship.org/asi-standards/asi-performance-standard (visited November 2022)

- Alternative 2: eBVD or EPD 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.[11]

Primary aluminium production:

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 CO_2e/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.

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

4.8 Chemical requirements

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

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

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

Metal plating does not need to meet requirements O27–O32. Instead, it must meet requirement O36.

Plastic and rubber: additives in plastic i.e., pigments, stabilizers, plasticizers and UV hardeners must meet requirements O28 and O29. Surface treatment of plastic and rubber must meet requirements O27–O32 and section 4.8.4. The requirements do not apply to chemicals and substances used in the production of polymers i.e., monomers.

In addition to the general chemical requirements in section 4.8.1, chemicals for surface treatment of wood, wood-base panels, HPL, metal, plastic and rubber must comply with sections 4.8.2-4.8.4.

Nordic Swan Ecolabelled products and products that carry the EU Ecolabel automatically meet the requirements in this chapter. Only the manufacturer, licence number and product name must be stated. In the case of EU Ecolabelled products, however, documentation must be submitted for requirement O32 concerning nanomaterial.

4.8.1 General chemical requirements

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

O27 Classification of chemical products

The chemical products used in the production of a product must not be classified with the hazard codes listed in the Table 7 below, in accordance with the CLP Regulation (EC) No 1272/2008.

Table 7 Prohibited classifications of chemical products

CLP Regulation 1272/2008:		
Hazard statement	**Hazard class and category**	**Hazard code***
Toxic to aquatic life	Toxic to aquatic life, Acute 1 Toxic to aquatic life, Chronic 1 Toxic to aquatic life, Chronic 2	H400 H410 H411
Harms public health and the environment by destroying ozone in the upper atmosphere	Hazardous to the ozone layer	H420
Acute toxicity	Acute Tox. 1 or 2 Acute Tox. 1 or 2 Acute Tox. 1 or 2 Acute Tox. 3 Acute Tox. 3 Acute Tox. 3	H300 H310 H330 H301 H311 H331
Specific target organ toxicity: single exposure and repeated exposure	STOT SE 1 STOT RE 1	H370 H372
Respiratory sensitisation	Resp. Sens. 1, 1A or 1B	H334
Carcinogenic	Carc. 1A or 1B Carc. 2	H350 H351
May cause genetic defects	Muta. 1A or 1B Muta. 2	H340 H341
Toxic for reproduction	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362

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

The following exemptions exist:

- Exception is made for adhesives with formaldehyde classified H350 or H341. Free formaldehyde is regulated in requirement O31. Formaldehyde emissions during production are regulated in requirement O8 for HPL panels.
- An exception is made for resins in High Pressure Laminate (HPL) classified as H341, H301 or H331 with max 10 w% phenol.

Phenol emissions during the production of HPL panels are dealt with in requirement O8.

- In the case of resin in High Pressure Laminate (HPL) and laminate, an exception is made for methanol (H301, H311, H331 and H370) in concentrations of max 10 w%.
- Wood preservatives are exempted from the ban on the hazard classes Toxic to aquatic life and Acute toxicity. In this context, wood preservative means an impregnation agent or primer that makes the wood resistant to fungal attack/rot.
- UV curing surface treatment products classified as environmentally hazardous are exempted if requirement O35 is met.
- Prohibition of classification H334 only applies to surface treatment products. All other types of chemical products are exempted from the prohibition.
- Wood-based panels are subject to an exemption for adhesive products classified as H351 due to MDI (methyl diphenyl diisocyanate).
- Classifications H351 and H361 for resins containing melamine (CAS No. 108-78-1).

- Classification of H360 due to 2-ethylhexanoic acid (CAS No. 149-57-5) is exempted in wood preservative products if the pH value is 9.5 or higher in the wood preservative product.

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

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

O28 Classification of ingoing substances

The ingoing substances used in the chemical products must not be classified with the hazard codes listed in the Table 8 below in accordance with the CLP Regulation (EC) No 1272/2008.

Table 8 Prohibited classifications of ingoing substances in chemical products

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

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

Exception:

- Formaldehyde (H350, Carc. 1B and H341, Muta. 2). Formaldehyde content is regulated in requirement O32. In addition, formaldehyde emissions during production are governed by requirement O8 for HPL panels.
- Glyoxal (H341, Muta. 2) in liquid chemical products with pH > 8.
- Methylene diphenyl diisocyanate (MDI) (H351, Carc. 2) for adhesive products in wood-based panels.
- Resin containing phenol (H341, Muta. 2) with max 10 w% phenol. Phenol emissions during the production of HPL panels are dealt with in requirement O8.
- Photo initiators classified H351, H341 or H361.
- Mequinol classified H361.
- The hardener in 2-component UV products can be exempted from the requirement if the following is met: it must be documented that the workers are not exposed to the components i.e., by using safety equipment when mixing or that the mixing takes place automatically without exposure of the workers and that the application of the finished two-component system is done in a closed system.
- The classifications H351 and H361 for resins containing melamine (CAS No. 108-78-1).
- 2-ethylhexanoic acid (H360, CAS No. 149-57-5) is exempted in wood preservative products if the pH value is 9.5 or higher in the wood preservative product.

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

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

O29 Excluded substances

The following substances or substance groups must not be present as ingoing substances in the chemical product:

- Substances on the Candidate List: https://www.echa.europa.eu/candidate-list-table
- Exemption: Melamine CAS No. 108-78-1.
- Substances that have been evaluated in the EU to be PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative), in accordance with the criteria in Annex XIII of REACH, plus substances that have not yet been investigated but that meet these criteria.
- Endocrine disruptors:
  - Substances on the EU member state initiative "Endocrine Disruptor Lists", List I and III. See the following links:

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

    IPBC (3-iodo-2-propynyl butylcarbamate, CAS No. 55406-53-6) is exempted, however see requirement O30.
- The following substances from the EU member state initiative "Endocrine Disruptor Lists", List II:
  - (±)-1,7,7-trimethyl-3-[(4-methylphenyl)methylene]bicyclo[2.2.1]heptan-2-one / 4-methylbenzylidene camphor / 4-MBC CAS No. 36861-47-9
  - 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane / bis-[4-(2,3-epoxipropoxi)phenyl]propane / bisphenol A diglycidyl ether CAS No. 1675-54-3
  - 4-tert-butylphenol / p-tert butylphenol CAS No. 98-54-4
  - Benzophenone-1 (BP-1) / 2,4-dihydroxybenzophenone CAS No. 131-56-6
  - Benzophenone-2 / 2,2',4,4'-tetrahydroxybenzophenone / BP-2 CAS No. 131-55-5
  - Butylparaben / butyl 4-hydroxybenzoate / n-butyl p-hydroxybenzoate CAS No. 94-26-8
  - Carbon disulphide CAS No. 75-15-0
  - Deltamethrin / α-cyano-3-phenoxybenzyl [1R-[1α(S*),3α]]-3-(2,2-dibromovinyl)-2,2-dimethylcyclopropanecarboxylate CAS No. 52918-63-5
  - Dicyclohexyl phthalate (DCHP) CAS No. 84-61-7
  - Diuron CAS No. 330-54-1
  - Ethyl 4-hydroxybenzoate / ethylparaben CAS No. 120-47-8
  - Homosalate / homomenthylsalicylate / 3,3,5-trimethyl-cyclohexyl salicylate CAS No. 118-56-9
  - Methylparaben / methyl 4-hydroxybenzoate / methyl p-hydroxybenzoate CAS No. 99-76-3

- Oxybenzone (BP-3) / benzophenone-3 / 2-hydroxy-4-methoxy-benzophenone CAS No. 131-57-7
- Propylparaben / propyl 4-hydroxybenzoate / n-propyl p-hydroxybenzoate CAS No. 94-13-3
- Resorcinol / 1,3-benzenediol CAS No. 108-46-3
- Tert-butyl methyl ether / methyl tertiary butyl ether (MTBE) CAS No. 1634-04-4
- Tert-butyl-4-methoxyphenol (BHA) / 2- and 3-tert-butyl-4-hydroxyanisole / butylated hydroxyanisole / tert-butyl-4-hydroxyanisole CAS No. 25013-16-5
- Ziram CAS No. 137-30-4

- On October 1st, 2022, the group of substances from List II above is extended to cover the full List II https://edlists.org/the-ed-lists/list-ii-substances-under-eu-investigation-endocrine-disruption

  Regarding List I, II and III: a substance which is transferred to one of the corresponding sublists called "Substances no longer on list", and no longer appears on any of List I-III, is no longer excluded. The exception is those substances on sublist II which were evaluated under a regulation or directive which doesn't have provisions for identifying EDs (e.g. the Cosmetics Regulation, etc.). For those substances, ED properties may still have been confirmed or suspected. Nordic Ecolabelling will evaluate the circumstances case-by-case, based on the background information indicated on sublist II.

- Perfluorinated and polyfluorinated alkylated substances (PFAS)
- Halogenated organic compounds with the following exceptions*:
  - Bronopol, IPBC and CMIT/MIT (3:1), which are regulated in requirement O30.
  - Halogenated organic pigments that comply with the Council of Europe recommendation "Resolution AP (89) 1 on the use of colorants in plastic materials coming into contact with food", point 2.5.
  - Epoxy acrylate used in UV curing coatings.
- Butyl hydroxytoluene (BHT) and butyl hydroxyanisole (BHA).

An exemption is given for BHT in UV curing lacquers and paints. If BHT is given a harmonized official classification so that the substance does not meet the requirements of the criteria document, the exemption will no longer be valid.

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

** Perfluorinated and polyfluorinated alkyl substances are covered by their own bullet and are not included in the exemption.*

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

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

O30 Preservatives

The content of preservatives in a chemical product must meet the limit values as stated in Table 9 below.

Table 9 Preservatives in chemical products

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

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

- Safety data sheet in line with prevailing European legislation (Annex II to REACH (Regulation 1907/2006/EF)).
- A declaration from the chemical producer or supplier of the chemical product.

O31 Free formaldehyde in chemical products

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

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

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

Resins used in the production of wood-based panels and HPL panels are exempted from the requirement. Resins in HPL panels are covered by requirement O8.

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

O32 Nanomaterials in chemical products

The chemical product must not have nanomaterials as ingoing substances.

The following substances are exempted from the requirement:

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

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

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

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

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

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

Chemical products used for surface treatment must also meet the general chemical requirements, section 4.8.1.

O33 Quantity applied and application method

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

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

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

b) If alternative b) in requirement O35 is used, state quantity applied (g/m^2), number of coats and application method(s) used.

The following levels of efficiency must be used when calculating the quantities of VOCs in subsequent requirement O35:

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

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

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

O34 Added amount of volatile organic compounds (VOC)

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

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

a) Total level of VOC ≤ 5 w% VOC

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

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

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

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

- Safety data sheet in accordance with Annex II of REACH (Regulation 1907/2006/EC) for each chemical product in the surface treatment system.
- Declaration from the manufacturer of the chemical products in the surface treatment system, detailing how much VOC is in each product.
- Calculation from the manufacturer showing that alternative b) in the requirement is met, if the surface treatment system does not fulfil alternative a), see example of calculation in Appendix 6 in the criteria document.

O35 UV curing surface treatment system

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

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

4.8.3 Surface treatment of metal

All surface treatment of metal must meet requirement O37 and O38 and the general chemical requirements, section 4.8.1. Metal plating i.e., hot-dip galvanising, is however exempted from requirement O37 and O38 and the general chemical requirements and must instead fulfil requirement O36.

O36 Metal plating

- Metal plating must not contain cadmium, lead*, chromium or nickel**. Impurities as defined in Table 1 are permitted.
- The plant must be drain free, i.e., there must be no emissions to a recipient watercourse/municipal treatment plant***.
- Residual products must be sent for recycling or handled as hazardous waste.

** Zinc used for hot-dip galvanizing must contain a maximum of 0.005% lead and no additional lead may be added to the galvanizing bath.*

*** Nickel in up to 0.07% in hot-dip galvanizing bath is allowed.*

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

- Declaration from the performer of the metal plating that the metal plating does not contain cadmium, lead, chromium or nickel.
- Declaration from the performer of the metal plating that the plant is drain free. If limited amounts of rinsing baths are diverted from hot-dip galvanizing: information that these amounts are limited and that it is led to the municipal treatment plant.
- The performer of the metal plating must state the recipient waste facility and give a description of how residual products from the plating are managed.

- For hot dip galvanizing:
  - From zinc supplier: Product data sheet or similar documentation for the lead content in zinc.
  - From the performer of the metal plating: Declaration that no additional lead is be added to and that nickel is max. 0.07% in the galvanizing bath.

O37 Quantity applied and application method

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

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

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

b) If alternative b) in requirement O38 is used, state quantity applied (g/m^2), number of coats and application method(s) used*.

The following levels of efficiency must be used when calculating the quantities of VOCs in subsequent requirement O38:

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

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

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

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

O38 Added amount of volatile organic compounds (VOC)

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

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

a) Total level of VOC ≤ 5 w% VOC

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

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

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

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

- Safety data sheet in accordance with Annex II of REACH (Regulation 1907/2006/EC) for each chemical product in the surface treatment system.
- Declaration from the manufacturer of the chemical products in the surface treatment system, detailing how much VOC is in each product.
- Calculation from the manufacturer showing that alternative b) in the requirement is met, if the surface treatment system does not fulfil alternative a), see example of calculation in Appendix 6 in the criteria document.

4.8.4 Surface treatment of plastic and rubber

Any surface treatment of plastic and rubber must meet the general chemical requirements in section 4.8.1.

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

O39 Surface treatment of plastic and rubber

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

- A declaration from the chemical producer or supplier of the chemical product.
- A declaration from the performer of the surface treatment.

O40 Quantity applied and application method

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

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

b) If alternative b) in requirement O41 is used, state quantity applied (g/m^2), number of coats and application method(s) used.

The following levels of efficiency must be used when calculating the quantities of VOCs in subsequent requirement O41:

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

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

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

O41 Added amount of volatile organic compounds (VOC)

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

a) Total level of VOC ≤ 5 w% VOC

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

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

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

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

- Safety data sheet in accordance with Annex II of REACH (Regulation 1907/2006/EC) for each chemical product in the surface treatment system.
- Declaration from the manufacturer of the chemical products in the surface treatment system, detailing how much VOC is in each product.
- Calculation from the manufacturer showing that alternative b) in the requirement is met, if the surface treatment system does not fulfil alternative a), see example of calculation in Appendix 6 in the criteria document.

4.9 Circular economy and functional requirements

O42 Guarantee and product design

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

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

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

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

2. Product design:

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

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

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

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

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

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

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

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

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

** By guarantee is meant that if a part proves to be faulty or does not work in normal use, the manufacturer must, within a reasonable timeframe, provide a replacement product, or repair or replace faulty or broken parts by delivering repaired products/parts or replacement*

products/replacement parts to the location. The guarantee can be provided that the part is used and maintained according to the manufacturer's recommendations.

- Description of the guarantee for the products parts covered by the requirement from the supplier of the product.
- Documentation showing that how the guarantee period and terms are communicated to the customer (purchase agreement, website, etc.).
- Description of how the product parts can be replaced.

O43 Separability

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

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

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

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

O44 Replacement parts

Replacement parts must be available from the manufacturer, on request, for at least 10 years after the product has gone out of production.

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

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

- Description from the applicant showing that replacement parts are offered for at least 10 years after the product has gone out of production and a list of which replacement parts are offered.
- Documentation that shows how the possibility to buy replacement parts is communicated to the customer and that ordering is user-friendly.

O45 Maintenance

The manufacturer/supplier must provide instructions on maintenance of the product during its service life. If specialist products (i.e., oil, varnish or paint) are recommended, these must meet the chemical requirements, see section 4.8.

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

- how often different parts must be inspected.
- how to inspect different parts.

- how to maintain different parts.
- after which time period parts may need to be replaced.

☐ Copy of the maintenance instructions. If special maintenance products are recommended, the safety data sheet in line with prevailing European legislation (Annex II to REACH, Regulation 1907/2006/EEC) and declaration that the chemical requirements in section 4.8 are met, must be enclosed.

☐ Copy of instructions for inspection and maintenance of playground equipment, permanently installed fitness equipment, parkour equipment, outdoor multi-sports equipment and climbing parks.

O46 Safety and durability

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

Outdoor furniture

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

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

Playground equipment for public playgrounds

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

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

Playground equipment for private use

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

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

Permanently installed outdoor fitness equipment

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

Parkour equipment

Must meet the standard EN 16899.

Outdoor multi-sports equipment

The products must meet the standard EN 15312 "Free access multi-sports equipment - Requirements, including safety and test methods".

Outdoor multi-sports equipment are free access multi-sports equipment and combinations intended for permanent installation and include, but not exclusively, equipment for sports such as badminton, basketball, football, handball, hockey, table tennis, tennis and volleyball.

Climbing parks

Climbing parks are permanent and mobile ropes courses and their components and must meet the standard EN 15567-1 "Sports and recreational facilities - Ropes courses - Part 1: Construction and safety requirements".

Outdoor grills

Outdoor grills must meet the standard EN 1860-1 “Appliances, solid fuels and firelighters for barbecuing – Part 1: Barbecues burning solid fuels – Requirements and test methods.”

Mobile waste bins

Mobile waste bins must meet the standard EN 840-5 "Mobile waste and recycling containers - Part 5: Performance requirements and test methods" and EN 840-6 "Mobile waste and recycling containers - Part 6: Safety and health requirements".

- Information on the product’s area of use and whether it is for private or public use.
- Documentation of compliance with relevant standards (i.e. test reports and information on the test institute).

4.10 Licence maintenance

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

O47 Customer complaints

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

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

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

O48 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.

t̄ Please upload your routine or a description.

5 Future criteria

Nordic Ecolabelling will, in the next generation of the criteria, like to further explore opportunities to strengthen and update the requirements, specially related to wood, metal and chemicals.

6 Criteria version history

Nordic Ecolabelling adopted version 5.0 of the criteria for outdoor furniture, playground and park equipment on 28 October 2026. The criteria are valid until 31 October 2031.

7 How to apply and regulations for the Nordic Ecolabelling

Application and costs

For information about the application process and fees for this product group, please refer to the respective national website. For contact information see the beginning of this document.

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

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.

Responsibility for Compliance with Applicable Legislation

When applying for the Nordic Swan Ecolabel, the applicant/licensee confirms compliance with all current regulatory requirements related to both the exterior and interior environment in connection with the production and handling of the product(s) covered by the application. Furthermore, the applicant declares that all applicable regulatory requirements within the

Nordic region are met for the product(s). Compliance with these regulations is a prerequisite for obtaining a licence.

On-site inspection

In connection with handling of the application, Nordic Ecolabelling normally conduct on-site inspection visit/-s to ensure adherence to the requirements. Scope and timing of on-site inspection is evaluated per product group and adapted to the specific application situation.

Follow-up inspections

Nordic Ecolabelling may decide to check whether the outdoor furniture, playground or park equipment fulfil 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 the outdoor furniture, playground or park equipment do 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.

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

Queries

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

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 competent.

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 manufacturer's test laboratory may be approved for analysis and testing if:

- Sampling and analysis are monitored by the authorities; or
- The manufacturer's quality assurance system covers analyses and sampling and is certified to ISO 9001; or
- 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 the manufacturer takes samples in accordance with a fixed sampling schedule.

Test method for COD / TOC emissions

COD content should be tested according to ISO6060 or equivalent. Measurement of PCOD, TOC or BOD can also be used if a correlation to COD is shown. Measurement method for TOC ISO 8245.

Sample frequency: Emissions to water are calculated as the annual average value and are based on at least one representative daily sample per week.

Sampling: Samples of process water shall be taken after external cleaning, and the analysis shall be carried out on unfiltered samples. Alternatively, the sampling frequency set by the authorities is accepted.

Appendix 2 Guidelines for standard, renewable commodities

Nordic Ecolabelling sets requirements on the standards to which cultivated commodities are certified. These requirements are described below. Each individual national sustainability standard and each certification system is reviewed by Nordic Ecolabelling to ensure that the requirements are fulfilled.

Requirements for standards

- The standard must balance economic, ecological and social interests and comply with the Rio Declaration's principles, Agenda 21 and the Forest Principles, and respect relevant international conventions and agreements.
- The standard must contain absolute requirements and promote and contribute towards sustainable cultivation. Nordic Ecolabelling places special emphasis on the standard including effective requirements and that the requirements protect the biodiversity.
- The standard must be available to the general public. The standard must have been developed in an open process in which stakeholders with ecological, economic and social interests have been invited to participate.

The requirements related to the sustainable standards are formulated as process requirements. The basis is that if stakeholders agree on the economic, social and environmental aspects of the standard, this safeguards an acceptable requirement level.

If a sustainability standard is developed or approved by stakeholders with ecological, economic and social interests, the standard may maintain an acceptable standard. Accordingly, Nordic Ecolabelling requires that the standard balances these three interests and that representatives from all three areas are invited to participate in development of the sustainable standard.

The standard must set absolute requirements that must be fulfilled for the certification. This ensures that the agriculture management fulfils an acceptable level regarding the environment. Since Nordic Ecolabelling requires that the standard must promote and contribute towards sustainable cultivation, the standard must be assessed and revised regularly for process improvement and successively reduce environmental impact.

Requirements for certification system

- The certification system must be open, have significant national or international credibility and be able to verify that the requirements in the sustainable standard are fulfilled.

Requirements for certification body

- The certification body must be independent, credible and capable of verifying that the requirements of the standard have been fulfilled. The certification body

must also be able to communicate the results and to facilitate the effective implementation of the standard.

The certification system must be designed to verify that the requirements of the standard are fulfilled. The method used for certification must be repeatable and applicable so the requirements can be verified. Certification must be in respect to a specific sustainable standard. There must be an inspection prior to certification.

Requirements on Chain of Custody (CoC) certification

- Chain of Custody certification must be issued by an accredited, competent third party.
- The system shall stipulate requirements regarding the chain of custody that assure traceability, documentation and controls throughout the production chain.

Documentation

- Copy of cultivation standard, name, address and telephone number to the organisation who has worked out the standard and audit reports.
- References to persons who represents stakeholders with ecological, economic and social interests who have been invited to participate.

Nordic Ecolabelling may request further documents to examine whether the requirements of the standard and certification system in question can be approved.

Appendix 3 Metal – BAT-EAL for energy efficiency in steel production

Table 10 Measures for efficient energy consumption in steel production

Blast furnaces	BAT is to maintain a smooth, continuous operation of the blast furnace at a steady state to minimise releases and to reduce the likelihood of burden slips. BAT is to use the extracted blast furnace gas as a fuel. BAT is to recover the energy of top blast furnace gas pressure where sufficient top gas pressure and low alkali concentrations are present.
BOF	BAT is to collect, clean and buffer BOF gas for subsequent use as a fuel. BAT is to reduce energy consumption by using ladle-lid systems. BAT is to optimise the process and reduce energy consumption by using a direct tapping process after blowing BAT is to reduce energy consumption by using continuous near net shape strip casting, if the quality and the product mix of the produced steel grades justify it.

Appendix 4 System limits for calculation of energy consumption in the manufacture of wood-based panels

The consumption of energy, both electrical and thermal, is calculated as an annual average for either the Nordic Swan Ecolabelled production or the entire operation.

What is included in the calculation

- Manufacture/production of the panel.
- Manufacture of the primary raw materials used in the panel. The primary raw materials are the raw materials that make up more than 2 w% of the finished sheet (i.e., wood fibre and adhesive).
- For the production, the energy calculation is to be based on data from raw material handling all the way up to the finished sheet.
- Wood drying and conveyors, both at the sawmill and on the production line.
- Lamination of the sheet.
- For the manufacture of chemical products such as adhesives, the energy calculation must be based on data from the manufacture of both the adhesive and the input raw materials. In the absence of specific energy data for the adhesive, it is possible, in exceptional circumstances, to use a model value for adhesive of 15 MJ/kg (solution used). When using several different suppliers for the same type of raw material, it is acceptable for the calculation to be based on the most frequent supplier.
- Purchased energy, internally produced energy and energy from residual products.

What is not included in the calculation

- Energy consumption during raw material extraction.
- Growing and felling of forest raw material.
- Transport in all phases.
- Energy consumed during surface treatment.
- The raw material’s energy content for the manufacture of ingoing chemical products.
- Self-generated energy and surplus energy that is sold on.

Appendix 5 Energy requirement for paper and pulp production

Guidelines for energy calculation

Use of energy in the form of fuel and electricity is subject to requirements. These are based on information about actual energy consumption in production in relation to reference values. The ratio between them determines the energy points.

The energy calculations cover the entire paper product; both the paper production and the pulps used. The calculations for paper do not include fillers. The energy consumption for raw material transport and for conversion and packaging is not included in the energy calculation. The requirement does not include transport within the factory site.

A non-integrated pulp mill

Electricity

Both purchased and in-house-generated electricity are to be included in the calculations

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

Invoices and meter readings are to form the basis for determining consumed electricity. Self-generated electricity is documented via a meter reading from the electricity production. The requirement covers all processes from log debarking to pulp drying. Electricity for offices and lighting within the factory is not to be included. If the pulp mill only produces pulp of a similar quality using the same type of process, the average electricity consumption may be used for all pulps.

Fuel

Both purchased fuel and fuel produced on site are to be included in the calculation, split into renewable and fossil fuel. The pulp manufacturer must report the fuel used for internally generated electricity and should subtract the fuel for electricity before reporting to the paper manufacturer. The paper manufacturer deducts the fuel consumption from internal electricity generation using a factor of 1.25 in their own energy calculation.

Fuel pulp = fuel produced on-site + purchased fuel - sold fuel * (sold fuel and/or thermal energy)

For purchased fuel, the amount purchased must take into account the quantities at the beginning and end of the current year. For the consumption of fuel produced in-house, from residues such as bark, wood chips and so on, the calculation is based on the thermal values for the fuels used or measured.

** Surplus energy*

Surplus energy sold in the form of electricity, steam or thermal energy is deducted from the total consumption. To calculate the amount of fuel used to produce electricity or thermal energy, divide the sold electricity or thermal energy by 0.8. This equates to an average efficiency level for the total production of electricity and thermal energy.

Alternatively, the plant’s actual efficiency level for the conversion of fuel into thermal energy can be used.

Verification

An overview of the factory's energy supply system, showing the number of boilers, with information on boiler output and the fuel used.

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

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

If thermal energy has been converted into fuel, the conversion factors and efficiency must be stated.

Use the calculation sheet from Nordic Ecolabelling for the calculation.

A non-integrated paper mill

Electricity

Both purchased and in-house-generated electricity are to be included in the calculations

Electricity = in-house-generated electricity + purchased electricity - sold electricity.

Invoices and meter readings are to form the basis for determining consumed electricity. On-site produced electricity is documented via a meter reading from the electricity production. The requirement covers all processes from pulp to drying the base paper. Electricity for offices and lighting within the factory is not to be included. If the paper mill only produces paper of a similar quality using the same type of process, the average electricity consumption may be used for all papers.

Fuel

All purchased fuel is to be included in the calculations, split into renewable and fossil fuel.

Fuel paper = purchased fuel - sold thermal energy 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*

Surplus energy sold in the form of electricity, steam or thermal energy is deducted from the total consumption. To calculate the amount of fuel used to produce electricity or thermal energy that is sold on, divide the sold electricity or thermal energy by 0.8. The coefficient 0.8 equates to the average energy efficiency of the total production of electricity and thermal energy. Alternatively, the plant's actual energy efficiency in converting fuel into thermal energy can be used.

Verification

An overview of the paper machine's energy supply system, showing the number of boilers with information on boiler output and the fuel used.

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

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

If thermal energy has been converted into fuel, the conversion factors and efficiency must be stated.

The calculation sheet from Nordic Ecolabelling can be used.

Steam

If the excess steam from some other production is used (e.g from another industry), the energy content of the steam is to be included in the calculation. In this case, Table 2, 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.

Both Nordic Swan Ecolabelled and non-Nordic Swan Ecolabelled production

If the paper manufacturer produces both products that are to be Nordic Swan Ecolabelled and products that are not to be Nordic Swan Ecolabelled, the specific energy consumption for the Nordic Swan Ecolabelled product is to be reported. In exceptional cases, the average for ecolabelled and non-ecolabelled products may be applied. The products must, however, be of an equivalent quality and be produced using similar processes within the same production unit.

Integrated pulp and paper mill

The reporting of electricity and fuel consumption in the integrated pulp and paper mill is done as for the unintegrated mill. The allocation of the electricity consumption between pulp and paper production shall be based on meter readings on respective production. The consumption of fuel of pulp respective paper production shall be calculated from the steam consumption of respective production.

Energy calculation, Paper production

Energy points, Paper production

Energy points for $P_{paper(electricity)}$ and $P_{paper(fuel)}$ for paper manufacture are calculated as:

$$P_{paper(electricity)} = \frac{Electricity_{consumed}}{Electricity_{reference}}$$

and

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

The following reference values for kraft paper are to be used:

$Electricity_{reference}$ = 1600 kWh/t

$Fuel_{reference}$= 2100 kWh/t

Verification

Calculation of energy points. The calculation sheet developed by Nordic Ecolabelling can be used.

Energy points where a mix of different pulp types is used

To calculate energy points for a mix of different pulp types, use the following formula:

$$\boldsymbol{P_{pulp(electricity)} = \sum_{i=1}^{n} P_{pulp(electricity)i} \cdot pulp_i}$$

and

$$P_{pulp(fuel)} = \sum_{i=1}^{n} P_{pulp(fuel)i} \cdot pulp_i$$

where $pulp_i$ is the proportion of the individual pulp relative to the total pulp mix. Due to waste and differences in water content, the sum of the pulp may be greater than 1. $P_{pulp(electricity)i}$ represents the energy points for electricity for pulp i. $P_{pulp(fuel)i}$ represents the energy points for fuel for pulp i.

Verification

Calculation of energy points. Use the calculation sheet developed by Nordic Ecolabelling.

Total energy points for paper and pulp production

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

$$P_{electriciy} = P_{electriciy(_{pulp})} + P_{electriciy(paper)}$$

and

$$\boldsymbol{P_{fuel} = P_{fuel(pulp)} + P_{fuel(paper)}}$$

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 fulfils the requirements, unless separate calculations are reported for each pulp mixture.

Verification

The documentation must contain calculations and 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 fulfils the requirements, unless separate calculations are reported for each pulp mixture. The calculation sheet developed by Nordic Ecolabelling can be used.

Energy points for pulp production

Energy points for Ppulp(electricity) and Ppulp(fuel) for paper manufacture are calculated as:

$$P_{pulp(electricity)i} = \frac{Electricity_{consumed}}{Electricity_{reference}}$$

and

$$P_{pulp(fuel)i} = \frac{Fuel_{consumed} - 1.25 \cdot in - house\ generated\ electricity}{Fuel_{reference}}$$

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

Table 11 Reference value 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, unbleached chemical pulp	4200	600
NSSC	3200	700
Dried NCCS	4100	750
CTMP	N/A	1500
Dried CTMP	900	1550
DIP	300	450
Dried DIP	1200	500
TMP	N/A	2200
Dried TMP	900	2250
Groundwood	N/A	2000
Dried groundwood	900	2050

Verification

Calculation of energy points. Use the calculation sheet developed by Nordic Ecolabelling. Calculation sheets are available by contacting Nordic Ecolabelling.

Table 12 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 SI Units, 1969. Springer-Verlag and R. Oldenbourg 1969.

Appendix 6 Example calculation Surface treatment of wood, wood-based panels, metal, plastic and rubber

Example calculation for added amount of VOC in the surface treatment system:

The manufacturer uses three (3) products in their surface treatment system and employs roller coating (95% efficiency):

The surface treatment system comprises the following products, with the amount applied and their VOC content:

Product A: amount applied 10 g/m^2, VOC 10.9 w%

Product B: amount applied 20 g/m^2, VOC 41.8 w%

Product C: amount applied 10 g/m^2, VOC 15.5 w%

The total amount of added VOC is calculated using the formula:

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

This gives:

Product	Amount applied (g/m^2)	VOC content (%)	Amount of added VOC (g/m^2)
A	10	10.9	1.09
B	20	41.8	8.36
C	10	15.5	1.55
Total amount of VOC:			11.00 g/m^2
Total amount of added VOC taking account of efficiency (95%):			10.45 g/m^2

The total amount of added VOC in the surface treatment system is thus 10.45 g/m^2, which falls well below the limit value of 35 g/m^2.