Nordic Ecolabelling of

Construction panels



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Consultation proposal

Nordic Ecolabelling

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Addresses

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

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

What is a Nordic Ecolabelled Construction panel?

The overall environmental advances to communicate for the total product group "ecolabelling of construction panels" is described here:

- Meets strict environmental requirements.
- Limited energy consumption during the whole production process
- High proportion of recycled or renewable materials
- No or reduced use of formaldehyde and organic solvents
- Ensure that quality and properties are documented

For ecolabelled wood construction panels, the following also applies:

- Wood from sustainable forests

For ecolabelled plasterboards, the following applies:

- 100% recycled or industrial gypsum

For ecolabelled construction panels for indoor use, the following also applies:

- Chemical requirements which guarantee a healthy indoor climate

Why choose the Nordic Ecolabel?

- The license holder may use the Nordic Ecolabel trademark, the Swan, for marketing. The Nordic Ecolabel is a very well-known and well-reputed trademark in the Nordic region.
- The Nordic Ecolabel is a cost-effective and simple way of communicating environmental work and commitment to customers and suppliers.
- Reducing environmental impact often creates scope for lowering costs, such as by cutting the consumption of energy and reducing amounts of packaging and waste.
- Environmentally suitable operations prepare the license holder for future environmental legislation.
- Environmental issues are complex. It can take a long time and extensive resources to gain an understanding of a specific area. Nordic Ecolabelling can be seen as aid in this work.
- The Nordic Ecolabel not only covers environmental issues but also quality requirements, since the environment and quality often go hand in hand. This means that a Nordic Ecolabel licence can also be seen as a mark of quality.

What can carry the Nordic Ecolabel?

Panels for both indoor and outdoor use are included. The product group includes panels in which the main function is one or more of the following: internal or outdoor cladding of buildings, construction panels, sound absorbent panels, panels for subfloors, facade panels, panels for subroofs and panels for production of furniture, outdoor furniture, internal fittings, etc.

The following material types are included in the product group:

- Wood-based panels with or without laminated surface
- Solid wood (surface-treated) for assembly into a panel for indoor use, e.g. by the consumer
- Panels based on renewable raw materials other than wood
- High pressure laminate panels
- Plasterboards
- Mineral wool panels (where the main function is **not** thermal insulation)
- Cement-based panels in the form of fibre cement, cement and magnesium oxide panels

The product group does not cover the following product types:

- Panels with more than 15 wt./% of materials other than the above are not included in the product group.
- Panels or cladding in which the main function is to insulate against heat or cold loss. Panels which are marketed as insulation panels or insulation products are thus not included.
- Wet room panels.
- Roofing panels (outer roof)
- Whole prefabricated wall elements are not included in the product group.
- Floor coverings, as these can be ecolabelled under the Nordic Ecolabelling criteria for floors.
- Facade panels in solid wood, as these can be ecolabelled under the Nordic Ecolabelling criteria for Durable Wood. If solid wood with a licence under the criteria for Durable Wood is included in a facade panel, Nordic Ecolabelling must be approached for clarification about this panel type.

Nordic Ecolabelling reserves the right to determine whether a product can be ecolabelled according to the Nordic Ecolabelling criteria, and to determine the criteria to be used for any product application. For further information please contact the Nordic Ecolabelling organisation (see addresses at the beginning of the document).

Fibre-based panels with more than 15% cement will be included in the functional unit "Cement-based panels". Panels based on renewable raw materials other than wood must fulfil the energy requirement for wood-based panels.

How to apply

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

Icons in the text

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

🔑 The requirement checked on site

🕮 Enclose procedure in environmental and quality management system

Application

Applications are made to the national ecolabelling organisation and the application is valid for 12 months. Applications may be processed by another ecolabelling organisation according to agreement between the organisations. The applicant is notified of this. Companies located outside the Nordic countries make applications to the national ecolabelling organisation of the primary market.

The application must consist of a completed application form together with all of the documentation required to demonstrate compliance with the requirements specified in the criteria document (this is specified for each requirement). The application form must specify in which Nordic countries the products in question are to be sold and the estimated turnover from the products in each country.

Further information and assistance may be available. Visit the relevant national website for information.

Sales in the Nordic region

Once granted, a licence is valid throughout the Nordic region. The licence document specifies in which Nordic countries the products are sold according to the information provided on the application. The products are published on Nordic Ecolabelling's website(s). The licensee undertakes to inform Nordic Ecolabelling of any changes as to where the product is sold. If the product is to be sold in other Nordic countries than those initially specified in the application, the licensee must provide written notification of this and submit any extra documentation required to Nordic Ecolabelling in the country that issued the license.

On-site inspection

In connection with handling of the application, Nordic Ecolabelling 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.

Costs

An application fee is charged to companies applying for a licence. There is an additional annual fee based on the turnover of the Nordic Ecolabelled Construction panels.

Enquiries

Please contact Nordic Ecolabelling if you have any queries or require further information. See page 2 for addresses.

What are the requirements of the Nordic Ecolabelling?

To be awarded a Nordic Ecolabel licence, all requirements must be fulfilled.

1 Definition of terms used in the criteria

Material: Materials means the constituent materials such as wood, paper, cardboard, pulp, plastic, mineral raw materials, metal, etc.

Chemical products: Chemical products means liquid products, e.g. for surface treatment, additives, glues and other adhesives.

Ingoing substance: Unless otherwise stated, ingoing substance are defined as all substances in the product, including additives to the raw materials/ingredients (e.g. preservatives or stabiliser), but not impurities from raw material production.

Contamination limit: Impurities include residues from raw materials production which are found in adhesive, paint, additives and other chemical products in concentrations below 100 ppm (0.0100 wt.%, 100 mg/kg), but not substances intentionally added to a raw material or product for a purpose, regardless of quantity. However, impurities at the raw material level at concentrations of over 1.0% of the raw material will be regarded as a ingoing substance. Known substances realised from the raw materials are also regarded as ingoing substances.

Renewable raw material: Renewable raw material is here defined as a biological material which is reproduced in nature. It includes the degradable part of products, waste and residues from agriculture and aquaculture (both vegetable and animal), forestry and similar industries and the biodegradable fraction of industrial waste and municipal waste.

2 Product information

Table 1 Overview of materials and in which section the requirements are

Section	Level	Requirement	Appendix	Relevant
Product information	Information about the product	O1	2	For all
Mineral raw materials *Applies in cases with more than 5 wt. % in the panel.*	General	O2-O3	-	Yes ☐ No ☐
	Selected raw materials	O4	-	Yes ☐ No ☐
Wood raw materials, paper, cardboard and paper pulp *Applies in cases with more than 5 wt. % in the panel.*	Wood fibres, cardboard and pulp	O5	3	Yes ☐ No ☐
	Solid wood, veneer and bamboo	O6-O8	4	Yes ☐ No ☐
	COD from paper and cardboard	O9	-	Yes ☐ No ☐
Resource requirements	Plasterboards	O10	5	Yes ☐ No ☐
	Mineral wool panels	O11	5	Yes ☐ No ☐
	Cement-based panels	O12	5	Yes ☐ No ☐
Energy requirements	Energy requirements for paper and pulp production *Applies in cases with more than 20 wt. % in the panel.*	O13	6	Yes ☐ No ☐
	Energy requirements for different panel types	O14–O18	-	Yes ☐ No ☐
Chemical products	General	O19-O22	7	Yes ☐ No ☐
	Nanoparticles	O23	7	Yes ☐ No ☐
	Environmental hazard (e.g. surface treatment)	O24	8	Yes ☐ No ☐
	Environmental hazard in surface treatment	O25	8	Yes ☐ No ☐
	VOC in adhesive	O26	9	Yes ☐ No ☐
	VOC in surface treatment	O27	9	Yes ☐ No ☐
	Free formaldehyde	O28	7	Yes ☐ No ☐
Emissions	COD (wet processes in panel production)	O29	-	Yes ☐ No ☐
	HPL production	O30	-	Yes ☐ No ☐
	Dust emissions *Applies in cases with more than 10% by weight minerals- or wood materials in the panel*	O31	-	Yes ☐ No ☐
	Formaldehyde *Does not include facade panels*	O32	-	Yes ☐ No ☐
	Emission requirement for the panel	O33	-	Yes ☐ No ☐
Use and quality requirements	General	O34-35	-	For all
Quality and environmental management requirements	General Marketing	O36-O44	10	For all

O1 Information about the product(s)

The applicant must submit the following information about the product(s):

1. Brand name(s) and trade name(s).
2. Description of product(s) included in the application). A product datasheet or similar for each product must be forwarded.
3. Description of manufacturing process of the product. Subcontractors must be described with company name, production location, contact person and the production processes used.
4. For each product: Attach a list of materials and chemical products used in producing the panel and any surface treatment of the panel. The list must contain the weight percentage of the constituent materials/chemical products in the panel. Safety datasheets for each chemical product must be included.

✉ Any information requested by the requirement. A product datasheet may be sent as part of the documentation. Information about materials, cf. Table 2 in Appendix 2, must be given. It is possible to use a separate Excel spreadsheet corresponding to Table 2 in Appendix 2 as a materials list.

✉ Table 1 in Appendix 2 should be completed and forwarded by the applicant for each product.

3 Environmental requirements

3.1 Mineral raw materials

The requirements apply to mineral raw materials and mineral bi-products (e.g. fly ash) which make up more than 5 wt. % of the finished panel

O2 Heavy metals

The main component(s) of the mineral raw material or mineral bi-product must as a maximum contain the following quantities of heavy metals:

Arsenic	10 mg/kg
Lead	25 mg/kg
Cadmium	1 mg/kg
Mercury	0.5 mg/kg
Chrome (total)	300 mg/kg

For the description of the measurement method, see Appendix 1.

✉ The declaration from the raw materials producer/refiner, containing measurement results, measurement methods and measurement frequency.

O3 Dust emissions

The production and refining of mineral raw materials must not generate dust emissions to the atmosphere (via a chimney) of more than 7 mg dry dust/m^3 air and 21 mg wet dust/m^3 air.

For a description of the measurement method, see section on dust emissions in Appendix 1.

✉ The declaration from the raw materials producer/refiner, containing measurement results, measurement methods and measurement frequency.

O4 Radioactive substances

The requirement covers all constituent mineral materials used in panels for internal uses such as walls, ceilings, sub-floors, fittings and joists. Hence, panels which are only marketed for outdoor use are not covered by the requirement.

For panel materials which contain:

Natural materials such as alum shale or building materials or additives of natural volcanic origin, e.g.:

- granitoids (such as granites, syenite and orthogneiss)
- porphyries
- tufa
- pozzolana
- lava
-

or

materials containing residues from industries which process naturally occurring radioactive material, e.g.:

- fly ash
- phosphogypsum
- phosphorus slag
- tin slag
- copper slag
- red mud (residue from aluminium production)
- residues from steel production

it must be documented that the gamma index (mγ) or activity index (l1) is less than 1.

The requirement applies to all constituent materials used in panels for internal uses such as walls, ceilings, sub-floors, fittings or joists. Radioactive substances in the panel material are expressed as a gamma/activity index in accordance with the following formula:

$C_K/3000 + C_{Ra}/300 + C_{Th}/200 < 0.5$

In the above formula, C_K, C_{Ra} and C_{Th} are the concentrations of potassium-40, radium-226 and thorium-232, expressed as becquerel per kilogram (Bq/kg) of the material. 1% potassium is equivalent to 310 Bq/kg potassium-40, 1 ppm uranium is equivalent to 12.3 Bq/kg of radium-226 and 1 ppm thorium is equivalent to 4.0 Bq/kg of thorium-232.

For the analysis method, see section in Appendix 1.

✉ Sampling programme, including measurement methods, measurement result and measurement frequency.

3.2 Wood, paper, cardboard and pulp

O5 Wood fibre and waste wood in paper, cardboard and pulp

The requirement covers raw materials purchased as wood fibre in paper, cardboard and pulp. The requirement does not apply to paper labels attached to the product.

Annually, at least:

1. 30% of the fibre raw material in paper, cardboard or pulp must come from forest areas in which operation has been certified under the forestry standard and certification system stated in Appendix 4c or which is certified as organically cultivated or where cultivation is in the process of being converted to organic production,

or

2. 75% of the fibre raw material in paper, cardboard or pulp must be recycled fibre or bi-products such as shavings or sawdust,

or

3. a combination of 1 and 2. If the fibre raw material in paper, cardboard or pulp consists of less than 75% recycled fibre, the proportion of fibre raw material from certified areas must be calculated according to the following formula:

Requirement for proportion of fibre raw material from certified areas in paper, cardboard or pulp (Y):

$Y\ (\%) \geq 30 - 0.4x$

where x = proportion of recycled fibre or bi-products such as shavings and sawdust.

✉ The declaration and any calculations from the supplier of the paper, cardboard or pulp that the requirement has been satisfied. The declaration must contain the name of the paper, cardboard or pulp. Appendix 3 may be used.

✉ Where points 1 or 3 apply, the paper, cardboard or pulp manufacturer must send a copy of the relevant forestry certificate which complies with the guidelines for forest certification and organic cultivation, as described in Appendix 4c.

O6 Solid wood, veneer and bamboo - origin and traceability

Constituent raw materials of solid wood, veneer and bamboo in the construction panel must comply with the following requirements.

Secondary raw materials from trees, e.g. palm leaves, are exempted from the requirement.

The licensee must:

- demonstrate traceability for all wood, veneer and bamboo materials.
- State the name (in Latin and one Nordic language) and geographic origin (country/state and region/province) of the kinds of wood and bamboo used.
- have a written procedure for sustainable wood and bamboo supply.

Wood, veneer and bamboo raw materials may not be sourced from:

- protected areas or areas in the process of being awarded protected status

- areas where ownership or usage rights are unclear
- genetically modified trees or plants.

Furthermore, forestry operations must not damage:

- standing natural timber, biodiversity, special ecosystems or important ecological functions
- important social and/or cultural values.

Nordic Ecolabelling may require further documentation in case of uncertainty about the raw material's origin.

✉ Name (Latin and a Nordic language or English) and geographical origin (country/state and region/province/municipality) for the wood raw materials used. Appendix 4a must be used.

✉ The traceability system must be described. The Chain of Custody Certificate may be used as documentation for point 2.

✉ Written routines for ensuring sustainable bamboo and wood supply. A requirement for a Chain of Custody Certificate from a supplier may be used as part of the procedure. The procedure must ensure updated lists of all suppliers.

O7 Certified solid wood, veneer and bamboo

The requirement applies to solid wood, veneer and bamboo included as raw material for building boards.

70 wt.% of all wood for parts made of solid wood and veneer and 70% of all bamboo must come from certified forests. Alternatively, the bamboo may be organically cultivated or the cultivation may be in the process of conversion to organic production.

The requirement may be documented as purchased wood and bamboo on an annual basis either for the whole company or the Nordic Ecolabeled production alone (minimum 70% certified wood must be credited to the Nordic Ecolabeled production).

Certification must be performed by an independent third party.

Certification must be to a valid forestry standard which fulfils the requirements for standards and certification systems laid down in Appendix 4c.

✉ The proportion (%) of certified wood or bamboo included in the applicant's annual ecolabelled production. Appendix 4b may be used.

✉ Copy of forestry certificated signed and approved by a certification body.

Nordic Ecolabelling may require further documentation to assess whether the requirements for standards, certification system and certified proportion have been satisfied. E.g. a copy of the certification body's approval report, a copy of the forestry standard including name, address and telephone number of the organisation which drew up the standard, and references to persons who represent the parties and interest groups invited to participate in the development of the forest standard.

O8 Use of biocides in tree felling

The requirement applies to solid wood, veneer and bamboo as constituent raw materials.

After felling, the wood must not be treated with pesticides with WHO classifications 1A and 1B.

The requirement relates to the treatment of logs after felling.

WHO classification: An overview can be obtained from internet address htttp://www.who.int/ipcs/publications/pesticides hazard/en/, "The WHO recommended classification of pesticides by hazard and guidelines to classification 2009" or on application to one of the secretariats.

✉ A statement from the wood suppliers as to the pesticides used and a declaration in accordance with Appendix 4a for each product.

O9 Emissions of COD from paper and cardboard production

The total emissions of acid-consuming organic material (COD - chemical oxygen demand) to water must be less than the specified COD value in Table 14 for the paper or cardboard used (for unfiltered sample). Each type of pulp has its own level in the requirement. The COD emission from pulp production must be included in the total COD calculation for the paper or cardboard used.

Table 2 COD requirement levels for different pulp and paper types

Pulp type	Total COD level kg/ADt for pulp and paper
Bleached chemical pulp (sulphate and other chemical pulps except sulphite pulp)	22.0
Bleached chemical pulp (sulphite pulp)	29.0
Unbleached chemical pulp	14.0
CTMP pulp	19.0
TMP/Groundwood pulp	7.0
Recycled fibre pulp	4.0

✉ Submit a description of the sampling programme, including measurement methods, measurement results from previous 12 months and measurement frequency, see also Section 1 of Appendix 1.

3.3 Resources

O10 Resource requirements plasterboards

As a minimum, at least 20 wt. % of recycled gypsum must be used in the plasterboard, in the form of waste gypsum from demolition and refurbishment of buildings.

The remainder of the constituent gypsum raw material must be industrial gypsum (residual product from power stations).

This requirement may be documented as an annual average for plasterboard production.

✉ A declaration from the recycled materials supplier, showing the amount of recycled material received in accordance with the requirement. Appendix 5 may be used.

✉ Applicant's calculation showing that the requirement level has been reached.

O11 Resource requirements for mineral wool panels

As a minimum there must be 50 wt. % recycled material in the panel. The requirement may be documented annually in the production of mineral wool panels.

Recycled raw materials are defined in this requirement as post-consumer, cf. definition in ISO 14021.

✉ A declaration from the recycled materials supplier, showing the amount of recycled material received in accordance with the requirement. Appendix 5 may be used.

✉ Applicant's calculation showing that the requirement level has been reached.

O12 Resource requirements for cement-based panels

As a minimum there must be 50 wt. % renewable or recycled material in the panel. The requirement may be documented annually in the production of cement-based panels.

Recycled raw materials are defined in this requirement as post-consumer, cf. definition in ISO 14021, and as waste products such as fly ash and industrial slag.

✉ A declaration from the recycled materials supplier, showing the amount of recycled material received in accordance with the requirement. Appendix 5 may be used.

✉ Applicant's calculation showing that the requirement level has been reached.

3.4 Energy

The energy requirements include the final energy consumption. The requirements must be documented in the form of energy consumed without the use of primary energy factors. The Nordic Ecolabelled panel must comply with either requirement O14, O15, O16, O17 or O18 depending on the panel material. Furthermore, the energy requirement for paper and mass will be activated, when more than 20% by weight of paper or mass in the finished panel. The energy requirement for paper and pulp O13 is explained in detail in Annex 6. All energy requirements are further explained in the background document.

O13 Energy requirements for paper and pulp production

The requirement covers paper and pulp which are present at more than 20 wt. % in the finished panel.

The following requirements must be satisfied for paper or pulp:

$P_{electricity(total)} < 1.25$

$P_{fuel(total)} < 1.25$

P stands for energy point for paper/pulp production. In $P_{electricity(total)}$ and $P_{fuel(total)}$, energy points are included from both paper production and the pulps used in the paper. See further explanation in Appendix 6.

✉ The pulp and paper manufacturer must submit a calculation according to Appendix 6 which shows that the points limits are being satisfied. The calculation sheet developed by Nordic Ecolabelling must be used for the calculation.

O14 Energy requirements for HPL panel production:

The requirement covers the applied energy for production of the panel and may be documented either for the ecolabelled panel production or for the company's total annual production of HPL panels.

HPL panels ≤ 2 mm thin:

No more than 10 MJ/kg panel may be used for producing the panel.

HPL panels ≤ 2mm thick:

No more than 6 MJ/kg panel may be used for producing the panel.

The requirement does not include extraction of resources. Self-produced energy and resold surplus energy should be stated, but will not count as applied energy in the calculation.

✉ A calculation should be submitted documenting compliance with the requirement. The calculation must contain information about: quantity of produced panels, sub-divided into thick and thin, applied electricity and fuel, and which fuel sources are being used.

O15 Energy requirements for wood-based panels

Energy consumption is calculated as an annual average for either just the ecolabelled production or for the whole enterprise. Energy consumption calculated as MJ/kg panel must include the primary panel production and the production of the constituent main raw materials. Main raw materials are the raw materials which make up more than 2 wt.% of the finished panel (for example wood fibre and adhesive).

Energy consumption for obtaining raw materials must not be included. In panel production, the energy calculation must be based on data available from the time of raw materials handling (including drying of wood and conveyor belts both in the saw works and on the production line) up to the finished product prior to any surface treatment. Energy consumption for surface treatment must not be included. In production of chemicals such as adhesives, the energy calculation is based on data available from the time of the production of the adhesive and of the constituent raw materials. The energy content of the raw material must not be included. In exceptional cases, a table value for adhesive of 15 MJ/kg (ready-to-use solution) may be used.

Chipboards:

No more than 7 MJ/kg panel may be applied for producing panels (excluding any surface treatment)

Wood fibres/veneer and laminated panels:

No more than 8MJ/kg panel may be applied for producing panels (excluding any surface treatment)

The requirement does not include extraction of resources. Self-produced energy and resold surplus energy should be stated, but will not count as applied energy in the calculation.

✉ A calculation should be submitted documenting compliance with the requirement. The calculation must contain information about: quantity of produced panels, applied electricity and fuel, and which fuel sources are being used.

O16 Energy requirements for plasterboards

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

No more than 4 MJ/kg plasterboard may be applied for total applied electricity and fuel in panel production.

The requirement does not include extraction of resources. Self-produced energy and resold surplus energy should be stated, but will not count as applied energy in the calculation.

✉ A calculation should be submitted documenting compliance with the requirement. The calculation must contain information about: quantity of produced panels, applied electricity and fuel, and which fuel sources are being used.

O17 Energy requirements for mineral wool panels

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

In total, no more than 8 MJ/kg mineral panel may be applied for electricity and fuel

The requirement does not include extraction of resources. Self-produced energy and resold surplus energy should be stated, but will not count as applied energy in the calculation.

✉ A calculation should be submitted documenting compliance with the requirement. The calculation must contain information about: quantity of produced panels, applied electricity and fuel, and which fuel sources are being used.

O18 Energy requirements for cement-based panels

The requirement covers the total energy impact from the constituent materials in the panel. The requirement covers all materials used in the panel which are present at more than 1 wt. %. To calculate this, table values are applied from Table 17 for each material, weighting them in proportion to the amount of material present in the finished panel.

No more than 5 MJ/kg panel may be applied.

The table values express the energy impact of the material with the system limit cradle to gate, e.g. the calorific value. It is not permitted to use privately obtained values.

Nordic Ecolabelling reserves the right to assess which table values are to be used when using materials not specifically laid down in the table or in case of doubt over choice of table value.

Portland cement is defined in accordance with Standard EN 197-1.

Table 3 Table value for energy for material production cradle to gate

Material	Primary energy MJ/kg (both renewable and fossil-based)
Portland Cement	8
Kaolin	5.4
Fly ash (hard coal ash from furnace)	0.4
Limestone flour	0.4
Silicate sand	0.6
Aluminium hydroxide	10
Magnesium oxide	2.7
Magnesium chloride (value for MgO)	2.7
Pozzolanic Filler	83
Residual wood (hardwood u=80% moisture content dry basis)*	5

Residual wood (softwood u=140 % moisture content dry basis)	2
Sawdust (chips u=70% moisture content dry basis)*	2
Wood chips (chips u=70% moisture content dry basis)*	1.5
PVA fibre (synthetic fibre)	202
Clay, expanded	4.8
Glass Foam	25.2
Fibreglass	35.2
Polyacrylonitrile (PAN) fibre	82
Other plastic fibres	200

** 70% "moisture content dry basis" means 0.7 m^3 water per 1 m^3 dry wood. This is the same as a moisture content of 41% "moisture content wet basis". In the case of a different moisture content in the wood raw material, a conversion must be made by using an energy figure for dry wood, which would be 2.5 MJ/kg dry substance wood (water content of 0%) for wood chips. A similar conversion must be made for other wood raw materials.*

✉ A calculation should be submitted documenting compliance with the requirement.

3.5 Requirements for chemical products

The requirements cover the chemical products included in the production of the ecolabelled panels. Either as additives to the panel or in surface treatments. The requirement relates to chemical products such as adhesive, additives and surface treatment. Auxiliary chemicals such as lubricating oil for mechanical equipment are not covered by the requirement.

Several of the requirements are aimed at the ingoing substances in the chemical product. See definition of ingoing substance in Section 1.1.

O19 Classification of the chemical product

The chemical product used in the production of the ecolabelled panel must be classified in accordance with the current legislation (CLP Regulation 1272/2008 or the EU's Dangerous Preparations Directive 1999/45/EEC 2008, or later) and may not be classified in accordance with Table 4 below.

Exemptions:
Adhesives and resins of formaldehyde and phenol are exempted from the prohibition of classifications with R40/H351. Instead the formaldehyde content of adhesives is regulated in requirements O288 and O322, which deal with formaldehyde emissions from the panel.

Adhesives and resins for production of HPL panels are exempted from the prohibition of classifications with R23, R24, R25, R39/H301, H330, H331, H370 and combinations of these and with R68/H341 and R40/H351. Emissions from HPL production are regulated in requirement O300.

Table 4 List of non-permitted classifications of chemical products in accordance with the CLP Regulation 1272/2008, or later

CLP Regulation 1272/2008			**EU Dangerous Substance Directive 67/548/EC**	
Signal words	**Hazard**		**Indication of danger**	**Risk phrase**

	statement			
			Carcinogenic	
Danger, Carc. 1A or 1B	H350		T	R45 and/or
Danger, Carc. 1A or 1B	H350i		T	R49
Warning, Carc. 2	H351		Xn	R40
			Mutagenic	
Danger, Muta. 1A or 1B	H340		T	R46
Warning, Muta. 2	H341		Xn	R68
			Reprotoxic	
Danger, Repr. 1A or 1B	H360		T	R60
Danger, Repr. 1A or 1B	H360		T	R61
Warning, Repr. 2	H361		Xn	R62 and/or
Warning, Repr. 2	H361		Xn	R63
-	H362		-	R33
-	H362		-	R64
			Very toxic	
Danger, Acute Tox. 1 or 2	H330		Tx	R26
Danger, Acute Tox. 1	H310		Tx	R27
Danger, Acute Tox. 2	H300		Tx	R28 and/or
Danger, STOT SE 1	H370		Tx	R39
			Toxic	
Danger, Acute Tox. 2 or 3	H330 or H331			
	H331		T	R23
Danger, Acute Tox. 3	H301		T	R24
Danger, Acute Tox. 3	H370		T	R25
Danger, STOT SE 1	H372		T	R39 and/or
Danger, STOT RE 1			T	R48

The classification applies in accordance with the EU's Dangerous Substances Directive 67/548/EC with subsequent amendments and adjustments and/or CLP Regulation 1272/2008 with subsequent amendments. During the transition period, i.e. up to 1 June 2015, classification in accordance with the EU's Dangerous Substances Directive or the CLP Regulation may be used. After the transition period, only classification in accordance with the CLP Regulation is allowed.

☒ Declaration from the producer of the chemical product used in the Nordic Ecolabelled product that the requirement has been satisfied. Appendix 7 may be used.

☒ A safety data sheet for the chemical product used in the Nordic Ecolabelled product in accordance with Appendix II of Reach (Regulation 1907/2006/EC with subsequent amendments and additions).

O20 CMR classification of constituent substances

The requirement covers all constituent substances in the chemical products used in panel production and for surface treatment.

The constituent substances used in chemical products in construction panel production (e.g. additives, adhesives and surface treatment) must not have any classifications listed in Table 5 below.

Table 5 List of non-permitted classifications of constituent substances in chemical products

CLP Regulation 1272/2008:			EU Dangerous Substance Directive 67/548/EC:	
Signal words	Hazard statement		Indication of danger	Risk phrase

Danger, Carc. 1A or 1B Danger, Carc. 1A or 1B	H350 H350i		Carcinogenic T T	R45 and/or R49
Danger, Muta. 1A or 1B	H340		Mutagenic T	R46
Danger, Repr. 1A or 1B Danger, Repr. 1A or 1B	H360 H360		Reprotoxic T T	R60 R61

The classification applies in accordance with the EU's Dangerous Substances Directive 67/548/EC with subsequent amendments and adjustments and/or CLP Regulation 1272/2008 with subsequent amendments. During the transition period, i.e. up to 1 June 2015, classification in accordance with the EU's Dangerous Substances Directive or the CLP Regulation may be used. After the transition period, only classification in accordance with the CLP Regulation is allowed.

✉ Declaration from the producer/supplier of the chemical product that the requirement has been satisfied. Appendix 7 may be used.

O21 Excluded substances in chemical products

The requirement covers all constituent substances in the chemical products used.

The following substances must not be present in the chemical product:

- Substances on the EU Candidate List*
- Persistent, bioaccumulative and toxic (PBT) organic substances**
- Very persistent and very bioaccumulative (vPvB) organic substances**
- Substances regarded as potentially endocrine-disrupting in category 1 or 2 on the EU
- Priority List of substances for further investigation for endocrine disrupting
- effects***
- Halogenated organic compounds, such as organic chloroparaffins, fluorine compounds and halogenated flame inhibitors****
- Bisphenol A
- Isocyanates*****
- Alkylphenols, alkylphenol ethoxylates and other alkylphenol derivates
- Phthalates
- Aziridine and polyaziridines
- Pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds

**Candidate List pursuant to REACH, 1907/2006/EC Article 59, Par. 10 is available on the ECHA website: http://echa.europa.eu/sv/candidate-list-table*

*** PBT and vPvB substances are defined in Annex XIII of the Reach Regulation (Regulation 1907/2006/EG). Substances which meet the PBT or vPvB criteria or which liberate substances which meet these criteria are listed on http://esis.jrc.ec.europa.eu/index.php?PGM=pbt. Substances which have been "deferred" or are "under evaluation" are not deemed to possess PBT or vPvB properties.*

****Se following link: http://ec.europa.eu/environment/chemicals/endocrine/pdf/final_report_2007.pdf (Annex L, page 238 ff.)*

***** The biocide CMIT, in combination with MIT, is an exemption from this rule and is regulated by Requirement O22.*

******Water-based polyisocyanates with a chain length of more than 10 are exempted from this rule.*

✉ Declaration from the raw materials producer or supplier showing that the requirement has been complied with. Appendix 7 may be used.

O22 Biocides (preservatives and antibacterial treatment)

Antibacterial treatment

No biocides or biocide products may be applied to the surface of the finished panel, or to parts of it, for the purpose of providing a disinfectant or antibacterial effect.

Preservatives

- Preservatives added to chemical products used in panel production must not be bioaccumulative*.
- The total content of Kathon mixture (CMIT/MIT) 5-chloro-2-methyl-2H-isothiazolin-3-one (CAS no.: 26172-55-4) and 2-methyl-2H-isothiazolin-3-one (CAS no.: 2682-20-4) (3:1) in the chemical mixture may not exceed 15 ppm (0.0015 wt.%, 15 mg/kg).

All panel types excluding surface treatment of facade panels:

- The total content of isothiazolinone compounds in the chemical product may not exceed 500 ppm (0.05 wt.%, 500 mg/kg).

Surface treatment of facade panels:

- For chemical products for surface treatment of facade panels, the total content of isothiazolinone compounds in the chemical mixture may not exceed 1500 ppm (0.15 wt.%, 1500 mg/kg).

The biological accumulability of a substance can be tested on fish in accordance with the OECD's test guidelines 305 AE. If the biological concentration factor (BCF) of the substance is ≥ 500, the substance is deemed bioaccumulative, and if BCF < 500 the substance is deemed non-bioaccumulative. Unless otherwise established, substances are deemed bioaccumulative if logKow ≥ 4 according to the OECD's test guidelines 107 or 117 or equivalent methods.

If there is a measured BCF value, the highest measured value must be used instead of logKow. This means that a substance with a logKow value ≥ 4 is not considered to be bioaccumulative if the highest measured BCF value is < 500.

✉ Declaration from producer/supplier of all constituent chemical products, showing that the requirement has been met. Appendix 7 may be used.

O23 Nanoparticles

The product may not contain nanoparticles (from nanomaterial*)

Polymer emulsions are not considered to be a nanomaterial.

Exemptions from the requirement are granted for the following:

- Pigment**
- Synthetic amorphous silicate***
- Naturally occurring inorganic fillers****

**The definition of nanomaterials follows the EU Commission's definition of nanomaterials of 18 October 2011:*

"Nanomaterials": a natural, incidental or manufactured material containing particles in an unbound state or as an aggregate or an agglomerate and where at least 50% of the particles in the size distribution by number, in one or more external dimensions, are in the size range of 1-100 nm.

***nano titanium dioxide is not considered to be a pigment.*

****this applies to conventional synthetic amorphous silicate in bulk form. May not contain surface-treated silica.*

*****this applies to fillers covered by Annex V Point 7 of REACH.*

✉ Declaration from producer/supplier of chemical product (except for polymer emulsion, pigment and synthetic amorphous silicate) that the product does not contain nanomaterial as defined by the requirement. Appendix 7 may be used.

O24 Environmentally harmful substances in the construction panel (not surface treatment)

The total quantity of added chemical substances in the construction panel which are classified as environmentally harmful according to Table 6 has been restricted and must comply with a required level of maximum 2 wt.% environmentally harmful substances by means of the following formula:

100*H410 + 10*H411 + H412 ≤ 2 wt. % environmentally harmful substances

or

100*(R50/53) + 10*(R51/53) + (R52/53) ≤ 2 wt. % environmentally harmful substances

where:

H410 is the total concentration of substances classified as H410 (and the same for R50/53) as a percentage of the panel

H411 is the total concentration of substances classified as H411 (and the same for R50/53) as a percentage of the panel

H412 is the total concentration of substances classified as H412 (and the same for R50/53) as a percentage of the panel

The requirement relates to the chemical products used in the panel (e.g. adhesives) with the chemical composition they have when mixed in the panel material. Ammonia in a concentration of over 24% is exempted and not counted here.

Table 6 Environmental hazard statements and risk phrases covered by the requirement

Hazard class	Hazard code and hazard statement according to CLP Regulation 1272/2008	Indication of danger and R-phrase according to EU Dangerous Substances Directive (67/548/EC)
Hazardous to aquatic life	Chronic 1 with H410	N; R50-53
	Chronic 2 with H411	N; R51-53
	Chronic 3 with H412	R52-53

✉ Declaration from producer/supplier of chemical product showing the content of environmental hazard classified substances covered by the requirement, stated specifically for each indication of danger/R phrase. Appendix 8 may be used.

✉ Calculation from panel manufacturer showing the panel's content of environmentally hazardous substances in relation to the requirement. Here information from Appendix 8 should be used.

O25 Environmentally harmful substances in surface treatment of construction panel

Chemical products used in the panel's surface treatment system (e.g. coating, oil, paint and lacquer) must satisfy one of the two following alternatives.

No chemical product in the surface treatment may be classified as environmentally harmful according to Table 7 below.

or

The total amount of environmentally harmful substances applied (indicated in Table 7) in the surface treatment system must not amount to more than 40 g/m² calculated in wet condition. One of the following formulae must be used to calculate the weight percentage of constituent environmentally harmful substances in the surface treatment system (to be done for each chemical product in the surface treatment):

100*H410 + 10*H411 + H412 = wt. % environmentally harmful substances

or

100*(R50/53) + 10*(R51/53) + (R52/53) = wt. % environmentally harmful substances

H410 is the concentration of substances classified as H410 (and the same for R50/53) as a percentage

H411 is the concentration of substances classified as H411 (and the same for R50/53) as a percentage

H412 is the concentration of substances classified as H412 (and the same for R50/53) as a percentage

All environmentally hazardous substances in unhardened chemical products must be included in the calculation.

Table 7 Environmental hazard statements and indications of danger covered by the requirement

Hazard class	Hazard code and hazard statement according to CLP Regulation 1272/2008	Indication of danger and R-phrase according to EU Dangerous Substances Directive (67/548/EC)
Hazardous for aquatic life	Aquatic acute 1 with H400	N; R50
	Aquatic chronic 1 with H410	N; R50-53
	Aquatic chronic 2 with H411	N; R51-53
	Aquatic chronic with H412	R52-53

The amount of applied environmentally hazardous substances (g/m²) is then calculated as:

Applied amount $\left(\frac{g}{m^2}\right)$ x weighted % environmentally hazardous substances in total surface treatment

For tone systems, a worst case calculation is made for the surface treatment with the most tone in the basic colour containing the most environmentally hazardous substance under the weighted formula for the classifications.

✉ For alternative a), a declaration is required from the producer/supplier of each chemical product that the product is not classified as environmentally hazardous under the above table. Appendix 7 may be used.

✉ For alternative b) Declaration from producer/supplier of chemical product showing the content of environmental hazard classified substances covered by the requirement. The concentration of substances must be stated specifically for each indication of danger/R phrase. Appendix 8 may be used. Confidential information from the chemicals supplier may be sent directly to Nordic Ecolabelling.

✉ The calculation from the manufacturer of the finished panel showing the number of coats of surface treatment, the application method and the applied amount per coat indicated as g/m² panel. And the weighted calculation of environmentally hazardous substances as shown by the requirement. Here information from Appendix 8 should be used.

O26 Volatile organic compounds (VOC) in adhesives

Volatile organic compounds* including volatile aromatic hydrocarbons (VAH), must not be present in the adhesive by more than 3 wt. %. Of these, VAHs (volatile aromatic hydrocarbons) may not amount to more than 0.1 wt. % of the adhesive.

** Volatile organic compounds are here defined as:*

Organic compounds with a steam pressure exceeding 0.01kPa, at 20°C.

For products under EU Directive (2004/42/EC) in which steam pressure is not indicated:

Organic substances with an initial boiling point that is lower than or equal to 250°C measured at a normal pressure of 101.3 kPa.

✉ Declaration from the producer/supplier of the chemical compound that the requirement has been fulfilled. Appendix 9 may be used.

O27 VOC in surface treatment

The content of volatile organic substances (VOC) in the chemical products in the surface treatment system must be either

below 5 wt.% for each chemical product, or

a maximum of 10 g/m² surface of panel for the total surface treatment system

The requirement relates to the chemical products used in surface treatment with the chemical composition they have in wet form. If the product is to be diluted, the calculation must be based on the content of the ready-diluted product.

Volatile organic compounds are here defined as:

Organic substances with an initial boiling point that is lower than or equal to 250°C measured at a normal pressure of 101.3 kPa.

✉ Declaration from the producer/supplier of each chemical product in the surface treatment. The declaration must state the content of VOC in the product. If necessary, VOC information from the producer of the chemical product may be sent directly to Nordic Ecolabelling. Appendix 9 may be used.

✉ When using alternative b), the applicant must submit a calculation showing the total amount of VOC in the surface treatment system in g/m² panel. The calculation must be based on the declared VOC content of each chemical product and the amount present in the surface treatment system.

O28 Content of free formaldehyde in chemical products

The requirement does not apply to resin used for impregnation in HPL and laminate production. HPL and laminate production must instead comply with Requirement O30 Emissions from HPL production.

The content of free formaldehyde in chemical products used for production of the product may be up to 0.2 wt. % (2000 ppm), except for adhesive products mixed with hardener. For adhesive products mixed with hardener, up to 0.2 wt. % (2000 ppm) of free formaldehyde is permitted in the ready-to-use mixture.

The content of free formaldehyde in chemical products used for stone wool may be no more than 0.5 wt. % (5000 ppm).

✉ Declaration from the producer of the chemical products used in the construction panel. Appendix 7 may be used.

3.6 Emissions

O29 Emissions to water in wet processes

The requirement covers processes in panel production. For panels manufactured with wet processes, the COD emission to water may be no more than 20 g COD/kg product (unfiltered sample).

✉ The sampling programme, including measurement method, measurement results for the last 12 months, and measurement frequency. For processing and analysis methods, see Appendix 1.

O30 Emissions from HPL production

In the case of production in countries where the mandatory national requirements are less stringent than the emission levels in this requirement, it must be documented that the following emissions levels have not been exceeded.

The requirement relates to panels in which the content of HPL (High Pressure Laminate) accounts for more than 10 wt. % of the panel.

The following limit values for emissions to air at the workplace may not be exceeded during production of HPL (High Pressure Laminate):

The limit value is expressed in relation to a reference period of 8 hours' time-weighted average (TWA):

Limit value for formaldehyde cas. no. 50-00-0: 0.5 ppm or 0.6 mg/m^3

Limit value for phenol cas. no. 108-95-2: 2 ppm or 8 mg/m^3

The limit value is expressed in relation to a short-term value of max. 15 min.:

Limit value for formaldehyde cas. no. 50-00-0: 1.0 ppm or 1.2 mg/m^3

limit value for phenol cas. no. 108-95-2: 4 ppm or 16 mg/m^3

Air measurement must be executed as an exposure measurement, in which an evaluation is made of the exposure of each worker to the pollution. Measurement equipment carried on the person should be used for these measurements. Hence, in taking samples during exposure measurement, it must be ensured that, e.g.

samples are generally taken in the inhalation zone of persons at work.

sample taking is conducted under normal operating conditions with normal ventilation

the high-emission phases of the different work processes are included.

the sampling time is long enough to show a representative average value

when planning sample-taking, a survey is made of any concentration variations during the work process or the working day.

☒ Air measurements for phenol and formaldehyde for the past 12 months, containing a description of the sampling programme, including measurement methods and measurement frequency. For analysis methods, see Appendix 1.

Or

☒ Description of mandatory national regulatory requirements, showing that the requirement automatically is followed.

O31 Dust emissions from panel production

In the case of production in countries where the mandatory national requirements are less stringent than the emission levels in this requirement, it must be documented, that the following dust emission levels have not been exceeded.

The following limit values for emissions to air must not be exceeded during the manufacture of panels in relation to the working environment. The requirement relates to panels in which the content of mineral raw materials or wood raw materials accounts for more than 10 wt.% of the panel:

Mineral dust, inert: 10 mg/m^3

Mineral dust, inert, breathable: 5 mg/m^3

Mineral wool: 1 fibre/cm^3

Wood dust, breathable: 2 mg/m^3

Organic dust, total: 5 mg/m^3

☒ Dust measurements according to the requirement for the past 12 months, containing a description of the sampling programme, including measurement methods and measurement frequency. For analysis methods, see Appendix 1.

Or

☒ Description of mandatory national regulatory requirements, showing that the requirement automatically is followed.

O32 Formaldehyde emissions from construction panels

The requirement covers all panels, which are not marketed as pure facade panels. For panels, which contain formaldehyde-based additives, or where the surface treatment includes formaldehyde, one of the two following requirements must be met:

1) The average content of free formaldehyde must not be more than 5 mg formaldehyde/100 g dry substance for MDF panels or 4 mg/100 g dry substance for all other panels as determined according to the current version of EN-120 or similar methods approved by Nordic Ecolabelling (see section in Appendix 1).

The requirement applies to panels in wood with a moisture level of H = 6.5%.

If the panels have a different moisture level within the range 3-10%, the analysed perforator value must be multiplied by a factor F, derived with the following formula:

For chipboard: F=-0.133 H + 1.86 For MDF: F = -0.121 H + 1.78

2) The average emission of formaldehyde must not exceed 0.08 mg/m³ air for MDF panels or 0.07 mg/m³ air for all other panels as determined according to the current version of EN 717-1 or similar methods approved by Nordic Ecolabelling (see description in Appendix 1).

✉ Analysis report including measurement methods, measurement results and measurement frequency. It must be clearly stated which method has been used, who carried out the analyses and that the testing institution is an independent third party.

O33 Emission requirements for the construction panel

The construction panel must be tested in accordance with CEN/TS 16516, ISO 16000-3/-6/-9/-10 or equivalent test method. Testing must be carried out by an accredited third party.

Panels which are exclusively marketed as facade panels are exempt from this requirement.

Emissions from Nordic Ecolabelled construction panels must comply with emission levels expressed either in mg/m²h or in mg/m³ according to the following table.

Substance groups	Limit value after 28 days in mg/m²h*	Limit value after 28 days in mg/m³h*
TVOC (C6-C16)	< 0.2	0.16
Carcinogens**	< 0.005	0.004

**Conversion between mg/m²h and mg/m³, requirements for analysis laboratory and testing methods are described in Appendix 1.*

*** Classified as Carc. 1A or 1B, Annex VI, CLP Regulation 1271/2008*

Other analysis methods are acceptable if considered equivalent by an independent competent body.

✉ The test report showing that the limit values in the table above have been satisfied. Valid certificate from subsequent indoor climate labelling scheme may be used as documentation: M1 after 01.07.2014. It must be clearly stated which test standard is being used, which laboratory has carried out the analysis and that the analysis laboratory is accredited by an independent third party, see Appendix 1.

✉ The certificate and underlying test report from other indoor climate labelling schemes, e.g. Danish Indoor Climate Labelling, may be used as verification/documentation if an independent expert can confirm that the certificate from the indoor climate labelling scheme fulfils the requirements.

3.7 Quality, properties and maintenance of construction panel

O34 Quality and properties of panel

For construction panels covered by a harmonised standard, the properties and functions with which the panel is marketed must be documented by a declaration of performance (DoP). As documentation, an example of CE marking and declaration of performance pursuant to the Construction Products Regulation (305/2011/EC) should be submitted.

For products not covered by a harmonised product standard, the construction panel's properties and functions may be declared either by a CE mark and declaration of performance pursuant to an ETA (European Technical Assessment).

Or alternatively, rather than an ETA, the construction panel's properties may be declared by a suitable third-party verification of the product's performance. In this case, the third-party verification must be approved by Nordic Ecolabelling.

✉ For products covered by a harmonised product standard, it should be stated which product standard(s) cover the product and the declaration of performance should be submitted.

✉ For products not covered by a harmonised standard, a description of why the panel is not covered by a harmonised standard should be given, and a declaration of performance should be submitted in accordance with an ETA for the Nordic Ecolabelled product or another third-party verification approved by Nordic Ecolabelling.

O35 Information about the product

The manufacturer/supplier must inform the consumer about how best to use, maintain and store the product. The information must be given in the official language of the country in which the Nordic Ecolabelled product is marketed.

The product must be accompanied by written instructions which state:

- The area of use for which the product is intended.
- How the product is to be stored on the building site.
- Assembly and instructions for any surface treatment
- How the product is to be maintained, which maintenance products are suitable for the product (paint, oils, etc.) and how often these maintenance products must be used.

✉ Copy of information material which accompanies the construction panel.

4 Quality and regulatory requirements

To ensure that Nordic Ecolabel requirements are fulfilled, the following procedures must be implemented.

If the licensee 's environmental management system is certified to ISO 14 001 or EMAS, and the following procedures implemented, it is sufficient for the accredited auditor to certify that the requirements are observed.

O36 Legislation and regulations

The licensee must guarantee adherence to safety regulations, working environment legislation, environmental legislation and conditions/concessions specific to the operations at all sites where the Nordic Ecolabelled product is manufactured.

No documentation is required, but Nordic Ecolabelling may revoke the licence if the requirement is not fulfilled.

✉ Declaration from the licensee that the requirement is met, and details of the regulatory authority.

O37 Nordic Ecolabel licence person

The company shall appoint a person responsible for ensuring the fulfilment of Nordic Ecolabel requirements, and a contact person for communications with Nordic Ecolabelling.

✉ A chart of the company's organizational structure detailing who is responsible for the above.

O38 Documentation

The licensee must be able to present a copy of the application, and factual and calculation data supporting the documents submitted on application (including test reports, documents from suppliers and suchlike).

🔑 Checked on site.

O39 Quality of the panel

The licensee must guarantee that the quality of the production of the Nordic Ecolabelled construction panel is maintained throughout the validity period of the licence.

✉ Procedures for collating and, where necessary, dealing with claims and complaints regarding the quality of the Nordic Ecolabelled XX.

O40 Planned changes

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

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

O41 Unplanned nonconformities

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

✉ Procedures detailing how unplanned nonconformities are handled.

O42 Traceability

The licensee must have a traceability system for the production of the Nordic Ecolabelled construction panel.

✉ Description of procedures for the fulfilment of the requirement.

O43 Take-back system

Relevant national regulations, legislation and/or agreements within the sector regarding the recycling systems for products and packaging shall be met in the Nordic countries in which the Nordic Ecolabelled XX are marketed.

✉ Declaration from the applicant regarding adherence to existing recycling/take-back agreements.

O44 Marketing

Marketing of the Nordic Ecolabelled XX must comply with "Regulations for the Nordic Ecolabelling of products" 22 June 2011 or later versions.

✉ Appendix 1 duly completed.

Marketing

The Nordic Ecolabel is a very well-known and well-reputed trademark in the Nordic region. Nordic Ecolabelled products and services may be marketed using the Nordic Ecolabel so long as the associated licence is valid.

The label must be positioned so that there is no doubt as to what the label refers and so that it is clear that the construction panel is ecolabelled.

More information on marketing can be found in "Regulations for the Nordic Ecolabelling of products" 22 June 2011 or later versions.

Design of the Nordic Ecolabel

Design of the Nordic Ecolabel:



Each licence has a unique six-figured licence number that must be displayed along with the label.

More information on the design of the label can be found in "Regulations for the Nordic Ecolabelling of products" 22 June 2011 or later versions.

Follow-up inspections

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

The licence may be revoked if it is evident that the construction panel 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.

How long is a licence valid?

Nordic Ecolabelling adopted the criteria for XX on DAY MONTH YEAR. The criteria are valid until DAY MONTH YEAR. (date to be inserted after consultation)

The 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 extended 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.

New criteria

- Inserted after consultation

Appendix 1 Analysis and test laboratories

Requirements on the analysis laboratory (all)

The analysis laboratory used shall fulfil the general requirements of standard EN ISO 17025 or have official GLP status.

The applicant's analysis laboratory/test procedure may be approved for analysis and testing if:

- sampling and analysis is 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.

Heavy metals (O2)

Measurement must be carried out in accordance with DS 259 Water quality investigations - Determination of metals in water, soil, sludge and sediments, DS/CEN/TS 16172 Sludge, treated biowaste and soil – Determination of elements using graphite furnace atomic absorption spectrometry (GF-AAS) or another equivalent method. The analysis must be carried out with a relevant analysis method. The most suitable analysis methods are ICP-MS (Inductively coupled plasma mass spectrometry) or FAAS (Flame atomic absorption spectrometry). The analysis report must contain information about the sensitivity of both the analysis value and the method. Two representative samples must be taken each week and combined in a monthly sample. The monthly sample must be analysed. The measurement result must be calculated as the average result from three consecutive monthly samples analysed during the 12 months before the application was submitted.

Dust emissions (O3)

Dust measurement is performed according to the relevant standard measurement methods, e.g. SS 028426, NS 4861, 4862 and 4863, EN 13284: Stationary source emissions, EN 482 Workplace exposure - General requirements for the performance of procedures for the measurement of chemical agents or ISO 16911.

For dust from mineral wool, ISO 10397 is used: Determination of asbestos plant emissions.

Gamma/activity index (O4)

Normally, the analyses are carried out with gamma spectrometry, either in the laboratory on crushed material, or in the field at the extraction site, or at the manufacturer’s premises using a portable gamma spectrometer. The measurement of the gamma index (or activity index) must be based on methods recommended by either Risø Research

Centre, Environment, Institute for Nuclear Safety Research and Nuclear Plant (Denmark), National Institute for Radiation Hygiene in Norway, National Radiation Protection Institute at the Environmental Laboratory in Stockholm, Radiation Safety Centre in Finland or equivalent. In Finland, Directive 12.2 applies.

As an alternative, equivalent analysis methods are acceptable, following evaluation by an independent body.

COD emissions in wet processes (O9)

Analysis method: Oxygen-consuming substances must be analysed according to the international standard ISO 6060 Water quality – determination of the chemical oxygen demand. If another analysis method is used, the licence applicant must show that it is equivalent. An analysis of PCOD or BOD may also be used as verification, if there is a correlation with COD. The method for measuring TOC is ISO 8245 Guidelines for the determination of total organic carbon (TOC) and dissolved organic carbon (DOC).

Sampling frequency: Emissions of oxygen-consuming substances must be calculated as an annual average and be based on at least one representative 24-hour measurement per week. Alternatively, a sampling frequency set by the authorities may also be approved.

Sampling: Water samples must be taken after the process drainage water has been treated, perhaps in an internal purification plant. The flow at the time of sampling must be indicated. If the process drainage water is purified externally along with other waste water, the analysis results must be reduced accordingly by the documented COD efficiency at the external purification plant. The analyses must be carried out on unfiltered and unsedimented samples in accordance with standard ISO 6060.

Paper and cardboard: For campaign-produced pulp types, the requirement is that the result is based on 40 consecutive 24-hour samples. For shorter campaigns, representative 24-hour samples from each campaign are acceptable, but these must amount to at least 40 24-hour samples in total. Sample-taking must be done before an external purification plant and before mixing with other waste water effluent. The analysis result should then be reduced by the purification plant's efficiency. The efficiency of the purification plant must be documented.

Measurement of Air quality - workplace atmospheres (O30) and (O31)

Air measurements are carried out in accordance with relevant standard test methods, including among others:

- EN 689, Air quality - Workplace atmospheres, guidance in the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy.
- EN 482, Air quality - Workplace atmospheres, general performance requirements for methods for determining the concentration of chemicals in the air.
- EN 14042, Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents

Air measurements of phenol and formaldehyde

Air Measurements of phenol and formaldehyde submitted for the last 12 months, with a description of the sampling program, including measurement methods and measuring frequency. Air measurement is performed both for a reference period of 8 hours time weighted average (TWA) and a short-term value of no more than 15 minutes.

Air measurement shall be conducted as the exposure measurement, which conducted a review of each employee's exposure to pollution. For these measurements measuring equipment shall be personally carried.

When sampling for exposure measurements, thus including shall be ensured:

• the sampling is carried out under normal operating conditions with normal ventilation
• including the particularly stressful phases of different work processes
• the sampling time is so long that it shows a representative average value
• the planning of sampling carried out the identification of potential variations in concentration during the work or working.

Formaldehyde emission (O32)

Determination according to EN 120: For determining the content of free formaldehyde, the latest version of the European standard for the perforator method (EN 120) is used. Other methods, such as JIS A 1460 or equivalent, may be used following approval by Nordic Ecolabelling. It must be clearly stated which test method is being used. If conversion factors are used, this must be documented.

or

Determination according to EN 717-1: European Standard EN 717-1 is used for the chamber method. The relevant EN standard for the reference determination of the emission value must be used. Other testing methods, such as ASTM D6007-2 or equivalent, may be used following approval by Nordic Ecolabelling. It must be stated which method is being used. If conversion factors are used, this must be indicated.

The test method for emission analysis, forming the basis for classification M1, is described in the section “Emission Classification of Building Materials” (http://www.rts.fi/ emission_classification_of_building_materials.htm).

Sampling frequency for these three tests are given in the standards (perforator) or the legislation for the individual Nordic country (air chamber method, EN 717-1), or the rules for the Finnish classification system.

Emissions from the construction panel (O33)

Emissions from the construction panel must be tested in line with the following relevant standards or equivalent methods:

- ISO 16000-3:2001 Indoor air – Part 3: Determination of formaldehyde and other carbonyl compounds –Active sampling method
- EN ISO 16000-6:2011 (E) Indoor air – Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TAsorbent, thermal desorption and gas chromatography using MS or MS-FID
- EN ISO 16000-9:2006, Indoor air –Part 9: Determination of the emission of volatile organic compounds from building products and furnishing – Emission test chamber method
- EN ISO 16000-10:2006 Indoor air – Part 10: Determination of the emission of volatile organic compounds from building products and furnishing – Emission test cell method
- CEN/TS 16516:2013 Construction products – Assessment of release of dangerous substances – Determination of emissions into indoor air

Other analysis methods can be accepted if the method/methods are judged to be equivalent by an independent and competent body/testing laboratory or similar.

Appendix 2 Applicant's list of materials

Applicant:	Contact:
Product:	The product's total weight in kg:

Table 1 presents a general view of the current requirements. The quantities and composition of various materials may determine the requirements that apply. Applicants must complete Tables 1 and 2. For variations within the same product type, the requirements are activated even if they are only relevant for one of the variations.

Table 1 List of materials and the sections in which the requirements are found.

Section	Level	Requirement	Appendix	Relevant
Product information	Information about the product	O1	2	For all
Mineral raw materials *Applies in cases with more than 5 wt. % in the panel.*	General	O2-O3	-	Yes ☐ No ☐
	Selected raw materials	O4	-	Yes ☐ No ☐
Wood raw materials, paper, cardboard and paper pulp *Applies in cases with more than 5 wt. % in the panel.*	Wood fibres, cardboard and pulp	O5	3	Yes ☐ No ☐
	Solid wood, veneer and bamboo	O6-O8	4	Yes ☐ No ☐
	COD from paper and cardboard	O9	-	Yes ☐ No ☐
Resource requirements	Plasterboards	O10	5	Yes ☐ No ☐
	Mineral wool panels	O11	5	Yes ☐ No ☐
	Cement-based panels	O12	5	Yes ☐ No ☐
Energy requirements	Energy requirements for paper and pulp production *Applies in cases with more than 20 wt. % in the panel.*	O13	6	Yes ☐ No ☐
	Energy requirements for different panel types	O14–O18	-	Yes ☐ No ☐
Chemical products	General	O19-O22	7	Yes ☐ No ☐
	Nanoparticles	O23	7	Yes ☐ No ☐
	Environmental hazard (e.g. surface treatment)	O24	8	Yes ☐ No ☐
	Environmental hazard in surface treatment	O25	8	Yes ☐ No ☐
	VOC in adhesive	O26	9	Yes ☐ No ☐
	VOC in surface treatment	O27	9	Yes ☐ No ☐
	Free formaldehyde	O28	7	Yes ☐ No ☐
Emissions	COD (wet processes in panel production)	O29	-	Yes ☐ No ☐
	HPL production	O30	-	Yes ☐ No ☐

	Dust emissions *Applies in cases with more than 10% by weight minerals- or wood materials in the panel*	O31	-	Yes ☐ No ☐
	Formaldehyde *Does not include facade panels*	O32	-	Yes ☐ No ☐
	Emission requirement for the panel	O33	-	Yes ☐ No ☐
Use and quality requirements	General	O34-35	-	For all
Quality and environmental management requirements	General Marketing	O36-O44	10	For all

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Table 2 below must be used to give an overview of:

- All suppliers of materials/raw materials/chemicals contained in the product.
- The function of the material in the product (e.g. core material, fibre, adhesive or surface treatment).
- The type of material/product (e.g. pigment, binder, fibreglass, wood fibre, cardboard, etc.).
- State which materials are renewable (bio-based) and the percentage of the individual material which has been recycled, cf. definitions in Requirements O10 to O12, with specification of pre-consumer and post-consumer fractions, cf. ISO 14021.
- The product's total weight should be stated, together with the volume of the individual materials in the product, and their weight percentage of the product's total weight.
- As an alternative to Table 2, Nordic Ecolabelling also accepts complete spreadsheets or similar from the producer, if the information described here is included. Table 1 above must always be completed.

Table 2. List of materials and suppliers, function within the product and material volumes.

Supplier	**Function within product**	**Material type and composition**	**Percentage renewable/recycled**	**Weight in kg**	**Wt.%**
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
Total weight					100%

Applicant's signature:

Date	Company name
Person responsible	Telephone Email:

Appendix 3 Paper, cardboard and pulp – recycled/certified fibres

Name of the raw material:
Producer/supplier of raw materials for paper, cardboard and pulp:

Does the paper, cardboard or pulp contain at least 75 wt.% recycled fibre?

Yes ☐ No ☐

If the paper, cardboard or pulp contains less than 75 wt.% recycled fibre, state how much: _____

Does the paper, cardboard or pulp contain at least 30 wt.% certified* wood fibre?

Yes ☐ No ☐

If the paper, cardboard or pulp contains less than 30 wt.% certified wood fibre, state how much: _____

**where operation has been certified under the forestry standard and certification system stated in Appendix 4c or certified as organically cultivated or where cultivation is in the process of being converted to organic production*

Signature of producer/supplier of paper/cardboard or pulp:

Date:	Company name:
Person responsible:	Telephone: Email:

Appendix 4 Wood, veneer and bamboo

4a Origin, traceability and certified raw materials (to be completed by wood supplier)

4b Description of the raw material and certified wood (to be completed by the panel manufacturer)

4c Requirement for forestry certification (Requirement for forestry certification)

4a Origin, traceability and certified raw materials (to be completed by wood supplier**)**

Supplier/producer of wood, veneer and bamboo:
Producer:
Product type (e.g. solid wood, plywood or bamboo):

As documentation of the raw material, the following shall be indicated in the table below:

- Wood type/bamboo and geographical origin (country/state and region/province)
- Copy of certificate(s) for forest certification and type standard
- Proportion (%) of wood from certified forestry/raw material (copy of invoice may be used as documentation)

Type of wood/raw material (type and name)*	**Geographical origin (country/state and region/province)**	**Forest Management (no.) Chain of Custody (no.)**	**Proportion (%)from certified forestry**

**Describe whether the wood is pine, spruce, beech, etc. and give the Latin name.*

Have any of the above wood raw materials been treated with biocide after felling?

Yes □ No □

Is the biocide classified by WHO as type 1A and/or 1B? Yes □ No □

Signature of producer/supplier of wood, veneer and bamboo:

Date:	Company name:

Person responsible:	Telephone: Email:

4b Description of the raw material and proportion of certified raw material

(To be completed by panel manufacturer)

For documentation of the raw material:

Detailed description of the supplier chain from cultivation (forest) to panel manufacturer:

_____

_____

_____

_____

Alternatively, a flow diagram showing the supply chain from cultivation to manufacturer may be submitted as a separate document.

Type of wood/raw material (type and name)*	**Supplier**	**Volume (m^3 per year)**	**Proportion (%) of wood from certified forestry**
Total:			

**Describe whether the wood is pine, spruce, beech, etc. and give the Latin name.*

Signature of panel manufacturer:

Date:	Company name:
Person responsible:	Telephone: Email:

4c Requirements for forestry certification

Wood included in the product must be certified by a third party, cf. the applicable forestry standard which fulfils the requirement for the standard and certification system.

The following requirements apply to standards and certification systems that can be accepted by Nordic Ecolabelling.

Standards:

1. The standard must balance economic, ecological and social interests and comply with the UN's Rio document, Agenda 21, and the Forest Principles, and respect relevant international conventions and agreements.

2. The standard must include absolute requirements and promote the objective of sustainable forestry.

3. The standard must be generally available. The standard must have been developed in an open process in which ecological, economic and social stakeholders have been invited to participate.

Certification system:

The certification system must be open and have broad national or international credibility, and it must be possible to control compliance with the requirements in the forestry standard (see above).

Certification body:

The certification body must be impartial and credible and be able to verify that the requirement in the standard has been fulfilled, be able to communicate the result, and be suitable for an effective implementation of the standard.

Documentation:

Copy of the forestry standard, name, address and telephone number of the organisation that drew up the standard, and the certification body's approval report.

References must be given for persons representing parties and interest groups that have been invited to contribute to the development of the forestry standard.

The environmental labelling organisation is entitled to require further documentation in order to assess whether the requirements in the standard and the certification system are fulfilled.

Alternatively:

In certain cases, Nordic Ecolabelling may agree to grant a licence without the wood used in production being certified in accordance with an approved forestry standard.

It must be documented in another reliable way that the wood is sourced from sustainable forestry with a level of requirements that is equivalent to the approved forestry standards.

Appendix 5 Recycled raw material

Supplier/producer of raw material:
Producer:
Type of raw material (e.g. solid mineral wool, fly ash, gypsum):

For gypsum raw materials

How large a proportion of the gypsum raw material is waste gypsum from buildings?
_____%

How large a proportion of the gypsum raw material is industrial gypsum (residual product from power stations)?

For raw materials other than gypsum

How large a proportion of the raw material is recycled from the pre-consumer stage?
_____%

How large a proportion of the raw material is recycled from the post-consumer stage?
_____

Post-consumer and pre-consumer are defined according to ISO 14021, as described below.

Pre-consumer material

Material diverted from the waste stream during a manufacturing process. Excluded is reutilisation of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

Pre-consumer material

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.

Signature of raw material producer/supplier:

Date:	Company name:
Person responsible:	Telephone: Email:

Appendix 6 Energy requirements for paper and pulp production

6a Guidelines for energy calculation

Requirements are laid down for the application of energy in the form of fuel or electricity. The starting point is information about the actual energy consumption from production compared to a documented reference value. The quotient of these values is stated as energy points.

The energy calculations cover all the paper products: both paper production and the pulp employed. In the case of paper, the calculations are performed without regard to fillers. Energy consumption for transporting the raw materials and for conversion and packing are not included in the energy calculation.

Applied energy:

State the total energy consumption for the paper or pulp production processes per tonne of product, broken down into fuel and electricity.

Fuel:

With regard to fuel, bought-in fuel, internally produced fuel and residual products should all be stated. This means, for example, that lye, bark and wood chips must be included to the extent that their heating values contribute to energy supplies for the process. Fuel used both for heat production and internal electricity production must be stated. Fuel consumption is calculated from the effective heating value of the dry substance. The calculations may derive from internally measured heating values or values according to Appendix 6d. If the fuel is damp, the calculation method in appendix 6e may be used.

As fuel can also be used for electricity production internally, in such cases corresponding amounts of fuel must be subtracted from the actual fuel consumption (=1.25 * internally produced electricity). This will avoid the double counting of energy information for fuel used for internal electricity production.

Electricity:

Both bought-in and internally produced electricity must be included in the calculations.

✉ The calculation of electricity and fuel consumption must be based on invoices and readings from in-house electricity meters. The calculated points level must then be forwarded by the pulp producer to the paper producer and to Nordic Ecolabelling. The paper producer can then carry out a calculation of the total energy points for the finished paper. The calculation includes the energy points for all pulps used and energy points for paper production.

Internally produced electricity can be documented by readings from in-house electricity meters. In the case of bought-in fuel, the amount purchased must be reconciled with the amounts at the start and end of the year in question. Internal consumption of residual products such as lye, bark, wood chips, etc. is calculated from the estimated

heating values of the fuels used (see Table 6.3 in Chapter 6d). Hence, the total consumption of electricity and fuel is reported.

Steam:

If surplus steam from another production process is used (e.g. from another industry), the energy content of the steam must be included in the calculation. In this case, the steam table in Appendix 6d 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 2.5.

Allocation:

If the paper or pulp producer makes products, some of which are ecolabelled and some of which are not, without the means to distinguish the energy requirements for the process types, an allocation must be performed. The energy consumption must be allocated to the paper for the ecolabelled product.

For process types not used for ecolabelled production, the relevant reference values are given in Tables 6.1 and 6.2. It is assumed that the contribution from these process types constitutes a proportion of the total energy requirement equal to that of the reference value for the process types compared to the total reference value for energy. It must be clearly stated which process lines are not being used for production of ecolabelled paper.

Exceptionally, average values can be used for ecolabelled products and products which are not ecolabelled. However, the products must be of equivalent quality and have been produced with comparable processes within the same production unit.

Integrated production:

The energy reference values for both paper production and pulp production must be used for integrated production (Tables 6.1 and 6.2). For integrated enterprises which act both as suppliers of market pulp and pumped pulp for ecolabelled products, the reference value for drying the market pulp must be used for the market pulp but not for the pumped pulp.

Energy surplus:

Energy surpluses sold in the form of electricity, steam or heat should be subtracted from the total consumption. The amount of fuel used for producing sold-on electricity or heat is calculated by dividing the sold electricity or heat by 0.8. This corresponds to an average efficiency for the total production of electricity and heat.

Alternatively, the actual efficiency of the plant for converting fuel to heat energy may be used, if this can be documented to Nordic Ecolabelling.

6b Energy calculation, paper manufacturer

Energy points for paper production

The energy points Pp(electricity) and Pp(fuel) for paper manufacture on the paper machine are calculated by the following formulae:

$$P_{p(el)} = \frac{El_{använd}}{El_{referens}}$$

and

$$P_{p(bränsle)} = \frac{(Bränsle_{använd} - 1{,}25 \cdot egen\ producerad el)}{Bränsle_{referens}}$$

The values for Electricity,reference and Fuel,reference are taken from Table 6.1 below.

Table 6.1. Energy for paper production

Processes	**Fuel kWh/t Reference value**	**Electricity kWh/t Reference value**
FBB* (folding box board)/ SBS* (solid bleached sulphate)/ SBB* (solid bleached board) SUB* (Solid Unbleached Board) WLC* (White Lined chipboard)	1700	800
News	1700	750
LWC	1700	800
SC	1700	750
Uncoated fine paper	1700	750
Coated fine paper	1700	800

*Only one of the marked processes must be used

☒ Calculation of points by means of a calculation spreadsheet designed by Nordic Ecolabelling.

Energy points for a mixture of different pulp types

For a mixture of different pulp types, the following formulae are used for calculating the energy points, Pm(electricity) and Pm(fuel):

$$P_{m(el)} = \sum_{i=1}^{n} P_{m(el)i} \cdot m_i$$

and

$$P_{m(bränsle)} = \sum_{i=1}^{n} P_{m(bränsle)i} \cdot m_i$$

in which mi is the proportion of the individual pulp in the total pulp mix, i.e. tonnes of individual pulp used per tonne of pulp. Due to wastage and differences in water content, the total of mi may be greater than 1. Pm(electricity)i is the energy points for electricity for pulp number i, and Pm(fuel)i is the energy points for fuel for pulp number i.

✉ Calculation of points by means of a calculation spreadsheet designed by Nordic Ecolabelling.

Total energy points for paper and pulp production

The total points for both electricity and fuel consumption is calculated from the pulp and paper consumption points by weighting the reference values (X= weighting of reference value of pulp or paper production):

$$P_{el} = X_{El,m} \cdot P_{El,m} + X_{El,p} \cdot P_{El,p}$$

where

$$X_{el,m} = \frac{El_{referens,m}}{(El_{referens,m} + El_{referens,p)}}$$

$$X_{el,p} = \frac{El_{referens,p}}{(El_{referens,m} + El_{referens,p})}$$

$$P_{bränsle} = X_{Bränsle,m} \cdot P_{Bränsle,m} + X_{Bränsle,p} \cdot P_{Bränsle,p}$$

where

$$X_{Bränsle,m} = \frac{Bränsle_{referens,m}}{(Bränsle_{referens,m} + Bränsle_{referens,p}}$$

$$X_{Bränsle,p} = \frac{Bränsle_{referens,p}}{(Bränsle_{referens,m} + Bränsle_{referens,p}}$$

For a mixture of pulps, the reference values for electricity and fuel must be weighted by the proportion of pulp, mi, in the expressions for X.

✉ The calculation of points with part results must be shown in the documentation. It must be clearly stated what starting values were applied for use of fuel and electricity. A

calculation spreadsheet designed by Nordic Ecolabelling must be used for the calculation.

6c Energy calculation, pulp manufacturer

The energy points Pelectricity,mi and Pfuel,mi for production of a pulp i should be calculated according to the formulae below:

$$P_{m(el)i} = \frac{El_{använd}}{El_{referens}}$$

and

$$P_{m(bränsle)i} = \frac{(Bränsle_{använd} - 1{,}25 \cdot \text{internt } producerad el)}{Bränsle_{referens}}$$

The values for Electricity,reference and Fuel,reference are taken from Table 6.2 below.

Table 6.2 Energy for pulp production

Processes	**Fuel kWh/t Reference value**	**Electricity kWh/t Reference value**
Bleached chemical pulp	3750	750
Dried, bleached chemical pulp	4750	750
Unbleached chemical pulp	3200	550
Dried, bleached chemical pulp	4500	550
CTMP	n.a.	2000
Dried CTMP	1000	2000
DIP	350	500
dried DIP	1350	600
TMP	n.a.	2200
dried TMP	1000	2200
Slip	n.a.	2000
Dried slip	1000	2000

✉ Calculation of points by means of a calculation spreadsheet designed by Nordic Ecolabelling.

6d Heating value and steam table

Table 6.3 Effective (lower) heating values for dry substance of fuel

Fuel	Heating value (lower)	Unit
Wood briquettes	10.0	GJ/m3 loose
Wood pellets	10.0	GJ/m3 loose
Wood powder	3.80	GJ/m3 loose
Wood chips	3.55	GJ/m3 loose
Saw dust	2.90	GJ/m3 loose
Bark	2.22	GJ/m3 loose
Lump peat	4.50	GJ/m3 loose
Milled peat	3.75	GJ/m3 loose
Sulphate lye	12.7	GJ/ kg DS
Sulphite lye	14.7	GJ/ kg DS
Tall oil pitch	36.8	GJ/m3
Natural gas	38.9	MJ/m3
Light fuel oil	36.0	GJ/m3
Heavy fuel oil	38.7	GJ/m3
LPG	46.1	MJ/kg
Coal	26.5	MJ/kg

The indicated heating values in the table are guideline values. Producers may use their own measured values if wished.

Table 6.4 Steam table

Enthalpy of measured steam, h´´ as a function of absolute pressure, p or temperature, t. The enthalpy is divided by an efficiency rate 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, referencing Schmidt, E.: Properties of water and Steam in Sl.Units, 1969. Springer-Verlag and R. Oldenbourg 1969.

1) All values are given in tonnes except for natural gas, where they are given in kg per normal cubic metre (kg/Nm3).

2) Natural gas in kg/Nm3.

Sources: Statistics Sweden: Energy statistics 1995. SFT (Norwegian Environment Agency) Report 9513; Incineration plants. Guidance for project managers. SFT (Norwegian Environment Agency): Emission coefficients (Audun Rosland, 1997).

6e Energy content of damp fuel

Calculation of energy content of damp fuel

The effective heating value of damp fuel can be calculated with the following formula:

Qiw = Qik * (100 - w)/100 -2.45 * w/100,

where

Qiw = lower heating value of damp fuel expressed in kJ/kg

Qik = lower heating value of dry substance expressed in kJ/kg

w = water content of damp fuel expressed as water percentage.

Calculation of energy content of wood chips

The energy content of wood chips depends primarily on the water content. The following explains how this can be calculated.

The energy content (lower heating value) of dry wood is stated as 19 MJ/kg.

Energy is required for evaporating the water normally present in wood. This energy demand reduces the wood's heating value. The formula for calculating the relationship between the energy content and the water content can be formulated as follows:

19 MJ * (100-water %)/100 - 2.45 * water %/100 = xx MJ/kg

It is necessary for the water content of the wood to be known.

Immediately after the tree is felled, the water content can be up to 55%. The water slowly evaporates from the wood, first during transport and then when it is cut up and seasoned for use in pulp production etc. During this period, the water content depends on the precipitation during the period. Normally, it will reduce to 20-40%.

For a 40% water content, the energy content can be calculated as:

19 MJ * (100-40%)/100 - 2.45 * 40/100 = 10.4 MJ/kg

For a 20 % water content, the energy content can be calculated as:

J * (100-20 %)/100 - 2.45 * 20/100 = 14.7 MJ/kg

Appendix 7 Chemical products - generally

The chemical product's name and area of use:
Producer/importer of the chemical product:

Conditions for declaration

The following definition must be used for "constituent": Unless otherwise stated, constituent substance covers all substances in the product, including additives to the raw materials (e.g. preservatives or stabiliser), but not impurities from raw material production. Impurities are taken to be residues from raw material production included in the end product in concentrations of less than 100 ppm (0.0100 wt.%, 100 mg/kg), but not substances added to a raw material or product deliberately and for a purpose, regardless of the quantity. Impurities must also be stated in the declaration. Known cleavage products of constituent substances are also considered to be constituents.

The declaration is made to the best of the signatory's knowledge and according to the knowledge held at the time, based on tests and/or declarations from raw materials producers/suppliers. Reservation is made for new developments and knowledge. If such new knowledge should come to light, the signatory is obliged to submit an updated declaration to Nordic Ecolabelling.

If the information concerning the composition of the raw materials is confidential, the information can be sent directly to the environmental labelling organisation.

Classification of chemical products in and/or on the panel (e.g. adhesive, paint, coatings, etc.)

Is the chemical product classified in accordance with the table below? Yes ☐ No ☐

If yes, state the classification:_____

Table 7: List of non-permitted classifications of the chemical product used in the panel in accordance with CLP Regulation 1272/2008, or later.

CLP Regulation 1272/2008			EU Dangerous Substance Directive 67/548/EC	
Signal words	Hazard statement		Indication of danger	Risk phrase
			Carcinogenic	
Danger, Carc. 1A or 1B	H350		T	R45 and/or
Danger, Carc. 1A or 1B	H350i		T	R49
Warning, Carc. 2	H351		Xn	R40
			Mutagenic	
Danger, Muta. 1A or 1B	H340		T	R46
Warning, Muta. 2	H341		Xn	R68
			Reprotoxic	
Danger, Repr. 1A or 1B	H360		T	R60
Danger, Repr. 1A or 1B	H360		T	R61
Warning, Repr. 2	H361		Xn	R62 and/or
Warning, Repr. 2	H361		Xn	R63
-	H362		-	R33

-	H362		-	R64
			Very toxic	
Danger, Acute Tox. 1 or 2	H330		Tx	R26
Danger, Acute Tox. 1	H310		Tx	R27
Danger, Acute Tox. 2	H300		Tx	R28 and/or
Danger, STOT SE 1	H370		Tx	R39
			Toxic	
Danger, Acute Tox. 2 or 3	H330 or H331			
	H331		T	R23
Danger, Acute Tox. 3	H301		T	R24
Danger, Acute Tox. 3	H370		T	R25
Danger, STOT SE 1	H372		T	R39 and/or
Danger, STOT RE 1			T	R48

Classification of constituent substances

Are the constituent substances of the chemical product classified in accordance with the table below? Yes ☐ No ☐

If yes, state which substances, which classification and the amount:

_____

CLP Regulation 1272/2008:			EU Dangerous Substance Directive 67/548/EC:	
Signal words	Hazard statement		Indication of danger	Risk phrase
			Carcinogenic	
Danger, Carc. 1A or 1B	H350		T	R45 and/or
Danger, Carc. 1A or 1B	H350i		T	R49
			Mutagenic	
Danger, Muta. 1A or 1B	H340		T	R46
			Reprotoxic	
Danger, Repr. 1A or 1B	H360		T	R60
Danger, Repr. 1A or 1B	H360		T	R61

The classification applies in accordance with the EU's Dangerous Substances Directive 67/548/EC with subsequent amendments and adjustments and/or CLP Regulation 1272/2008 with subsequent amendments. During the transition period, i.e. up to 1 June 2015, classification according to the EU's Dangerous Substances Directive or the CLP Regulation may be used. After the transition period, only classification in accordance with the CLP Regulation is allowed.

Content and additives in the chemical product

Does the chemical product contain halogenated organic solvents? Yes ☐ No ☐

If yes, state which substances and the amount (wt.%):

_____

Does the chemical product contain bisphenol A? Yes ☐ No ☐

If yes, state the amount (wt.%): _____

Does the chemical product contain isocyanates (except for water-based polyisocyanates with a chain length of more than 10)? Yes ☐ No ☐

If yes, state which substances and the amount (wt.%):

_____

Does the chemical product contain alkylphenols, alkylphenol ethoxylates or other alkylphenol derivates? Yes ☐ No ☐

If yes, state which substances and the amount (wt.%):

_____

Does the chemical product contain phthalates? Yes ☐ No ☐

If yes, state which substances and the amount (wt.%):

_____

Does the chemical product contain aziridine and polyaziridines? Yes ☐ No ☐

If yes, state which substances and the amount (wt.%):

_____

Does the chemical product contain pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds? Yes ☐ No ☐

If yes, state which substances and the amount (wt.%):

_____

Does the chemical product contain substances from the EU Candidate list in accordance with REACH 1907/2006/EC Article 59, Par. 10? Yes ☐ No ☐

If yes, state which substances and the amount (wt.%):

_____

Does the chemical product contain PBT and vPvB substances, cf. definition in REACH Regulation Annex XIII? Yes ☐ No ☐

If yes, state which substances and the amount (wt.%):

Does the chemical product contain free formaldehyde? Yes ☐ No ☐

If yes, state the amount in wt.% (for adhesives mixed with hardener, state the amount of the final mixture):

Nanoparticles (from nanomaterial*)

Polymer emulsions are not considered to be a nanomaterial.

Exemptions from the requirement are granted for the following:

- Pigment**
- Synthetic amorphous silicate***
- Naturally occurring inorganic fillers****

Does the chemical product contain nanoparticles (from nanomaterial)? Yes ☐ No ☐

**The definition of nanomaterials follows the EU Commission's definition of nanomaterials of 18 October 2011:*

"Nanomaterials": a natural, incidental or manufactured material containing particles in an unbound state or as an aggregate or an agglomerate and where at least 50% of the particles in the size distribution by number, in one or more external dimensions, are in the size range of 1-100 nm.

***nano titanium dioxide is not considered to be a pigment.*

****this applies to conventional synthetic amorphous silicate in bulk form. May not contain surface-treated silica.*

*****this applies to fillers covered by Annex V Point 7 of REACH.*

Biocides/preservatives in the chemical product

Is the product used for disinfectant or antibacterial treatment? Yes ☐ No ☐

Does the chemical product contain preservatives? Yes ☐ No ☐

If yes, state which substances and the amount (wt.%):

Is the preservative employed bioaccumulative according to the following definition? Yes ☐ No ☐

The biological accumulative of a substance can be tested on fish in accordance with the OECD's test guidelines 305 AE. If the biological concentration factor (BCF) of the substance is ≥ 500, the substance is deemed bioaccumulative, and if BCF <

500 the substance is deemed non-bioaccumulative. Unless otherwise established, substances are deemed bioaccumulative if logKow ≥ 4 according to the OECD's test guidelines 107 or 117 or equivalent methods.

If there is a measured BCF value, the highest measured value must be used instead of logKow. This means that a substance with a logKow value ≥ 4 is not considered to be bioaccumulative if the highest measured BCF value is < 500.

Does the chemical product contain isothiazolinone compounds? Yes ☐ No ☐

If yes, state the content below:

The chemical product contains _____ ppm of the mixture of 5-chloro-2-methyl-2H-isothiazolin-3-one (CAS no.: 26172-55-4) and 2-methyl-2H-isothiazolin-3-one (CAS no.: 2682-20-4) (3:1).

The raw material contains _____ppm of other isothiazolinone compounds

Classification of chemical products which are environmentally hazardous

Is the chemical product classified in accordance with the table below? Yes □ No □

Hazard class	**Hazard code and hazard statement according to CLP Regulation 1272/2008**	**Indication of danger and R-phrase according to EU Dangerous Substances Directive (67/548/EC)**
Hazardous for aquatic life	Chronic 1 with H410	N; R50-53
	Chronic 2 with H411	N; R51-53
	Chronic 3 with H412	R52-53

Signature of producer of the chemical product:

Date:	Company name:
Person responsible:	Telephone: Email:

Appendix 8 Specification of environmentally hazardous substances in chemical products

Conditions for declaration
The following definition must be used for "constituent": Unless otherwise stated, constituent substance covers all substances in the product, including additives to the raw materials (e.g. preservatives or stabiliser), but not impurities from raw material production. Impurities are taken to be residues from raw material production included in the end product in concentrations of less than 100 ppm (0.0100 wt.%, 100 mg/kg), but not substances added to a raw material or product deliberately and for a purpose, regardless of the quantity. Impurities must also be stated in the declaration. Known cleavage products of constituent substances are also considered to be constituents.

The declaration is made to the best of the signatory's knowledge and according to the knowledge held at the time, based on tests and/or declarations from raw materials producers/suppliers. Reservation is made for new developments and knowledge. If such new knowledge should come to light, the signatory is obliged to submit an updated declaration to Nordic Ecolabelling.

If the information concerning the composition of the raw materials is confidential, the information can be sent directly to the environmental labelling organisation.

Are the constituent substances of the chemical product classified in accordance with the table below? Yes □ No □

If yes, use the following table to state the total wt.% of the substances classified as environmentally hazardous according to the various classification systems:

Hazard class	**Hazard code and hazard statement according to CLP Regulation 1272/2008**	**Indication of danger and R-phrase according to EU Dangerous Substances Directive (67/548/EC)**	**Indicate the total wt.% of substances in the chemical product**
Hazardous for aquatic life	Chronic 1 with H410	N; R50-53	
	Chronic 2 with H411	N; R51-53	
	Chronic 3 with H412	R52-53	

Signature of producer of the chemical product:

Date:	Company name:
Person responsible:	Telephone:

Appendix 9 Declaration of VOC content of adhesive or product for surface treatment

The chemical product's name and area of use:
Producer/importer of the chemical product:

Conditions for declaration

The following definition must be used for "constituent": Unless otherwise stated, constituent substance covers all substances in the product, including additives to the raw materials (e.g. preservatives or stabiliser), but not impurities from raw material production. Impurities are taken to be residues from raw material production included in the end product in concentrations of less than 100 ppm (0.0100 wt.%, 100 mg/kg), but not substances added to a raw material or product deliberately and for a purpose, regardless of the quantity. Impurities must also be stated in the declaration. Known cleavage products of constituent substances are also considered to be constituents.

The declaration is made to the best of the signatory's knowledge and according to the knowledge held at the time, based on tests and/or declarations from raw materials producers/suppliers. Reservation is made for new developments and knowledge. If such new knowledge should come to light, the signatory is obliged to submit an updated declaration to Nordic Ecolabelling.

If the information concerning the composition of the raw materials is confidential, the information can be sent directly to the environmental labelling organisation.

Does the product contain [1]volatile organic compounds? Yes ☐ No ☐

If yes, state which substances and the amount (wt.%):

_____

Does the product contain volatile aromatic compounds (VAH)[2]? Yes ☐ No ☐

If yes, state which substances and the amount (wt.%):

_____

Signature of producer of the chemical product:

Date:	Company name:
Person responsible:	Telephone: Email:

[1] Volatile organic compounds are here defined as: Organic compounds with a steam pressure exceeding 0.01kPa, at 20°C. For products under EU Directive (2004/42/EC) in which steam pressure is not indicated:
Organic substances with an initial boiling point that is lower than or equal to 250°C measured at a normal pressure of 101.3 kPa.

[2] Volatile aromatic compounds are volatile organic compounds in which one or several benzene rings are included in the molecule.

Appendix 10 Marketing of ecolabelled construction panels

We hereby confirm that we are familiar with the regulations for the use of the Nordic Ecolabel, the Swan, in accordance with "Rules for Nordic Ecolabelling of Products" dated 22 June 2011, or later versions, and we undertake to ensure that the marketing of the Nordic Ecolabelled construction panel will take place in accordance with these regulations.

We also confirm that we are familiar with the criteria for the Nordic Ecolabelling of construction panels.

We undertake to ensure that the persons marketing the ecolabelled construction panels within our company receive information on the criteria governing the ecolabelling of construction panels and the "Rules for Nordic Ecolabelling" dated 22 June 2011 or later versions.

Place and date	Name of company
Signature, contact person	
Contact person	Telephone Email:
Signature, Head of Marketing	
Head of Marketing	Telephone Email:

A new certificate must be submitted to Nordic Ecolabelling in the event of staff changes.