Nordic Ecolabelling for

Outdoor furniture, playground, and park equipment

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Nordic Ecolabelling

Content

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

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
www.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.

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

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

Nordic Swan Ecolabelled outdoor furniture, playground, and park equipment:

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

Why choose the Nordic Swan Ecolabel?

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

What can carry the Nordic Swan Ecolabel?

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

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

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

The following cannot be Nordic Swan Ecolabelled:

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

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

How to apply

Application and costs

For information about the application process and fees for this product group, please refer to the respective national website. For addresses see page 3.

What is required?

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

Each requirement is marked with the letter O (obligatory requirement) and a number. All requirements must be fulfilled to be awarded a licence.

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

✉ Enclose

🔑 Requirement checked on site

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

License 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 extended or adjusted, in which case the licence is automatically prolonged, and the licensee informed.

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

On-site inspection

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

Queries

Please contact Nordic Ecolabelling if you have any queries or require further information. See page 3 for addresses. Further information and assistance (such as calculation sheets or electronic application help) may be available. Visit the relevant national website for further information.

1 Product description

O1 Description of the product

The applicant must provide the following information about the product:

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

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

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

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

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

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, and instead must meet the requirements in Chapter 4.

The chemicals used/added must comply with the requirements in Chapter 8.

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

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

O2 Prohibited tree species

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

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

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

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

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

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

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

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

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

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

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

<u>If species from the lists b), c) or d) is used:</u>

✉ 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;

[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

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

O3 Wood from certified forestry

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

1. Species name

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

2. Chain of custody certification

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

Applicant/manufacturer/suppliers using only recycled material in the wood-based panels used in the Nordic Swan Ecolabelled product, are exempted from the requirement to Chain of Custody certification. For a definition of recycled material, see section 12 Definitions.

For solid wood:

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

3. Certified material

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

A minimum of 70% by weight of all wood raw material (virgin/recycled material) used in the Nordic Swan Ecolabelled product, must origin from forest managed according to sustainable forestry management principles that meet the 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 Ecolabelled products.

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

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

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

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

**Recycled material/raw material is defined according to ISO 14021, see section 12 Definitions.*

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

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

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

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

✉ If the supplier is CoC- certified:
Documentation from the manufacturer of outdoor furniture, playground and park equipment on the purchase of wood raw material / 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 with recycled materials

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

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

This means that the materials must not come from

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

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

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

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

O5 Formaldehyde emissions from wood-based panels

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

The requirement does not include HPL panels, which instead must meet the requirements in Chapter 4.

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

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

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

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

O6 Energy requirement - wood-based panels

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

The requirement does not include HPL panels, which instead must meet the requirements in Chapter 4.

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

Requirement level:

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

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

3 Durability of solid wood

This chapter relates to solid wood. Wood preservatives must meet the chemical requirements in Chapter 8.

O7 Durability and wood protection methods

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

- Structural wood protection: It must be described which design measures have been taken in the product to extend the life expectancy and limit the use of wood protection methods (i.e., impregnation, thermal or chemical modification).
- Nordic Swan Ecolabelled durable/resistant wood for outdoor use automatically meets this requirement.
- The timber falling within use class UC 3 or UC 4 as per EN 335 must be documented as having good durability i.e., resistance to fungal attack. To provide sufficient durability, one of the methods/materials in Table 1 must be used.

Wood protection methods other than those described in Table 1 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 is allowed for those parts of the product that fall

within use class UC 4 as per EN 335. The parts must be NTR A-certified.

- NTR AB is allowed for those parts of the products that fall within use sub-class UC 3.2 as per EN 335. I.e., parts that remain wet for long periods or where water can accumulate. The parts must be NTR AB-certified.
- Wood preservatives must also meet the chemical requirements in Chapter 8.

Table 1 **For wood parts that fall within use class UC 3 or UC 4 as per EN 335: Various methods for protecting wood and the requirements for documentation of durability that apply for each use class.**

Wood protection method	Use class as per EN 335	Required documentation of durability
Wood with natural durability (May not be treated with wood preservatives)	UC 3 and UC 4	Durability class DC 1 (very durable) or DC 2 (durable) as per EN 350
Wood protection, thermally and chemically modified wood classified in accordance with NTR	UC 3	NTR ABmod
	UC 4	NTR Amod
Wood protection, thermally and chemically modified wood *not* classified in accordance with NTR	UC 3	Approved testing in line with: - EN 113-2 (alternatively CEN/TS 15083-1 can be used) excluding testing with Coriolus versicolor after separate accelerated ageing in line with EN 73 or EN 84. - CEN/TS 12037 - Approved results must be assessed by an independent party with experience in the field.
	UC 4	Approved testing in line with: - EN 113-2 (alternatively CEN/TS 15083-1 can be used) including testing with Coriolus versicolor after separate accelerated ageing in line with EN 73 or EN 84. - ENV 807 - EN 252 for at least five years in three locations, two of which are in a Nordic country. - Approved results must be assessed by an independent party with experience in the field.
Preservative-treated impregnated wood	UC 3.2*	NTR AB or NTR AB GL
	UC 4	NTR A or NTR A GL

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

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

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

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

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

✉ For wood protection (impregnated or modified) timber: enclose NTR certificate.

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

✉ For impregnated wood: Documentation/drawing of product, which shows which parts are NTR A/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. Attach the NTR certificate.

4 High Pressure Laminate (HPL) panels

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

Where the product contains more than 10 wt% HPL, the chemical requirements in Chapter 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.

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

O8 Energy requirement for HPL panel production

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

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

The requirement does not include energy used for resource extraction or production of constituent raw materials. Self-generated energy (see section 12 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.

O9 Emissions in the work environment during HPL production

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

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

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

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

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

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

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

and

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

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.

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

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

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

O10 Wood in paper

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

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

Tree species must live up to requirement O2.

- The paper manufacturer must hold Chain of Custody certification from FSC or PEFC.

- For certified wood fibre and/or recycled fibre*, one of the following three alternatives must be fulfilled on an annual basis:

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

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

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

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

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

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

* *Recycled material is defined as per ISO 14021. See further definition in section 12.*

✉ 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.

O11 COD emissions from paper and pulp production

Total emissions to water of oxygen-consuming substances, measured as COD, must not exceed the value stated in Table 2. 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 2 Requirement levels for COD emissions for pulp and paper

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

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

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

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

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

O12 Energy requirement for paper and pulp production

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

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

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

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

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

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

✉ 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.

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 Chapter 8.

The requirements in this chapter (O13–O18) do not apply to plastic in wood-plastic composite (WPC) materials. Instead, the requirements in Chapter 6 must be fulfilled.

O13 Information and labelling

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

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

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

✉ Declaration from the plastic manufacturer/supplier.

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

O14 Chlorinated plastic

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

✉ Declaration from the plastic manufacturer/supplier.

O15 Raw materials for bio-based polymers

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

Palm oil and soy

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

Sugar cane

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

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

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

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

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

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

Other raw materials

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

The raw materials must meet one of the following requirements:

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

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

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

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

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

✉ 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.

O16 Nitrosamines in rubber

The following limit values must be observed:

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

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

✉ Declaration from the rubber manufacturer.

O17 PAH in plastic, silicone and rubber

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

The limit values for selected polycyclic aromatic hydrocarbons (PAH) as listed in Table 3 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 3 Limit values for selected PAHs in materials

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

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

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

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

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

O18 Recycled/biobased plastics

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

The recycled plastic must not be PVC or PVDC.

If wood plastic composite (WPC) is used in the product, plastic from WPC is not included in the calculations of the proportion of recycled plastic, see separate requirements for WPC in section 6.

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

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

or

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

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

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

of 15 wt% of post-consumer/commercial recycled plastic applies regardless of the total amount of recycled plastic in the product.

or

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

* *See definition, section* 12.

✉ 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 O15.

O19 Chemicals in recycled plastic

Recycled plastic must not contain:

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

Impurities up to 100 ppm are permitted.

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

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

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

6 Wood-plastic composite material (WPC)

O20 Wood fibre and plastic

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

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

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

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

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

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

✉ From the manufacturer of WPC:

- For plastics: state the proportion of recycled plastic and types of recycled plastic according to the requirement and proportion of each type.
- For wood fibre: indicate the type of by-product and from which production it originated. Also certify that the wood fibre 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.

O21 Recycled plastic

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

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

and

- Sink and float separation step

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

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

O22 Additives

Chemicals added during WPC production, such as pigments, UV stabilisers and bonding agents, must meet the chemical requirements in Chapter 8.

✉ Declaration for all additives regarding the chemical requirements in Chapter 8.

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

O23 Quality

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

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

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

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

O24 Other requirements for WPC

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

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

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

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

7 Metal

O25 Metals that must not be used

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

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

O26 Production of steel

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

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

A) High proportion recycled

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

Recycled steel is defined as both pre- and post-consumer/commercial, according to definitions in ISO 14021, see section 12.

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[4] or by all major suppliers[5].

1. **Steel produced from traditional methods**

Steel used in the Nordic 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 stell certified production site**

A minimum of 50% by weight of the steel used in the Nordic Ecolabelled product comes from a production site that are certified according to the standard Responsible Steel[6], version 1.0, 2019 or later versions.

or

[4] 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)
[5] 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.
[6] Overview of certified steel producers, https://www.responsiblesteel.org/certification/issued-certificates/

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

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

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

☒ 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.

O27 Production of aluminium

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

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

A) High proportion recycled

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

Recycled metal is defined as both pre- and post-consumer/commercial, according to definitions in ISO 14021, see section 12.

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

1. Aluminium production – active sustainability strategy

Aluminium used in the Nordic 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 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.

[7] In case of several potential aluminum 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 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)
[8] 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.

or

3. Aluminium production – low electricity consumption for electrolysis

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

or

4. Aluminium production – ASI certified site

A minimum of 50% by weight of aluminium used in the Nordic Ecolabelled product comes from a production site that are certified to the ASI Performance standard[9].

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.

☒ Alternative2: 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[10].

Primary aluminium production:

Alternative 1:

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

[9] https://aluminium-stewardship.org/asi-standards/asi-performance-standard (visited November 2022)
[10] https://www.hydro.com/en-DK/about-hydro/publications/certificates/ (visited November 2022)

✉ 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.

8 Chemicals requirements

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

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

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

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

Plastic and rubber: additives in plastic i.e., pigments, stabilizers, plasticizers and UV hardeners must meet requirements O29 and O30. Surface treatment of plastic and rubber must meet requirements O28–O33 and section 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 8.1, chemicals for surface treatment of wood, wood-base panels, HPL, metal, plastic and rubber must comply with sections 8.2–8.4.

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 O33 concerning nanomaterial.

8.1 General chemical requirements

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

O28 Classification of chemical products

The chemical products used must not have a classification listed in Table 4 below.

Table 4 Classification of chemical products

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

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

The following exemptions exist:

- Exception is made for adhesives with formaldehyde classified H350 or H341. Free formaldehyde is regulated in requirement O32. Formaldehyde emissions are regulated in requirement O5 regarding wood-based panels and emissions during production are regulated in requirement O9 for HPL panels.
- An exception is made for resins in High Pressure Laminate (HPL) classified as H341, H301 or H331 with max 10 wt% phenol.

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

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

O29 CMR substances

The ingoing substances* must not have a classification listed in Table 5.

**See Definitions, section12.*

Table 5 Non-approved classifications of ingoing substances in chemical products

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

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

Exception:

- Formaldehyde (H350, Carc. 1B and H341, Muta. 2). Formaldehyde content is regulated in requirement O32. In addition, formaldehyde emissions are dealt with in requirement O5 for wood-based panels, while emissions during production are governed by requirement O9 for HPL panels.
- Glyoxal (H341, Muta. 2) in liquid chemical products with pH > 8.
- Methylene diphenyl diisocyanate (MDI) (H351, Carc. 2) for adhesive products in wood-based panels.

- Resin containing phenol (H341, Muta. 2) with max 10 wt% phenol. Phenol emissions during the production of HPL panels are dealt with in requirement O9.
- The dispersant trimethylol propane (TMP) (self-classified as H361) is allowed up to 1% in pigments and the exception is time-limited until 2025-05-31.
- Photo initiators classified H351, H341 or H361.
- Mequinol classified H361.
- The hardener in 2-component UV products can be exempted from the requirement if the following is met: it must be documented that the workers are not exposed to the components i.e., by using safety equipment when mixing or that the mixing takes place automatically without exposure of the workers and that the application of the finished two-component system is done in a closed system.
- 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.

O30 Other prohibited substances in chemical products

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

**See Definitions, section 12.*

- Substances on the Candidate List: https://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 O31.
  - 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-trimethyI-cycIohexyI 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 [SE: bestämmelser] 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.

- Halogenated organic compounds with the following exceptions:
  - Bronopol, IPBC and CMIT/MIT (3:1), which are regulated in requirement O31.
  - Halogenated organic pigments that comply with the Council of Europe recommendation "Resolution AP (89) 1 on the use of colorants in plastic materials coming into contact with food", point 2.5.
  - Epoxy acrylate used in UV curing coatings.
- Butyl hydroxytoluene (BHT) and butyl hydroxyanisole (BHA).

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

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

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

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

O31 Preservatives in chemical products

The limit values for the level of preservatives in a chemical product, as stated in Table 6, must be fulfilled:

Tabel 6 Limit values for stated preservatives

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

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

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

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

O32 Free formaldehyde in chemical products

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

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

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

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

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

O33 Nanomaterials in chemical products

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

The following substances are exempted from the requirement:

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

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

(https://eur-lex.europa.eu/legal-content/SV/TXT/PDF/?uri=CELEX:32011H0696&from=EN):
'Nanomaterial' means a natural, incidental or manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for 50% or more of the particles in the number size distribution, one or more external dimensions is in the size range 1 nm-100 nm.

*** See Definitions, section12.*

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

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

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

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

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 8.1.

O34 Quantity applied and application method

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

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

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

b) If alternative b) in later requirement O35 is used, state quantity applied (g/m2), number of coats and application method(s) used.

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

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

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

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

O35 Added amount of volatile organic compounds (VOC)

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

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

a) Total level of VOC ≤ 5 wt% VOC

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

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

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.

O36 UV curing surface treatment system

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

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

8.3 Surface treatment of metal

All surface treatment of metal must meet requirement O38 and O39 and the general chemical requirements, section 8.1. Metal plating i.e., hot-dip galvanising, is however exempted from section 8.1, requirement O38 and O39, and must instead fulfil requirement O37.

O37 Metal plating

- Metal plating must not contain cadmium, lead*, chromium or nickel**. Impurities as defined in section 0 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.

O38 Quantity applied and application method

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

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

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

b) If alternative b) in later requirement O39 is used, state quantity applied (g/m2), number of coats and application method(s) used*.

The following levels of efficiency must be used when calculating the quantities of VOCs in subsequent requirement O39:

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

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

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

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

O39 Added amount of volatile organic compounds (VOC)

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

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

a) Total level of VOC ≤ 5 wt% VOC

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

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

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

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

✉ 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.

8.4 Surface treatment of plastic and rubber

Any surface treatment of plastic and rubber must meet the general chemical requirements, Chapter 8.1.

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

O40 Surface treatment of plastic and rubber

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

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

✉ A declaration from the performer of the surface treatment.

O41 Quantity applied and application method

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

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

b) If alternative b) in later requirement O42 is used, state quantity applied (g/m2), number of coats and application method(s) used.

The following levels of efficiency must be used when calculating the quantities of VOCs in subsequent requirement O42:

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

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.

O42 Added amount of volatile organic compounds (VOC)

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

a) Total level of VOC ≤ 5 wt% VOC

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

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

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

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

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

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

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

9 Packaging

O43 Packaging

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

The following materials are prohibited in packaging:

- chlorinated polymers/plastics such as PVC
- metal*

* *Exceptions are given for staples.*

The following applies to cardboard/paper and plastic:

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

* *See definition in section 12.*

☒ Description showing that no disposable packaging is used

or

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

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

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

10 Service life/use phase

O44 Guarantee and product design

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

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

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

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

2. Product design:

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

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

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

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

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

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

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

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

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

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

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

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

✉ Description of how the product parts can be replaced.

O45 Separability

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

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

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

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

O46 Replacement parts

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

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

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

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

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

O47 Maintenance

The manufacturer/supplier must provide instructions on maintenance of the product during its service life. If specialist products (i.e., oil, varnish or paint) are recommended, these must meet the chemical requirements, see Chapter 8.

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

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

✉ Copy of the maintenance instructions. If special maintenance products are recommended, the safety data sheet in line with prevailing European legislation (Annex II to REACH, Regulation 1907/2006/EEC) and declaration that the chemical requirements in Chapter 8 are meet, must be enclosed.

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

O48 Safety

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

Outdoor furniture

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

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

Playground equipment for public playgrounds

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

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 propertie0s).

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

Permanently installed outdoor fitness equipment

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

Parkour equipment

Must meet the standard EN 16899.

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

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

11 Licence maintenance

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

O49 Customer complaints

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

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

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

O50 Traceability

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

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

✉ Please upload your routine or a description.

12 Definitions

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

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

Regulations for the Nordic Ecolabelling of products

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

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

Follow-up inspections

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

The licence may be revoked if it is evident that the outdoor furniture, playground or park equipment does not meet the requirements.

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

Criteria version history

Nordic Ecolabelling adopted version 4.0 of the criteria for Outdoor furniture, playground and park equipment on 15 March 2021. The criteria are valid until 31 December 2025.

On 8 June 2021, Nordic Ecolabelling decided to adjust requirement O30 Other prohibited substances in chemical products regarding substances on EU member state initiative "Endocrine Disruptor Lists", List II. The new version is called 4.1.

On 5 April 2022, Nordic Ecolabelling decided to adjust requirement O7 where standard CEN/TS 15083-1 was replaced by EN 133-2. In requirement O29 the exception for trimethylol propane (TMP) was prolonged to 31 May 2023. The new version is called 4.2.

On 23 August 2022, Nordic Ecolabelling decided to adjust requirement O15 where the use of certification Bonsucro standard was added and exception for melamine was added in requirement O28 and O29. On 1 November 2022, Nordic Ecolabelling decided to adjust requirement O28 and O29 with exception for 2-ethylhexanoic acid in wood preservative products with a pH value of 9.5 or higher. Time-limited exception for biocide propiconazole has been deleted in requirement O28 and O29. On 15 November 2022, Nordic Ecolabelling decided to adjust requirement O26 and O27 for production of steel and aluminium regarding traceability. Now the requirements can be verified using mass balance or by major suppliers. The new version is 4.3.

On 14 February 2023, Nordic Ecolabelling decided to adjust requirement O30 and add an exception for melamine. The new version is called 4.4.

On 20 June 2023, Nordic Ecolabelling decided to adjust the table in requirement O7 by allowing accelerated ageing in line with EN 73 or EN 84, and requirement O37 where nickel in up to 0.07% in hot-dip galvanizing bath is allowed. The new version is called 4.5.

On 3 October 2023, Nordic Ecolabelling decided to adjust requirement O28 and O29 regarding exception for 2-ethylhexanoic acid which change classification from H361 to H360. The new version is called 4.6.

Nordic Ecolabelling decided on 14 November 2023 to prolong the validity of the criteria to the 31 December 2026. Nordic Ecolabelling decided on 21 November 2023 to prolong the exception for trimethylol propane (TMP) to 31 May 2025. The new version is called 4.7.

Nordic Ecolabelling decided on 19 August 2025 to include in requirement O7 NTR-classified glued laminated (GL) for wood impregnation. Nordic Ecolabelling decided on the 26th of August 2025 to include an exemption for IPBC from the ED list II in O30. Nordic Ecolabelling decided on 23rd on September to remove an exemption for titanum dioxide (TiO_2) in requirement O29.The new version is called 4.8.

Nordic Ecolabelling decided on 20 January 2026 to prolong the validity of the criteria to the 31 October 2027. The new version is called 4.9.

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 on 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 on 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 on 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 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 rapports.
- 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 (steel)

Steel

Table 1: 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% by weight 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:

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

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

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

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 $P_{pulp(electricity)}$ and $P_{pulp(fuel)}$ 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 1 **Reference values pulp**

Process	Fuel kWh/t, Ref. value	Electricity kWh/t, Ref. value
Bleached chemical pulp	3600	650
Dried, bleached chemical pulp	4600	700
Unbleached chemical pulp	3200	550
Dried, 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 2 **Steam table**

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

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

Source: Thermal Engineering Data, which refers to Schmidt, E.: Properties of Water and Steam in 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/m², VOC 10.9 wt%
Product B: amount applied 20 g/m², VOC 41.8 wt%
Product C: amount applied 10 g/m², VOC 15.5 wt%

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

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

This gives:

Product	Amount applied (g/m²)	VOC content (%)	Amount of added VOC (g/m²)
A	10	10.9	1.09
B	20	41.8	8.36
C	10	15.5	1.55
Total amount of added VOC:			11.00 g/m²
Total amount of added VOC taking account of efficiency (95%)			10.45 g/m²

The total amount of added VOC in the surface treatment system is thus 10.45 g/m², which falls well below the limit value of 35 g/m².