Nordic Ecolabelling for

New Buildings

Residential, educational and office buildings

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Consultation version

Content

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Addresses

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

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

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What is a Nordic Swan Ecolabel building?

A Nordic Swan Ecolabel building is a good choice for both the environment and for the residents. It meets strict obligatory requirements for the whole life cycle of the building, including extraction and production of materials, the construction process, the use phase as well as the waste and recycling phase.

The requirements help to promote a circular economy, reduce climate impact, save resources and preserve biodiversity. They also promote high quality buildings with good indoor environment.

A Nordic Swan Ecolabel building:

- Has a climate declaration and meets requirements to reduce the climate footprint from production of materials associated with the largest climate impact: e.g. cement, steel and aluminium.
- Has a low energy demand that is minimum 10% better than "nearly zero-energy buildings" (NZEB).*
- Has a good indoor environment by meeting strict requirements for moisture control, daylight, acoustics, and minimised emissions of harmful substances.
- Meets strict chemical requirements for substances harmful to health and the environment. This applies to everything from paints and sealants to insulation, vapour barriers and floors.
- Promotes a circular economy by stimulating the demand for reused building products and products made of recycled materials. A material logbook ensures the traceability of the building components. It also promotes producer take-back systems and meets strict standards for the sorting of construction waste.
- Helps to preserve and improve biodiversity at the building site and meets strict requirements for certified construction timber from sustainably managed sources.
- Has high quality, ensured by control of the construction process and the final building. This minimises the risk of construction defects such as moisture damage.
- Fulfils the technical screening criteria in the EU taxonomy for construction of new buildings.

** Except for Iceland, which has not implemented Directive 2010/31/EU.*

Why choose the Nordic Swan Ecolabel?

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

What can carry the Nordic Swan Ecolabel?

The following building types can be Nordic Swan Ecolabel according to the criteria for New Buildings. All building types can stand alone or be constructed as an extension to existing buildings.

Areas in the building such as cafés, restaurants, shops/retail, gym/fitness facilities, supermarkets etc. are exempt from the requirements and excluded from the licence.

1. Buildings classified as residential buildings, including dormitories, homes for the elderly and residential institutions or homes for persons with physical or mental functional impairment.

2. Educational buildings, including preschool buildings, kindergartens and day-care centres, schools, universities and other schools for higher education.

   For gymnastics halls and sports halls that are constructed in the same project as an educational building the following applies:

   a) Gymnastics and sports halls that are an integrated part of the educational building must be included in the licence and fulfil the requirements.

   b) Gymnastics and sports halls built as separate buildings can be included in the licence and must then fulfil the requirements.

3. Office buildings. All the following facilities/areas in the office building must be included in the licence and fulfil the requirements: All office landscapes and cellular offices, shared meeting rooms and conference facilities for internal use, gym/fitness facilities for internal use, changing rooms for internal use and similar.

4. Temporary constructions such as modules, pavilions or annexes classified as residential buildings, offices or educational buildings.

5. Holiday residences and cottages if: The building is included in the national building permit regulation, is heated and has running water and sewage according to local regulations and fulfils the energy requirement O3 for small houses or apartments depending on the building type. No national exemptions for smaller buildings are accepted.

The following buildings cannot be Nordic Swan Ecolabel

- Permanent supplementary buildings, such as garages, refuse depots, bicycle storage rooms, and sheds constructed as separate projects.
- Separate educational buildings that primarily accommodate laboratories, workshops and similar.
- Ice skating halls, public and private swimming pools.
- Gymnastics halls and sports halls constructed as separate projects.
- Hospitals, hospices and other care facilities that are not used as permanent residential buildings, or classified as premises according to the national legislation.
- Hotels and conference centres. Hotels and conference operations can be Nordic Swan Ecolabel according to criteria for Hotels, restaurants and conference facilities.
- Factory buildings.

Who may be a licensee?

The following can be licensee in the product group New Buildings.

- Contractor
- Building developer
- Property owner
- House manufacturer

Architects, technical consultants, or other parties can only be licensees if they can take full responsibility for all requirements.

The holder of a Base Licence can be any of the previously mentioned stakeholders if they are fully responsible not only for all the requirements but also for all the internal quality procedures, ensuring the viability of a Base Licence.

How to apply

Application and costs

For information about the application process, various licence types (base licence or project licence) and fees for this product group, please refer to the respective national web site. For addresses see page 3.

What is required?

The application must consist of an application form/web form and documentation showing that all relevant requirements are fulfilled. Documentation is normally provided throughout the planning and construction process.

The criteria for New Buildings comprise a combination of obligatory and point score requirements. The letter "O" indicates a obligatory requirement whereas the letter "P" identifies a point score requirement. The point score of each point requirement is summed up to verify that the minimum total point score for the building type is achieved to fulfil the licence constraints.

The requirement text also describes how the applicant must demonstrate fulfilment of each requirement. The following icons are used:

✉ Enclose

In order to be awarded a Nordic Swan Ecolabel licence the following must be fulfilled:

- All obligatory requirements must be fulfilled.
- The minimum point score according to O2 must be achieved.
- Nordic Ecolabelling must conduct inspection on the construction site.

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

Licence types

Three different licence types can be applied for depending on the building project. The concepts are described in the following:

Project licence
Valid for one construction project. This licence can later be extended to include additional buildings, through an extension application. The extension is evaluated in the same manner as the first application, i.e. all requirements must be documented. The building can be marketed as Nordic Swan Ecolabel once the licence or extension is obtained.

Base licence
Pre-validation of routine requirements based on the license applicant's routines, contracts, procurement organisation etc. It is possible to include requirements other than routine requirements, provided that the applicant has an organisational

structure that can guarantee requirement fulfilment. The applicant prepares templates for documentation and sets up organisational routines to ensure that all requirements will be met in construction projects. The pre-validated requirements will not be evaluated for every project application related to the base licence, but are subject to sample inspection. Requirements with project specific documentation will always be evaluated for each project. The base licence can be used for marketing with the Nordic Swan Ecolabel. The extent of pre-validated requirements is set in dialogue between the applicant and Nordic Ecolabelling.

Base licence for serial production
A more extensive base licence, fit for serial production. The building type/model included in the licence can in general be marketed as Nordic Swan Ecolabel. However, each new project must apply for a licence.

Further details on the certification process are obtained by contacting the relevant national Nordic Ecolabelling office.

Licence validity

The Nordic Swan Ecolabel licence is valid providing that relevant requirements in the criteria are fulfilled and until the criteria expires. The validity period of the criteria may be extended or adjusted, in which case the licence is automatically extended and the licensee informed. The building is ecolabelled according to a specific generation of the criteria.

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

On-site inspection and other control measures

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.

Nordic Ecolabelling can require measurements of relevant parameters in order to verify compliance with local legislation and/or requirements defined in these criteria. In the event that the relevant requirement is not fulfilled, the applicant must pay for the testing and perform corrective measures.

Queries

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

1 What is subject to the requirements?

Buildings, supplementary buildings and outdoor areas

The Nordic Swan Ecolabel building and any permanent supplementary building must fulfil all relevant requirements. Communal areas for residents are also included (e.g. gyms and hobby rooms in the building). Supplementary buildings are refuse depots, bicycle sheds, garages (both as a separate structure or connected to the building) and similar constructions.

Commercial areas such as shop premises, hairdressers etc. are exempt from the requirements. Please see the section “What can carry the Nordic Swan Ecolabel?”.

Outdoor areas that are included in the building project are covered by the relevant requirements.

General scope of the material requirements

- The requirements include all materials and products that are incorporated in the Nordic Swan Ecolabel buildings and supplementary buildings included in the project.
- Materials used on outdoor areas that are included in the building project are covered by relevant requirements. This includes products and construction materials such as decking, fences, pergolas, permanently installed outdoor furniture, playground and park equipment and similar items.
- The material requirements apply to all structures above the capillary layer. This includes materials used for insulation of the base plate (above or below the plate) and any radon barrier wherever it is placed.
- Installations up to the building are not included. This means, for example, that electrical cables up to the main fuse box are not included, nor are sewerage pipes before they enter the building through the base plate.
- No requirements apply for pipes laid under the base plate or in the ground at the building site, such as drainage pipes in the capillary layer.
- Permanently installed fittings, furnishings and trimmings as well as loose fittings and furnishings (e.g. wardrobes and lockers) that are included in the construction project.

Exempted areas, materials and products

The following are not subject to any requirement:

- Technical service areas
- Elevator
- Installation/control units for water, ventilation and heating
- Marking paint, marking tape that is removed, cable/pipe lubricant and cleaning agents.
- Sealing foam, formwork oil, etc. used to seal or lubricate casting moulds.

- Touch-up paint for damage to white goods and fittings.
- Rust protection paint to restore railings and beams after welding and when screw holes have been drilled or similar work.
- Building fixtures (e.g. locks, handles, hole plates and hinges).
- Nails, screws, nuts, bolts, washers and similar fasteners.
- Plastic products such as palletising trays, plastic spacers, ground spacers, bends, sleeves, mounting boxes, roof boxes, inflow and outflow pipes for white goods and similar items.

Any other exemption must be communicated to Nordic Ecolabelling for approval.

Prefabrication

When anything that would normally have been built on site is purchased as prefabricated, the same chemical and material requirements apply. This for instance includes:

- Prefabricated bathroom modules.
- Sandwich elements and other modules for wall, floor, roof or similar
- Primed and final-coated wooden panels and ceilings (indoor and outdoor products)
- Concrete elements (incorporated building products and surface treatment)

Examples where chemical requirements do not apply, but where material requirements still apply:

- Pre-painted windows, doors and interiors (mouldings, kitchen and bathroom fittings)
- Surface-treated steel

For two-component products used in prefabrication, the following applies: The sub-components must comply with the chemical requirements or alternatively the hardened two component product must comply with the chemical requirements.

2 EU Taxonomy compliance

The obligatory requirements in the criteria for New Buildings in combination with national legislation cover both the technical screening criteria and the DNSH criteria (Do-No-Significant-Harm in the EU Taxonomy for the construction of new buildings.

The technical screening criteria are according to the internal assessment done by Nordic Ecolabelling covered by the following requirements:

Technical screening criteria	**Relevant requirement in criteria for New Buildings**
#1: Primary energy demand	O3: Energy demand of the building
#2: Air tightness	O44: Air permeability O48: The contractor's self-monitoring system
#3: GWP calculation	O7: Climate declaration of the building

The DNSH criteria are according to the internal assessment done by Nordic Ecolabelling covered by the following requirements:

DNSH criteria	**Relevant requirement in criteria for New Buildings**
#2: Climate Change adaption	Considered to be covered by national legislation in the Nordic countries
#3: Sustainable use and protection of water and marine resources	O6: Water saving sanitary tapware
#4: Transition to a circular economy	O12: Waste management O17: Design for Disassembly and Adaptability (DfD/A)
#5: Pollution and prevention control	Section 6 of this criteria (New Buildings) regulates relevant parameters for chemical substances in building products. Note: Nordic Ecolabelling has an ongoing dialogue with the European Commission to clarify the requirement for formaldehyde and carcinogenic substances, as test methods and the possibility to use alternative documentation methods (declaration of content from producers) are currently unclear. Handling of brownfield sites, noise, dust and pollutant emissions are considered to be covered by local legislation in all Nordic countries.
#6: Protection and restoration of biodiversity and ecosystems	O36: Ecology report. Note: Nordic Ecolabelling only sets a requirement for evaluation of compliance with part a) "arable land" and c) "forest". Part b) of the EU Taxonomy is covered by national legislation.

Please, contact Nordic Ecolabelling's national organizations for further information.

3 General requirements

O1 Overall description of the building

A description of the building(s) and the immediate surroundings must be given, including information on the following:

- The situation plan, general layouts and facade drawings.
- Building type(s) and number of buildings. Buildings at the construction site that are not included in the application.
- Number of storeys, number of square metres (NO: BRA, SE: BOA, FI: A(netto), DK: Brutto and Netto, IS: A(brutto)).
- Commercial spaces or other supplementary activities (canteen, gym etc.) in the building.
- System to ensure that office buildings have individual metering of electricity for each rentable unit or each floor as a minimum.
- The carcass/load-bearing structure, facade, roof, foundation, heating system and ventilation system.
- Number of residential units. For offices and educational buildings: intended number of users of the building.
- Any supplementary buildings such as garages, storerooms, bicycle storage rooms, waste sorting stations, etc.
- Outdoor areas: layout and materials.
- Options for various layouts, materials or fittings.

✉ Situation plan, general layouts and facade drawings.

✉ Documented description of the aforementioned items. Appendix 1 or corresponding documentation can be used.

O2 Points achieved

Projects must fulfil the minimum requirement for total points according to Table 1. Table 2 displays an overview of all point requirements and the minimum number of points that must be achieved for ecolabelled products.

Table 1 Total minimum number of points

Building type	DK / NO / SE	FI	IS
Small houses	28	26	25
Apartments	25	23	22
Homes for the elderly	25	23	22
Offices	25	23	22
Educational Buildings	24	22	21

Table 2 Summary of all point requirements and minimum number of points required for ecolabbeled products.

Area	Requirements on the area
Energy and Climate	P1 Household appliances of better energy class (3p) P2 Energy efficient or water saving sanitary tapware (2p) P3 Management of energy consumption and power peaks (2p) P4 Local energy sources and energy recovery (4p) P5 Quality assurance of the climate calculation (2p) P6 Building sites, construction machinery (3p) P7 Bicycle transport (2p)
Resource efficiency/Circular economy	P8 Construction waste reduction (5p) P9 Take-back systems (2p) P10 Reused construction materials (5p) P11 Insulating materials from sustainable or recycled sources (3p) P12 Renewable carcass, facade or inner walls (3p)
Ecolabelled products	P13 Ecolabelled products (14p) DK/SE/NO: Minimum 8 points FI: Minimum 6 points IS: Minimum 5 points
Biodiversity	P14 Improvement and preservation of biodiversity (6p)
Indoor climate	P15 Quality assurance of acoustics (1p) P16 Daylight experience optimisation (3p) P17 Solar shading and energy efficient cooling technologies (2p)
Innovation and green initiatives	P18 Innovation and green initiatives (4p)
Total available points	**66**

✉ Summary of the points that the licensee plans to obtain. Appendix 2 can be used. Documentation needed for each point requirement as described in the relevant requirement.

4 Energy and climate

4.1 Energy

O3 Energy demand of the building

The calculated energy demand must at least correspond to:

Denmark

All building types: 10% better than BR18 or according to the Low energy class in BR18.

Sweden

Apartment buildings and single-family houses: 15% better than BBR.

Preschools and schools*: 20% better than BBR.

Office buildings: 15% better than BBR.

Norway
Small houses: 15% better than TEK17.

Preschools and schools*: 15% better than TEK17.

Apartment buildings: 10% better than TEK17.

Office buildings: 15% better than TEK17.

Finland
Small houses and apartments: Energy class A according to the Ministry of the Environment's regulation for buildings' energy performance (1010/ 2017).

Preschools and schools*: 20% better than the regulation limit* of 100 kWh/m^2.

Office buildings: Energy class A according to the Ministry of the Environment's regulation for buildings' energy performance (1010/ 2017).

Iceland
For all building types: 20% better than BRG #112/2012 with later additions. In order for the building to be EU Taxonomy compliant, the energy demand must meet the requirement for one of the other Nordic countries.

** The same requirement applies for sports halls when included in the licence (and for gymnastics halls if they are calculated separately).*

The energy calculation must be performed in accordance with national building legislation, see Appendix 3.

The transitional periods set by the national authorities also apply to the fulfilment of Nordic Ecolabelling's energy requirements. If new national regulations and thresholds for a building's energy demand are introduced during the criteria's term of validity, Nordic Ecolabelling will perform a new assessment of the energy requirement and may adjust the requirement, including the percentage, in relation to the new regulations. The adjustment will be made after a national round of consultation.

For extensions to existing buildings, the energy requirement must be fulfilled by the extension. The energy calculation must be made for the extension and fulfil the requirements for new buildings.

✉ Energy calculation according to the national legislation (see specifications in Appendix 3). If the energy consumption varies for different building configurations, it must be specified that each configuration in the application fulfils the requirements. Alternatively, the requirements must be fulfilled for the building configuration that has the greatest energy consumption.

O4 Lighting management

Outdoor lighting

All outdoor lighting must have automatic demand control installed based on daylight and presence. The lighting control must be connected to the fixture and not only to/in the light source. This applies to lighting in all common areas, including shared courtyards, shared roof terraces and playgrounds, as well as facade lighting.

Instead of completely turning the light off, dimming to a low level in response to daylight could be accepted where there are safety and security reasons.

Indoor lighting

Apartment buildings

- Automatic demand control must be installed in all communal areas such as entrance halls, stairs, laundry rooms, storage rooms, common eating areas and technical rooms.
- In communal areas with access to daylight, the artificial lighting must dim in response to daylight levels.

Educational buildings

- Automatic demand control must be installed in all rooms.
- In rooms with access to daylight, the artificial lighting must dim in response to daylight levels.

Offices

- Automatic demand control must be installed in all rooms.
- In rooms with access to daylight, the artificial lighting must dim in response to daylight levels.

General exemptions

- Dormitories in preschools
- Lifts
- Lighting for works of art.
- Workplace lighting, worktop lighting and lighting fitted into technical installations and equipment.
- Emergency lighting and lighting in bombshelters.
- Common areas in homes for the elderly with special functions or with special safety concerns.

✉ Description of the automatic demand control for indoor and outdoor lighting in accordance with the requirement.

O5 Energy-efficient white goods

Household appliances and professional kitchen appliances must fulfil the energy class requirements in accordance with Tables 3 and 4 below.

If new legislation comes into force during the validity period of the criteria, Nordic Ecolabelling will assess the requirement and an adjustment may be implemented.

Table 3 Requirements for household appliances

Product type	Energy labelling according to Energy Label Regulation 2017/1369	Energy label in accordance with the Energy Labelling Directive 2010/30/EC (including supplements)
Washing machine	B	
Refrigerator	D	
Integrated refrigerator	E	
Freezer	E	

Combined refrigerator and freezer	D	
Integrated combined refrigerator and freezer	E	
Refrigerator for mini kitchen (under 80 cm)	E	
Drying cabinets	Must have an energy consumption of no more than 0.4 kWh/kg of laundry	
Dryers		A+++
Combined wash and tumble dryer	D	
Dishwasher	C	
Oven		A+
Electric water heater		C

For fridges in prefabricated mini kitchens/kitchenettes the requirement of minimum energy class E applies.

Table 4 Requirements for professional kitchens

Product type	Requirement
Boiling pans	At least 90% energy efficiency according to EFCEM's Energy Efficiency Standard for boiling pans or equivalent.
Refrigerators	Class A or better*
Freezers	Class B or better*
Combined freezer/refrigerator cabinets	B or better*

* Energy class according to Energy Labelling Directive 2010/30/EC (1094/2015/EU)

Refrigerators and freezers with central cooling systems are not covered by the requirement.

✉ Household appliances: Overview of all household appliances installed in the Nordic Ecolabelled building, which includes name/product specification, product type and energy label. For drying cabinets, additional documentation showing the drying cabinet's energy consumption.

✉ For professional kitchen products: Overview of all products stating the type of product, product sheet, technical manual or similar document showing fulfilment of the requirement.

✉ For boiling pans: Results from tests performed in accordance with EFCEM's Energy Efficiency Standard for boiling pans or equivalent.

P1 Household appliances of better energy class

If all products within a product type/category are two classes higher (or the highest energy class available on the market) than stated in Table 3 in O5, 1 point is given.

For electrical water heaters the following alternative applies: One point is granted if the heater is equipped with a control system that ensures that the primary electricity consumption is located outside peak hours.

A maximum of 3 points can be achieved. Every row in Table 3 corresponds to one product type/category.

✉ Overview of all white goods within a product type/category. Product specifications or similar, stating model and energy label/energy class.

✉ Documentation of control system for electric water heaters.

O6 Water saving sanitary tapware

The minimum levels in table 5 must be fulfilled for all building types.

Table 5 Requirements for water saving sanitary tapware.

Type/category of sanitary tapware	Maximum water usage
Washbasin taps	6 L/min
Kitchen taps	6 L/min
Showers*	8 L/min
WCs, suites, bowls and flushing cisterns	Maximum full flush volume: 6 L Average flush volume: 3.5 L
Urinals	2 L/bowl/h Flushing urinals must have a maximum full flush volume of 1 litre

**A hand shower must be installed unless a verification is presented by certification bodies that show that both the overhead shower and hand shower meet the relevant maximum water usage.*

Bath mixer taps and utility sinks are exempt from the requirement.

✉ Overview of the type/model/name of sanitary tapware and documentation of maximum water usage such as product datasheets or product label.

P2 Energy efficient sanitary tapware and technologies

One point is awarded if all products within a product category either fulfil energy class A (according to SS 820000 or SS 820001) or have touchless operation, see Table 6.

Installation of water saving systems that reuse greywater or rainwater for toilet flushing are awarded 2 points. An estimated annual water saving of minimum 20% is required.

Maximum 2 points are available.

Table 6 Energy labelled or water saving sanitary tapware.

Type/category of sanitary tapware	Energy class according to SS 820000 and SS 820001	Points
Washbasin mixer taps	A	1
Kitchen taps	A	1
Touchless taps	n.a.	1
Thermostatic mixers with shower*	A	1

Installation of system for reuse of greywater/rainwater for toilet flushing	n.a.	2

Bath mixer taps, taps in broom cupboards, two-handle shower mixers and sanitary fixtures for separate purposes that are not intended for household use are exempt from the requirement.

[*] *Points are only awarded when a hand shower is installed unless a verification by certification bodies is presented, showing that both the overhead shower and the hand shower function meet the relevant energy class.*

✉ Energy class or touchless taps: Overview of the type/model/name of sanitary tapware and the energy class label, certificate number and name of the standard.

✉ Description of the installation for reuse of greywater/rainwater and estimated annual water saving.

P3 Management of energy consumption and power peaks

Management of energy consumption

A maximum of 2 points can be achieved. One point can be given for the following installations to reduce total energy use:

- Residential buildings: A building automation and control system (BACS)[*] defined according to standard EN 15232. The installation must communicate with the users, and offer guidance and/or adjust to the users' preferences and behaviour patterns (based on indoor climate preferences, for example).
- Buildings for preschools, schools/educational buildings, office buildings and other buildings with common areas must have installed a centralised technical solution[*] defined according to standard EN 15232. The system can be operated by external operators such as those providing janitor services. The system must communicate with the operator and offer guidance on energy efficient building operation.

Management of power peaks

Two points are given if the building has installed a technical solution that enables load responsive control of electricity use. The following is required:

- The BACS solution must have the potential to reduce purchased electricity when the electricity grid is heavily loaded.
- The system** must include the possibility of automatic control of power outtake, e.g. by a load aggregator, energy service company or grid company.

** The BACS solution for management of energy use must at least include heating, hot water, lighting and ventilation. Any installation for vehicle charging, heat pumps, solar panels, or solar thermal collector or snowmelt must also be included. For buildings with common areas, cooling in the area must be included.*

*** The control system must at least include any installed electric vehicle charging, hot water and/or heating and installed solar panels (on the building or in the immediate vicinity and controlled by the operator of the building).*

✉ The installed energy management system must be documented according to the requirement.

✉ The system for controlling power peaks must document an automatic control system installed for flexible electricity use.

P4 Renewable energy production and energy recovery

Installed solar panels (photo-voltaic (PV) modules), solar thermal collectors, or systems for wastewater heat recovery can give a maximum of 4 points. The installations must be situated on/in the building or in the immediate vicinity and at least fulfil the following measures for the building/project:

a. Solar PV panels showing an estimated electricity production of minimum:
    - 4 kWh/m² heated floor area/year gives 1 point.
    - 8 kWh/m² heated floor area/year gives 2 points.
    - 12 kWh/m² heated floor area/year gives 3 points.
    - 16 kWh/m² heated floor area/year gives 4 points.

b. A solar collector showing estimated energy production of minimum 50% of the energy for hot water on a yearly basis gives 2 points.
If solar collectors deliver surplus energy to increase the inlet temperature of a heat pump, 1 extra point is given.

c. Wastewater heat recovery installation gives 2 points. As a minimum the installation must cover more than 50% of the showers.

d. Liquid-to-water heat pumps that supply minimum 90% of the estimated energy need for hot water, space heating and ventilation. Points can only be achieved outside district heating areas. 1 point.

✉ For solar PV panels: Description of the installation, its location and calculated annual energy generation relative to the heated floor area of the building.

✉ Solar thermal collectors: Description of the installation, its location, calculated annual energy generation relative to the building's energy demand for hot water.

✉ For wastewater heat recovery installations: Description of the installation, its location, and the calculated efficiency.

✉ Liquid-to-water heat pumps: Description of the installation and the supplied energy delivered in relation to the total demand for hot water, space heating and ventilation.

4.2 Climate

O7 Climate declaration of the building

In countries where the authorities have implemented a system for obligatory or voluntary climate declaration/calculation for buildings < 5000 m², this declaration must be submitted to Nordic Ecolabelling.

All buildings >5000 m² must document compliance with Annex 1 of the EU Taxonomy Climate Delegated Act (21 April 2021 or later). The climate declaration must be submitted to Nordic Ecolabelling. The climate declaration must also be disclosed to investors and clients on demand.

Official national calculation tools can be used to perform the calculation. The climate declarations/calculations must document that the building fulfils the following national threshold limits*:

- Denmark: < 8 kg CO_{2eq}/m^2/year **
- Sweden: No limit for the time being.
- Finland: No limit for the time being.
- Norway: No limit for the time being.
- Iceland: No limit for the time being.

* *A limit value that is stricter than the authorities' obligatory requirements (where the authorities have introduced a limit value) will be determined by Nordic Ecolabelling after a national consultation. There will be a notification period before a requirement limit is introduced.*

** *Level is defined in the "voluntary sustainability class". The limit value in the "voluntary sustainability class" has been determined by the Danish Housing and Planning Agency. The requirement may later be tightened in line with the requirement level in the "voluntary sustainability class".*

☒ Buildings < 5000 m^2 in those countries where a obligatory climate declaration requirement has been introduced: Climate declaration/calculation according to the authorities' requirements for calculation methods and threshold limit.

☒ Buildings > 5000 m^2: Climate declaration/calculation that complies with the requirements of the EU Taxonomy. National calculation method is accepted.

P5 Quality assurance of the climate declaration

One point is awarded for each of the following quality measures a–f in the climate declaration/calculation* for the building. For some of the quality requirements below, it is required that the calculation also includes specific modules in the standard EN 15978. A maximum of 2 points can be achieved.

For a project that consists of several independent buildings, a calculation must be submitted for at least one of the (main) buildings in the project.

The calculations and their quality measures must be verified by someone other than the person performing the calculation, such as an external third party or an internal specialist who has not participated in the climate declaration/calculation.

a. Completeness of the calculation: The degree of completeness of the calculations relating to the unit processes must be at least 90% and is evaluated by balancing the mass or economic value of the building materials. Percentage deviations must be reported.
b. Data quality: At least 50% of the total contribution to greenhouse gas emissions from the materials included in the calculation is based on product-specific EPDs.
c. Time effect**: Analyses where the CO2e emissions are weighted with regard to the specific time of the emissions. As a minimum, the analysis must include modules A1–A5, B4, B6, C3, C4 and D.

d. Consequential LCA: The calculation has been performed as a consequential LCA, and the most important consequence considerations that have been performed must be stated.

e. Sensitivity analysis: A sensitivity analysis has been performed to calculate how results and conclusions change if important assumptions change. This must be done for the assumptions or parameters that make the three largest contributions to the calculation of the total CO2e contribution.

f. A calculation is performed in at least two phases during the project's lifetime, e.g. in the design phase, the engineering phase and/or as a finished building.

Countries that do not need to submit a climate declaration/calculation in O7 can still obtain points in this requirement by submitting a calculation that meets at least one of the points in the requirement.

** The climate declaration/calculation shall be based on EN15978 and performed using either a national standard, a government-authorised method or according to Level (s)[1].*

*** When weighting with a time effect, both positive and negative emissions must be taken into account at the times they occur, such as for replacement of materials and installations, carbon sequestration in forests and cement, waste incineration, reuse, energy use and exported energy. Simplified methods with weighting factors can be used, e.g. the methods set out in the FutureBuilt Zero method description (Resch, E. et al. (2020): FutureBuilt ZERO metodebeskrivelse). When using other simplified weighting factors, Nordic Ecolabelling must be contacted for approval.*

☒ The climate declaration/calculation, along with a statement from the person who has checked that the specified quality requirements have been met.

☒ Description of education and experience of external third party or internal specialist.

O8 Cement and concrete

Choose two of the concrete construction categories a–g in order to fulfil the required measures below:

a. Foundation

b. Columns

c. Beams

d. Slabs

e. Shear walls

f. Elevator shaft

g. Facade elements, balcony elements, terraces and verandas

[1] https://ec.europa.eu/environment/levels_en

Both prefabricated and cast-in-place concrete are covered by the requirement. The requirements are not set for hemp concrete (hempcrete).

If cement/concrete is only used in the foundation, only this must be accounted for.

At least 50% by weight of the chosen construction categories must fulfil one of the measures 1–5.

A. The manufacturer of cement clinker, cement or alternative binder (measure 1–3)

1. Must meet the technical screening criteria for specific greenhouse gas emissions for manufacture of cement clinker, cement or alternative binder in Annex 1 to the EU Taxonomy Climate Delegated Act from 21 April 2021 or later.

2. Use at least 75% biobased and/or alternative* fuels for the production on a yearly basis.

3. Reduce at least 50% of the CO_{2e} emissions with carbon capture and storage (CCS)**.

B. The manufacturer of the concrete product

4. Must document the use of concrete with low carbon impact compared to concrete with the same compressive strength. The documentation with a product specific EPD must at least indicate fulfilment of the threshold value for CO_{2e} emissions defined in a concrete classification system. For example, fulfilling low carbon concrete A or better in the Norwegian Concrete Association's publication no. 37 Low carbon concrete (NB37)**. Other low carbon classification systems for concrete in the Nordic countries will be included with a limit value or class when they are adopted.

C. Responsible contractor/consulting engineer/architect etc.

5. Must use reused concrete parts in 50% of the chosen construction category.

* *Alternative fuels are waste fuels derived from pre-treated and sorted waste fractions, including solid and liquid recovered fuels. Examples are given in Table 1.20 in the EU BREF report for the Production of Cement, Lime and Magnesium Oxide (2013).*

** *The thresholds are given in the Norwegian Concrete Association's publication no. 37 Low carbon concrete (NB37), which classifies the concrete material without reinforcement. Each low carbon class provides generic values for greenhouse gas emissions for the different compressive strength classes of the concrete. EPDs for similar strength classes in other Nordic countries can be used as documentation after approval from Nordic Ecolabelling.*

✉ Specify the construction categories chosen for documentation in this requirement. Submit a calculation, for each of the two categories, showing that at least 50% by weight fulfils the chosen measures. The construction category in question must document the measures with one of the following alternatives:

- 1, 2, and 3: Documentation from the manufacturer of cement clinker or cement alternative binder showing compliance with the requirement.

- 4. Product specific EPD from the concrete manufacturer showing that the concrete meets the requirement for greenhouse gas emissions for the required strength class, and is made according to the ISO standard 14025 Environmental Labels and Declarations Type II.

- 5. Documentation showing that the concrete parts are reused.

O9 Steel

Steel rebars

Stainless steel rebars used in the building must be made of at least 75% recycled steel. For other steel rebars at least 95% of the material must come from recycled steel.

The supply chain must be specified, and there must be traceability through the supply chain from the smelter to the finished product.

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

Beams and columns for construction, roof and facade panels for exterior use

Beams and columns for construction, and roof and facade panels for exterior use must fulfil one of the three alternative measures 1) Recycled content, 2) Reused parts or 3) Improvements in iron ore-based production.

The requirement also applies to the steel element in sandwich panels. Mouldings around doors and windows, valley gutters and masonry crowns are exempted from the requirement. Panels mounted in combination with entrances are also exempted.

Facade and roof panels that make up less than 20 m^2 or 100 kg are exempted from the requirement. The total facade area is calculated as the total area of outer walls (windows and doors excluded).

1) Recycled content

The recycled content in the product must be at least 80%. Recycled steel is defined as both pre- and post-consumer, according to definitions in ISO 14021.

The supply chain must be specified, and there must be traceability through the supply chain from the smelter to the finished product.

2) Reused steel parts

At least 50% of each category of steel construction product must be reused building parts. There must be traceability back to the parts' most recent use in construction.

3) Iron ore-based production

The requirement can be met by measures in A or B below:

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

The steel used comes from steel production sites that have implemented one of the following technologies:

- direct electrolysis of iron ore;
- blast furnace top gas recycling with carbon capture and storage;
- direct smelting reduction processes;
- hydrogen steelmaking in shaft furnaces using green H_2, produced via water electrolysis using renewable electricity sources.

or

B. Steel production – traditional methods

The steel producer (of ore-based steel) must show energy and climate calculations with time-limited reduction targets for energy consumption and greenhouse gas emissions. The result of the calculations must be transparent, meaning it must be stated which assumptions and conditions form the basis for the calculation (e.g. factors used in the calculation, system limits, use of databases, etc.).

In addition, one of the points below must be met:

- A minimum of 50% by weight of the steel included in the product must come from production sites that are certified according to the standard Responsible Steel, version 1.0, 2019 or later versions.
- Emissions to air and water must be within the emission values stated as BAT-AEL in the EU BREF document for iron and steel production from 2013 or later. This includes the parameters that are included in the requirement, as well as limit values given in Tables 1 and 2 in Appendix 4.
- The steel producer must have introduced at least 2 of the energy efficiency measures stated as BAT in the EU BREF document for iron and steel production. The measures are listed in Table 3 in Appendix 4.

✉ The proportion of <u>recycled steel</u> in the product must be stated.

✉ The smelter must declare the amount of recycled steel in the production. The annual average for the smelter is approved.

✉ Traceability in the supply chain must be documented, e.g. in the form of a flow chart, so that the amount of recycled steel is secured through the supply chain. This can be done e.g. by information on invoices or accounting from the steel supplier that shows the amount of recycled steel purchased and how much is sold. There must be an agreement between the steel supplier and the manufacturer/builder of the Nordic Swan Ecolabel building showing that recycled steel is delivered.

✉ <u>Reused steel products</u> must be described and the traceability back to the parts' most recent use in construction must be documented.

✉ <u>Ore-based steel production:</u> For A) Steel production based on new technologies with reduced greenhouse gas emissions: State which smelter(s) the steel comes from, as well as a brief description of which technology is used.

☒ For B) Steel production – traditional methods: Energy and climate calculation with reduction targets, where it is clear which assumptions form the basis for the calculation.

☒ Valid Responsible Steel certificate from the steel manufacturer/smelter. Overview from the supplier/manufacturer of the constituent steel part, showing which smelters are certified according to the standard and demonstrating that the requirement of a minimum of 50% certified is met.

☒ Declaration from the steel producer that the emission levels are within the stated values in the tables, as well as information on the emission values. Nordic Ecolabelling may request additional documentation for emission values.

☒ Description of how energy efficiency is worked on in production, showing which BAT measures have been implemented.

O10 Aluminium

The requirement can be met by documenting A) Reused products B) High proportion recycled aluminium or C) Improvements in primary aluminium production.

The requirement also applies to aluminium in sandwich panels. Mouldings around doors and windows, valley gutters and masonry crowns are exempted from the requirement. Panels mounted in combination with entrances are also exempted.

Facade, roof panels or aluminium profiles for alu-glas facade systems that make up a maximum of 20 m^2 or less than 100 kg are exempted from the requirement. The total facade area is calculated as the total area of outer walls (windows and doors excluded).

A) Reused products

At least 50% of aluminium facade, roof panels or aluminium profiles for alu-glas facade systems are reused.

B) High proportion recycled

A minimum of 75% by weight of aluminium must be recycled. The proportion of pre- and post-consumer must be stated and at least 30% by weight must be post-consumer.

Aluminium from primary production must not come from production using the Söderberg process.

The supply chain must be specified, and there must be traceability through the supply chain from the smelter to the finished product, so that the amount of recycled material is assured through the supply chain.

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

C) Primary aluminium production

The two following obligatory requirements must be met:

1. The manufacturer of the facade, roof panels or aluminium profiles for alu-glas facade systems shall purchase aluminium from a primary aluminium producer who has energy and climate calculations with time-limited reduction targets for energy consumption and greenhouse gas emissions. The result of the calculations must be transparent, meaning it must be stated which assumptions and conditions form the basis for the calculation (e.g. factors used in the calculation, system limits, use of databases, etc.).

2. Pre-baked anodes must be used in the production.

In addition, at least one of the following requirements must be met:

- A minimum of 50% by weight of aluminium included in the product must be certified according to the ASI Performance Standard. The manufacturer must document that the proportion of certified aluminium in the product is at least 50% by weight. The documentation can be done on an annual basis.
- Emissions to air must be within the emission values stated as BAT-AEL in the BREF document from 2017 or later for the production of aluminium. The parameters that are included in the requirement, as well as limit values, are specified in Tables 4, 5 and 6 in Appendix 4.
- The direct climate-affecting emissions for primary aluminium production must not exceed 1.5 tonnes of CO_{2e}/tonne of aluminium produced.
- Electricity consumption for electrolysis must not be higher than 15.5 MWh/tonne of aluminium produced.

✉ Reused aluminium products must be described and the traceability back to the parts' most recent use in construction must be documented.

✉ The proportion of recycled aluminium in the product must be stated.

✉ The aluminium producer must declare the amount of recycled aluminium in the production and provide an overview of the share that is pre- and post-consumer, showing that a minimum of 30% by weight is post-consumer. An annual average for production is approved. The traceability of the supply chain must be documented, e.g. in the form of a flow chart, so that the share recovered is assured through the supply chain all the way to the product being used in the building. This can be done e.g. by information on invoices or accounts from the aluminium supplier, showing the amount of recycled material purchased and how much is sold. The requirement can be documented with a valid certificate showing that the limit for recycled pre- and post-consumer content has been met and where the recycling share is certified by an independent third party.

✉ Primary aluminium production: Energy and climate calculations with reduction targets, where it is clear which assumptions form the basis for the calculation.

✉ Declaration from the aluminium manufacturer that pre-baked anodes are used in the production.

✉ ASI certification: Valid ASI traceability certificate from aluminium supplier. Documentation showing that the proportion of certified aluminium in the panels is at least 50% by weight on an annual basis. The documentation must be supported by claims on the invoice or delivery note.

✉ Emissions to air: Declaration from the aluminium manufacturer that the emission levels are within the values given in the tables, as well as an indication of the

emission values. Nordic Ecolabelling may request additional documentation for emission values.

✉ Direct emissions of greenhouse gases: Declaration that the requirement is met, as well as calculation and indication of direct emissions in tonnes of CO_{2e}/tonne of aluminium produced.

✉ Electricity consumption electrolysis: Declaration that the requirement is met, as well as calculation and indication of electricity consumption in MWh/tonne of aluminium produced.

O11 Construction site fuel restrictions

Energy used for concrete setting, temporary heating and drying out at a building site, thawing/frost protection and heating of construction barracks must be fossil-free* i.e. produced from bio-based fuels, electricity, heat pumps, district heating and hydrogen.

Interior drying out shall not begin until the building envelope is sealed and must be regulated using temperature sensors.

An exception can be made if natural gas will be used for heating of the building after construction.

**There is no requirement concerning the origin of the energy used on the building site, i.e. the fuel mix for district heating or the types of energy from which the electricity or hydrogen are produced.*

✉ A description of the energy sources used for heating at the building site.

✉ A project plan with time schedule showing that interior heating of the building starts after the building envelope is sealed.

✉ A description of the thermostats installed and location of the thermostats.

P6 Construction site machinery

Points will be given according to the following:

- 1 point: 100% of the fuel used for construction machines* is fossil-free**.
- 2 points: A minimum of 50% of the construction machines* are emission free on the building site (powered by electricity or hydrogen), while the remaining 50% are fossil-free**. At least 2 of the electric construction machines must be 8 tonnes or larger.
- 3 points: 100% of the construction machines* are emission free on the building site (powered by electricity or hydrogen).

A maximum of 3 points can be achieved.

* *Vibration platform machines and wheeled construction machines are exempted.*

** *Fossil-free, i.e. here defined as: bio-based fuels (HVO, FAME/RME, ED95, etc.), hydrogen and electricity.*

✉ A list of all construction machines by brand and type.

✉ Information on the energy used to power the machines.

P7 Bicycle transport

A maximum of 2 points are given when one or more of the following measures are taken to promote bicycle transport.

Residential buildings	
Indoor bicycle workshop available to all residents.	1 point
At least 1.5 bicycle parking spaces per residential unit are provided and equipped with access to frame locks. Bicycle stands alone are not sufficient to achieve points.	1 point
At least 50% of bicycle parking is weather protected. Minimum 1.5 bicycle parking spaces per residential unit.	1 point
Communal cargo bike(s) with designated weather protected parking are available for the residents.	1 point
Weather protected bicycle parking for cargo bikes and bicycle trailers is available. Minimum 1 per 10 residential units.	1 point

Educational buildings	
One bicycle parking space per student and teacher is provided and equipped with access to frame locks. Bicycle stands alone are not sufficient to achieve points.	1 point
At least 50% of bicycle parking is weather protected. Minimum number of parking spaces according to alternative 1 must be fulfilled	1 point
Preschools: Weather protected bicycle parking for cargo bikes and bicycle trailers is available. Minimum 1 parking space per 15 children.	1 point
Facility for charging electric bikes is available as part of the bicycle parking facilities.	1 point

Office buildings	
One bicycle parking space per 10 employees is provided in a locked room.	1 point
At least 50% of bicycle parking is weather protected. Minimum number of parking spaces according to alternative 1 must be fulfilled	1 point
Facility for charging electric bikes is available as part of the bicycle parking facilities.	1 point
Bikes are available for the employees in the office building for local transport. A minimum of 1 bike per 20 employees must be available.	1 point

✉ Description of the specific measures in relation to the requirement.

5 Resource efficiency / circular economy

O12 Construction waste management

At least 85% by weight of the non-hazardous construction waste generated on the construction site*, must be prepared for reuse, recycling and other material recovery including backfilling operations using waste to substitute other materials, in accordanc with the waste hierarchy and the EU Construction and Demolition Waste Management Protocol. The percentage excludes naturally occurring material referred to in category 17 05 04 in the European List of Waste established by Decision 2000/532/EC.

Untreated wood must always be sorted separately from treated wood.

Unsorted waste intended for energy recovery is not considered material recovery.

**If more than 50% of the building (calculated as total cost of the materials) is constructed as a module/prefabricated elements, the waste generated in the factory must be accounted for in the calculation. In this case, the sorting percentage at the construction site must be at least 70%, while the total percentage of the building project must be 85%.*

The waste management plan for the project must be sent to Nordic Ecolabelling before the construction of the building begins. The plan must contain information about waste fractions, waste collector(s) and intended use of the fractions.

✉ The waste management plan for the project must be delivered before the construction starts at the building site.

✉ A report from the waste contractor showing the amount of waste collected in relation to the total volume of the project's construction waste. The intended use of the waste fractions must be stated.

O13 Waste sorting inside the building

Facilities for waste sorting must be available in the Nordic Swan Ecolabel building. The number of fractions is stated for each building type below. Residual waste is considered one fraction.

Residential buildings

- Sorting vessels for minimum six fractions in all residential units*.
- Communal kitchens: Sorting vessels for minimum six fractions must be installed in or in the vicinity of the kitchen (e.g. in homes for the elderly and dormitories)

  * *Tea kitchens without cooking facilities such as oven and stove (e.g. homes for the elderly) are exempted from the requirement.*

Educational buildings

- Sorting vessels for six fractions must be installed in or in the vicinity of the main kitchen and in all other permanent kitchen facilities.
- Sorting vessels for four fractions must be installed in all classrooms and common rooms.

Office buildings

- Sorting vessels for six fractions must be installed in canteen facilities.

✉ Description of sorting vessels for waste sorting. Documentation can be description, pictures or datasheet.

P8 Construction waste reduction

Minimisation of the construction waste at the building site gives points according to table 7 below.

The entire building period from construction of the base plate to the finished building is included.

Table 7 Requirement for minimisation of construction waste.

Waste per square metre floor area	Points
≤35 kg/m^2	1
≤30 kg/m^2	2
≤25 kg/m^2	3
≤20 kg/m^2	4
≤15 kg/m^2	5

Floor area is calculated as the total area of all floors (including areas covered by walls or other constructions.)

Naturally occurring material defined in EU waste category 17 05 04 – soil and stones and total hazardous waste are excluded when calculating the total amount of waste.

If more than 50% (calculated as total cost of the materials) of the building has been constructed as modules in a factory facility, yearly-based data from the factory must be combined with the waste data from the building site.

✉ Report from the waste contractor showing the total amount of construction waste from the construction site and/or module factory.

✉ Calculation of the construction waste generated per square metre.

P9 Take-back systems

Points are given if producer take-back systems for excess material/waste are used at the construction site or module production facility in the following categories:

- Mineral insulation
- EPS and/or XPS. The system must collect cuttings and other materials (e.g. material from packaging) that can be recycled by the producer
- Flooring
- Untreated wood for temporary safety constructions. Both external services and internal reuse within the company are accepted
- Roof membranes
- Cement-bonded wood fibre
- Other products must be approved by the Nordic Swan Ecolabel.

1 point can be given for each category. Maximum 2 points can be achieved.

✉ An agreement with the supplier/producer or documentation with specific details showing how the take-back system is implemented at the construction site or module production facility.

✉ Report from the receiver of the material handled in the take-back system.

O14 Windows and exterior doors in non-renewable materials

Windows and exterior doors made from non-renewable materials must comprise a certain proportion of recycled material as follows:

- At least 40% of the aluminium profiles in the frames and leaves for windows and doors must be recycled aluminium.
- At least 20% of the steel/stainless steel in the frames and leaves for doors must be recycled steel.
- At least 30% of the PVC in the frames and leaves for windows and doors must be recycled PVC. Recycled plastic resources may not contain lead or cadmium in levels exceeding 100 ppm**. Plastic items ≤ 50 grams are excluded.

The requirement does not apply to:

- external cladding of outer wood components for the sole purpose of weather proofing
- plastic composite material
- materials that account for less than 3% by weight of the window, patio door or exterior door's total weight
- hinges, handles, fittings, stabiliser plates and kick plates
- window and exterior door insulation
- non-renewable components in glass panes/insulation panes.

A Nordic Swan Ecolabel window, patio door or exterior door will fulfil the requirement and must only verify the requirement with the product name and licence number.

Skylights and roof domes regulated by product standard EN 1873 and windows and exterior doors that are resistant to fire pursuant to standard EN 16034 are not included in the requirement.

✉ Specification of the proportion of recycled material used, for example in a construction product declaration. Declaration from the material supplier on the share of recycled material on an annual basis, in accordance with Appendix 5.

✉ For recycled plastic, also test results or the equivalent showing that the requirement concerning lead and cadmium is fulfilled in accordance with Appendix 5.

O15 Hazardous substances in reused construction products and materials

For reused construction products, fittings and materials, a risk analysis documenting the presence of undesirable substances listed in Appendix 6 and relevant local legislation must be conducted by a competent third party*. The risk analysis must, as a minimum, be based on the age of the building/construction, the renovation history of the building, and the state and cleansing of the material.

If the competent third party identifies any risk of undesirable substances (according to Appendix 6 and relevant local legislation), analyses must be performed by an accredited laboratory to verify the content in relation to relevant threshold limits. Nordic Ecolabelling always have the right to require laboratory analysis.

** The competent third party conducting the risk analysis must be trained in conducting environmental surveys and have at least 3 years' experience in the field of environmental mapping/surveys of buildings.*

✉ Overview of the reused materials used.

✉ Risk analysis from competent third party that documents the presence of undesirable substances listed in Appendix 6 and relevant local legislation.

✉ Where relevant, an analysis report from an accredited laboratory on the substances listed in Appendix 6 and relevant local legislation.

O16 Reused construction products and materials

Minimum 25% of the need for one specific construction product, fitting or material must be covered by reused products. The material can be used in the primary building, supplementary building or outdoor areas.

A list of reused products must be included with the material documentation that is handed over to the final owner of the building.

All products/materials must comply with requirements in O15.

The same product can give points in P10 if the requirement is fulfilled.

The same products can be used to fulfil O8, O9 and O10.

✉ Calculation of the ratio of reused product.

✉ Documentation for the purchased products.

P10 Reused construction products and materials

The following product categories give points for reused products. The minimum share of the total demand that must be covered by reused products to obtain points is shown in table below. All materials/products must comply with requirement O15.

A list of reused products must be included with the material documentation that is handed over to the final owner of the building.

Product category	Minimum share of total demand	Points
Facade material (Wood, steel, aluminium, glass etc).	25%	2
	50%	3
Roof material	25%	2
	50%	3
Inner walls (Timber, bricks, aerated concrete etc.)	25%	2
	50%	3
Floor slab/ floor framing (Timber, concrete elements, steel beams)	25%	2
	50%	3
Load-bearing walls (Timber, bricks, concrete elements etc.)	25%	2
	50%	3
Load-bearing roof structures (Timber, concrete elements etc.)	25%	2
	50%	3
Doors	50%	1
	90%	2
Flooring	50%	1
	90%	2
Lighting sources	50%	1
	90%	2

Suspended ceiling	50%	1
	90%	2
Untreated construction wood/timber for supplementary buildings	50%	1
	90%	2
Untreated construction wood/timber for temporary safety constructions	50%	1
	90%	2
Outdoor decking (stone, wood, tiles etc)	50%	1
	90%	2
Capillary break layer	50% of total need for sand/ aggregates must be taken from another construction site where it is surplus to requirement.	1
Concrete foundation	50% of total need for aggregates must be crushed concrete	1
Maximum points		**5**

On request, Nordic Ecolabelling will assess any other products and materials that are suggested for inclusion on a project basis.

✉ Calculation of the share of reused product in the relevant product category.

✉ Documentation for the purchase of reused products.

P11 Insulating materials from renewable or recycled sources

This requirement applies to the insulation materials in the following construction parts: outer walls, inner walls, roof and foundation.

1 point is given when a minimum of 90% of the total need for insulation in a construction part is covered by one of the following:

- EPS or XPS products that contain ≥ 30% recycled material documented on an annual basis on the production site. Maximum 10 % of the recycled material on an annual basis can be internal production waste.
- Mineral wool products that contain > 80% post-consumer recycled material documented on an annual basis on the production site.
- Paper wool insulation containing minimum 80% recycled material documented on an annual basis on the production site.
- Wood fibre insulation or other types of renewable insulation. Must contain minimum 80% renewable material. A maximum of 5% recycled synthetic fibre is accepted in the products.
- Maximum 3 points are available.

All materials must comply with the requirements in O31.

Wood fibre must also comply with O35 and O36.

O17 Design for disassembly and adaptability

In order to support circularity, it must be demonstrated how the building is designed to promote reuse and recycling with regard to resource efficiency, adaptability, flexibility and dismantlability (according to ISO 20887 or other relevant standards for assessing the disassemblability or adaptability of buildings). The following must be accounted for in a design for disassembly and adaptability specification of the measures taken to ensure that:

- Reversible connections are used where technically possible
- Installation shafts and technical service areas are dimensioned to ensure accessibility to the installations for repair and refurbishment.
- Technical installations (ventilation duct systems/electrical installations) are designed for rerouting and/or reuse with minimal damage to materials.
- Office buildings and educational buildings account for the flexibility of the floor plan and the disassemblability of the interior.
- Design details (drawings) that provide information on how to disassemble building components for optimal recovery of materials**,** are delivered to the building owner.

✉ A design for disassembly and adaptability **specification** is provided, verifying the bullets for the building or relevant components.

✉ A description of how the information on design for disassembly and adaptability is delivered to the building owner.

P12 Renewable carcass, facade or inner walls

For buildings with timber construction in the carcass, facade or inner walls, the following points are given:

Building component	Minimum share	Points
Floor framing	90%	1
Load-bearing walls	90%	1
Load-bearing roof structures	100%	1
Facade area (excluding windows and doors)	50%	1
Maximum points		**3**

**WPC (Wood polymer composite) will not be given points.*

✉ Description/drawings of the relevant building component.

✉ Calculation of reused/timber/renewable material in facade/inner walls.

6 Chemical products, construction products, construction goods and materials

This chapter consists of three sections of requirements: 1. Product list and logbook, 2. Chemical products, and 3. Construction products, goods and materials. Reference is made to the individual requirements and the section ”What is subject to the requirements?” for an explanation of what is included in the requirements.

Nordic Swan Ecolabel products automatically fulfil the requirements in this section.

6.1 Product list and logbook

O18 Product list

A list of construction products, construction materials, goods and chemical products used in the Nordic Swan Ecolabel building and any supplementary building must be created in the Nordic Ecolabelling Portal.

An external database service that has an agreement with Nordic Ecolabelling can be used if traceability is ensured. Acceptance of external databases must be given by Nordic Ecolabelling.

✉ Product list in the Nordic Ecolabelling Portal or in a verified external database.

O19 Logbook

The Nordic Swan Ecolabel project must have a digital logbook that includes all the construction products, goods, materials and chemical products used in the construction of the project. Reused products must also be registered. The logbook must provide the following obligatory information:

- Product name
- Product type
- Name of producer (or supplier if they declare the product)
- The location of the product in the building(s)*

* *Minimum level of description: ceiling, walls and floor, building's roof, facade, cellar, stairwell, slab, building's frame, terrace, balconies, garage, sports halls, garden, entrance hall, technical installation rooms, waste sorting room, laundry room, elevator shaft.*

There must be routines in place to ensure that the digital logbook is accessible to the owner of the building and to Nordic Ecolabelling.

The following is not necessary to include in the logbook: 1. products under the triviality limit, 2. technical instruments and 3. products related to electrical installations (apart from those specifically mentioned in requirements).

The GTIN number if available or the ID number in a national product registry can be included in the information but is not obligatory.

✉ A digital logbook (e.g. PDF, Word or Excel) must be available to the final owner of the building and to Nordic Ecolabelling. The logbook can also be created using a verified third-party logbook service after approval by Nordic Ecolabelling.

6.2 Chemical products

Chemical products are chemical substances or mixtures of different chemical substances, in liquid, gaseous or solid form, which are used on a construction site or by a manufacturer of prefabricated building components. Chemical products for both indoor and outdoor use are covered by the requirements. The requirements in the criteria document and accompanying appendices apply to all ingoing substances in the chemical product. Impurities are not regarded as ingoing substances and are exempt from the requirements.

- Ingoing substances and impurities are defined in the Definitions section.
- For details on what is subject to the requirements, reference is made to the section "What is subject to the requirements?".

O20 Classification of chemical products

Chemical products used in the production of Nordic Swan Ecolabel buildings must not be classified according to the table below.

Classification of chemical products CLP Regulation 1272/2008:		
Hazard statement	**Hazard class and category**	**Hazard code**
Toxic to aquatic life	Toxic to aquatic life, Acute 1 Toxic to aquatic life, Chronic 1 Toxic to aquatic life, Chronic 2	H400 H410 H411
Harms public health and the environment by destroying ozone in the upper atmosphere	Hazardous to the ozone layer	H420
Acute toxicity	Acute Tox. 1 or 2 Acute Tox. 1 or 2 Acute Tox. 1 or 2 Acute Tox. 3 Acute Tox. 3 Acute Tox. 3	H300 H310 H330 H301 H311 H331
Specific target organ toxicity: single exposure and repeated exposure	STOT SE 1 STOT RE 1	H370 H372
Skin sensitising	Skin sens. 1, 1A or 1B	H317
Carcinogenic	Carc. 1A or 1B Carc. 2	H350 H351
May cause genetic defects	Muta. 1A or 1B Muta. 2	H340 H341
Toxic for reproduction	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362

The classifications in the table concern all classification variants. For example, H350 also covers classification H350i.

Exemptions:

- Chemical anchors classified H400, H410 and H411 due to dibenzoyl peroxide (CAS 94-36-0) are allowed.
- Hardener for acrylic floor coatings classified H400, H410 and H411 due to dibenzoyl peroxide (CAS 94-36-0) are allowed for use in commercial kitchens. In Nordic countries with an authorisation system, the flooring contractor must be authorised.
- For naphtha-based primers used in waterproofing assembly (flat roofs, green roofs, courtyards, terraces and similar applications) and naphtha-based adhesives for cellular rubber insulation intended for cooling pipes and ventilation ducts indoors, the classification H411 is accepted.
- For primers for expansion joints on concrete, concrete-metal and metal-metal outwardly/outside on the building and for roof adhesive/adhesive for waterproofing outwardly, the classification H411 is accepted.
- For all outdoor products, the classification H317 is accepted.

✉ Declaration from the manufacturer of the chemical product, in accordance with Appendix 7

✉ Safety data sheet in accordance with Annex II to REACH (Council Regulation (EC) no. 1907/2006) for all chemical products.

O21 CMR substances

Chemical products, used in the production of Nordic Swan Ecolabel buildings, must not contain any ingoing substances classified as carcinogenic, mutagenic or reprotoxic according to CLP Regulation 1272/2008, see Table 8 below.

Table 8 Non-approved classifications of ingoing substances in chemical products according to CLP Regulation 1272/2008:

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

The classifications in the table concern all classification variants. For example, H350 also covers classification H350i.

Exemptions:

- Glyoxal (CAS no. 107-22-2, H341) ≤ 100 ppm (0.01% by weight) in the final product if the pH value in the final product is higher than pH 8.
- TiO_2 (CAS no. 13463-67-7, H351 inhalation).
- The dispersant trimethylolpropane (CAS no. 77-99-6, H361 self-classification) up to ≤ 5000 ppm (0.5% by weight) in the final product.
- Dibutyltin (DBT) and dioctyltin (DOT) in sealing products (the primer and joint product respectively) ≤ 5000 ppm (0.5% by weight) in the final product.

Note that tributyltin (TBT) and triphenyltin (TPT) are not accepted regardless of content or product type.

✉ Declaration from the manufacturer of the chemical product, in accordance with Appendix 7.

✉ Safety data sheet in accordance with Annex II to REACH (Council Regulation (EC) no. 1907/2006) for all chemical products.

O22 Preservatives in indoor paint and indoor varnish

The amount of preservative/combination of preservatives is limited according to the tables below. For tinting systems, a worst-case calculation must be performed for the colour with most tinting paste and the base paint with most environmentally hazardous substances.

Table 9 Concentration limits for preservatives totally.

Preservatives in total	Concentration limit
Paints, varnishes, base paints with tinting paints etc. for indoor use.	900 ppm (0.09% w/w)
Wet room paint specifically	1000 ppm (0.1% w/w)

Table 10 Concentration limits for specific compounds.

Preservatives	Concentration limit
Isothiazolinone compounds in total*	600 ppm (0.06% w/w)

The term preservative refers to both PT 6 (in-can) and PT 7 (dry-film protection).

**Note that dithio-2,2'-bis-benzmethylamide (DTBMA) is to be included in the total amount of isothiazolinones.*

✉ Declaration from the manufacturer of the chemical product, in accordance with Appendix 7.

O23 Preservatives in other chemical products intended for indoor use

The amount of preservative/combination of preservatives in other chemical products for indoor use is limited according to Table 11 below.

Table 11 Concentration limits for preservatives in other chemical products for indoor use.

Preservatives	Concentration limit
Isothiazolinone compounds in total*	600 ppm (0.05w/w)
Iodopropynyl butylcarbamate (IPBC) (CAS no. 55406-53-6)	2000 ppm (0.2% w/w)
Bronopol (CAS no. 52-51-7)	500 ppm (0.05% w/w)

The term preservative refers to both PT 6 (in-can) and PT 7 (dry-film protection).

** Note that dithio-2,2'-bis-benzmethylamide (DTBMA) is to be included in the total amount of isothiazolinones.*

✉ Declaration from the manufacturer of the chemical product, in accordance with Appendix 7.

O24 Other substances excluded from use

The following substances must not be an ingoing substance in chemical products used in the production of Nordic Swan Ecolabel buildings:

- Substances on the Candidate List.
- Substances evaluated by the EU to be PBT substances (persistent, bioaccumulative and toxic) or vPvB substances (very persistent and very bioaccumulative) in accordance with the criteria in Annex XIII to REACH.
- Substances shall not be potential or identified endocrine disruptors according to any of the EU member state initiated "Endocrine Disruptor Lists" I, II and III.

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

A substance that is transferred to one of the corresponding sublists called "Substances no longer on list", and no longer appears on any of Lists I–III, is no longer excluded. The exception is those substances on sublist II which were evaluated under a regulation or directive that does not have provisions for identifying EDs (e.g. the Cosmetics Regulation, etc.). For those substances, ED properties may still have been confirmed or suspected. Nordic Ecolabelling will evaluate the circumstances case-by-case, based on the background information indicated in sublist III. In addition, the following individual substances and substance groups are prohibited or restricted. There may be an overlap between the substances listed below and substances categorised above.

- Short-chain chlorinated paraffins (C10-C13) and medium-chain chlorinated paraffins (C14-C17).
- Perfluoroalkyl and polyfluoroalkyl substances (PFASs)
- APEO – alkylphenol ethoxylates and other alkylphenol derivatives (substances that release alkylphenols on degradation).
- Halogenated flame retardants.
- Phthalates.
- Bisphenol A, bisphenol S and bisphenol F.
- The heavy metals lead, cadmium, arsenic, chromium (VI), mercury and their compounds.
- Volatile aromatic compounds >1% by weight.
- Organic tin compounds.

Exemptions are made for:

- Naphtha-based primers for waterproofing assembly (flat roofs, green roofs, courtyards, terraces and similar applications), primers for expansion joints on concrete, concrete-metal and metal-metal outwardly/outside on the building and roof adhesive/adhesive for waterproofing outwardly may contain up to 20% by weight of volatile aromatic compounds
- Dibutyltin (DBT) and dioctyltin (DOT) in sealing products (the primer and joint product respectively) ≤ 5000 ppm (0.5% by weight) in the final product.

Note that tributyltin (TBT) and triphenyltin (TPT) are not accepted regardless of content or product type.

☒ Declaration from the manufacturer of the chemical product, in accordance with Appendix 7.

☒ Safety data sheet in accordance with Annex II to REACH (Council Regulation (EC) no. 1907/2006) for all chemical products.

O25 Nanoparticles in chemical products

Nanoparticles according to European Commission definition (2011/696/EU) must not be an ingoing substance in chemical products, with the following exemptions:

- Pigments*
- Naturally occurring inorganic fillers**
- Synthetic amorphous silica***
- Unmodified calcium carbonate (Ground Calcium Carbonate (GCC) and Precipitated Calcium Carbonate (PCC))
- Polymer dispersions

** Nano-titanium dioxide is not considered to be a pigment and is therefore covered by the requirement.*

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

**** This applies to unmodified synthetic amorphous silica. Chemically modified colloidal silica can be included in the products as long as the silica particles form aggregates in the final product. Surface-treated nanoparticles must fulfil requirement O21 (classification of ingoing chemical substances) and requirement O25 (Other substances excluded from use).*

✉ Declaration from the manufacturer of the chemical product, in accordance with Appendix 7.

6.3 Construction products – restricted material

O26 Halogen-free cables

All heavy current cables must be documented as halogen-free according to IEC/DIN EN 60754-1, IEC/DIN EN 60754-2, 60754-2 or DIN EN 31023-2.

The requirement does not include data, telephone and TV cables.

Obligatory requirement O31 must also be met.

✉ Documentation from the supplier such as technical datasheet stating compliance with relevant standard.

O27 Surface layers on floors, ceilings, walls and interior doors

Interior doors and interior surface layers on floors, ceilings and walls may not contain chlorinated plastics (PVC). This includes watertight layers, wall film, acoustic dampening foams and other products used under the surface layer.

The following are exempt from the requirement:

- Mouldings, skirting boards and baseboards in bathrooms, professional kitchens and staircases in apartment buildings.
- Floorings in professional kitchens with floor drain.
- Floorings in wet rooms with floor drain in educational buildings, homes for the elderly and homes for disabled.

Products covered by the exemption must fulfil O31 (Appendix 12).

✉ Documentation to show how the requirement is fulfilled, for example floor plans, product data sheet, construction product declaration or similar.

O28 Durable wood for outdoor use

The use of pressure impregnated wood containing heavy metals and/or biocides is restricted according to Table 12. This applies to the following:

- The Nordic Swan Ecolabel building
- Supplementary buildings (i.e. refuse depots, bicycle storage rooms and sheds)
- Decking, fences, pergolas, permanently installed outdoor furniture, playground and park equipment and similar items

Nordic Swan Ecolabel products automatically fulfil the requirement.

Table 12 Restrictions for the use of pressure impregnated wood.

User class as per EN 335	Allowed area of use	Allowed NTR Class
UC 5	Direct contact with salt water according to user class 5 in EN 335. Not valid for outdoor furniture and playground and park equipment.	NTR M
UC 4	Direct contact with soil, fresh water according to user class 4 in EN 335. Not valid for outdoor furniture and playground and park equipment.	NTR A
UC 3.2	Weather-exposed load-bearing constructions with specific demands for durability of the material e.g. for safety reasons. Not valid for facades, decking, fences, acoustic barriers, pergolas, permanently installed outdoor furniture, playground and park equipment and similar items.	NTR AB
UC 3.1	Windows	NTR B

Exemption:

- Impregnated wood that contains no heavy metals and a maximum of 500 ppm of biocides in the final product is exempt from the requirement.

✉ Nordic Swan Ecolabel products: State producer, licence number and product name

✉ Documentation for wood in the relevant user class: NTR certificate, user class per EN 335 and documentation/drawings clearly showing that impregnated wood is used according to the relevant exemption.

✉ For the exemption: Documentation from the producer that verifies the content of heavy metals and biocide in the wood products.

O29 Copper

A. Tap water pipes must not consist of copper.

Exemptions:

- Visible pipelines
- Water fittings connecting pipes
- Closed water supply systems, for example in a water-borne heating system
- Pipes through the wall for an outdoor tap

B. Roof and facade cladding must not contain more than 10% by weight of copper. The same applies to other products for roofs and facades (roof drainage products, gutters, exhaust hoods, eaves nets, cover profiles and the like).

✉ Declaration from applicant, Appendix 8.

✉ Description of the use of copper in the project. Where relevant, supplementary documentation for roof and facade cladding, such as product data sheet, construction product declaration or information from producer.

O30 Infill of granules on playgrounds and outdoor areas

Surfaces on playgrounds and other outdoor areas included in the Nordic Swan Ecolabel project/assignment must not consist of material with infill of plastic or rubber granules

✉ Declaration from the applicant that plastic or rubber granules or other synthetic material have not been used as infill on surfaces in playgrounds and other outdoor areas, Appendix 9.

6.4 Construction products – ingoing substances and emissions

O31 Excluded substances in construction products, construction goods and materials

The requirement applies to the following product categories:

1. Sealing products on walls, foundation and roofing.
2. Thermal, acoustic and technical insulation
3. Interior and exterior building panels. Does not include panels of solid wood, laminated timber, veneer, OSB, plywood, MDF/HD, chipboard, HPL, CPL and compact laminates.
4. Heavy current cables and electrical conduits
5. Wood that is impregnated as protection from rot, blue stain and mould (see O28 for restrictions on use)
6. Wood plastic composite (WPC)
7. Plastic coverings for floors, ceilings and walls for interior use.
8. Textile coverings for floors, ceilings and walls.

In the construction products and materials mentioned above, the following substances must not be an ingoing substance in the product. Ingoing substance means all substances in the construction product that are present in concentrations higher than 100 ppm (0.010 w% , 100 mg/kg).

- A substance on the EU's Candidate List
- Substances evaluated by the EU to be PBT substances or vPvB substances in accordance with the criteria in Annex XIII to REACH.
- Substances classified as carcinogenic, mutagenic or toxic for reproduction (CMR) Category 1A and 1B.
- Substances that are potential or identified endocrine disruptors according to any of the EU member state initiated "Endocrine Disruptor Lists" I, II and III.
    - https://edlists.org/the-ed-lists/list-i-substances-identified-as-endocrine-disruptors-by-the-eu
    - https://edlists.org/the-ed-lists/list-ii-substances-under-eu-investigation-endocrine-disruption
    - https://edlists.org/the-ed-lists/list-iii-substances-identified-as-endocrine-disruptors-by-participating-national-authorities

A substance that is transferred to one of the corresponding sublists called "Substances no longer on list" and no longer appears on any of Lists I–III, is no longer excluded. The exception is those substances on sublist II that were evaluated under a regulation or directive that does not have provisions for identifying EDs (e.g. the Cosmetics Regulation, etc.). For those substances, ED properties may still have been confirmed or suspected. Nordic Ecolabelling will evaluate the circumstances case-by-case, based on the background information indicated in sublist III. In addition, the following individual substances and substance groups are prohibited or restricted. There may be an overlap between the substances listed below and substances categorised above.

- Short-chain chlorinated paraffins (C10-C13) and medium-chain chlorinated paraffins (C14-C17).
- Perfluoroalkyl and polyfluoroalkyl substances (PFASs)
- Alkylphenol ethoxylates (APEO) and other alkylphenol derivatives (substances that release alkylphenols on degradation).
- Halogenated flame retardants.
- Phthalates.
- The heavy metals lead, cadmium, arsenic, chromium (VI), mercury and their compounds.
- Bisphenol A, bisphenol S and bisphenol F.
- Boric acid, sodium perborate, perboric acid, sodium borate (borax) and any other boron compounds classed as carcinogenic, mutagenic or reprotoxic in category 1A/1B/2/Lact.
- Organotin compounds.

Exemptions are made for:

- The material in (electrical) conduits, which may contain halogenated flame retardants provided that the following limits are fulfilled:
  - Bromine content (Br) ≤ 0.15%
  - Chlorine content (Cl) ≤ 0.15%
  - Total content: bromine content (Br) + chlorine content (Cl) ≤ 0.2%

The content must be verified using ion chromatography (IC) according to the methods in EN 14582 or modified IC methods according to EN50642.

✉ Declaration from the manufacturer of the construction product, construction goods or construction material in accordance with Appendix 10.

✉ Construction product declaration or corresponding if available for the product.

O32 Antimicrobial surface treatments

Biocide treated articles, see Definitions, (including antifouling and self-cleaning treatments) where the purpose is to create an antimicrobial or antiviral surface must not be used in construction products, construction goods or materials. This also includes treatment with silver nanoparticles.

Exemptions are made for:

- Wood that is impregnated as protection from rot, blue stain and mould. Products must still meet requirement O28 and O31.
- Air filters and door gaskets in white goods

✉ Declaration from the applicant confirming compliance with the requirement concerning antibacterial/antiviral additives not permitted in Nordic Swan Ecolabel building. Appendix 11 must be used.

O33 Formaldehyde emissions

The requirement covers all wood-based or laminate panels and boards for indoor use, containing formaldehyde-based additives, such as building panels (raw or surface treated), panels in floors, panels in doors* or other fitments as well as mouldings, baseboards and frames.

The requirement does not apply to panels solely marketed as facade panels, solid wooden worktops and individual fixture details such as a hat or shoe shelf.

The average emission of formaldehyde must not exceed the limit values for the relevant test method according to Table 13.

Table 13 Threshold limits for formaldehyde emissions.

Test method	EN 717-1	EN 16516
Wood-based panels and fitments	0.062 mg/m^3	0.124 mg/m^3
Laminate panels and fitments** Including high pressure laminates (HPL), continuous pressure laminates (CPL) and compact laminates	NA	0.03 mg/m^3

If the panel is covered by e.g. melamine or laminate, it is the complete product with covering that should be tested. If a fitment consists of more than one panel, the complete product can be tested or the panels can be tested separately.

* *For Finland, apartment doors that are fire-protected according to EN16034 instead of the emission limit value in the table above must comply with M1.*

Analysis methods other than those stated in the above table can be used, provided that the correlation between the testing methods can be verified by an independent third party.

If legislation is introduced or tightened and becomes tighter than Nordic Ecolabelling's requirement levels for formaldehyde during the term of validity of these criteria, this requirement will be adjusted.

✉ Declaration concerning occurrence of formaldehyde-based additives in accordance with Appendix 12.

✉ Certificate or analysis report from an independent third party documenting the requirement level and the method/standard used.

6.5 Ecolabelled products

P13 Ecolabelled products

Nordic Swan Ecolabel or EU Ecolabelled products used in a Nordic Swan Ecolabel building qualify for points. Each product category in Table 15 is subject to an individual maximum point score.

A maximum of 14 points can be achieved. A minimum point score must be achieved according to Table 15.

Table 14 Minimum point score for each country.

Country	Minimum points
DK/SE/NO	8
FI	6
IS	5

Table 15 Product categories available for point.

Product category	Maximum points for category (Pmax)
Construction and facade panels outside the vapour barrier	2
Construction, wall covers and panels inside the vapour barrier	2
Flooring (visible layer, excluding tiles)	3
Tiles (floors and walls)	1
Bathroom fittings	1
Wardrobes (including coat racks/hat shelves and similar)	2
Kitchens (front, frames and countertops)	3
Windows	2
Exterior doors	1
Indoor doors	2
Outdoor furniture	2
Playground equipment	2
Stove/fireplace	1
Durable wood	2

Indoor paint	3
Indoor fillers	2
Outdoor paint	2
Sealants	2
Adhesives and microdispenser	2
Other chemical building products	2
Other products	Defined when relevant
Maximum points total	14

The total point score (P_{total}) is calculated according to the following:

$$P_{total} = \sum \frac{Eco_A}{Total_A} * P_{max,A} + \frac{Eco_B}{Total_B} * P_{max,B} + \cdots + \frac{Eco_n}{Total_n} * P_{max,n}$$

Eco_x = amount of ecolabelled product in category X

$Total_x$ = total amount of product in category X

$Pmax_x$ = maximum point for category X

The choice of unit in the calculation is up to the licensee, but only one unit can be used per product category.

The total number of points must be rounded to the nearest whole number.

✉ Completed calculation with relevant product information.

✉ Documentation for amounts and products in calculation such as invoices or estimates of relevant amounts.

7 Biodiversity and wood raw materials

O34 Tree species with restricted use

This requirement applies to all wood-based products used in the construction of the Nordic Swan Ecolabel building, supplementary buildings and outdoor areas. The requirement also applies to wood-based products used in construction but not incorporated in the building, such as wood in casting moulds.

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

a. CITES (Appendices I, II and III)

b. IUCN red list, categorised as CR, EN and VU

c. Rainforest Foundation Norway's tree list

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

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

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

- the tree species does not originate from an area/region where it is IUCN red listed, categorised as CR, EN or VU.
- the tree species does not originate from an Intact Forest Landscape (IFL), defined in the World's IFL 2000 map in Google Earth http://www.intactforests.org/world.map.html.
- the tree species shall originate from an FSC or PEFC certified forest/plantation and shall be covered by a valid FSC/PEFC Chain of Custody certificate documented/controlled as FSC or PEFC 100% through the FSC transfer method or PEFC physical separation method. Tree species grown in plantations shall, in addition, originate from a FSC or PEFC certified forest/plantation established before 1994.

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

The declaration is made by the applicant for the whole project.

The declaration is made by the supplier in the event that the wood-based products are subject to declaration in the supply chain declaration portal.

☒ Declaration that tree species listed in a–d are not used in the Nordic Swan Ecolabel building. Appendix 13 must be used.

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

☒ If a tree species is listed in either b, c or d, the supplier is required to present a valid FSC/PEFC Chain of Custody certificate that covers the specific tree species and demonstrates that the tree is controlled as FSC or PEFC 100% through the FSC transfer method or PEFC physical separation method.

☒ If a tree species is listed in either b, c or d, the supplier is required to document full traceability back to the forest/certified forest unit, thereby demonstrating that:

- the tree species does not originate from an area/region where it is IUCN red listed, categorised as CR, EN or VU;
- the tree species does not originate from Intact Forest Landscape (IFL), defined in the World's IFL 2000 map in Google Earth http://www.intactforests.org/world.webmap.html;
- For plantations, the applicant/manufacturer/supplier is required to document that the tree species does not originate from FSC or PEFC certified plantations established after 1994.

O35 Wood and bamboo, traceability and certification

This requirement applies to the following construction elements of solid wood, glulam, LVL, bamboo, plywood, veneer or particle/fibre board used in the construction of the Nordic Swan Ecolabel building and supplementary buildings:

- Frames, trusses, studs and joists used in the wooden structure of the building (roof, walls and floors)

- Underlay on roofs, walls and floors such as plywood, particle boards, tongue-and-groove and rafters
- Interior panels
- Exterior cladding and facade panels
- Timber for balcony, terrace, decking, veranda and fences
- Wooden floors
- Mouldings
- Doors and door frames
- Windows
- Kitchen cabinets and worktops
- Wood fibre insulation

The applicant may include other building parts in the calculation of certified wood raw materials. Nordic Swan Ecolabel wood products comply with the certified wood raw material requirement.

Name of tree species

The applicant/supplier must state the name (species name) of the wood raw material or bamboo used in Nordic Swan Ecolabel buildings.

Chain of Custody certification

The supplier of wood raw materials/bamboo materials must have valid Chain of Custody (CoC) certification under the FSC/PEFC schemes.

Suppliers who only deliver recycled material in the Nordic Swan Ecolabel buildings are exempted from the requirement for Chain of Custody certification. For a definition of recycled material, see below*.

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

Certified wood raw materials and bamboo

A minimum of 70% by weight of all wood raw materials and bamboo used in the Nordic Swan Ecolabel building must originate from forests managed according to sustainable forest management principles that meet the requirements set out by the FSC or PEFC Chain of Custody schemes, or be recycled material*.

The remaining proportion of wood raw material must be covered by the FSC/PEFC control schemes regarding FSC controlled wood/PEFC controlled or bed recycled material (see Definitions).

Nordic Ecolabelling considers products from primary wood processing industries (sawdust, wood chips, bark, etc.) or residues from forestry (bark, branches, roots, etc.) as recycled material.

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

✉ Valid FSC/PEFC Chain of Custody certificate from all suppliers of wood-based products, covering all wood materials and bamboo used in the Nordic Swan Ecolabel building. Alternatively, a link to the certificate holder's valid certificate information in the FSC/PEFC certificate database.

✉ Documentation alternative 1: A summary showing i) the total quantity of wood raw materials and ii) the total percentage of certified wood raw material or recycled material used in the project. Copy of invoice(s) to confirm the proportion of certified wood raw materials or recycled materials purchased for the project.

✉ Documentation alternative 2: An aggregated signed list from suppliers (compilation of all wood raw material deliveries to the project containing information on: CoC code, name of tree species, type of product items, FSC/PEFC claims for each product item, quantities of wood raw materials and percentage of certified/recycled wood and the invoice number (reference)) can be used as a basis for the summary. Nordic Ecolabelling may ask for copies of invoices to confirm the proportion of certified timber purchased for the Nordic Swan Ecolabel building.

✉ If the applicant does not use a CoC certified supplier, the supplier shall present i) invoices for the wood raw materials in question from the CoC certified supplier and ii) a valid certificate which must be in accordance with the invoice(s). The invoice must state the volume of certified wood raw material and certification number.

✉ The applicant must have a documented agreement with the supplier which describes how the supplier guarantees that the specified, certified wood raw material on the invoice is delivered to the project. The agreement shall also state that the supplier is obliged to report any change in the source of the wood raw material. Nordic Ecolabelling may ask for further information.

O36 Ecology report

An ecology report covering the building site must be delivered and include the following:

a. Assessment of whether the building site is covered by the following definitions:
    - Arable land and crop land with a moderate to high level of soil fertility and below-ground biodiversity as referred to in the EU LUCAS survey.
    - Land matching the definition of forest as set out in national law used in the national greenhouse gas inventory, or where not available, in accordance with the FAO definition of forest.

b. Mapping of the existing biodiversity and natural value at the building site. This includes evaluation of landscape ecology and ecosystem services, geological deposits, water bodies, ecologically functional areas for game and fish, habitats, species of national management interest and invasive species. The method for the mapping performed must be described. Reference is made to Appendix 14 for guidance.

c. Recommended measures to preserve the existing biodiversity and measures that can be taken to improve the biodiversity or compensate for the loss of biodiversity at the building site. The recommended measures must be ranked according to their impact on biodiversity and suggestions must be given as to how the measures can be implemented in the building project. Reference is made to Appendix 14 for guidance.

Whenever possible, the report must be completed before the preparation of the building site and the construction process begins.

The mapping must be done by a biologist/ecologist with minimum two years' experience of mapping biodiversity.

✉ Ecology report

✉ Documentation showing the competence and minimum 2 years' experience of the ecologist/biologist.

O37 Measures for biodiversity

A: Improving and protecting the biodiversity of the building site

The applicant must describe what measures and recommendations from the ecology report they will implement to preserve and improve/compensate the biodiversity on the building site during and after the building is completed.

Two alternatives apply depending on the ownership of the building site:

1. If the applicant owns the building site, the following measures must as a minimum be implemented (if recommended in the ecology report):
    - Invasive species found on the site must be removed or controlled*. Such species must also not be planted. This also applies to green roofs.
    - Elements with natural value that already exist on the site must, as far as possible, be protected in accordance with the recommendations in the ecology report **.
    - Local plant species must be planted in all common areas.
2. If the applicant does not own the building site, the applicant must have an active dialogue with the owner of the building site to implement the bullets mentioned in 1.

* *This mainly applies to species that are prohibited from being imported and sold. They are found in the following documents: Denmark: The Danish Environmental Protection Agency's list of invasive species. Finland: National list of invasive species. Norway: Regulation on invasive organisms Appendix 1. Sweden: Currently, the requirement applies to species on the EU list and the list of most problematic species that have not yet been regulated by law. This may be changed when the authorities prepare new lists. Iceland: Act 583/2000. All countries: Regulation (EU) 2016/1141.*

** *Elements of high natural value include old oak trees and other large trees, such as beech and birch, and natural ponds and streams.*

B: Protection and maintenance plan

The applicant must deliver a management plan for the biodiversity on the site, and it must be handed over to the future residents and/or caretakers. The following must, as a minimum, be included in the plan if it is considered relevant in the ecology report:

- Ecology report
- Instructions and recommendations from the action plan
- Overview of who is responsible for the care, e.g. what should be done by caretakers, and what should be done by residents
- Overview of which local species are recommended for planting, and instructions for care
- Overview of alien invasive species that should not be planted
- Description of good gardening practice, including a ban on the use of pesticides on green areas and guidance on which alternative methods of pest and weed control are recommended
- Description of how any compost should be used, also stating that alien species should not be placed in the compost, but sent to the municipal facility for garden waste.

✉ A1: Description of the measures and recommendations from the ecology report that the applicant plans to implement in order to preserve and improve/compensate the biodiversity on the site during and after the building is completed.

✉ A2: Documentation of dialogue with the owner of the site and description of possible measures and recommendations from the ecology report that they plan to implement to improve/compensate the biodiversity on the site during and after the building is completed.

✉ B: The management plan for the biodiversity on the site and information about how it will be handed over to future residents and caretakers.

P14 Improvement and preservation of biodiversity

Points are awarded for measures that preserve and promote biodiversity in the construction project.

A maximum of 6 points can be obtained from the measures below.

Table 16 Biodiversity measures

Measures	Points
Green roofs. The total green surface must be at least 50% of the possible available roof area. If a green roof is combined with cultivation boxes, the cultivation boxes must be in addition to the 50%, alternatively the total green surface (green roof + cultivation boxes) must be at least 75% of the total area. 1 point for extensive roofs and 2 points for intensive roofs.*	2
Local management of surface water (rain or melt water that flows over various surfaces such as grass, gravel, asphalt and roofs, or drainage water) that promotes biodiversity, i.e. the establishment of open waterways and ponds with natural banks, moisture habitats and rain beds.	2

Permeable surfaces: At least 75% of the area of all paths, roads and social meeting places and/or playscapes on the site are permeable. Parking spaces are not included. Asphalt, tiles and concrete pavements are not considered permeable.	2
Create opportunities for urban gardening, e.g. in cultivation boxes. Water outlets should be located nearby. There is no requirement for how large the area or the return should be, but an overall assessment must be made by the ecologist.	1
Gardens with rich biological diversity. Emphasis will be placed on increasing the proportion that is not monoculture, increasing the proportion of perennial beds, flower meadows, multi-layered vegetation and new habitats. The gardens should have edible plants, fruit trees and plants that benefit pollinators (bumblebees, honey bees, etc.). Trees, planting and any green roofs must be planned so that it is easier for the insects to move around. There is no requirement for how large the area should be, but an overall assessment must be made by the ecologist.	2
Create habitats for local species of insects, birds, bats, flying squirrels or ponds for amphibians. At least one bird box, insect hotel, etc. must be installed for every tenth apartment. In educational buildings and office buildings a minimum of one bird box, insect hotel, etc. must be installed for every tenth user of the building. Points are not awarded for beehives because domestic bees are considered an alien species.	1
Composting of garden waste if it is permitted by the municipality and recommended by the ecologist. The ecologist must recommend where the composting should be located, among other things to avoid run-off. The size must be in accordance with the size of the garden.	1
Social meeting places and/or natural playscapes. Social meeting places can be created in combination with measures for biodiversity, such as cultivation boxes. Natural playscapes are detailed, nature-based playgrounds with loose materials.	1
Maximum points	**6**

** Extensive roofs have a thin layer of soil or mats of growth medium (often sedum roofs). Intensive roofs have a thicker soil mass that can support shrubs and small trees and thereby contributes to greater biological diversity.*

✉ Description of the measures that have been implemented in accordance with the recommendations in the ecology report.

✉ Documentation for the establishment of measures.

8 Indoor environment

O38 Acoustics

The requirement must be verified in an acoustic plan showing calculated sound levels and designed sound classes in the building project.

The survey must be performed by an acoustic technician with minimum 2 years' experience.

Educational buildings

Sweden (according to SS 25268): Buildings must fulfil noise class B for all parameters assessed according to the valid national sound class standard.

Finland: Guideline values given in the Ministry of the Environment's guide to the sound environment of a building, 2018 (based on Decree 796/2017) must be fulfilled. Parameter for reverberation time shall be class B according to SFS 5907:2004 or corresponding later standard.

Denmark: Reverberation time, airborne sound insulation and noise from technical installations must fulfil the levels defined in BR18.

Norway (according to NS 8175):

- Schools: according to national legislation.
- Preschools: Sound class B for reverberation time and another optional sound environment parameter. Other sound environment parameters must comply with class C.

Island (according to IST 45):

- Schools: Sound class C for reverberation time.
- Preschools: Sound class B for reverberation time and another optional sound environment parameter. Other sound environment parameters must comply with class C.

Rooms that are occupied temporarily are exempt from the requirement. For safety reasons, each preschool section is viewed as one room in relation to evaluation of the airborne sound insulation parameter.

Residential buildings

Sweden: Sound class B for two optional acoustic environment parameters. The rest of the sound environmental parameters must comply with class C (according to SS 25267).

Finland: Values for weighed standardised level difference (DnT,w) and for weighted standardised impact sound pressure level L'nT,w+CI,50-2500 are required to be 3 dB better than the values given in Decree 796/2017. Parameter for reverberation time shall be class B according SFS 5907:2004 or corresponding later standard.

Norway: Recommended supplementary requirements for low frequencies concerning impact noise according to NS 8175:2012 must be taken into account in the acoustic calculations. Airborne noise from ventilation in bedrooms cannot be higher than 27 dB. Between bedrooms in student housing, the airborne sound insulation has to fulfil a weighted apparent sound reduction index, R'w, of minimum 52 dB.

Iceland: Recommended supplementary requirements for low frequencies concerning impact noise and airborne noise according to the national acoustic environment standard must be taken into account in the acoustic calculations, in combination with sound class C (according to IST 45):

Denmark: Sound class B for reverberation time and noise from ventilation systems. The rest of the sound environment parameters must comply with class C (According to DS 490). Exemption for Denmark: According to BR18, light constructions in apartment boundaries, i.e. partitions with weight per area unit <100 kg/m^2 and floor separations with a weight per area unit <250 kg/m^2, must meet airborne sound insulation R'w + C50-3150 ≥ 53 dB and step sound level L'n,w+CI,50-2500 ≤ 53 dB.

Office buildings

Sweden: Buildings must fulfil noise class B for all parameters assessed according to the valid national sound class standard (according to SS 25268):

Finland: Guideline values given in the Ministry of the Environment's guide to the sound environment of a building, 2018 (based on Decree 796/2017) must be fulfilled. Parameter for reverberation time shall be class B according SFS 5907:2004 or corresponding later standard.

Denmark: Reverberation time, airborne sound insulation, indoor noise from traffic, and noise from technical installations must fulfil the guideline levels given in "Bygningsreglementets vejledning om lydforhold, vejledning for kontorbyggeri", BR18.

Norway: According to national legislation.

Island: Sound class B for reverberation time and another optional sound environment parameter. Other sound environment parameters must comply with class C (According to IST 45).

Rooms that are occupied temporarily are exempt from the requirement.

✉ Acoustic plan that shows calculated sound levels and designed sound classes in the building project.

✉ Competence description of the acoustic technician such as CV.

P15 Quality assurance of acoustics

For all building types, control measurements of any acoustic parameter in accordance with obligatory requirement O39 gives 1 point. Maximum 1 point can be achieved.

If deviations from the projected/simulated values are found, the relevant issues in the construction must be dealt with. Documentation must be sent to Nordic Ecolabelling.

The extent of the conducted measurements must be defined by the acoustic technician to ensure their relevance.

Measurement methods must be in accordance with national legislation and/or national industry guidelines.

✉ Results of the control measurements of relevant noise parameters, including description of measurement methods and reasoning for the controlled rooms/areas.

✉ Documentation of corrections to deviations from the projected values, if relevant.

O39 Daylight provision

Daylight provision* in the Nordic Ecolabelled building must be evaluated through computer simulations, using one of the two methods described in CEN 17037, Target daylight factor** or Target illuminance. At least 50% of the utilised area*** in a room must meet the target illuminance level or daylight factor. For details about the methods and input values, see Appendix 15.

Residential buildings

The applicant shall demonstrate that the daylight provision in the common living areas fulfils the requirement shown in Table 17. Common living areas**** are defined as spaces intended for gathering, dining, watching television, etc. All residential units must fulfil the requirement, which is shown through simulations.

For apartment buildings or identical small houses, simulations of the critical residential units (≥5 units) are accepted. The selection should be justified.

Table 17 Minimum levels for Target illuminance level and Target daylight factor for each country in residential buildings.

Nation	Target illuminance level	Target daylight factor (DT)
Denmark	200 lux	1.4%
Sweden	150 lux	1.3%
Norway	200 lux	1.6%
Finland	150 lux	1.1%
Iceland	200 lux	1.7%

Educational buildings

The applicant shall demonstrate, through computer simulation, that the daylight provision achieved for each of the common areas, which include common rooms/playrooms, classrooms as well as areas for group working and studying, fulfils the requirement shown in Table 14. Areas used only for transient activity, such as corridors or bathrooms, and areas with special lighting requirements are excluded, as shown in Table 19.

Office buildings

The applicant shall demonstrate, through computer simulation, that the daylight provision achieved for the workplace areas fulfils the requirement shown in Table 18. Areas used only for transient activity, such as corridors or bathrooms, and areas with special light requirements are excluded, as shown in Table 19.

Table 18 Minimum levels for illuminance and daylight factor for each country in educational buildings and offices

Nation	Target illuminance level	Target daylight factor (DT)
Denmark	300 lux	2.1%
Sweden	300 lux	2.5%
Norway	300 lux	2.4%
Finland	300 lux	2.2%
Iceland	300 lux	2.6%

Table 19

Areas excluded from the simulations
Sports facilities and gymnasiums
Auditoriums
Music rooms
Areas with special security needs, such as rooms for technical work or laboratories
Rooms for health care, dental care, etc.
Offices for teachers and staff room
Conference rooms
Canteens
Other rooms with special needs that may be exempted from this requirement need to be approved by Nordic Ecolabelling *

Daylight provision is defined as the level of illuminance achieved across a fraction of a reference plane for a fraction of daylight hours within a space.

** *Target daylight factor (DT) is defined as the ratio of the light level inside a structure to the light level outside the structure, for a given illuminance level on the inside.*

*** *Utilised area is the fraction of the space of a room intended to be occupied.*

**** *Common living areas are defined as space intended for gathering, dining, watching television, etc. In homes for the elderly, both private and common areas intended to be used for gathering, dining, watching television, etc. are included.*

✉ Description of the selection of the critical units (worst-case units for each project) in residential buildings, the common areas in educational buildings or the workplace areas in office buildings.

✉ Results of the computer simulation for either Method 1 or Method 2 and drawings of the area defined as the utilised area and its daylight provision.

P16 Daylight experience optimisation

The applicant can choose one or more of the following options. Each option gives 1 point with a maximum of 3 points.

A. Illuminance prediction method (1 point)

Use of method 2 (see Appendix 15 for details) as the calculation method in O39 gives 1 point.

B. Daylight provision optimisation (2 points)

Points are awarded for buildings that provide good daylight distribution in a greater part of the rooms, compared to the obligatory levels in O39. While fulfilling O39, at least 95% of the utilised area must reach the target levels shown in Table 20. For details on simulations and methods, see Appendix 15. Definitions and exemptions apply according to O39.

Table 20 Minimum levels for illuminance and daylight factor.

Nation	Illuminance level	Daylight factor
Denmark	100 lux	0.7%
Sweden	100 lux	0.8%
Norway	100 lux	0.8%
Finland	100 lux	0.7%
Iceland	100 lux	0.9%

✉ Description of the selection of the critical units (worst-case units for each project) in residential buildings, the common areas in educational buildings or the workplace areas in office buildings.

✉ Results of the computer simulation for either Method 1 or Method 2 and drawings of the area defined as the utilised area and its daylight provision.

C. View out (1 point)

The applicant shall demonstrate compliance with the minimum level of recommendations for the view out by following the criteria according to Annex C of EN17037. Included and excluded rooms are defined as in obligatory requirement O39.

- In the living and activity zone, view openings as seen from the reference point of the view have a total horizontal sight angle higher than 14°.
- The distance to the outside view is larger than 6 m.

- In the living and activity zones at least the landscape layer (urban and/or nature) is seen from at least 75% of the utilised area.

✉ Description of the selection of the critical units (worst-case units for each project) in residential buildings, the common areas in educational buildings or the workplace areas in office buildings.

✉ Results of the three levels and drawings of the area defined as the utilised area.

D. Glare (1 point – only for day-care, preschools, schools and office buildings)
The applicant must demonstrate that the following criteria are met according to Annex E of EN17037:

- DGPe<5% for the occupied space* does not exceed 0.45 for 5% of the occupation time of the relevant space.

The daylight glare probability (DGP) can be assessed using a simplified method or an annual DGP calculation. Both methods are described in Annex E of EN 17037.The DGP assessment is not applicable for a space with horizontal daylight openings.

* *Occupied space: spaces where the activities are comparable to reading, writing, or using display devices and the occupants are not able to choose position and viewing direction.*

✉ Description of the occupied space.

✉ Results of the simulated calculations for DGPe<5% for the occupied space.

E. Exposure to sunlight (1 point – only for residential buildings)
The applicant must demonstrate, through computer simulation, that the following criteria are met according to Annex D of EN17037:

- On a selected date between 1 February and 21 March, the common living areas receive sunlight for at least 1.5 hours.

Calculation methods are described in Annex D of EN 17037.

The calculation must be performed for the common living areas of the critical units. Common living areas and critical units are defined as in obligatory requirement O39 and Appendix 15.

✉ Description of the selection of the critical units (worst-case units for each project).

✉ Results of the computer simulation for the common living areas in the critical units.

O40 Thermal comfort and overheating

Nordic Swan Ecolabel buildings must be designed to tackle overheating. Rooms that risk overheating must be identified and evaluated for compliance according to Tables 19 and 20. This must be verified through dynamic simulations of the average hourly operative temperature on a room basis. Parameters for the simulation are given in Appendix 16. Rooms not intended for habitation/occupancy, such as bathrooms, hallways, corridors, stairwells, and storage and maintenance rooms are exempt from the requirement.

Temperatures* can exceed the following values only for a limited number of hours per year, as given in Tables 21 and 22:

Table 21 Long-term operative temperatures

Long-term operative temperatures		Denmark	Finland	Iceland	Norway	Sweden
Residential buildings* and offices	Temperature, °C	27	27	26	26	26
	Max time, h	100	150	100	50	100
Homes for the elderly and educational buildings	Temperature, °C	26	26	26	26	26
	Max time, h	100	150	100	50	100

Table 22 Short-term operative temperatures

Short-term operative temperatures		All countries
Residential buildings and offices	Temperature, °C	28
	Max time, h, within the hours given in Table 21	25
Homes for the elderly and educational buildings	Temperature, °C	27
	Max time, h, within the hours given in Table 21	25

** Instead of temperature simulations, PPD simulations can be used with the following thresholds: PPD<10% corresponds to 26°C, PPD<15% corresponds to 27°C and PPD<20% corresponds to 28°C. Simulations must be done in accordance with EN ISO 7730, and parameters in Appendix 16 should be used.*

✉ Calculations of the average operative indoor temperature for the critical rooms based on dynamic simulations.

✉ Drawings of the buildings indicating the chosen critical rooms.

P17 Solar shading and energy efficient cooling technologies

1 point is granted for each of the following technologies used to control the indoor temperature. Maximum 2 points are available.

- External solar shading, provided by architectural elements such as awnings, protrusions, louvres etc., or solar shading provided by vegetation. All southeast, south and southwest facing windows must be accounted for.
- Cooling provided by sea or lake water
- District cooling
- Seasonal energy storage provided by e.g. water, salt, phase change materials, snow or ice.
- Passive cooling techniques such as automated night ventilation.
- All cooling agents used in the central cooling systems has a GWP ≤ 5.

☒ Description of the chosen technical solutions.

☒ Reference to either the energy demand calculations in O3 or thermal comfort simulation in O40.

O41 Radon

Buildings must be constructed to be radon proof. Verification of the relevant construction principles must be carried out according to the building site's geology and the relevant national building legislation.

Buildings in Norway and Iceland are exempted from the requirement, see Background text.

☒ Verification of the building's radon-proof design according to the construction site geology and relevant national legislation.

O42 Moisture prevention

Moisture prevention in the building must be documented in line with A to C:

A. Plan for moisture prevention

A plan for moisture prevention must be submitted to Nordic Ecolabelling before construction work begins. The project-specific plan for moisture prevention must include:

- List of relevant moisture-sensitive materials and constructions.
- Weather protection of materials/elements during transport and storage.
- Plan for closure of the building and weather protection of relevant constructions.
- Description of procedures and methods for drying out the building.
- Description of how it is ensured that subcontractors adhere to applicant's moisture prevention plan.
- Description of the requirements set for manufacturers of prefabricated elements/modules in relation to moisture prevention during manufacturing, transport and installation.

B. Plan for moisture measurements

A plan for moisture measurements must be made according to the following:

- Moisture measurements must be performed for all relevant materials and constructions in the building, according to the national legislation or official guidelines. The relevant structures and materials must be listed in the plan.
- In concrete-based materials that are covered by moisture-sensitive materials (e.g. parquet) the moisture content must be verified by borehole/specimen measurements.
- Measured values must be below requirements from the manufacturer of surface materials (e.g. linoleum, parquet, etc.) or official national industry guidelines. Relevant target values must be stated.

- Measurement results must be documented and be available to Nordic Ecolabelling upon request.

C. Coordinator for moisture management

- A moisture coordinator must monitor adherence to the moisture prevention plan. The coordinator must fulfil the following:
- Education in moisture prevention in buildings
- At least 2 years' experience in construction site moisture management/control or moisture damage investigations

✉ A. Plan for moisture prevention.

✉ B. Plan for moisture measurements.

✉ B. Monitoring reports and measurement results must be available to Nordic Ecolabelling upon request.

✉ C. Competence description of the moisture coordinator such as CV.

O43 Indoor air quality

Offices and educational buildings:
An indoor maximum concentration of 1000 ppm CO_2 in air must be adhered to in all the common areas, which include common rooms/playrooms, classrooms as well as areas for group working and studying. Sensors for automatic demand control based on the concentration of CO_2 must be installed.

Homes for the elderly and homes for disabled:
An indoor maximum concentration of 1000 ppm CO_2 in air must be adhered to in all common rooms. Areas in the building that are defined as residential areas must comply with the requirement below. Sensors for automatic demand control based on the concentration of CO_2 must be installed.

Residential buildings:
The required supply air for the extraction hood must be supplied automatically without occupant intervention.

Hoods based on recirculation and filtration are not allowed.

A minimum of one window/door that can be opened to the outside must be available in all bedrooms and living rooms.

✉ Office buildings, educational buildings and homes for the elderly: Description of the demand control system.

✉ Residential buildings: Documentation of the air supply system connected to the exhaust hoods. Availability of windows/doors in relevant rooms must be documented.

9 Innovation and other green initiatives

P18 Innovation and other green initiatives

Points are given for innovative measures taken in the construction process or in direct relation to the Nordic Ecolabelled project. A maximum of 4 points can be achieved. The list below shows the measures that are awarded points.

a. A minimum of 90% of the main brick walls are built using lime mortar for construction. Other types of mortar that allow for bricks to be disassembled can also earn points. Documentation must be provided for mortar types other than lime mortar. 2 points

b. Mass management plan that verifies a significantly minimised need for transport of mass at the construction site. 2 points.

c. Point foundation or ground screw foundation of the Nordic Swan Ecolabel building. 2 points.

d. Minimum 25% of the certified wood (according to xx) comes from wood that is produced by the concept of continuous cover forestry*. 1 point

e. Minimum 50% of the certified wood (according to xx) comes from wood that is produced by the concept of continuous cover forestry*. 2 points

f. Other measures may be accepted after consideration by Nordic Ecolabelling.

* *Forests that are managed according to the principles of close-to-nature forestry with forests of different ages. (There are several models, but the common feature is that forestry is run without clear-cutting, with trees of different ages and local species.) The forest must have an operating plan showing how it is managed and renewed, and that clear-cutting is not done. There must be a delivery note/invoice stating that the wood comes from this forest area.*

☒ A) Documentation of the mortar used and the relative amount used in the project.

☒ B) Mass management plan.

☒ C) Documentation of the principle used for the point foundation or ground screw foundation.

☒ D/E) Operating plan for management of the forest and documentation of certified wood produced by the concept of continuous cover forestry.

10 Quality management of the construction process

O44 Air permeability

The applicant must have routines to test air permeability/air-tightness based on the standard EN ISO 9972 in order to ensure the performance that is set at the design stage. The routines must include defect analysis and corrective measures in cases where the projected air permeability is not achieved.

Air permeability must be measured for each building (small houses and educational buildings) or at least 10% of the total number of residential units (in apartments and town houses). Both measurements of individual apartments and entire staircases are approved methods. When air permeability is measured on a random sample basis, there must be a routine to ensure that other apartments have equivalent air permeability. In projects that comprise more than one building, apartments from each building need to be evaluated.

✉ Routine(s) to measure air permeability, comprising measurement method, corrective measures, and error analysis when the measured value deviates from the project designed value.

✉ Results of the air permeability tests and comparison with the air permeability value used in the energy calculation (O3).

O45 Compliance with material and chemical requirements

The applicant must ensure fulfilment of all material and chemical requirements. A routine must be established for the whole construction process, including:

- Chain of responsibility for the material requirements (O15–O29) in the design phase, construction phase(s) and procurement.
- Instructions for subcontractors, e.g. via agreements and control plans.
- Procedure for construction site inspections that covers:
    - Frequency of internal inspections during the construction period
    - Extent of the internal inspections (minimum: material storage, active construction site and area for construction waste).
    - Documentation for internal inspections: inspected materials and their compliance with material requirements in the criteria must be documented, e.g. in the self-inspection system.

✉ Routines that as a minimum document the bullets above.

O46 Information for those involved in the construction process

Employees, including supervisors, site managers and subcontractors involved in the construction process, must have the relevant knowledge to be able to ensure fulfilment of the requirements in conjunction with the project design and construction of a Nordic Swan Ecolabel building.

The routines for the training and information programme must include at least the following:

- Content and scope of the training/information, depending on the participant's role.

- Frequency of the training/information.
- Division of responsibilities.

The applicant must ensure that training and information are available in relevant languages.

✉ Routine in the quality management system and training programme.

O47 Unforeseen non-conformities

The applicant must describe how unforeseen non-conformities that affect Nordic Ecolabelling's requirements are handled and reported to Nordic Ecolabelling. Unforeseen non-conformities must be reported to Nordic Ecolabelling in writing, without delay. Appendix 17 can be used.

✉ Routines describing how unforeseen non-conformities are handled and reported to Nordic Ecolabelling.

✉ Non-conformity reports if relevant. Appendix 17 can be used.

O48 The contractor's self-monitoring system

The contractor must have a documented quality self-monitoring system during the entire construction period. As a minimum, the self-monitoring system must include routines for:

a. Overview of chain of responsibility for the control measures

b. System for management of documents, including archiving and corrections of drawings

c. System for checks on deliveries at time of receipt

d. System for process control, defining control levels and frequency of control for subcontractors, advisors and the construction site management

e. Procedures for checks on prefabricated elements

f. Procedure for the final inspection and handover of the building

Nordic Ecolabelling must have access to the quality self-monitoring system through the entire construction process. This can be handled in the contractor's digital quality assurance system, if that is an option.

✉ Routines describing the self-inspection system according to the requirement.

Definitions

Definition	Description
Biocide treated articles	Articles and products that have been intentionally treated with or intentionally incorporate a biocidal product. Biocides are substances or mixtures that contain or generate one or more active substances that are intended to neutralise or prevent the effects of harmful organisms, such as bacteria, moulds, viruses and insects. The products are treated with biocides to achieve a certain function, for example to prevent bacterial growth.
Chemical products	Chemical products refer to a chemical substance or mixtures of different chemical substances, in liquid, gaseous or solid form, which are used on a construction site or by a manufacturer of prefabricated building components. Chemical products both for indoor and outdoor use are covered by the requirements.
Construction products	Products used in the construction of buildings, for example wall elements, flooring, power cables, doors, thermal insulation etc. In EU regulation No 305/2011, a construction product is defined as “any product or kit which is produced and placed on the market for incorporation in a permanent manner in construction works or parts thereof and the performance of which has an effect on the performance of the construction works with respect to the basic requirements for construction works”.
Homes for the elderly	In order to be covered by the criteria for New Buildings, the building must be classified as a residential building in the national building legislation. Shared areas for the home’s residents and staff areas are also covered by the Nordic Swan Ecolabel and must fulfil the requirements.
Impurities in chemical products	Residuals, pollutants, contaminants etc. from production, incl. production of raw materials that remain in the raw material/ingredient and/or in the chemical product in concentrations of less than 1000 ppm (0.100 w-%, 1000 mg/kg) in the chemical product. Examples of impurities are residues of the following: Rresidues or reagents incl. residues of monomers, catalysts, by-products, scavengers, and detergents for production equipment and carry-over from other or previous production lines.
Ingoing substances	<u>Chemical products:</u> All substances in the chemical product, incuding additives (e.g. preservatives and stabilisers) in the raw materials. Substances known to be released from ingoing substances (e.g. formaldehyde, arylamine, in situ-generated preservatives) are also regarded as ingoing substances. Construction products: All substances in the construction product that are present in concentrations higher than 100 ppm (0.010 w%, 100 mg/kg).
Nanomaterial	A nanomaterial is a natural, incidental or purposely manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for 50% or more of the particles in number or size distribution, one or more external dimensions are in the size range 1–100 nm.
Post-consumer/commercial recycled material	“Post-consumer” is defined as material generated by households or commercial, industrial or institutional facilities in their role as end-users of a product that can no longer be used for its intended purpose. This includes materials from the distribution chain.
Pre-consumer/commercial recycled material	Material that is reclaimed from the waste stream during a manufacturing process. Production waste (scrap, rework, regrind) that can be returned directly to the same process in which it was generated is not counted as recycled pre-consumer material. Nordic Ecolabelling defines rework, regrind or scrap, that cannot be reused directly in the same process, but requires reprocessing (e.g. sorting, reclamation and granulation) before it can be reused, to be pre-consumer material. This is regardless of whether it is produced in-house or externally.
Recycled material	Recycled material is defined according to ISO14021 in the categories of pre-consumer and post-consumer and includes both mechanical and chemical recycling.

Residential institutions / homes for persons with physical or mental functional impairment	In order to be covered by the criteria for New Buildings, the building must be classified as a residential building in the national building legislation. Shared areas for the home's residents and staff areas are also covered by the Nordic Swan Ecolabel and must fulfil the requirements.
Reused materials	Reuse of a material means using it again for the same purpose for which it was originally made. The original product is usually not altered in any significant way before being used again. These criteria also include use of a certain material again, but in a manner different to what it was originally intended for. The original product is left mostly intact, utilising its shape, form and material for a different purpose.
Supplementary buildings	Supplementary buildings are refuse depots, bicycle sheds, garages (both as a separate structure or connected to the building) and similar constructions.
Take Back Systems	An initiative organized by the manufacturer or retailer, to collect used products or materials from the construction sites and module manufacturers and reintroduce them to the original processing and manufacturing cycle. A company may implement this program in collaboration with end-of-life logistics and material processing firms.
Technical service areas	Technical service areas are fan rooms, substations, lift shafts, machine rooms, electricity centres and other areas to which unauthorised persons do not have access. The following are not service areas: all living areas and communal areas such as dressing rooms, shower rooms, stairways, entrance areas, storerooms, corridors in basements/galleries, pram rooms and bicycle rooms.

Appendix 1 Template for overall description of the building

Applicant	
Builder	
Project name	
Date	

Number of buildings	**Number of storeys**	**Building type(s)**	**Number of apartments**	**Area of the building (m2)**
Buildings at the construction site that are not included in the application.		[Describe here]		
Carcass/bearing structure		[Describe here]		
Facades		[Describe here facade material(s)]		
Roof		[Describe here roof materials]		
Foundations		[Describe here foundations]		
Heating system		[Describe here heating system]		
Office buildings: Individual measurement of electricity for each rentable unit or each floor as a minimum		[Describe here]		
Ventilation system (centralised or de-centralised ventilation)		[Describe here ventilation system]		
Garage (attached or detached)		[Describe here garage, if included in the building]		
Storerooms, bicycle storage rooms (attached or detached)		[Describe here storehouse(s)]		
Waste sorting station, other supplementary buildings		[Describe here]		
Outdoor areas		[Describe here the outdoor areas on the site when the building is finished]		
Options for various layouts, materials or fittings		[Describe whether options are available, and the types of options]		

Appendix 2 Template for calculation of points

The table below can be used to verify the requirement O2: "Points achieved".

Areas and requirements	Project's points	Maximum points
Energy and climate		
P1 Household appliances of better energy class		3
P2 Energy efficient or water saving sanitary tapware		2
P3 Management of energy consumption and power peaks		2
P4 Local energy sources and energy recovery		4
P5 Quality assurance of the climate calculation		2
P6 Building sites, construction machinery		3
P7 Bicycle transport		2
Points for climate and energy		18
Resource efficiency/Circular economy		
P8 Construction waste reduction		5
P9 Take-back systems		2
P10 Reused construction materials		5
P11 Insulating materials from sustainable or recycled sources		3
P12 Renewable carcass, facade or inner walls		3
Points for climate and energy		18
Ecolabelled products		
P13 Ecolabelled products Note: minimum point score in P13.		14
Points for ecolabelled products*		14

Biodiversity		
P14 Improvement and preservation of biodiversity		6
Points for biodiversity		6
Indoor climate		
P15 Quality assurance of acoustics		1
P16 Daylight experience optimisation		3
P17 Solar shading and energy efficient cooling technologies		2
Points for indoor climate		6
Innovation and green initiatives		
P18 Innovation and green initiatives (4p)		4
Points for innovation and green initiatives		4
Total points		66

Appendix 3 Energy Calculation

Information about the energy calculation for verification of requirement O3.

Denmark: BE18 or equivalent.

Norway: NS 3031.

Finland: Ministry of the Environment's regulation for buildings' energy performance or equivalent.

Iceland: Calculations shall be made in accordance with BRG # 112 and prepared using a dynamic energy calculation program for energy calculations of buildings.

Sweden: The version of BBR stated in the building permit must be followed. Valid regulation (BEN) and national practice according to SVEBY. Nordic Ecolabelling does not set requirements for specific software, but to achieve energy calculations of good quality the following applies:

- The current regulation BEN must be followed.
- The calculation must be made using dynamic energy calculation software, i.e. software that takes account of variations in e.g. temperature over time. Examples of dynamic energy calculation software are IDA ICE, VIP+ and BV2. Any other software that uses a dynamic simulation could be accepted, but only after consultation with Nordic Ecolabelling.
- The energy calculation program must be adapted to the type of building.
- Standard values may not be used for thermal bridges. Thermal bridges at connection points such as outer wall-window; outer wall-eaves; outer wall, between joists and external walls-ground slabs must instead be calculated according to the Swedish standard EN ISO 10211:2 Thermal performance of buildings – Transmission and ventilation heat transfer coefficients – Calculation method, and ISO 10211:2017 Thermal bridges in building construction – Heat flows and surface temperatures – Detailed calculations.
- Data concerning U values and g values for the relevant windows and window frames must be used.
- Air gaps with facade trim are not included in the calculation of the outer wall's U value.
- Cold roof space resistance must follow Table 3 of SS-EN ISO 6946 Building components and building elements – Thermal resistance and thermal transmittance – Calculation method.
- User input data must be taken from the current edition of Sveby User Related Input Data for homes, or the relevant parts of Sveby User Related Input Data for offices, unless other more customised user input data is appropriate.

- Analogous to Sveby User Related Input Data for homes, no deductions may be made for domestic hot water consumption with individual measurement.
- If a room is optional in a small house, for example, it must not be included to raise the individual heat contribution.
- COP for heatpump and effectiveness of heat exchangers should be based on the measured annual value, taking account of relative humidity.
- When calculating the building's energy use for verification of the building's primary energy number according to Building Regulation (2011:6) – regulations and general recommendations, BBR, appropriate margins are applied so that the requirement is met even when the energy use is measured and normalised.

Appendix 4 Metal – BAT-EAL for emissions (steel and aluminium) and energy efficiency (steel)

Steel

Table 1: Emissions to air – BAT-EAL values for emissions to air for steel. For fully integrated steelworks, emissions from all processes must be included

	Source	Method	Dust mg/Nm3	Hg mg/Nm3	SO2 mg/Nm3	NOx mg/Nm3	PCDD/F ng-I-TEQ/Nm3
Sinter plant	Primary emissions	Bag filters	1-15		<500	<500	<0.05-0.2
		Advanced ESP	20-40				<0.20-0.4
	Secondary emissions	Bag filters	<10	<0.03-0.05			
		ESP	<30				
Pellet plant	Crushing, grinding, drying		<20				
	Other process steps		<10-15				
		Scrubbing or semi-dry desulphurisation			<20		
Blast furnace	BF Gas cleaning	Wet ESP/wet scrubber	<10				
	Cowper's (hot stoves)				<200		
	Cast house emissions	Bag filter/EPS	1-15				
Basic oxygen furnace plant	Primary dedusting	Dry ESP/bag filter	10-30				
		Wet ESP	<50				
	Secondary dedusting	Dry ESP	<20				
		Bag filter	1-10				

Table 2: Discharges to water – BAT-EAL values for discharges to water for steel. For fully integrated steelworks, emissions from all processes must be included

Parameter	Sinter plants emissions mg/l	Palletisation plant emissions mg/l	Coke plant emissions mg/l	Blast furnace emissions mg/l	Basic oxygen emissions mg/l
Suspended solids	<3	<50		<30	<20
COD	<100	<160	<220		
BOD			<20		
Sulphides			<0.10		
Thiocyanate			<4		
Cyanide			<0.10	<0.40	
PAH			<0.05		
Phenols			<0.50		
Sum ammonia-nitrogen, nitrate-nitrogen, and nitrite-nitrogen			<15-50		
Iron				<5	<5
Lead				<0.50	

Zinc				<2	<2
Nickel					<0.50
Total chromium					<0.50
Total hydrocarbons					<5
Total heavy metals	<0.1	<0.55			

Table 3: Measures for efficient energy consumption in steel production

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

Aluminium

The tables below state BAT-EAL values for emissions to air from the electrolysis process in aluminium production.

Table 4: BAT-associated emission levels for dust and fluoride emissions to air from electrolytic cells – channelled dust and fluoride emissions

Parameter	BAT-AEL (mg/Nm3)
Dust	2-5(1)
HF	≤1.00 (1)
Total fluorides	≤1.50 (2)

(1) As a daily average or as an average over the sampling period.

(2) As an average over the sampling period.

Table 5: BAT-associated emission levels for the total emissions of dust and fluoride to air from the electrolysis house (collected from the electrolytic cells and roof vents)

Parameter		BAT-AEL for existing plants (kg/t Al) (1), (2)	BAT-AELs for new plants (kg/t Al) (1)
Dust		≤1.2	≤0.6
Total fluorides		≤0.6 (2)	≤0.35

(1) As mass of pollutant emitted during a year from the electrolysis house divided by the mass of liquid aluminium produced in the same year.

(2) These BAT-AELs are not applicable to plants that, due to their configuration, cannot measure roof emissions.

Table 6: BAT-associated emission levels for SO2 emissions to air from electrolytic cells

Parameter	BAT-AEL (kg/t Al) (1), (2)
SO2	≤2.5-15

(1) As mass of pollutant emitted during a year divided by the mass of liquid aluminium produced in the same year.

(2) The lower end of the range is associated with the use of a wet scrubber. The higher end of the range is associated with the use of low-sulphur anodes.

Appendix 5 Windows and exterior doors

The appendix applies to all windows, window doors and exterior doors which to a major extent consist of non-renewable material in profiles and door leaves. The first part shall be declared by the manufacturer of the window, window doors or the exterior door. The second part shall be declared by the supplier of the material.

Manufacturer
Name of the product, Denmark
Name of the product, Finland
Name of the product, Iceland
Name of the product, Norway
Name of the product, Sweden
Product description:

1. Which material do the window profile and/or door leaves consist of?

PVC	Yes ☐	No ☐
Aluminium	Yes ☐	No ☐
Steel	Yes ☐	No ☐

Other? Please state: _____

Signature of manufacturer

City and Date	Company
Name of contact person	Signature by contact person
Phone	E-mail

A correct signed declaration can result in the acceptance of use of the construction product in Nordic Swan Ecolabel buildings. This must not be mixed up with the possibility to Nordic Swan Ecolabel construction products.

2. Is the above stated material recycled to minimum the following extent?

30% for PVC	Yes ☐	No ☐
40% for Aluminium	Yes ☐	No ☐
20% for steel	Yes ☐	No ☐

Other; please state percentage: _____

** Recycled material is defined as recycled material both from the pre-consumer phase and the post-consumer phase, in accordance with ISO 14021:*

Material in the pre-consumer phase: Material diverted from the waste stream during a manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it. Nordic Ecolabelling defines rework, regrind or scrap, that cannot be recycled directly in the same process, but requires a reprocessing (e.g., sorting, reclamation, and granulation) before it can be recycled, to be pre-consumer material. This is whether it is produced in-house or externally.

Material in post-consumer phase: Material generated by households or by commercial, industrial, and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose. This includes returns of material from the distribution chain.

3. Hereby, certifies that the recycled PVC, does not contain lead or cadmium in levels exceeding 100 ppm? Yes ☐ No ☐

Signature of material supplier

City and Date	Company
Name of contact person	Signature by contact person
Phone	E-mail

A correct signed declaration can result in the acceptance of use of the construction product in Nordic Swan Ecolabel buildings. This must not be mixed up with the possibility to Nordic Swan Ecolabel construction products.

Appendix 6 Hazardous substances in reused construction products

- The following substances must not exceed the given threshold limits below.
- The level of substances must, in addition, always comply with the national threshold limits given in the national legislation and guidelines.
- Substances not specified in the following list but regulated in national legislation must also be documented if relevant to the material.

Substance	Limit	Example of materials/products
Asbestos	0 mg/kg	Facade and roof panels, electrical conduits, insulation materials
CFC, chlorofluorocarbons	100 mg/kg	Insulation materials and foams
Substances classified as hazardous waste according to national legislation and guidelines.	According to national legislation and guidelines	
Cadmium, arsenic, copper, chromium, lead, mercury and their compounds	100 mg/kg	PVC/plastic, products with paint layer
phthalates DEHP, BBP, DBP and DIBP	1.000 mg/kg	PVC/plastic/rubber
Halogenated flame retardants	100 mg/kg	Rubber/plastic
Chlorinated paraffins Short-chained chlorinated paraffins (SCCPs, C10-C13) and medium-chained chlorinated paraffins (MCCPs, C14-C17)	100 mg/kg	Rubber/plastic/products with paint layer
Nonyl- and octylphenols	1.000 mg/kg	Flooring and products with paint layers
PCBs (polychlorinated biphenyls)	0.1 mg/kg internal and 1 mg/kg external*	Flooring, products with paint layers, concrete

**Measured inside the material or in a finish, depending on where the concentration was deemed to be the highest. The limit is the one used in the Danish regulation "Restproduktbekendtgørelsen" from December 2016.*

Appendix 7 Declaration from the manufacturer of the chemical product

This appendix applies to all chemical products used in construction work at the building site or by manufacturers of prefabricated construction elements. Chemical products used to construct any supplementary buildings or to construct fences, decking, outdoor furniture, playground equipment and similar are also included.

This appendix is completed and signed by the chemical supplier based on the best of his/her knowledge at the time of the application, also based on tests and/or declarations from raw material manufacturers, with reservations for new advances and new knowledge. Should such knowledge arise, the undersigned is obliged to submit an updated declaration to Nordic Ecolabelling.

Chemical product name, Denmark
Chemical product name, Finland
Chemical product name, Iceland
Chemical product name, Norway
Chemical product name, Sweden
Manufacturer
Type of chemical product (e.g. adhesive, paint) and its area of use

1. Classification of chemical products

Is the chemical product classified according to the table below? Yes ☐ No ☐

If yes, which classification?

_____

_____

Classification of chemical products CLP Regulation 1272/2008:		
Hazard statement	**Hazard class and category**	**Hazard code**
Toxic to aquatic life	Toxic to aquatic life, Acute 1 Toxic to aquatic life, Chronic 1 Toxic to aquatic life, Chronic 2	H400 H410 H411
Harms public health and the environment by destroying ozone in the upper atmosphere	Hazardous to the ozone layer	H420
Acute toxicity	Acute Tox. 1 or 2 Acute Tox. 1 or 2 Acute Tox. 1 or 2 Acute Tox. 3 Acute Tox. 3 Acute Tox. 3	H300 H310 H330 H301 H311 H331
Specific target organ toxicity: single exposure and repeated exposure	STOT SE 1 STOT RE 1	H370 H372
Skin sensitising	Skin sens. 1, 1A or 1B	H317
Carcinogenic	Carc. 1A or 1B Carc. 2	H350 H351
May cause genetic defects	Muta. 1A or 1B Muta. 2	H340 H341
Toxic for reproduction	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362

The classifications in the table concern all classification variants. For example, H350 also covers classification H350i.

Exemptions:

- Chemical anchors classified H400, H410 and H411 due to dibenzoyl peroxide (CAS 94-36-0) are allowed.
- Hardener for acrylic floor coatings classified H400, H410 and H411 due to dibenzoyl peroxide (CAS 94-36-0) are allowed for use in commercial kitchens. In Nordic countries with an authorisation system, the flooring contractor must be authorised.
- For naphtha-based primers used in waterproofing assembly (flat roofs, green roofs, courtyards, terraces and similar applications) and naphtha-based adhesives for cellular rubber insulation intended for cooling pipes and ventilation ducts indoors, the classification H411 is accepted.
- For primers for expansion joints on concrete, concrete-metal and metal-metal outwardly/outside on the building and for roof adhesive/adhesive for waterproofing outwardly, the classification H411 is accepted.
- For all outdoor products, the classification H317 is accepted.

2. Ingoing substances

Ingoing substances are all substances in the chemical product, incuding additives (e.g. preservatives and stabilisers) in the raw materials, but not including impurities. Substances known to be released from ingoing substances (e.g.

formaldehyde, arylamine, in situ-generated preservatives) are also regarded as ingoing substances.

Impuritues are residuals, pollutants, contaminants etc. from production, incl. production of raw materials that remain in the raw material/ingredient and / or in the chemical product in concentrations of less than 1000 ppm (0.100 w-%, 1000 mg/kg) in the chemical product. Examples of impurities are residues of the following: residues or reagents incl. residues of monomers, catalysts, by-products, scavengers, and detergents for production equipment and carry-over from other or previous production lines.

3. CMR substances

a) Does the chemical product contain any ingoing substances classified according to the table below? Yes ☐ No ☐

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

The classifications in the table concern all classification variants. For example, H350 also covers classification H350i.

Exemptions are made for:

- Glyoxal (CAS no. 107-22-2, H341) ≤ 100 ppm (0.01% by weight) in the final product if the pH value in the final product is higher than pH 8.
- TiO_2 (CAS no. 13463-67-7, H351 inhalation).
- The dispersant trimethylolpropane (CAS no. 77-99-6, H361 self-classification) up to ≤ 5000 ppm (0.5% by weight) in the final product.
- Dibutyltin (DBT) and dioctyltin (DOT) in sealing products (the primer and joint product respectively) ≤ 5000 ppm (0.5% by weight) in the final product.

Note that tributyltin (TBT) and triphenyltin (TPT) are not accepted regardless of content or product type.

b) If yes, specify classification and the quantity as a percentage by weight of each substance:

_____

_____

c) Does the declaration about CMR substances relate to a hardened two-component product? Yes ☐ No ☐

4. Preservatives in indoor paints and varnishes

Are any of the following preservatives/combinations of preservatives an ingoing substances in indoor paint and varnishes?

- Preservatives exceeding, in total:
- 1000 ppm for wet room paint Yes ☐ No ☐
- 900 ppm for all other indoor paints and varnishes Yes ☐ No ☐
- Isothiazolinone compounds* exceeding 600 ppm in total Yes ☐ No ☐

The term preservative refers to both PT 6 (in-can) and PT 7 (dry-film protection).

* Note that dithio-2,2'-bis-benzmethylamide (DTBMA) is to be included in the total amount of isothiazolinones.

5. Preservatives in other chemical products for indoor use

Are any of the following preservatives/combinations of preservatives ingoing substances in any other chemical product for indoor use?

- Isothiazolinone compounds exceeding 600 ppm in total* Yes ☐ No ☐
- Iodopropynyl butylcarbamate (IPBC) exceeding 2000 ppm Yes ☐ No ☐
- Bronopol (CAS no. 52-51-7) exceeding 500 ppm Yes ☐ No ☐

The term preservative refers to both PT 6 (in-can) and PT 7 (dry-film protection).

** Note that dithio-2,2'-bis-benzmethylamide (DTBMA) is to be included in the total amount of isothiazolinones.*

6. Other substances excluded from use

Are any of the following ingoing substances in the chemical product?

- Substances on the Candidate List* Yes ☐ No ☐
- Substances evaluated by the EU to be PBT substances (persistent, bioaccumulative and toxic) or vPvB substances (very persistent and very bioaccumulative) in accordance with the criteria in Annex XIII to REACH. Yes ☐ No ☐
- Substances shall not be potential or identified endocrine disruptors according to any of the EU member state initiated "Endocrine Disruptor Lists" I, II and III. Yes ☐ No ☐

- Short-chain chlorinated paraffins (C10-C13) and medium-chain chlorinated paraffins (C14-C17) Yes ☐ No ☐
- Perfluorinated and polyfluorinated alkylated substances (PFASs) Yes ☐ No ☐
- APEO – alkylphenol ethoxylates and other alkylphenol derivatives (substances that release alkylphenols on degradation) Yes ☐ No ☐
- Halogenated flame retardants Yes ☐ No ☐
- Phthalates Yes ☐ No ☐
- Bisphenol A, bisphenol S and bisphenol F Yes ☐ No ☐
- The heavy metals lead, cadmium, arsenic, chromium (VI), mercury and their compounds Yes ☐ No ☐
- Volatile aromatic compounds > 1% by weight** Yes ☐ No ☐
- Organotin compounds Yes ☐ No ☐
- Do any of the exemptions for dibutyltin (DBT) and dioctyltin (DOT) in sealing products (the primer and joint product respectively) stated below need to be used: Yes ☐ No ☐
    - Maximum 0.5% in silane hardener systems.
    - Maximum 0.2% in other hardener systems.

Please state type of polymer and/or product:

_____

Please state type and content of organotin compound:

_____%

Volatile aromatic compounds are any aromatic compound having an initial boiling point less than or equal to 250°C measured at a standard pressure of 101.3 kPa. For paints and varnishes, volatile aromatic compounds are instead defined as aromatic compounds having a boiling pressure of at least 0.01 kPa at 293.15°K.

Note that tributyltin (TBT) and triphenyltin (TPT) are not accepted regardless of content or product type.

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

** Naphtha-based primers for waterproofing assembly (flat roofs, green roofs, courtyards, terraces and similar applications, primers in expansion joints on concrete, concrete-metal and metal-metal outwardly/outside on the building and roof adhesive/adhesive for waterproofing outwardly may contain up to 20% by weight of volatile aromatic compounds.

7. Nanoparticles in chemical products

Are nanoparticles* according to European Commission definition (2011/696/EU) ingoing substances in the chemical product? Yes ☐ No ☐

Exemptions are made for:

- Pigments**
- Naturally occurring inorganic fillers***
- Synthetic amorphous silica and calcium carbonate****
- Unmodified calcium carbonate (Ground Calcium Carbonate (GCC) and Precipitated Calcium Carbonate (PCC))
- Polymer dispersions

* The definition of nanomaterial follows the European Commission's definition of nanomaterial of 18 October 2011 (2011/696/EU): "A nanomaterial is a natural, incidental or purposely manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and when, for at least 50% of the particles in the number size distribution, one or more external dimensions is in the size range 1-100nm."

** Nano-titanium dioxide is not considered to be a pigment, and is therefore covered by the requirement.

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

**** This applies to unmodified synthetic amorphous silica. Chemically modified colloidal silica can be included in the products as long as the silica particles form aggregates in the final product. Surface-treated nanoparticles must fulfil requirement O21 (classification of ingoing chemical substances) and requirement O25 (Other substances excluded from use).

Signature of chemical product manufacturer

City and Date	Company
Name of contact person	Signature by contact person
Phone	E-mail

A correctly signed declaration can result in the acceptance of use of the construction product in Nordic Swan Ecolabel buildings. This must not be mixed up with the possibility to Nordic Swan Ecolabel construction products.

Appendix 8 Declaration of copper in water pipes and as facade and roofing material in Nordic Swan Ecolabel buildings

Name of the Nordic Swan Ecolabel applicant	**Project**

It is hereby declared that copper has not been used in water pipes and as facade and roofing material in the Nordic Swan Ecolabel building.

Do any of the exemptions for copper stated below need to be used:

- Visible pipelines
- Water fittings connecting pipes
- Tap water pipes in service areas
- Closed water supply systems, for example in a water-borne heating system
- Pipes through the wall for an outdoor tap

Please state type of exemption(s):

Does the following contain more than 10% copper?

Roof Yes ☐ No ☐

Facade cladding Yes ☐ No ☐

Signature of applicant

City and Date	Company
Name of contact person	Signature by contact person
Phone	E-mail

A correctly signed declaration can result in the acceptance of use of the construction product in Nordic Swan Ecolabel buildings. This must not be mixed up with the possibility to Nordic Swan Ecolabel construction products.

Appendix 9 Declaration of granular infill on playgrounds and outdoor areas

Name of the Nordic Swan Ecolabel applicant	Project
Name of product (playground/outdoor material)	Name of producer

It is hereby declared that granules of plastic or rubber are not used as infill on surfaces on playgrounds and outdoor areas that are included in the Nordic Swan Ecolabel project/assignment and that are constructed and marketed together with the Nordic Swan Ecolabel building,

Signature of applicant

City and Date	Company
Name of contact person	Signature by contact person
Phone	E-mail

A correctly signed declaration can result in the acceptance of use of the construction product in Nordic Swan Ecolabel buildings. This must not be mixed up with the possibility to Nordic Swan Ecolabel construction products.

Appendix 10 Declaration on substances excluded from construction products, construction goods and materials

The declaration applies to manufacturers of any of the following building products, goods and building materials:

☐ Sealing products (such as vapour, wind and radon barriers, fixed waterproofing of wet rooms, roof surfacing and roofing membrane).	☐ Thermal, acoustic and technical insulation.
☐ Interior and exterior building panels (besides panels of solid wood, laminated timber, veneer, OSB, plywood, MDF/HDF and chipboard)	☐ Plastic coverings for floors, ceilings and walls
☐ Wood plastic composites (WPC)	☐ Wood that is impregnated as protection from rot, blue stain and mould.
☐ Heavy current cables	☐ (Electrical) conduits
☐ Other. Please specify:	☐ Textile coverings for floors, ceilings and walls

Service areas are exempt from the requirement. Service areas are fan rooms, substations, lift shafts, machine rooms, electricity centres and other areas to which unauthorised persons do not have access.

Name of the product, Denmark
Name of the product, Finland
Name of the product, Iceland
Name of the product, Norway
Name of the product, Sweden
Manufacturer

This declaration is completed and signed by the manufacturer of the building product or building material, based on their knowledge at the time of the application, and based on tests and/or declarations from raw material manufacturers, with reservations for new advances and new knowledge. Should such knowledge arise, the undersigned is obliged to submit an updated declaration to Nordic Ecolabelling.

Are any of the following substances present in the building product/material in concentrations higher than 100 ppm?

- Substances on the EU's Candidate List* Yes ☐ No ☐
- Substances evaluated by the EU to be PBT substances or vPvB substances in accordance with the criteria in Annex XIII to REACH. Yes ☐ No ☐
- Substances classified as carcinogenic, mutagenic or toxic for reproduction (CMR) Category 1A and 1B Yes ☐ No ☐
- Substances that are potential or identified endocrine disruptors according to any of the EU member state initiated "Endocrine Disruptor Lists" I, II and III Yes ☐ No ☐
- Short-chain chlorinated paraffins (C10-C13) and medium-chain chlorinated paraffins (C14-C17) Yes ☐ No ☐
- Perfluorinated and polyfluorinated alkylated substances (PFASs) Yes ☐ No ☐
- Alkylphenol ethoxylates (APEO) and other alkylphenol derivatives (substances that release alkylphenols on degradation) Yes ☐ No ☐
- Halogenated flame retardants** Yes ☐ No ☐
- Phthalates Yes ☐ No ☐
- The heavy metals lead, cadmium, arsenic, chromium (VI), mercury and their compounds Yes ☐ No ☐
- Bisphenol A, bisphenol S and bisphenol F Yes ☐ No ☐
- Organotin compounds Yes ☐ No ☐

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

** The material in (electrical) conduits may contain brominated flame retardants provided that the following limits are fulfilled:

- Bromine content (Br) ≤ 0.15%
- Chlorine content (Cl) ≤ 0.15%
- Total content: bromine content (Br) + chlorine content (Cl) ≤ 0.2%

The content must be verified using ion chromatography (IC) according to the methods in EN 14582 or modified IC methods according to EN50642.

Signature of manufacturer of the construction product/goods/material

City and Date	Company
Name of contact person	Signature by contact person
Phone	E-mail

A correctly signed declaration can result in the acceptance of use of the construction product in Nordic Swan Ecolabel buildings. This must not be mixed up with the possibility to Nordic Swan Ecolabel construction products.

Appendix 11 Declaration of antimicrobial surface treatments in construction products

Name of the Nordic Swan Ecolabel applicant	Project
Name of product (playground/outdoor material)	Name of producer

It is hereby declared that biocide treated articles*, where the purpose is to create an antimicrobial surface, are not used in the Nordic Swan Ecolabel building, in supplementary buildings (for example refuse depots, bicycle sheds and sheds) or in decking, fences, outdoor furniture, playground equipment and similar that is included in the Nordic Swan Ecolabel project/assignment and is constructed and marketed together with the Nordic Swan Ecolabel building.

Exemptions are made for:

- wood that is impregnated as protection from rot, blue stain and mould
- articles in white goods, such as air filters and door gaskets

* *Biocide treated articles are products that have been intentionally treated with or intentionally incorporate biocidal product. Biocides are substances and mixtures that contain or generate one or more active substances that are intended to neutralise or prevent the effects of harmful organisms, such as bacteria, moulds, viruses and insects. The products are treated with biocides to achieve a certain function, for example to prevent bacterial growth.*

Nordic Ecolabelling may request further information if in doubt about specific products.

Signature of applicant

City and Date	Company
Name of contact person	Signature by contact person
Phone	E-mail

A correctly signed declaration can result in the acceptance of use of the construction product in Nordic Swan Ecolabel buildings. This must not be mixed up with the possibility to Nordic Swan Ecolabel construction products.

Appendix 12 Declaration on emissions of formaldehyde

Applies to all wood-based panels/boards used in the production of Nordic Swan Ecolabel buildings either as (building) panels/boards, boards in floors or boards in fittings. The requirement does not apply to panels solely marketed as facade panels, solid wooden worktops and individual fixture details such as a hat or shoe shelf.

Product name, Denmark	
Product name, Finland	
Product name, Iceland	
Product name, Norway	
Product name, Sweden	
Manufacturer	
Product description	☐ Wood based panels/boards ☐ Boards in floorings ☐ Boards in doors and fittings ☐ Mouldings, baseboards and frames

1. Does the emission of free formaldehyde exceed the limit stated below, in accordance with the current version of the standard at the time of sampling? Please tick below and attach test results.

EN 717-1:

0.062 mg/m^3 for wood based panels and fitments Yes ☐ No ☐

EN 16516:

0.124 mg/ m^3 for wood based panels and fitments Yes ☐ No ☐

0.03 mg/ m^3 for laminate panels and fitments Yes ☐ No ☐

Signature of panel/board manufacturer

City and Date	Company
Name of contact person	Signature by contact person
Phone	E-mail

A correctly signed declaration can result in the acceptance of use of the construction product in Nordic Swan Ecolabel buildings. This must not be mixed up with the possibility to Nordic Swan Ecolabel construction products.

Appendix 13 Declaration – tree species with restricted use

Name of the applicant/supplier:
Name of Nordic Swan Ecolabel project (filled by applicant):
Version and date of the list of restricted tree species used

The declaration is completed by the applicant for the whole project and for the wood containing products that are not subjected to declaration in the supply chain declaration portal:

It is hereby confirmed that no tree species on the list of restricted tree species are used in the construction of the Nordic Swan Ecolabel building – including wood-based products used in construction but not incorporated in the building, such as wood in casting moulds.

The declaration is completed by the supplier of the wood containing products in the case of wood containing products that are subject to declaration in the supply chain declaration portal:

It is hereby confirmed that no tree species on the list of restricted tree species are used in the wood-based products.

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

If tree species listed in either b, c or d (see the requirement) are intended to be used in the project, this has to be documented by the supplier of the specific tree species. Tree species listed in either b, c or d cannot be used in the project without prior approval by Nordic Ecolabelling.

Signature

Date	Company
Name of contact person	Signature by contact person
Phone	E-mail

A correctly signed declaration can result in the acceptance of use of the construction product in Nordic Swan Ecolabel buildings. This must not be mixed up with the possibility to Nordic Swan Ecolabel construction products.

Appendix 14 Ecology report

The scope of the biodiversity mapping must be adapted to the size and condition of the building site. The analysis must emphasise multi-functionality and describe which ecology is needed on the site to maintain the ecosystem.

National methods for mapping and evaluating biodiversity can be used but must be adapted to the type of biodiversity found on building plots. For example, all sites of importance for biodiversity must be registered (i.e. any method requirements for minimum area are deleted), red-listed and invasive species must be mapped in the entire area, and elements with ecological value that may not be covered by the national mapping instructions must also be registered. For example large old trees.

Information from public databases must be used as much as possible. The surveyor can otherwise use data collected during an inspection of the site at one or more appropriate times during the year, when different plant and animal species are present. The content of the report must be representative of the biodiversity as it is on the building site, before the initial work begins.

Examples of measures that can be evaluated in the report:

- Planting of trees
- Green roofs
- Creation of rain beds, open waterways with natural banks and moisture biotopes for surface water management. Must be assessed in collaboration with the developer's professionals for water and sewerage and landscape architects.
- Create possibility for urban cultivation, e.g. in cultivation boxes. The placement in relation to the building must be considered.
- Compost for garden waste
- Planting of local plants that benefit pollinators (bumblebees, honey bees, etc.) and planting of edible plants.
- Create habitats for local species of insects, birds, bats and flying squirrels and ponds for amphibians.

Appendix 15 Daylight provision

Daylight must be documented according to EN 17037 Daylight in buildings, Annex B. The following two methods can be used:

Method 1: A calculation method based on daylight factor and cumulative daylight availability data. At least 50% of the utilised** area in a room must meet the target daylight factor (DT)* given in obligatory requirement O39. For the point requirement, at least 95% of the utilised area must reach the target daylight factor in P16.

Method 2: A calculation method based on the direct prediction of illuminance levels using hourly climate data of diffuse skylight and direct sunlight. At least 50% of the utilised area in a room must meet the target illuminance given in obligatory requirement O39. For the point requirement, at least 95% of the utilised area must reach the target illuminance in P16.

All the simulations must be done with no furnishings other than those permanently installed.

All calculations must be done for a median daylight factor and/or median illuminance level to fulfil the requirement.

The reflectance values used in the modelling of the daylight provision need to be within the range provided in the Table below. Default values must be used when the specific surface reflectance value of the material is unknown.

Table 23 Values of reflectance for different surfaces.

Surface	Range (EN 17037:2018)	Default values (EN 17037:2018)
Ceiling	0.7-0.9	0.7
Interior walls	0.5-0.8	0.5
Floor	0.2-0.4	0.2
Exterior walls	0.2-0.4	0.2
Exterior ground	0.2	0.2

* Target daylight factor (DT) is defined as the ratio of the light level inside a structure to the light level outside the structure, for a given illuminance level on the inside.

Appendix 16 Parameters for thermal comfort simulations

Parameters to be set for the dynamic simulation of thermal comfort according to requirement O40.

Parameters for the dynamic simulation

Climate Files	SE: Sveby-SMHI normal year, DK: DRY 2013, NO: according to NS 3031 FI/IS: none for the time being. or similar
Climate zone	Climate zone corresponding to the building location
Internal heat loads	100% of internal heat loads coming from equipment, lighting and occupants
Air velocity	0.15 m/s
Clothing coefficient (clo)	0.5
Metabolic rate (met)	1.2
Window openings	≤10%
Solar shading and blinds	Drawn or scheduled
Other parameters	According to ISO 7730

Appendix 17 Non-conformity report template

Which requirement does the non-comformity corner?	
State relevant product and producer if relevant	
Describe what has happened in relation to the non-conformity.	
Why did the non-conformity occur ?	
Extent, i.e. amount	
Corrective measures already taken	
Improvements and preventive measures to be implemented	

Signature

Date	Company
Name of contact person	Signature by contact person
Phone	E-mail