

Nordic Ecolabelling for
Chemical Building products



Version 3.0 • date – date

CONSULTATION

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This document is the original document. In case of dispute in other languages, the original document should be taken as authoritative.

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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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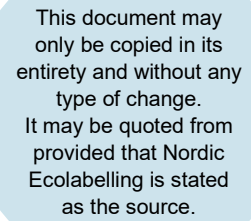
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1 What to communicate about a Nordic Swan Ecolabel Chemical building product

A Nordic Swan Ecolabel chemical building product has reduced environmental impact throughout its lifecycle. By meeting strict requirements for chemicals, quality and raw materials, the product group is a better choice for the environment, the climate, and the users.

Nordic Swan Ecolabel chemical building products:

- Meet strict quality requirements to promote long-lasting, durable, and efficient chemical building products which leads to less use of resources in a lifecycle perspective.
- Meet strict requirements regarding environmentally hazardous chemicals.
- Meet strict health requirements for chemicals. It means that the chemical building product does not contain substances that are classified to cause cancer, damage genes or reproductive capacity.
- Is free from phthalates, organic fluorinated substances and identified and potential endocrine disruptors on current lists from EU and national authorities.
- Meet strict requirements for emissions of harmful substances. This is positive for the indoor environment.
- Meet requirements for the manufacturing of raw materials with high climate impact such as titanium dioxide and cement/hydraulic binders.
- Has packaging that includes recycled material - which contributes to a circular economy.
- Ensures that if renewable raw materials are used, it originate from more sustainably produced and controlled sources.

The overall environmental impact in the lifecycle of this product group and Nordic Swan Ecolabel identification of where ecolabelling can have the greatest effect is described in Environmental impact of the chemical building product.

2 What can carry the Nordic Swan Ecolabel?

The product group of chemical building products shall comprise of the following:

- Adhesives, including multipurpose adhesives/construction adhesives*
- Sealants
- Fillers / putties / screed (including primers to these)
- Impregnating agent for tiles, stone, and concrete**

- Mortar and plaster

** Here adhesives refer to products such as wood adhesive, grab adhesive, tile adhesive, wallpaper paste and the like. The product group does not include adhesives for industrial use for purposes such as furniture production or panelling.*

*** Impregnating agents for tiles, stone and concrete refer to products that have special technical properties that protect the material.*

3 Guide to criteria

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

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

- ☒ Enclose
- 📁 Upload
- ↓ Download
- 📄 State data in electronic application
- 📍 Requirement checked on site

To be awarded a Nordic Swan Ecolabel licence:

- All obligatory requirements must be fulfilled.
- Nordic Ecolabelling must inspect the site.

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

4 Summary

Nordic Swan Ecolabelling holds significant relevance for a range of chemical building products, including putties, fillers, adhesives, impregnating agents, mortars and plasters. Sustainable practices in this domain have evolved to address diverse environmental aspects. Companies now prioritize reducing volatile organic compounds (VOCs), conserving energy, minimizing waste, enhancing process efficiency, and incorporating renewable materials. The evaluation of social impacts across the entire value chain is increasingly integral, reflecting a broader commitment to environmental sustainability and social responsibility in the production and use of chemical building products.

Updated chemical requirements

Ingoing substances that are classified as environmental hazardous have been tightened in this version of the criteria. Furthermore, the limit for preservatives has been tightened. In addition, new CLP classifications have been added to better identify endocrine disruptors, persistent substances, and mobile and toxic substances.

In this generation of chemical requirements, a definition of ingoing substances is used which means a ban on specific ingoing substances down to 0 ppm, just like in the previous generation. As such, a safety data sheet alone is not enough to meet the documentation requirement. Further information about the chemicals will always be needed. Other certifications that do not require chemical documentation down to the same level will therefore not be permissible as documentation for these requirements.

The requirement for formaldehyde, VOCs, and Semi-Volatile Organic Compounds (SVOC) has been updated with emission testing to better protect the consumer from exposure.

Nordic Ecolabel has introduced a new dynamic criterion for endocrine disruptors that are identified or suspected as endocrine disruptors across different legislations or national evaluations.

Requirements for energy and CO₂-reduction

The criteria have been expanded with requirements focused on reducing the climate impact of raw material production with a high energy consumption, by introducing energy efficiency requirement such as certification or limit values for CO₂-emissions.

Requirements for renewable raw materials

The criteria have introduced a supply chain policy for the manufacturer and a code of conduct for responsible sourcing of renewable raw materials.

Circular economy

The criteria have introduced several requirements for packaging to promote circular economy. This includes use of recycled material in packaging and making it more clear to consumer how to recycle the packaging at the end of life.

It is difficult to measure the environmental gains from ecolabelling. Nordic Ecolabelling is, however, aware that the licensees in this product group have widely been forced to change their formulations in order to meet the requirements set out in the Criteria for Nordic Ecolabelling of Chemical Building Products. This fact, coupled with the relatively large volumes of chemical building products, gives a strong indication that a significant environmental gain has been generated.

5 Requirements and justification of these

Nordic Ecolabelling bases its work on three parameters when setting the requirements within the criteria.

These three parameters are to be seen together and as such are referred to as Relevance-Potential-Steerability, RPS. Choosing the requirements that together have the greatest relevance, potential and steerability in terms of the product's life cycle achieves the greatest environmental gain.

Relevance is assessed based on which environmental problems the product group causes and how extensive those problems are.

Potential is assessed based on the potential environmental gains within the specific product group and for each area in the criteria where requirements are set.

Steerability is assessed based on the scope to set requirements concerning the relevant environmental parameters with potential for improvement.

These chapters also present new and revised requirements, explains the background to them, the chosen requirement levels and any changes compared with previous generation for chemical building products. The appendices referred to are those that appear in the criteria document.

5.1 Definition of the product group

The product group definition below has been updated compared with version 2. Paints and varnishes for outdoor use, industrial paints and varnishes and anti-corrosion paints have been moved to the criteria document of Paints and varnishes version 4.

Chemical building products refers to liquid or non-hardened products for use in building work both indoors and outdoors, and on different substrates. Relevant chemical building products other than those mentioned below, which can be assessed as chemical building products, can be included in the product group upon request. The decision on which new products can be included in the product group is made by Nordic Ecolabelling." Such a wording gives Nordic Ecolabelling an opportunity to expand the product group during the validity period, with products that are not named or were intended during the revision/criteria development.

- Adhesives, including multipurpose adhesives/construction adhesives*
- Sealants
- Fillers, putty, and levelling compound (screed) (including primers to these)
- Impregnating agent for tiles, stone, and concrete**
- Mortars and plasters

* *Here adhesives refer to products such as wood adhesive, grab adhesive, tile adhesive, wallpaper paste and similar.*

*** Impregnating agents for tiles, stone and concrete refer to products that have special technical properties that protect the material.*

Solid building products such as insulation materials and plastic products, pure concrete, etc. cannot be Nordic Swan Ecolabelled under these criteria. However, Nordic Ecolabelling criteria exist for, for example small houses, windows and external doors, floors, furniture and fitments (including internal doors and stairs), building panels and sustainable wood/ durable wood-alternative to conventionally impregnated wood.

5.2 Definitions

Adhesive	Non-metallic substance or product used for surface-to-surface bonding, which is applied in a liquid state and then, by cooling, evaporation or chemical change, hardens into an intermediate layer with significant cohesiveness between the surfaces. Adhesive is a broad term encompassing materials like cement, mucilage, glue, and paste, often used interchangeably for substances forming adhesive bonds. Inorganic materials like Portland cement can also be regarded as adhesives.
Sealant	Soft, plastic, putty-like material used to seal joints in buildings and other structures.
Filler/Putty/Levelling compound/Screed	Pasty mass used to smooth out unevenness in a surface to be painted, wallpapered, lacquered, or covered with any floor material.
Impregnating agent	Chemical product used to impregnate the façade or surface in order to protect the substrate against penetrating moisture via hydrophobic or strongly water repellent substances.
Mortar	Is composed from a mixture of a fine aggregate (typically sand), a hydraulic binder and water. The binder is generally either lime or cement. This blend forms a paste employed in masonry construction to serve as both a bedding and adhesive. It binds and fills the gaps between adjoining blocks of brick, concrete, or stone.
Plaster	Is a pasty composition, often made of lime or gypsum, water, and sand, that hardens upon drying. It is utilized for coating walls, ceilings, and partitions in construction, providing protection and decoration. Plaster can also be employed to craft architectural elements like ceiling roses, cornices, and corbels. Typically, it is produced as a dry powder and transformed into a stiff paste by mixing with water before application.
Ingoing substances	All substances in the Nordic Swan Ecolabelled product regardless of amount, including additives (e.g., preservatives and stabilizers) in the raw materials. Substances known to be released from ingoing substances (e.g., formaldehyde, arylamine, in situ-generated preservatives) are also regarded as ingoing substances.
Impurities	Residuals, pollutants, contaminants etc. from production, incl. production of raw materials, that remain in the Nordic Swan Ecolabelled product in concentrations less than 100 ppm (0.0100%).

	<p>Impurities in the raw materials exceeding concentrations of 10 000 ppm (1.0000%) are always regarded as ingoing substances, regardless of the concentration in the Nordic Swan Ecolabelled product.</p> <p>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.</p> <p>The impurity limit of 100 ppm (0.0100%) applies to each individual substance that is excluded, i.e., Impurities with the same classification in different raw materials shall not be summed up to comply with the limit. The same contaminants in different raw materials also do not need to be summed.</p>
Phthalates	Esters of phthalic acid orthophthalic acid / phthalic acid /1,2- benzene dicarboxylic acid).
Alkyd resin (binder)	Synthetic resin resulting from the polycondensation of fatty acids (or oils) and carbonic acids with polyols.
Acrylic resin (binder)	Synthetic resin resulting from the polymerization or copolymerization of acrylic and/or methacrylic monomers, frequently together with other monomers.
Hydraulic binder	Materials that that hardens when mixed with water by means of hydration reactions.
In-can preservatives	<p>Biocide used to prevent growth of microorganisms during storage of a water-based coating material or stock solution.</p> <p>Active substances within the meaning of Article 3(1)(c) of Regulation (EU) No 528/2012 of the European Parliament and of the Council (the "Biocide Regulation"), intended for use in Product Type 6 (PT 6) as described in Annex V to that Regulation.</p>
Dry-film preservatives	<p>Products used for the preservation of films or coatings by the control of microbial deterioration or algal growth in order to protect the initial properties of the surface of materials or objects.</p> <p>Active substances within the meaning of Article 3(1)(c) of Regulation (EU) No 528/2012 (the "Biocide Regulation"), intended for use in Product Type 7 (PT 7) as described in Annex V to that Regulation</p>
Nanomaterial	<p>Nanomaterials/-particles are defined according to the EU Commission Recommendation on the Definition of Nanomaterial (2022/C 229/01):</p> <p>'Nanomaterials' means a natural, incidental, or manufactured material consisting of solid particles that are present, either on their own or as identifiable constituent particles in aggregates or agglomerates, and where 50 % or more of these particles in the number-based size distribution fulfil at least one of the following conditions:</p> <p>(a) one or more external dimensions of the particle are in the size range 1 nm to 100 nm;</p> <p>(b) the particle has an elongated shape, such as a rod, fibre or tube, where two external dimensions are smaller than 1 nm and the other dimension is larger than 100 nm;</p> <p>(c) the particle has a plate-like shape, where one external dimension is smaller than 1 nm and the other dimensions are larger than 100 nm.</p> <p>In the determination of the particle number-based size distribution, particles with at least</p>

	two orthogonal external dimensions larger than 100 µm need not be considered. However, a material with a specific surface area by volume of < 6 m ² /cm ³ shall not be considered a nanomaterial.
Volatile organic compound (VOC)	Any organic compound having an initial boiling point less than or equal to 250°C measured at a standard pressure of 101,3 kPa as defined in Directive 2004/42/EC and which, in a capillary column, are eluting up to and including n-Tetradecane (C ₁₄ H ₃₀).
Semi volatile organic compound (SVOC)	Any organic compound having a boiling point greater than 250 °C and less than 370 °C measured at a standard pressure of 101,3 kPa and which, in a capillary column are eluting with a retention range after n-Tetradecane (C ₁₄ H ₃₀) and up to and including n-Docosane (C ₂₂ H ₄₆).
Level of traceability:	
Identity preserved	Certified product(s) from a certified site is kept separate from other sources throughout supply chain.
Segregated	Certified product from different certified sources is kept physically separate from non-certified product through each stage of the supply chain.
Mass balance	Certified physical product is not separated from and may be mixed with non-certified physical product at any stage in the production process, provided that the quantities are controlled.
Book & Claim	Certified products are completely decoupled from sustainability data.

5.3 General requirements

O1 Information about the product

The applicant must give detailed information on the product to which the application relates. The following information is required:

- Trade name of the product and a description of the product and its application method.
- If the product forms part of a component system that jointly ensures the functioning of the product, the entire product must be Nordic Swan Ecolabelled and not simply parts of it (e.g., a two-component adhesive containing a resin and hardener).
- Formulation detailing complete composition with a specification of all ingoing substances (see definition of raw materials and ingoing substances in 5.2 Definitions). The description must include:
 - The trade name of each raw material
 - The function of each raw material in the final product
 - The chemical name and CAS no. (if possible) of the ingoing substances
 - Content in % per ingoing substance in the product
 - Specification for preservatives, e.g., in-can (PT 6) or preservative for dry-film coatings (PT 7), see Definitions 5.2.
 - Type of binder

Description of the product in accordance with the definition of what may be Nordic Swan Ecolabelled, e.g., label and product data sheet (if available).

- ☒ Description of how the product is to be used to achieve functionality (e.g., as a single component, two-component or multicomponent) and which application method it is intended for.
- ☒ Formulation detailing complete composition with a specification of all raw materials and ingoing substances, as set out in Appendix 3.
- ☒ Safety data sheets for each raw material in line with prevailing European legislation (Annex II to REACH Regulation, 1907/2006/EC).

Background to requirement O1

The purpose of this requirement is to give an overview of the chemical building product that is to be certified with the Nordic Swan Ecolabel and that the product falls within the product definition.

5.4 Chemical requirements

The requirements in the criteria document and accompanying appendices apply to all ingoing substances in the Nordic Swan Ecolabelled product. Impurities are not regarded as ingoing substances and are exempt from the requirements. Ingoing substances and impurities are defined in 5.2. Definitions, unless stated otherwise in the requirements.

O2 Classification of the product

The final product must not be classified according to Table 1. Note that the responsibility for correct classification lies with the manufacturer.

Table 1 Classification of chemical products CLP Regulation 1272/2008

Classification	Hazard class and category	Hazard code
Hazardous to the aquatic environment	Aquatic Acute 1	H400
	Aquatic Chronic 1	H410
	Aquatic Chronic 2	H411
	Aquatic Chronic 3	H412
	Aquatic Chronic 4	H413
Hazardous to the ozone layer	Ozone	H420
Acute toxicity	Acute Tox. 1 or 2	H300
	Acute Tox. 1 or 2	H310
	Acute Tox. 1 or 2	H330
	Acute Tox. 3	H301
	Acute Tox. 3	H311
	Acute Tox. 3	H331
	Acute Tox. 4	H302
	Acute Tox. 4	H312
	Acute Tox. 4	H332
Specific target organ toxicity: single or repeated exposure	STOT SE 1 or 2	H370
	STOT SE 1 or 2	H371
	STOT RE 1 or 2	H372
	STOT RE 1 or 2	H373
Skin corrosion/irritation	Skin Corr. 1A, 1B or 1C	H314
Aspiration hazard	Asp. Tox. 1	H304
Skin sensitisation	Skin Sens. 1, 1A or 1B	H317
Respiratory sensitisation	Resp. Sens. 1, 1A or 1B	H334
Carcinogenicity*	Carc. 1A or 1B	H350
	Carc. 2	H351
Germ cell mutagenicity*	Muta. 1A or 1B	H340

Classification	Hazard class and category	Hazard code
	Muta. 2	H341
Reproductive toxicity*	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362
Endocrine disruption for human health**	ED HH 1 ED HH 2	EUH380 EUH381
Endocrine disruption for the environment**	ED ENV 1 ED ENV 2	EUH430 EUH431
Persistent, Bioaccumulative and Toxic properties**	PBT	EUH440
Very Persistent, Very Bioaccumulative properties	vPvB	EUH441
Persistent, Mobile and Toxic properties	PMT	EUH450
Very Persistent, Very Mobile properties	vPvM	EUH451
Explosives	Unst. Expl. Expl. 1.1 Expl. 1.2 Expl. 1.3 Expl. 1.4 Expl. 1.5 Expl. 1.6	H200 H201 H202 H203 H204 H205 H206
Oxidizing liquids and solids	Ox. Liq. 1 to 3 Ox. Sol. 1 to 3	H271 H272
Organic peroxides and self-reactive substances and mixtures	Org. Perox. A to EF Org. Perox. A to EF Org. Perox. A to EF	H240 H241 H242
Extremely flammable aerosol and liquids	Aerosol 1 Flam. Liq. 1	H222 H224

* The classifications concern all classification variants. For example, H350 also covers classification H350i.

** See also O12 for additional criteria for potential or identified endocrine disruptors and PBT/vPvB substances.

- Safety data sheet in accordance with Annex II of REACH (Regulation 1907/2006) for each product in the application.

Background to requirement O2

Nordic Ecolabelling strives to ensure that the health and environmental impact of the products are as low as possible. The requirements therefore make it clear that products classified as harmful, very toxic, toxic, harmful to health, corrosive, sensitizing, carcinogenic, mutagenic, toxic for reproduction, explosive, oxidising, and/or highly flammable cannot be ecolabelled.

The Nordic Swan Ecolabel has included the new CLP classifications to align with the European Green Deal's goal of a toxic-free environment. This inclusion reflects the need to establish hazard identification for endocrine disruptors and addresses criteria for environmental toxicity, persistency, mobility, and bioaccumulation. By incorporating these classifications, Nordic Swan Ecolabel ensures that the criteria relate to up-to-date scientific understanding and regulatory compliance. Additionally, the inclusion of PMT and vPvM substances is crucial due to their persistence, mobility, and potential impact on water quality. The Nordic Swan Ecolabel aims for comprehensive hazard identification and protection of the environment and human health.

O3 Classification of ingoing substances

The final product must not contain ingoing substances that are classified according to Table 2. Note that the responsibility for correct classification lies with the manufacturer.

Table 2 Classification of ingoing substances CLP Regulation 1272/2008

Classification	Hazard class and category	Hazard code
Carcinogenicity*	Carc. 1A or 1B Carc. 2	H350, H351
Germ cell mutagenicity*	Muta. 1A or 1B Muta. 2	H340 H341
Reproductive toxicity*	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362
Respiratory sensitisation	Resp. Sens. 1, 1A or 1B	H334
Specific target organ toxicity: single exposure or repeated exposure	STOT SE 1 STOT RE 1	H370 H372
Endocrine disruption for human health**	ED HH 1 ED HH 2	EUH380 EUH381
Endocrine disruption for the environment**	ED ENV 1 ED ENV 2	EUH430 EUH431
Persistent, Bioaccumulative and Toxic properties**	PBT	EUH440
Very Persistent, Very Bioaccumulative properties	vPvB	EUH441
Persistent, Mobile and Toxic properties	PMT	EUH450
Very Persistent, Very Mobile properties	vPvM	EUH451

* *The classifications concern all classification variants. For example, H350 also covers classification H350i.*

** *See also O12 for additional criteria for potential or identified endocrine disruptors and PBT/vPvB substances.*

Exemptions:

- Respirable crystalline silica/quartz classified as H372/H350i with a maximum content of 1% in raw materials, see separate requirement O10.
- Glyoxal (CAS no. 107-22-2) if the pH in the final product is above 7.5.
- Titanium dioxide (CAS no. 13463-67-7), see separate requirement O9.
- If the classification is due to monomers in polymers, please see requirement O7.
- Formaldehyde (CAS. No. 50-00-0), see separate requirement O6.
- Methanol (CAS no. 67-56-1) with a maximum content of 0.10% in newly produced sealants and construction adhesives*.

* *Construction adhesives refers to adhesives used on non-absorbing substrates, such as metals and glazed surfaces. Construction adhesives are used on smaller surfaces, like for example mounting mirrors.*

- ☒ Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material. Documentation of exemptions for each substance is done in Appendix 1 and 2, together with a statement as to why the substance is present in the product/raw material and other documentation if appropriate. If methanol is included in the sealant or construction adhesive it must be documented with test results.

- Safety data sheet for all raw materials in line with Annex II to REACH (Regulation (EC) No 1907/2006).

Background to requirement O3

For the same reasons described under requirement O2, there is a requirement that none of the ingoing substances are classified as carcinogenic, mutagenic, or toxic for reproduction as these have inherently dangerous properties. Same reasoning applies regarding exemptions of a few substances as O2 which are deemed necessary to improve the quality and lifetime of the product, which in overall would result in lower exposure as reapplying periods are reduced.

Respirable crystalline silica/quartz is a common impurity found in most mineral fillers, causing the final product to exceed the 100 ppm impurity limit. Silica is classified as STOT RE 1 (H372) and H350i. However, when mixed into a dispersion, it is no longer respirable nor poses a health risk. An exemption is made for respirable silica less than 1% in raw materials. To fulfil requirement O10, producers must take measures to limit dust in production.

O4 Environmentally harmful substances

Ingoing substances classified as environmentally harmful with hazard phrases H410, H411 and/or H412, according to CLP Regulation (1272/2008), are limited in the product according to the following formulas.

$$M \cdot 100 \cdot H410 + 10 \cdot H411 + H412 \leq 3\%$$

Where *M* is the multiplying factor for H410 as stated in CLP.

H410 is the concentration of substances classified with H410 in percent

H411 is the concentration of substances classified with H411 in percent

H412 is the concentration of substances classified with H412 in percent

If information about a substance's harmfulness to the environment (in the form of data concerning toxicity and degradability or toxicity and bioaccumulation) is not available, the substance is treated as environmentally harmful – H410, and multiplication factor 100.

Exemptions:

- Preservatives are exempted from the requirement, however, requirement O2 and O5 must still be fulfilled.
 - Zinc oxide (CAS no. 1314-13-2) is exempted up to 2500 ppm (0.25%) in the final product. If the product contains 0.5% Zinc oxide, then 0.25% must be included in the calculation.
- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- Safety data sheet for all constituent substances in line with Annex II to REACH (Regulation (EC) No 1907/2006).
- Calculation clearly showing that the requirement is fulfilled.

Background to requirement O4

Environmentally harmful substances that are classified as toxic to aquatic organisms are restricted and can only appear in small quantities. The purpose of restricting these substances is to reduce the ability for such substances to be emitted to water by incorrectly rinsing equipment, e.g., when washing brushes

and tools. Preservatives are however exempted from the requirement because they are limited in O5.

The limit for environmental hazardous substances has been significantly lowered from previous 11% to 3% based on licensing data, mainly due to the removal of outdoor paints and industrial paints from the criteria which contributed to the previous limit value.

Zinc oxide (ZnO) is a multifunctional component in various formulations for general building products, functioning as a UV-blocker, opacity brightener, and an inhibitor of microorganism growth such as bacteria and fungi, which can compromise the contents of the product. The absence of ZnO can lead to a reduction in the product's lifetime and shelf life. Preservative-free formulations for building products rely on alternative strategies like pH and moisture control, as well as careful raw material selection. However, ZnO also plays a role in preventing microbial growth, reducing the reliance on additional preservatives that might have adverse environmental effects. Incorporating ZnO as an antimicrobial agent in building products can extend their shelf life and decrease the need for other preservatives.

O5 Preservatives

Only preservatives compliant with product-type 6 and product-type 7 according to Regulation (EU)528/2012 (The Biocidal Products Regulation) can be used.

The amount of preservative/combination of preservatives is limited in the final product according to the tables 5 and 6. See also limitations in requirements O2 and O3. The amount of preservatives must not exceed the maximum theoretical amount at the time of the production.

Note that Dithio-2,2'-bis-benzmethylamide (DTBMA, CAS no. 2527-58-4) is to be included in the total amount of isothiazolinones.

Note that 2-cyanoacetamide (DBNPA, CAS no. 10222-01-2) is to be excluded from the calculation of total preservatives.

The amount of preservatives may be reported in one of the following ways:

- The maximum theoretical amount of preservative must not exceed the limit values in Table 3 at the time of manufacturing. The limit value is stated in the tables below and the amount must be calculated based on added preservatives and the maximum amount in the raw materials.
or
- Alternatively, the amount of preservatives can be measured analytically by high-performance liquid chromatography (HPLC) or similar methods and shall be based on the maximum amount in the final product. The measurement is made on the finished product before it is sealed or the raw materials that contain biocides.

Table 3 Concentration limits for preservatives in the final product.

Product type	Isothiazolinones*	Iodopropynyl butylcarbamate (IPBC)	Preservatives total
Adhesives	300 ppm (0.0300%)	100 ppm (0.0100%)	500 ppm (0.0500%)
Sealants	300 ppm (0.0300%)	100 ppm (0.0100%)	500 ppm (0.0500%)
Fillers	500 ppm (0.0500%)	100 ppm (0.0100%)	700 ppm (0.0700%)
Impregnating agents for tile, stone and concrete	300 ppm (0.0300%)	100 ppm (0.0100%)	500 ppm (0.0500%)
Plaster and mortar	-	-	-

*All PT 6 isothiazolinones with a specific concentration limit (SCL) of 15 ppm or 360 ppm are limited to 15 ppm or 360 ppm each in the final product (each CLP Appendix VI entry calculated separately).

If the SCL is changed in accordance with CLP Regulation 1272/2008 Annex VI for other PT 6 isothiazolinones, they and their limit values will also be changed and added accordingly.

- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- Test report of results from analysis by HPLC or similar method showing that the requirement concerning preservatives is fulfilled.
- Documentation showing that the test laboratory fulfils the requirement in appendix 5.
- Calculation clearly showing that the requirement concerning preservatives is fulfilled.

Background to requirement O5

Preservatives are added to liquid products to prevent bacterial growth in the products, in-can preservatives. The composition of the product may also affect the need for preservatives. The product's durability and longevity are currently the largest gains that can be made in regard to circular economy, although an increased exposure to isothiazolinones is seen as a risk.

Since binders (the raw materials that contain most isothiazolinones) used in sealants are also often the same as in adhesives, it makes most sense to set similar requirements for adhesives and sealants when it comes to preservatives.

However, sealants are predominantly used in guns/applicators that reduce skin contact and it is therefore reasonable for the limit to be the same as for adhesives. Many sealants come with a recommendation that a finger can be used to finish the sealant. However, this can also be done using a sealant smoother, or a damp sponge or cloth. See requirement O34 on consumer information and recommendations.

Fillers and indoor paints are similar because they both use polymers and include natural materials that add microorganisms to the product. The 500 ppm limit for isothiazolinone compounds uses the same limit value as what is needed for indoor paints in the criteria of Paints and Varnishes version 44.0.

Impregnating agents for tile, stone and concrete, requirements have been changed from previous version to allow for more diverse use of impregnating agents, for instance impregnation for concrete. Furthermore, the requirement has been harmonized with other product types such as adhesives and sealants.

O6 Formaldehyde

In fillers, formaldehyde is permitted as an impurity in newly produced polymers at a concentration of no more than 200 ppm (0.0200 w%, 200 mg/kg), on condition that the content of free formaldehyde in the end product does not exceed 10 ppm (0.0010 w%, 10 mg/kg).

In adhesives, sealants and multipurpose adhesives/construction adhesives, formaldehyde is permitted as an impurity in newly produced polymers at a concentration of no more than 250 ppm (0.0250 w%, 250 mg/kg), on condition that the content of free formaldehyde in the end product does not exceed 10 ppm (0.0010 w%, 10 mg/kg).

Indoor products:

- The level of free formaldehyde in the final product must not exceed 10 ppm (0.0010 w%, 10 mg/kg) measured by HPLC, the Merckoquant method or similar methods.
- The emissions of formaldehyde of the final product after 28 days must not exceed 0.06 mg/m³ measured in the air of a test chamber according to EN 16516.

Outdoor products:

- The level of free formaldehyde in the final product must not exceed 10 ppm (0.0010 w%, 10 mg/kg) measured by HPLC, the Merckoquant method or similar methods.

- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- Test report according to EN 16516, HPLC, Merckoquant method or other equivalent test method for the products showing that requirement is met.
- Documentation showing that the test laboratory fulfils the requirement in appendix 5.

Background to requirement O6

Formaldehyde is a toxic and allergenic substance that has carcinogenic effects and should therefore be avoided as far as possible. The limit value for in-can formaldehyde has been lowered from 25 ppm to 10 ppm compared to version 2 of the criteria.

In this generation of the criteria, the requirement has been updated to separate indoor and outdoor products.

For indoor products, the focus is on maintaining a good indoor air climate, while staying in compliance with the EU Taxonomy and to protect users from exposure.

For outdoor products, the requirement is similar as to the previous generation of the criteria.

To minimising the costs to applicants for multiple products within the same product series, the formaldehyde content or emission shall be determined for the

product that is predicted to contain the highest theoretical amount of formaldehyde.

O7 Residual monomers in polymers

For each polymer present in the product >1 w% the quantity of residual monomers* and its classifications must be stated. There cannot be more than 100 ppm (0.0100 w%, 100 mg/kg) of the residual monomer in newly produced polymers of each classification in Table 4.

* *Residual monomers in newly produced polymers and based on the content in the raw material.*

Table 4 Classification according to CLP Regulation 1272/2008

Classification	Hazard class and category	Hazard code
Carcinogenicity	Carc. 1A or 1B Carc. 2	H350, H350i H351
Mutagenic	Muta. 1A or 1B Muta. 2	H340 H341
Germ cell mutagenicity	Repr. 1A or 1B Repr. 2 Lact.	H360 H361 H362
Respiratory sensitisation	Resp. Sens. 1, 1A or 1B	H334
Specific target organ toxicity: single exposure or repeated exposure	STOT SE 1 or 2 STOT SE 1 or 2 STOT RE 1 or 2 STOT RE 1 or 2	H370 H371 H372 H373

Exemptions:

- Vinyl acetate (CAS no. 108-05-4) as residual monomer in polymers up to 700 ppm.
- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- If vinyl acetate (CAS no. 108-05-4) is present in an amount over 100 ppm, please also state the amount in ppm in each polymer.

Background to requirement O7

Residual monomers in polymers can cause negative health effects, for example due to the allergic and carcinogenic properties of the monomers. This risk is considered so great that it necessitates a separate requirement to limit the level of residual monomers in the polymer. Monomers tend to reduce over time, as many monomers are volatile compounds. The requirement relates to the newly produced polymer since it is important to reduce the impact at source and to this end it is most practical for the polymer manufacturer to perform the analysis. The limit of 100 ppm of residual monomers in polymers with classification according to Table 4 is based on licensing data.

Vinyl acetate is used in polymer dispersions in certain products. In the previous version, the classification of Carc. 2 H351 was relatively new in relation to the publication of the criteria, and a limit of 1000 ppm was exempted as there was not much focus in reducing the monomer in polymers. As a result, it was difficult to obtain polymers containing less than 1000 ppm of vinyl acetate. Steps have been taken to reduce vinyl acetate in polymers. However, according to our

licensing data, the general limit of 100 ppm is still too strict. Therefore, vinyl acetate is exempt up to 700 ppm.

O8 Heavy metals

The following heavy metals or heavy metal compounds must not be present in the product or in its raw materials. Traces of the following metals from residuals can be included up to 100 ppm (100 mg/kg, 0.0100 w%) per single metal in the raw material.

- Cadmium
- Lead
- Chromium VI
- Mercury
- Arsenic
- Barium
- Selenium
- Antimony

Exemptions:

- Barium sulphate and other equally insoluble barium compounds.
- Antimony in pigments contained in a TiO₂ rutile lattice on the following terms: test results must prove that the molecular structure is inert, and that the environmental and health effects of the pigment are on the same level as, or better than, the results for C.I Pigment Brown 24 CAS no. 68186-90-3 and C.I Pigment Yellow 53 CAS no. 8007-18-9 in the report: UNEF Publications, OECD SIDS Initial Assessment Profile (www.inchem.org).
- Raw material for plaster and mortar may contain a maximum of 200 ppm of lead in the raw material.

- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- For pigment that contains antimony integrated into a TiO₂ rutile lattice, documentation must be submitted to show that the molecular structure is inert, and that the environmental and health effects of the pigment are on the same level as, or better than, the results for C.I Pigment Brown 24 CAS no. 68186-90-3 and C.I Pigment Yellow 53 CAS no. 8007-18-9 in the report: UNEF Publications, OECD SIDS Initial Assessment Profile (www.inchem.org).
- For antimony in pigments that are exempted by the above terms, please attach test according to test method DIN 53770-1 or equivalent, showing that terms (molecular structure is inert, and that the environmental and health effects of the pigment are on the same level as, or better than, the results for C.I Pigment Brown 24 CAS no. 68186-90-3 and C.I Pigment Yellow 53 CAS no. 8007-18-9 in the report: UNEF Publications, OECD SIDS Initial Assessment Profile (www.inchem.org)). are fulfilled).

Background requirement to O8

Nordic Ecolabelling restricts heavy metals (“heavy metals” refers in this case to heavy and particularly environmentally harmful metals as specified in the text)

because they are toxic to people and other organisms, both on land and in the aquatic environment. On forested land, metals can end up in microorganisms in such way that the degradation of dead organic material and thus the release of nutrients are slowed¹. On agricultural land, metals can disrupt the organisms in the soil, or have a directly toxic effect on plants. Metals on agricultural land can also be taken up by crops to varying degrees, leading to human exposure². Mercury, cadmium, arsenic, and lead are toxic to the human nervous system and kidneys, amongst other things, and the metals can accumulate in living organisms³. Chromium VI is classified as: very toxic, CMR and harmful to the environment.

The metals and their compounds – cadmium, lead, chromium VI, mercury, arsenic, barium (except for barium sulphate, and other equally insoluble barium compounds), selenium and antimony – must therefore not be included in the product or in its ingoing substances. It is, however, accepted that ingoing substances may contain traces of the substances in the form of residuals. Trace amounts of each heavy metal must not exceed 100 ppm in the raw material. This means that the requirement is stricter than the general limit for residuals specified in section "5.4 Chemical requirements". It is relevant to set a stricter requirement to residuals of heavy metals since they are included in the raw materials in chemical building products as sand, gravel etc. The requirement has been set by the Nordic Ecolabel to steer toward natural raw materials with lower amounts of residuals.

Barium sulfate (and other equally insoluble barium compounds) are used as fillers in chemical building products and are exempted from this requirement since there are not many other alternatives available with the same function. As mineral raw materials can contain barium, it may be used if laboratory testing e.g., according to DIN 53770-1 or equivalent methods show that the metal is bonded within a crystal lattice and is insoluble.

Note that selenium is not a metal but a metalloid which means it has some metallic properties and some non-metallic properties, but it interacts with many metals and behaves in the same way in the environment and has therefore been included in the requirement. Arsenic is included in the requirement due to its status as a semi-metal.

The specific natural occurring raw material for plasters and mortals may contain more lead than can be commonly found in other mineral raw materials due to process-related impurities, therefore the requirement is different compared to the other products.

¹ Government official investigations:
<https://www.regeringen.se/49bbb3/contentassets/c0f10a5d57534a48b9b8641aba971a1e/bilagorna-6-9> (visited 2022-06-01)

² Government official investigations:
<https://www.regeringen.se/49bbb3/contentassets/c0f10a5d57534a48b9b8641aba971a1e/bilagorna-6-9> (visited 2022-06-01)

³ Toxicity, mechanism and health effects of some heavy metals:
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4427717/> (visited 2022-06-01)

O9 Titanium dioxide

If the product contains more than 3.0 w% of titanium dioxide (TiO₂) (CAS no. 13463-67-7), the following requirements apply for energy consumption, emissions and residual waste and occupational exposure:

- Energy consumption:

Full or pending implementation of an energy management system for the manufacturing plant in accordance with ISO 50001.

- Emissions and residual waste:

Emissions from the production of TiO₂ shall not exceed the values given in Table 5 and 6 for the sulphate process and the chloride process, respectively.⁴

Table 5 Emission limits from the production of TiO₂ using the sulphate process.

Sulphate process	Limit
SO _x expressed as SO ₂ :	7.0 kg/tonne TiO ₂
Sulphate waste:	500 kg/tonne TiO ₂

Table 6 Emission limits from the production of TiO₂ using the chloride process.

Chloride process	Limit
When using natural ore:	103 kg chloride waste/tonne TiO ₂
When using synthetic ore:	179 kg chloride waste/tonne TiO ₂
When using slag ore:	329 kg chloride was/tonne TiO ₂

If more than one type of ore is used, the values apply proportionately to the ore type used.

- Occupational exposure:

The raw material manufacturer must meet the requirements for powder handling according to O10.

- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- ISO 50 001 certificate for the manufacturing plant or documentation showing pending implementation.
- A description and calculation from the titanium dioxide-manufacturer showing that the requirement for emissions is fulfilled.
- The raw material manufacturer must submit a description of how powdered raw materials are handled during the production process.

Background requirement to O9

For chemical building products, the use of titanium dioxide may be less compared to paints and varnishes, where titanium dioxide plays an important part in the overall lifecycle of a paint or varnish. However, chemical building products can still contain titanium dioxide due to its use as a white pigment, providing brightness and opacity e.g., in fillers, or providing benefits such as UV resistance and improving the overall durability of the product. The production of titanium dioxide pigments involves energy-intensive processes and the production is associated with environmental impact, however it is important in enhancing the performance of the product. A carefully balanced approach is needed in order to ensure that high quality products are produced, whilst minimising the impact to

⁴ Derived from the Best Available Techniques for the Production of Basic Inorganic Chemicals (BREF) (August 2007).

the environment. It is difficult to steer towards a specific manufacturing process for TiO₂ pigments, as it is heavily reliant on geographical location of the manufacturing plant, local policies, and ore supply. This need to be considered to determine the best processing option with the least environmental impact⁵.

Both the sulphate and the chloride processes are considered very energy intensive and results in both direct and indirect CO₂ emissions. Direct emissions occur because of the chemical reactions in the processes at the manufacturing plant while indirect emissions are the emissions generated along the energy supply chain up to the point of operation.

Because the production of titanium dioxide is energy intensive, a requirement has been introduced to reduce the energy demand to produce TiO₂-pigments with certified energy management systems and proved energy reduction commitments. By requiring certification of the manufacturing plant in accordance with e.g., ISO 50001, the plant is recognized as working with international climate goals to reduce their energy demand and/or implement energy efficient measures by introducing operational changes, such as those implemented under the ISO 50001 certification.

The production of titanium dioxide is also associated with emissions of sulphates, SO₂ and chloride⁶. The requirement level has been calculated based on the 38 g TiO₂/m² with 98% opacity on a standard reference surface.

Titanium dioxide has been included in requirement of powder (O10) handling due to the inherent classification of titanium dioxide as suspected carcinogen through inhalation. Therefore, to ensure that the TiO₂ risks that give rise to its classification are controlled, an assessment of the process and procedures on the handling and conditions of TiO₂ in powder form regarding to the occupational safety and health needs to be documented by the raw material producer to reduce worker exposure to dust.

O10 Powdered raw materials

Raw materials in powder form must be added in a closed system, in a suspension or by means of a method that promotes a "low-dust" working environment e.g., using protective equipment which heavily reduce the dust or completely remove the dust from the raw materials (e.g., exhaust ventilation, personal protective equipment and clear safety instructions).

- ☒ Description of how powdered raw materials are handled during the production process for chemical building products.

Background requirement to O10

It is required that powdered substances be added in a closed system, in a suspension or using a method, e.g., protective equipment that ensures a "low-dust" work environment. The protective equipment/method must significantly reduce or completely remove the dust from the raw materials.

The aim of the requirement is to ensure that the working environment is as dust-

⁵ Middlemas et al., (2015) Life cycle assessment comparison of emerging and traditional Titanium dioxide manufacturing processes

⁶ Best Available Techniques for the Production of Basic Inorganic Chemicals (BREF) (August 2007).

free as possible to secure a good working environment for those involved in manufacturing the chemical building products.

Respirable crystalline silica/quartz is present as an impurity in most mineral fillers and is therefore commonly used in chemical building products. It is classified as STOT RE 1 (see O3), but when it is mixed into the wet product it binds to larger particles and is therefore no longer "respirable". To protect the people working in the production the requirement for constituent powdered substances is important for raw materials containing respirable silica, which is in powder.

Compliance with the requirement must include general information on how powdered raw material is dosed, with what types of equipment, if any air extraction system is used and how it is being monitored to determine if the systems are operating and functioning properly, how employees are trained regarding risks of powder handling, protective equipment used and how dust exposure is controlled towards legislation to make sure that the workers are not overly exposed to dust.

O11 Nanomaterials/-particles

Nanomaterials/-particles must not be added or be present in the product.

Nanomaterials/-particles are defined according to the EU Commission Recommendation on the Definition of Nanomaterial (2022/C 229/01):

'Nanomaterial' means a natural, incidental, or manufactured material consisting of solid particles that are present, either on their own or as identifiable constituent particles in aggregates or agglomerates, and where 50 % or more of these particles in the number-based size distribution fulfil at least one of the following conditions:

(a) one or more external dimensions of the particle are in the size range 1 nm to 100 nm;

(b) the particle has an elongated shape, such as a rod, fibre or tube, where two external dimensions are smaller than 1 nm and the other dimension is larger than 100 nm;

(c) the particle has a plate-like shape, where one external dimension is smaller than 1 nm and the other dimensions are larger than 100 nm.

Exemptions:

- Pigments. This exemption does not apply to pigments added for other purposes than imparting colour. Please note that Nano-TiO₂ is not considered a pigment.
- Naturally occurring inorganic fillers. This exemption applies to fillers subject to Annex V, paragraph 7 of REACH.
- Synthetic amorphous silica (SAS). This exemption applies to non-modified SAS. Chemically modified colloidal silica can be included in the products if the silica particles form aggregates in the final product. Any surface treatment of nanoparticles must fulfil requirement O3 (Classification of constituent chemical substances) and requirement O12 (Prohibited substances).
- Unmodified calcium carbonate (grounded calcium carbonate, GCC) and unmodified precipitated calcium carbonate (PCC).
- Polymer dispersions.

- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.

Background requirement to O11

Nanomaterials are a diverse group of materials which are often more reactive and can have altered properties compared to their bulk counterparts. Further, different sizes, shapes, surface modifications and coatings can also change their physical and chemical properties, which complicates the risk assessment. There is concern among regulators, scientists, environmental organisations, and others about the insufficient scientific knowledge regarding the potential detrimental effects on health and the environment.^{7,8,9,10,11,12,13,14,15}

Nanomaterials can cause increased or unwanted effects in humans or the environment since nano particles can cross biological membranes and thus be taken up by cells and organs. One of the main concerns are linked to free nanoparticles, as some of these – when inhaled – can reach deep into the lungs, where the uptake into the blood is more likely. Inhalation studies in rats have shown that nanoparticles may induce more irreversible inflammation and result in more tumours than an equal mass of larger particles.¹⁶

Although concerns about nanomaterials have emerged over the last 30 years, not all nanomaterials are new. Most nanomaterials on the market today have either been in use for decades or are more recently engineered nanoforms of previously existing materials.¹⁷ For example, nanoparticles of carbon black and amorphous silica (SiO₂) have been used for the last century. Titanium dioxide (TiO₂), has long been used as a colourant in the bulk form, but is now manufactured as

⁷ UNEP (2017) Frontiers 2017 Emerging Issues of Environmental Concern. United Nations Environment Programme, Nairobi.

https://wedocs.unep.org/bitstream/handle/20.500.11822/22255/Frontiers_2017_EN.pdf?sequence=1&isAllowed=y

⁸ Parliamentary Assembly of the Council of Europe (2017 (2013)) Nanotechnology: balancing benefits and risks to public health and the environment. <http://semantic>

<http://semantic.pace.net/tools/pdf.aspx?doc=aHR0cDovL2Fzc2VtYmx5LmNvZS5pbmQvbnNvZG91L1hSZWYyVWJILURXLWV4dHluYXNwP2ZpbGVpZD0xOTczMCZsYW5nPUVO&xsl=aHR0cDovL3NlbWFudGljcGFjZS5uZXQvWHNsdC9QZGYvWFJlZi1XRC1BVC1YTUwYUERGlnhzbA==&xsltparams=ZmlsZWlkPTE5NzMw>

⁹ Larsen PB, Mørck TAA, Andersen DN, Hougaard KS (2020) A critical review of studies on the reproductive and developmental toxicity of nanomaterials. European Chemicals Agency.

¹⁰ SCCS (Scientific Committee on Consumer Safety) (2019) Guidance on the Safety Assessment of Nanomaterials in Cosmetics. SCCS/1611/19.

https://ec.europa.eu/health/sites/health/files/scientific_committees/consumer_safety/docs/sccs_o_233.pdf

¹¹ Mackevica A, Foss Hansen S (2016) Release of nanomaterials from solid nanocomposites and consumer exposure assessment - a forward-looking review. *Nanotoxicology* 10(6):641–53. doi: 10.3109/17435390.2015.1132346

¹² BEUC – The European Consumer Organisation et. al (2014) European NGOs position paper on the Regulation of nanomaterials. www.beuc.eu/publications/beuc-x-2014-024_sma_nano_position_paper_caracal_final_clean.pdf

¹³ SweNanoSafe. Nationell plattform för nanosäkerhet. <https://swenanosafe.se/> (visited 2022-06-07)

¹⁴ BEUC – The European Consumer Organisation. Nanotechnology. www.beuc.eu/safety/nanotechnology (visited 2022-06-07)

¹⁵ Azolay D and Tuncak B (2014) Managing the unseen – opportunities and challenges with nanotechnology. Swedish Society for Nature Conservation. www.naturskyddsforeningen.se/sites/default/files/dokument-media/rapporter/Rapport-Nano.pdf

¹⁶ EU observatory for nanomaterials Risk assessment of nanomaterials – further considerations https://euon.echa.europa.eu/documents/23168237/24095644/nano_in_brief_en.pdf/295c5f46-0f1e-4ad5-72a5-81c44b45bdd5

¹⁷ EU observatory for nanomaterials and European Chemicals Agency (2019) What are next generation nanomaterials and why are regulators interested in them? Information note. https://euon.echa.europa.eu/documents/23168237/24095696/190919_background_note_next_gen_materials_en.pdf/b9178324-5a69-2e4b-1f2b-aac2c2845f45

nanomaterial for other purposes.¹⁸ In the future, other types of engineered nanomaterials are expected to come onto the market.¹⁹

In the product group of chemical building products it is hard to formulate requirements to the content of nano particles. Chemical building products consist of many ingoing substances, and it is difficult to keep an overview of all ingoing components and the size distributions of them. Many of the traditional raw materials used in chemical building products consists of particles in nano size which are referred to as nano materials according to the EU commission's definition. There are also examples of traditional raw materials containing a small fraction of nanoparticles that are produced with an even larger fraction of ultrafine particles than earlier and that the particles in many cases have a surface treatment. In general, we prohibit nanomaterials based on the precautionary principle. However, several nano-sized traditional chemical building raw materials are accepted, as described in the exemptions.

Nano-TiO₂ as a coating on windows has shown that the photocatalytic effect is reduced and that TiO₂ is released from the surface into the environment when subjected to ageing tests (water, salt, UV light)²⁰. It is, however, not entirely clear whether it is nano- TiO₂ that is released or larger TiO₂ particles. The study shows that the photocatalytic effect is reduced by ageing without being concluded with what the cause is. Nano-TiO₂ is not considered a pigment, but a nanomaterial that is added to give the products new properties, such as a self-cleaning effect in chemical products. These are not exempted from the requirement and therefore must not be used in Nordic Ecolabelled chemical building products.

Pigments are exempted from the requirements concerning nanoparticles, since they are necessary in chemical building products and no other suitable replacement is available to fulfil their function.

Synthetic amorphous silica is considered a traditional raw material in chemical building products. Since amorphous silica is a nanomaterial, under the European Commission definition, synthetic amorphous silica is exempted from the requirement concerning nanomaterials.

Ground Calcium Carbonate (GCC) is formed directly from the grinding of limestone to a powder. GCC can be produced using two different processing methods that are dry or wet. Each method produces different finishing products that suit different applications. Precipitated Calcium Carbonate (PCC) is produced chemically and precipitated as a powder. PCC is produced through a carbonation process between fast lime and carbon dioxide. PCC is a synthetic mineral that allows more flexibility in adapting its size, shape, particle size distribution compared to GCC. Therefore, the complexity of processing for PCC is one of the main reasons for a higher production cost compared to GCC. The chemical composition of GCC and PCC is the same. GCC can be seen as naturally

¹⁸ European commission, COMMISSION STAFF WORKING PAPER, Types and uses of nanomaterials, including safety aspects, Accompanying the [...] second regulatory review of nanomaterials, SWD(2012) 288 final

¹⁹ EU observatory for nanomaterials and European Chemicals Agency (2019) What are next generation nanomaterials and why are regulators interested in them? Information note.
https://euon.echa.europa.eu/documents/23168237/24095696/190919_background_note_next_gen_materials_en.pdf/b9178324-5a69-2e4b-1f2b-aac2c2845f45

²⁰ J. Olabarrieta et al, Aging of photocatalytic coatings under a water flow: Long run performance and TiO₂ nanoparticles release, Applied Catalysis B: Environmental, Volumes 123–124, 23 July 2012

occurring. Although PCC is chemically manufactured, there is no indication that unmodified PCC would have a higher toxicity than GCC as it has been evaluated in EU.²¹

Polymer dispersions have also been exempted from the requirement. In the follow up report from the EU Commission²² to the second "Regulatory Review on Nanomaterials" from 2012²³ it is stated that the solid nanomaterials dispersed in a liquid phase (colloidal) shall be considered as nanomaterials according to the EU Commissions recommendation. Nano emulsions are however not covered by the definition. Polymers/monomers can occur in different phases and sizes, and it is therefore chosen to explicitly mention that polymers are exempted from the definition in chemical building products.

O12 Prohibited substances

The product must not contain ingoing substances that are:

- Substances on the REACH Candidate list of SVHC.
- Substances evaluated by the EU to be Persistent, Bioaccumulative, and Toxic (PBT) or very Persistent and very Bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH and substances that have not yet been investigated, but which meet these criteria.
- Endocrine disruptors: Substances on the EU member state initiative "Endocrine Disruptor Lists", List I, II and III, see the following links:

- <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>

2,2-dibromo-2-cyanoacetamide (DBNPA, CAS. No 10222-01-2) is exempted from the requirement.

Butylated hydroxytoluene (CAS. No 128-37-0) is exempted from the requirement up to 100 ppm in the final product.

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

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

- Organotin compounds.
- Phthalates (Definition of phthalates: *Esters of phthalic acid orthophthalic acid / phthalic acid / 1,2- benzene dicarboxylic acid*).

²¹ <https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2022.7135>

²² European commission, COMMISSION STAFF WORKING PAPER, Types and uses of nanomaterials, including safety aspects, Accompanying the [...] second regulatory review of nanomaterials, SWD(2012) 288 final

²³ Communication from the commission to the European parliament, the council and the European economic and social committee, Second Regulatory Review on Nanomaterials, COM(2012) 572 final

- 34 bisphenols²⁴ that have been identified by ECHA for further EU regulatory risk management that are known or potential endocrine disruptors for the environment or for human health, or that can be identified as toxic for reproduction.
 - Alkylphenols, alkylphenol ethoxylates (APEO) and other alkylphenol derivatives (APD).
 - Perfluorinated and polyfluorinated alkylated substances (PFAS)
 - Halogenated organic compounds. Exemptions for:
 - Preservatives that fulfil O5.
 - Pigments that meet the EU's requirement concerning colourants in food packaging under Resolution AP (89) point 2.5.
 - Isocyanates. Exemption for water-borne polyisocyanates with a chain length of more than 10, where the concentration of isocyanates with a chain length of less than 10 as an impurity is documented.
 - Fragrances.
 - Boric acid, borates, and perborates.
 - Ethylenediamine tetraacetate (EDTA) and its salts and Diethylenetriamine pentaacetate (DTPA) and its salts.
- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- If halogenated organic pigments are used, a declaration is required from the pigment supplier confirming that the pigment meets the EU's requirement concerning colourants in food packaging under Resolution AP (89) point 2.5.
- If water-borne polyisocyanates with a chain length of more than 10, where the concentration of isocyanates with a chain length of less than 10 as an impurity are used, send documentation showing this.

Background requirement to O12

There are several requirements here about substances that the product must not contain. The reason/background for this is stated below in each case:

REACH Candidate list of SVHC:

The Candidate List identifies substances of very high concern which fulfil the criteria in article 57 of the REACH Regulation (EC 1907/2006). The list includes carcinogenic; mutagenic; and reprotoxic substances (CMR, categories 1A and 1B in accordance with the CLP Regulation); and PBT (persistent, bioaccumulative and toxic) and vPvB (very persistent and very bioaccumulative) substances (as defined in REACH Annex XIII). In addition, two more substance groups are included if they are of equivalent level of concern (ELoC) as the ones previously mentioned. These are endocrine disruptors and substances which are environmentally hazardous without fulfilling the requirements for PBT or vPvB. Based on these adverse characteristics, Nordic Ecolabelling prohibits substances on the Candidate List. This means that we take action ahead of the legislation

²⁴ Assessment of regulatory needs: Bisphenols. ECHA – 16 December 2021: Section 2.1: Bisphenols for which further EU RRM is proposed – restriction <https://echa.europa.eu/documents/10162/c2a8b29d-0e2d-7df8-dac1-2433e2477b02>

and ban the substances before they are subject to authorisation and restriction in accordance with REACH.

PBT and vPvB:

PBT and vPvB are abbreviations for substances that are persistent, bioaccumulative and toxic, and very persistent and very bioaccumulative, respectively, in accordance with REACH Annex XIII. This means that they are not biodegradable and that they accumulate in living organisms. Based on these adverse characteristics they pose a threat to the environment and human health. They are prohibited in all Nordic Swan Ecolabel products.

Endocrine disruptors:

Endocrine disruptors (EDs) are chemicals that alter the functioning of the endocrine (hormone) system and consequently cause adverse health effects. The term potential EDs is used for chemicals with properties that make them suspected to be EDs. The hormone system regulates many vital processes in living organisms and when normal signalling is disturbed, adverse effects may result. EDs raise high concern for their risk of causing serious negative impact on the environment as well as on human health specifically. Special concern is raised for effects on reproduction and development and about possible links to increases in public health diseases. While effects in wildlife populations have been confirmed, evidence is pointing to effects also in humans.

Harmonised scientific criteria for the identification of EDs are missing across different pieces of EU legislation. Few EDs have been identified in the legislation so far, compared to the numbers of potential EDs. Under these circumstances, the Nordic Swan Ecolabel excludes identified and potential EDs listed by the EU member state initiative “Endocrine Disruptor Lists” at www.edlists.org. The initiative is a voluntary collaboration, compiling and presenting a single repository of information about the current status of substances identified as EDs or being under ED evaluation in the EU.

A substance listed on any of List I; II; and/or III is excluded in the product group. List I contain substances identified as EDs at EU legislative level; List II contains substances under EU legislative ED evaluation; and List III is for substances considered by a national authority to have ED properties. All listed substances are excluded from all raw materials and products unless otherwise specified in the requirement, meaning that substances listed with reference to e.g., the Cosmetics Regulation are not only excluded from cosmetics.

The requirement concerns the main lists (List I-III) and not the corresponding sublists called “Substances no longer on list”. A substance which is transferred to a sublist is thus no longer excluded, unless it also appears on any of the other main lists I-III. However, special attention is needed concerning those List II substances which are evaluated under a regulation or directive which doesn't have provisions for identifying EDs, e.g., the Cosmetics Regulation. Since it's not within the scope of e.g., this regulation to identify EDs, it's not clear how the substances will be handled at www.edlists.org once the evaluation (safety assessment of the substances in cosmetics in this case) is finalised. Nordic Ecolabelling will evaluate the circumstances for substances on sublist II case-by-case, based on the background information indicated on the sublist.

The lists are dynamic, and the companies are responsible for keeping track of updates, in order to keep labelled products compliant with the requirement throughout the validity of the licences. Nordic Ecolabelling acknowledges the challenges associated with new substances being introduced on particularly List II and III, and in some cases also List I. We will evaluate the circumstances and possibly decide on a transition period on a case-by-case basis.

By excluding both identified and prioritised potential EDs which are under evaluation, the Nordic Swan Ecolabel ensures a restrictive policy on EDs.

Organotin compounds:

Organotin compounds are used as a catalyst that harden through cross-linking. The level of tin catalyst depends on the cross-linking system, and the quantity of silicone or polymer. Organotin compounds were on the Danish Environmental Protection Agency's list of undesirable substances²⁵, but were subsequently removed since they are used in quantities of less than 100 tonnes per year. They have several inherent properties that are not desirable in Nordic Ecolabelled chemical building products, such as endocrine disrupting and environmentally hazardous, see more below.

Phthalates:

Several phthalates are identified as endocrine disruptors and some of them are classified as reprotoxic. For these reasons several phthalates are included in the Candidate list. Based on their hazardous properties phthalates pose a threat to the environment and human health and there is a ban on this group of substances. The exclusion of phthalates covers esters of phthalic acid (orthophthalic acid / phthalic acid / 1,2- benzene dicarboxylic acid or commonly known as ortho-phthalates. The exclusion does not cover tera-phthalates or cyclic phthalates.

Bisphenols:

Several bisphenols with the general bisphenol structure and 'bisphenol derivatives' which have constituents with structural properties common to bisphenols are now prohibited. Based on the potential for widespread use and available information on potential endocrine disruptors, reproductive toxicity and PBT/vPvB properties, 34²⁶ substances were identified in need for further regulatory risk management in EU²⁷.

APEO:

The non-ionic APEO group of surfactants are produced in large volumes and their uses lead to widespread release to the aquatic environment. APEOs are highly toxic to aquatic organisms and degrade to more environmentally persistent compounds (alkylphenols). Ethoxylated nonylphenol and several other

²⁵ <http://www2.mst.dk/udgiv/publikationer/2010/978-87-92617-15-6/pdf/978-87-92617-16-3.pdf>

²⁶ Assessment of regulatory needs: Bisphenols. ECHA – 16 December 2021: Section 2.1: Bisphenols for which further EU RRM is proposed – restriction <https://echa.europa.eu/documents/10162/c2a8b29d-0e2d-7df8-dac1-2433e2477b02>

²⁷ Annex XV restriction report <https://echa.europa.eu/documents/10162/450ca46b-493f-fd0c-afec-c3aea39de487>

alkylphenols are included in the Candidate List due to endocrine disrupting properties.

Halogenated organic substances:

Halogenated organic substances whereas organic substances that contain halogenated substances such as chlorine, bromine, fluorine, or iodine must not appear in Nordic ecolabelled chemical building products. Halogenated organic substances include many substances that are harmful to health and the environment, in that they are very toxic to aquatic organisms, carcinogenic or harmful to health in some other way. Halogenated organic substances persist in the environment, which means they pose a risk of having harmful effects. There is therefore a requirement that halogenated organic compounds must not appear in chemical building products. This means that substances such as brominated flame retardants, chlorinated paraffins, perfluoroalkyl compounds and certain plasticisers are not permitted in Nordic Ecolabelled chemical building products.

Perfluorinated and polyfluorinated alkylated substances (PFAS) are a group of substances with undesirable properties. PFASs are defined as fluorinated substances containing at least one fully fluorinated methyl or methylene carbon atom (without any H / Cl / Br / I atom attached to it), i.e., with a few listed exceptions, all chemicals with at least one perfluorinated methyl group ($-CF_3$) or a perfluorinated the methylene group ($-CF_2-$) is a PFAS as described in OECD 2021.²⁸ The substances are persistent and are readily absorbed by the body.

PFASs are persistent in the environment and are known to remain in the environment longer than any other artificial substance. This means that as long as PFAS continues to be released into the environment, humans and other species will be exposed to an increasing concentration of PFAS. PFAS substances have often been shown to contaminate groundwater, surface water and soil. Remediation of contaminated sites is both technically difficult and costly. If the release continues, the PFASs will accumulate in the environment, in drinking water and in food.

There are also halogenated pigments used in the industry. There is an exemption of the preservatives that fulfil O5 and for pigments fulfilling the EU requirements for pigments in food packaging according to Resolution AP (89) point 2.5. The reason for including a requirement that pigments need to fulfil Resolution AP (89) is that the Nordic Ecolabelling does not wish to allow PCBs at all but since it is not possible to set a zero limit for pigments, the Nordic Ecolabelling has chosen to use the same limit as in food packaging (Resolution AP (89) point 2.5). This level has been chosen since it is a well-known method in the industry and the low level used in food packaging is considered strict enough for chemical building products. The exemption for these halogenated pigments is needed to make it possible to produce products with good colourfastness without choosing pigments with even worse environmental profile.

²⁸ <https://www.oecd.org/chemicalsafety/portal-perfluorinated-chemicals/terminology-per-and-polyfluoroalkyl-substances.pdf> 2021

Isocyanates:

Isocyanates cause allergies and asthma and some, including TDI (toluene diisocyanate), are also suspected carcinogens. Any Occupational Exposure Limit, for occupational diisocyanate exposure, derived from the exposure-excess risk relation, will be associated with a residual excess risk for developing occupational asthma. The lower the exposure the lower the risk for developing asthma²⁹.

Nordic Ecolabelling has chosen to exclude the use of isocyanates, based on their problematic properties. Nordic Ecolabelling has chosen to do an exception for water-borne polyisocyanates with a chain length of more than 10, since they are used in water-based adhesives, for example in binders. These long chain polyisocyanates are considered non-reactive since they are fully polymerised, which means fully reacted and stable. They are therefore unlikely to react and release isocyanates when used, for example when adhesives are applied.

Fragrances:

Fragrances must not be present in Nordic Ecolabelled chemical building products. Nordic Ecolabelling is not aware of any fragrances being used in chemical building products but, since fragrances are gaining a foothold in many products, Nordic Ecolabelling wishes to prevent future use of fragrances in the product group.

Boric acid, borates, and perborates:

Boric acid, borates and perborates have many uses and can be used in adhesives and sealants. They are also classified as toxic to reproduction and poses a risk to consumers.

EDTA and DTPA:

Ethylenediaminetetraacetic acid (EDTA) and diethylenetriamine pentaacetate (DTPA) can be used in sealants, adhesives, fillers, putties and plasters to improve stability. EDTA, DTPA and their salts are not readily degradable. Furthermore, they are both classified toxic for reproduction and poses a risk to consumers. For EDTA, the EU's risk assessment states that under the conditions at municipal water treatment plants EDTA is either not broken down or only breaks down to a slight degree. To-date in Europe, EDTA has been replaced in virtually all consumer products by readily biodegradable alternatives such as MGDA (methylglycine diacetic acid) and GLDA (glutamic acid diacetic acid).

5.5 Binder requirements

The requirements in this section aims to promote raw materials with less climate impact, reduced energy consumption, increased energy efficiency, transition from fossil to sustainable raw materials, use of more renewable energy – and subsequently, reduced emissions of greenhouse gases. The requirements are divided in three parts depending on the binder type (acrylic resin, alkyd resin or cement/hydraulic binders), where the specific binder type in question must fulfil the requirement where relevant below. The description of the chemical type of

²⁹ RAC Opinion on scientific evaluation occupational exposure limits for Diisocyanates. 11 June 2020. <https://echa.europa.eu/documents/10162/4ea3b5ee-141b-63c9-8ffd-1c268dda95e9> (Accessed on 2022-11-15).

binder shall be derived from that component of the binder which is decisive for the characteristic properties of the final product.

O13 Acrylic and alkyd resin binders

The following requirements must be fulfilled if the product contains acrylic or alkyd resins:

1. The license holder shall have a a) supply chain policy and b) code of conduct for responsible sourcing of renewable raw materials* used in acrylic and/or alkyd resin binders used in Nordic Swan Ecolabelled chemical building products.
 - a) The supply chain policy shall include the following:
 - A policy statement committing the license holder to respect human rights and the environment within its operations and supply chain; this includes a commitment to support suppliers' compliance with the supplier code of conduct by engaging in responsible purchasing practices.
 - Commitment to comply with all applicable local, national- and international environmental laws and regulations, as well as all applicable health and safety regulations.
 - A description for governance processes in place for due diligence; this includes routines for assessing biodiversity and deforestation risk along the whole supply chain.
 - b) A supplier Code of Conduct, that informs all suppliers along the whole supply chain what is expected of them with respect to the Licensee's own supply chain policy regarding human rights and protecting the environment.

The supply chain policy and code of conduct must be both public and communicated to the supply chain.

2. Acrylic resin binders:

- If renewable raw materials from palm oil are used in acrylic resins the palm oil must be RSPO certified. This also includes by-products, residues, and waste fractions from palm oil industries, such as palm fatty acid distillate and palm effluent sludge. Traceability must at least be ensured by mass balance. Book and claim systems are not accepted.
- If any other renewable raw materials are used in acrylic resins, the raw material manufacturer of the acrylic resin must document:
 - Type of renewable raw material used in the acrylic resins (e.g., crops, sugarcane, source of bio-naphtha),
 - Whether the renewable raw materials are derived from primary feedstock or residue or waste,
 - Whether the renewable raw materials are certified according to any sustainability standards,
 - Level of traceability (Identity Preserved, Segregated, Mass Balance, Book & Claim) on both the renewable raw materials used in the production of acrylic monomers and the acrylic resin itself.

3. Alkyd resin binders:

- Fatty acids used in alkyd resin binders must be made from renewable or recycled raw materials.
- Renewable raw materials from palm oil must not be used in fatty acids in alkyd resin. The requirement also includes by-products, residues, and waste fractions from palm oil industries, such as palm fatty acid distillate and palm effluent sludge.
- The raw material manufacturer of the alkyd resin must document:
 - Type of renewable raw material used in the alkyd resins (e.g., castor oil, tall oil, rapeseed oil, soybean oil),
 - Whether the renewable raw materials are derived from primary feedstock or residue or waste,
 - Whether the renewable raw materials are certified according to any sustainability standards,
 - Level of traceability (Identity Preserved, Segregated, Mass Balance, Book & Claim) on the renewable raw materials used in the production of alkyd resins.

** Renewable raw materials compose of biomass and that can be continually replenished for example wood, crops, marine products, organic waste.*

- Submit both supply chain policy and supplier code of conduct, together with information on how these are public and communicated to the supply chain.
- Declaration in line with Appendices 1 or 2 from the manufacturer of the product or the manufacturer of each raw material, respectively.
- Declaration in line with Appendix 4 signed by the manufacturer of the acrylic or alkyd resins.

Acrylic resin binders:

- Invoices/delivery notes/order confirmation which document purchase of RSPO certified raw materials. The information on the document must include information on type of traceability (Segregated, identity preserved or mass balance)
- The raw material manufacturer must provide information on the raw material(s) according to the requirement.

Alkyd resin binders:

- Declaration from the licensee stating that a) fatty acids used in alkyd resin binders are made from renewable raw materials or recycled raw materials and b) renewable raw materials from palm oil are not used in fatty acids in alkyd resin.
- The raw material manufacturer must provide information on the raw material(s) according to the requirement.

Background to requirement O13

Acrylic resins

This is a new requirement in generation 3 of the criteria and the same requirement in the criteria of paints and varnishes generation 4. Implementing a supply chain policy and code of conduct for responsible sourcing of renewable raw materials is important for the license holder of chemical building products. It helps to minimize environmental impact, improve social practices, and meet regulatory and customer expectations. The purpose of documenting the supply chain policy and code of conduct is a commitment to transparency and reporting on the company's practices in order for a more sustainable and socially responsible production process.

The general environmental benefit of bio-based plastics comes from the shift from fossil feedstock to bio-based feedstock. Traditionally acrylic resins are fossil-based but there is a shift in the industry towards the use of bio-based polymers for chemical building products. Although a full shift is deemed too early due to supply and demand issues of biobased naphtha and 1st generation feedstock, there are environmental gains that can be made by setting a requirement to encourage the use of biobased material to reduce greenhouse gas emissions, while maintaining the same product quality in order to make sure the product has a long lifetime.

If renewable raw materials are used in acrylic resins the manufacture of acrylic resins must provide Nordic Ecolabelling with information on type and status (primary feedstock, waste or residue) of renewable raw materials and level/description of traceability used on both raw materials and the acrylic resin itself. Palm oil can be used in the production of acrylic resins, and because palm oil is linked to environmental and social issues, only palm oil that is RSPO certified is allowed to ensure that the palm oil comes from sustainable sources.

Alkyd resins

Alkyd resins are oil-based polyesters consisting of dibasic acid, polyols, and fatty acids. The fatty acid content and polyol of alkyd resins are compared to dibasic acids often derived from renewable raw materials (animal or vegetable oils). As with acrylic resins the general environmental benefit of bio-based plastics comes from the shift from fossil feedstock to bio-based feedstock. Therefore, fatty acids in alkyd polymers used in Nordic Swan Ecolabelled chemical building products must be made from renewable raw materials.

Alkyd polymer production is based on the use of vegetable oil, where advantages of the oil include the use of a renewable raw material which is sustainable and being environmentally friendly³⁰. Vegetable oil can be derived from many different raw materials, but it is important to determine the potential for each raw material and find the most sustainable ones, as alkyds can be derived from anywhere from palm oil to tall oil. However, not all raw materials are sustainable. There are several factors that influence the sustainability of bio-based products. For example, the agricultural process has a large impact on the

³⁰ Amelia, Okta, et al. (2021) Eco-friendly Alkyd Resins Based on Vegetable Oil. Jurnal Rekayasa Proses.

sustainability of vegetable oils³¹. The environmental impact of raw materials can be reduced if vegetable oils are produced on plantations managed sustainably, so that pesticides and unsustainable crop overexploitation are avoided.

Furthermore, there is incentive to utilize oils based on co-products from other industries, like pulp and paper or used cooking oils, as it is advised to avoid a burden shift of food-competing crops, because they could create a strong competition for land and water used for food production. With an increase in competition of land and water use, so does risk of deforestation and destruction of ecosystems increase due to urbanization and plant expansion. Palm oil is prohibited in alkyd resins as with increasing production and demand, the potential for producing all palm oil sustainably is limited. Furthermore, there are other alternative vegetable oils as to avoid the use of palm oil. For that reason, palm oil should only be used in products where a sustainable alternative is difficult to find.

The traceability of renewable raw materials is increasingly important for ensuring sustainability and ethical sourcing in the production of various products. Different levels of traceability have been developed to help companies and consumers understand the origin and sustainability of the raw materials they use.

The highest level of traceability is "Identity Preserved," which involves keeping raw materials from a specific source or batch physically separate throughout the entire supply chain. This allows for full traceability and verification of the origin and sustainability of the raw materials.

"Segregated" is the next level of traceability, where different batches or sources of raw materials are kept separate throughout the production process. This allows for traceability and verification of the origin of the raw materials, but does not guarantee that the raw materials are from a specific source or batch.

"Mass balance" is a method for tracking the flow of raw materials throughout the supply chain. It involves assigning a percentage of the total raw material inputs to each stage of the process, based on the amount of material that is physically present at each stage. This allows for traceability and verification of the sustainability of the raw materials, but does not guarantee that the final product contains materials from a specific source or batch.

"Book and Claim" is a certification scheme that allows companies to claim that they have used a certain amount of renewable raw materials in their products, without actually physically separating and tracking the materials. Instead, the company purchases certificates from a certification body, which represent a certain amount of renewable raw materials that have been sustainably produced. This allows for claims about the sustainability of the product but does not guarantee that the raw materials used in the product are actually from sustainable sources.

³¹ Alcock, Thomas et al. (2022): More sustainable vegetable oil: Balancing productivity with carbon storage opportunities

O14 Cement/Hydraulic binder

If the product contains cement or other hydraulic binders, the raw material manufacturer must fulfil at least one of the requirements below:

- The production of white cement clinker, grey cement clinker or lime shall have a maximum emission rate³² per tonne according to Table 7 in accordance with GHG-Protocol, ISO 14064 or calculated in accordance with Commission Delegated Regulation (EU) 2019/331³³, or
- The production of cement from grey clinker, white clinker, or alternative hydraulic binder, the specific greenhouse gas emissions from the clinker and cement or alternative binder production per tonne of cement or alternative binder manufactured shall not exceed values³⁴ given in Table 8. Calculation must be performed in accordance with GHG-Protocol, ISO 14064 or calculated in accordance with Commission Delegated Regulation (EU) 2019/331³⁵, or
- For cement/building lime, the total GWP for system boundaries A1, A2 and A3 according to EN 15804+A2 and EN 16908+A1 shall not exceed the limit values in Table 9. The data quality must fulfil quality level Fair or better, in accordance with EN 15804+A2, Annex E Table E.1 and E.2.

Table 7 Limit values for specific emissions for cement clinker and alternative hydraulic raw materials.

Cement clinker and alternative hydraulic raw material	Maximum emission
White cement clinker	0.973tCO ₂ e/tonne white cement clinker
Grey cement clinker	0.722tCO ₂ e/tonne grey cement clinker
Lime	0.746tCO ₂ e/tonne lime

Table 8 Limit values for cement and alternative hydraulic binder.

Cement/hydraulic binder	Maximum emission
White cement	0.632tCO ₂ e/tonne white cement
Grey cement	0.469tCO ₂ e/tonne grey cement
Alternative hydraulic binder	0.485tCO ₂ e/tonne alternative binder

Table 9 Limit values for product-specific emissions for cement and alternative hydraulic binders. Product specific GWP_{tot} for the cradle to gate system boundaries (A1-A3)

Cement/hydraulic binder	GWP _{tot} A1-A3
White cement	0.817tCO ₂ e/tonne white cement
Grey cement	0.605tCO ₂ e/tonne grey cement
Lime	0.746tCO ₂ e/tonne lime

³² Reflecting the average value of the 10% most efficient installations in 2016 and 2017 (t CO₂ equivalents/t) as set out in the Annex to the Commission Implementing Regulation (EU) 2021/447 of 12 March 2021 determining revised benchmark values for free allocation of emission allowances for the period from 2021 to 2025 pursuant to Article 10a(2) of Directive 2003/87/EC of the European Parliament and of the Council, (OJ L 87, 15.3.2021, p. 29).

³³ Calculated in accordance with Commission Delegated Regulation (EU) 2019/331 of 19 December 2018 determining transitional Union-wide rules for harmonised free allocation of emission allowances pursuant to Article 10a of Directive 2003/87/EC of the European Parliament and of the Council (OJ L 59, 27.2.2019, p. 8).

³⁴ Reflecting the average value of the 10% most efficient installations in 2016 and 2017 (t CO₂ equivalents/t) for grey cement clinker as set out in the Annex to the Implementing Regulation (EU) 2021/447, multiplied by the clinker to cement ratio of 0,65.

³⁵ Calculated in accordance with Regulation (EU) 2019/331.

- ☒ Documentation from the license holder showing that the specific cement or hydraulic binder is used in the product.
- ☒ Calculation of carbon dioxide emissions per tonne of hydraulic raw material manufactured in accordance with GHG-Protocol Scope 1, ISO 14064, in accordance with Commission Delegated Regulation (EU) 2019/331³⁶ or emission testing results according to relevant ISO test method showing compliance with the requirement.
- ☒ Product-Specific Type III Environmental Product Declaration (EPD) in accordance with ISO 14025, EN 15804+A2 and EN 16908+A1. The data quality must fulfil quality level Fair or better, in accordance with EN 15804+A2, Annex E Table E.1 and E.2.
- ☒ Declaration in line with Appendices 1 or 2 from the manufacturer of the product or the manufacturer of each raw material, respectively.

Background to requirement O14

A typical cement-based product contains with a vast majority Portland cement, hydrated lime, and calcium carbonate. Portland cement being the key ingredient, is one of the major sources of greenhouse gases globally, and accounts for 5% of carbon dioxide emissions³⁷. According to estimates, 900 grams of CO₂ emerge from the manufacturing of 1000 grams of cement, resulting in 3.24 billion tons of CO₂ being generated annually³⁸. Therefore, requirements are set out to reduce the energy demand, to limit the anthropogenic emissions of CO₂³⁹.

The specific limits for the different types of cement and hydraulic binders are derived from the average value of the top 10% of installations based on the data collected in the context of establishing the EU Emissions Trading System (EU ETS) industrial benchmarks for the period of 2021-2026 and calculated in accordance with the methodology for setting the benchmarks set out in Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC⁴⁰.

5.6 Adhesives, multipurpose adhesives, and construction adhesives

O15 Volatile aromatic compounds (VAC)

Volatile aromatic compounds (VAC) must not be actively added to the product but may occur as residuals to a total maximum of 100 ppm (0.01 w%, 100 mg/kg) in the final product.

³⁶ Calculated in accordance with Regulation (EU) 2019/331.

³⁷ The Cement Sustainability Initiative: <https://docs.wbcsd.org/2016/12/GNR.pdf> (visited 2022-05-30)

³⁸ Hendriks, C. A., Worrell, E., De Jager, D., Blok, K., & Riemer, P. (1998, August). Emission reduction of greenhouse gases from the cement industry. In Proceedings of the fourth international conference on greenhouse gas control technologies (pp. 939-944). IEA GHG R&D Programme Interlaken, Austria.

³⁹ Antunes, M., Santos, R. L., Pereira, J., Rocha, P., Horta, R. B., & Colaço, R. (2021). Alternative Clinker Technologies for Reducing Carbon Emissions in Cement Industry: A Critical Review. *Materials*, 15(1), 209.

⁴⁰ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R0447&rid=1>

Volatile aromatic compounds are volatile organic compounds where one or more benzene rings are contained within the molecule.

- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- Calculation of the level of volatile aromatic compounds in the product (based on data for all ingoing raw materials).

Background to requirement O15, O19, O23, O27 and O31

VACs have specific environmental and human health impacts including DNA damage⁴¹. Exposure to these products should be minimised and any way to mandate a reduction in their use encouraged. The current criterion prevents their addition but allows their presence from residuals.

O16 Volatile organic compounds (VOC)

Adhesives that are intended for frostproof use during the winter may contain maximum 6.0% by weight volatile organic compounds (VOC).

Other adhesives may contain a maximum of 1.0% by weight volatile organic compounds.

Note that if, during use, volatile organic compounds form, these must meet all applicable obligatory requirements.

- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- Calculation of the level of volatile organic compounds in the product (based on data for all ingoing raw materials).

Background to requirement O16, O20, O24, O28 and O32

Volatile organic compounds (VOCs) are to be considered particularly concerning due to their inherent properties. They can be absorbed through the lungs and skin and cause damage to various organs. Prolonged exposure to certain organic solvents can cause chronic damage to the brain and nervous system, while other organic solvents can cause cancer or reproductive damage⁴². The requirement concerning adhesives has been set such that adhesives that need to be frostproof are permitted to contain up to 6.0% by weight volatile organic compounds, so that they can function at low temperatures. Other adhesives are permitted to contain no more than 1.0% by weight volatile organic compounds.

O17 Emission of total volatile compounds (TVOC) and semi-volatile organic compounds (TSVOC) in adhesives

For indoor adhesives, the emissions of carcinogenic VOC and Total Volatile Organic Compounds (TVOCs), and emissions of total Semi-Volatile Organic Compounds (TSVOCs) must not exceed limits given in Table 10.

Note: If the product is intended for both outdoor and indoor use, it must meet the requirements concerning indoor adhesives.

Test method: Emission testing after 28-days according to EN 16516 or EN 16402 or other equivalent test methods.

⁴¹ Environ Health Perspect. 2002 June; 110(Suppl 3): 451–488.

⁴² Bruckner, J. V., Anand, S. S., & Warren, D. A. (2008). Toxic effects of solvents and vapors. Casarett and Doull's Toxicology: The Basic Science of Poison, 7th Ed. Klaassen CD (Eds.), 981-1051.

Adhesives for indoor use sold in packs of less than 125 ml are exempted from this requirement.

The test laboratory must fulfil the requirements in appendix 5.

Table 10 Emission limits for the final product for fillers after 28 days

Product description	1A and 1B carcinogenic VOC*	TVOC	TSVOC
Indoor Adhesives	≤ 0,001 mg/m ³	≤ 0,1 mg/m ³	≤ 0,05 mg/m ³

* Carcinogenic 1A and 1B VOCs listed in Annex H of EN 16516.

- Specification of packaging size.
- Test report in accordance with EN 16516, EN 16402 or other equivalent standardised test conditions and determination methods for products sold in packs greater than 125 ml.
- Documentation showing that the test laboratory fulfils the requirements in appendix 5.

Background to requirement O17

The requirement for emissions has slightly changed from previous version to align with emission testing in accordance with requirements set out in the EU-Taxonomy as well as the Norwegian environmental certification for buildings BREEAM-NOR. Carcinogenic VOCs has been included in the requirement to be in line with the EU-Taxonomy.

Building materials emit chemical emissions into the indoor environment, which can affect the health of occupants. These emissions have therefore raised awareness about how the chemicals affect the human health^{43,44}. As people spend more time in indoor environments, it is necessary to measure and quantify indoor VOC emissions to prevent possible adverse health effects of indoor air pollution due to the toxic nature of many VOCs⁴⁵. Furthermore, there is long-lasting persistence of many SVOCs indoors, even after removing their primary source. Indoors, SVOCs may persist for hundreds of hours or even for several years⁴⁶. While emissions of SVOC must be reported, there is no specific limit value in the version of the criteria. The purpose is to report emission data of SVOC and in future revision set a limit value which is representative for products with lower emissions on the market.

The decline in use of VOCs has led to an increase in the use of SVOCs. Construction and building products are a major source of SVOCs and the Construction Products Directive⁴⁷ has an optional criterion⁴⁸ that SVOCs need to be avoided within the sector⁴⁹. Indoor SVOCs originate from indoor and outdoor

⁴³ Swedish Chemicals Agency (KemI). Action plan for a non-toxic everyday 2015–2020 – protect the children (in Swedish). Report 5. KemI, Sundbyberg, 2014.

⁴⁴ Sundell J. (2004) On the history of indoor air quality and health.

⁴⁵ Morin, J., Gandolfo, A., Temime-Roussel, B., Strekowski, R., Brochard, G., Bergé, V., ... & Wortham, H. (2019). Application of a mineral binder to reduce VOC emissions from indoor photocatalytic paints. *Building and Environment*, 156, 225-232.

⁴⁶ Weschler, C. J., & Nazaroff, W. W. (2008). Semivolatile organic compounds in indoor environments. *Atmospheric environment*, 42(40), 9018-9040.

⁴⁷ Council Directive 89/106/EEC

⁴⁸ European Collaborative Action. Urban air, indoor environment, and human exposure. Report No 27; Harmonisation framework for indoor material labelling schemes in the EU (2010)

⁴⁹ CEN/TC 351 Construction products: Assessment of the release of dangerous substances.

sources. The major issue is that SVOCs can partition themselves among different phases and available surfaces⁵⁰, walls and onto other surfaces which increases their residence time indoors to several years. SVOCs may also react with indoor oxidants, such as hydroxyl radicals (OH), nitrate radicals (NO₃), and ozone, as such, they can be inhaled and ingested and pose a risk to health and environment⁵¹. SVOCs are not subjected to a limit but is to be reported in the requirement.

O18 Quality requirements for adhesives

Adhesives are to be tested in accordance with the standards stated below. If there is no relevant quality test for a specific product mentioned below, Nordic Ecolabelling can extend the requirements for quality tests during the validity of the criteria to include other relevant tests.

Table 11 Quality tests for adhesives

Types	Test method
Adhesives for wall and floor coverings	EN ISO 22631, EN ISO 22632, EN 1902 or equivalent methods. At least one comparable reference product is to be tested.
Ceramic tile adhesive	For dispersion adhesives and cement-based adhesives: EN 12004-2 or equivalent methods. The adhesive must meet the minimum requirements in standard EN 12004 for the particular type of adhesive.
Wallpaper paste	Comparative test (see Appendix 4) that clearly shows the quality of the adhesive.
Wood adhesive	EN 205 or equivalent methods. At least one comparable reference product is to be tested.
Chemical anchors, multipurpose adhesives / construction adhesives	EAD 330449-01-0601 that has resulted in ETA approval.
Other adhesives	Methods that apply for these products or comparative test (see Appendix 4) that clearly shows the quality of the adhesive.

- ☒ Test report from a laboratory in line with Appendix 5 or a comparative test in line with Appendix 4, which clearly shows that the requirement is fulfilled.

Background to requirement O18

Adhesives are tested in line with the test methods stated in the requirement in order to show that the products meet the quality standards in the tests. An adhesive that performs well stops the user having to use unnecessary amounts of the product and this can “save” on raw materials compared with less good adhesive, where gluing must be done several times to achieve the same effect. Test methods have been chosen in dialogue with the industry.

5.7 Sealants

O19 Volatile aromatic compounds (VAC)

Volatile aromatic compounds (VAC) must not be actively added to the product but may occur as residuals to a total maximum of 100 ppm (0.01 w%, 100 mg/kg) in the final product.

⁵⁰ Wei, W et al., (2017). Reactivity of semivolatile organic compounds with hydroxyl radicals, nitrate radicals, and ozone in indoor air. *International Journal of Chemical Kinetics*, 49(7), 506-521.

⁵¹ Salthammer, T et al., (2009) Occurrence, Dynamics, and Reactions of Organic Pollutants in the Indoor Environment

Volatile aromatic compounds are volatile organic compounds where one or more benzene rings are contained within the molecule.

- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- Calculation of the level of volatile aromatic compounds in the product (based on data for all ingoing raw materials).

Background to requirement O19

See background for requirement O15 for background information.

O20 Volatile organic compounds (VOC)

Sealants are permitted to contain no more than 3.0% by weight volatile organic compounds.

Note that if, during use, volatile organic compounds form, these must meet all applicable obligatory requirements.

- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- Calculation of the level of volatile organic compounds in the product (based on data for all ingoing raw materials).

Background to requirement O19

See background for requirement O16 for background information.

O21 Emission of total volatile compounds (TVOC) and semi-volatile organic compounds in sealants

For indoor sealants, the emissions of carcinogenic VOC and Total Volatile Organic Compounds (TVOCs), and emissions of total Semi-Volatile Organic Compounds (TSVOCs) must not exceed limits given in Table 12.

Note: If the product is intended for both outdoor and indoor use, it must meet the requirements concerning indoor sealants.

Test method: Emission testing after 28-days according to EN 16516 or EN 16402 or other equivalent test methods.

Sealants for indoor use sold in packs of less than 125 ml are exempted from this requirement.

The test laboratory must fulfil the requirements in appendix 5.

Table 12 Emission limits for the final product for fillers after 28 days

Product description	1A and 1B carcinogenic VOC*	TVOC	TSVOC
Indoor sealants	≤ 0,001 mg/m ³	≤ 0,3 mg/m ³	≤ 0,03 mg/m ³

* Carcinogenic 1A and 1B VOCs listed in Annex H of EN 16516.

- Specification of packaging size.
- Test report in accordance with EN 16516, EN 16402 or other equivalent standardised test conditions and determination methods for products sold in packs greater than 125 ml.
- Documentation showing that the test laboratory fulfils the requirements in appendix 5.

Background to requirement O21

See background for requirement O17 for background information.

O22 Quality requirements for sealants

The sealant must, where appropriate, be tested in accordance with ISO 11600. Other sealants are to be subject to a comparative test (see Appendix 4) that clearly shows the quality of the sealant.

If there is no relevant quality test for a specific type of sealant, Nordic Ecolabelling can extend the requirements for quality tests during the validity of the criteria to include other relevant tests.

For cement-based products within sealants EN 13888 Grout for tiles, or equivalent methods, are accepted.

- ☒ Test report from a laboratory in line with Appendix 5 or comparative test in line with Appendix 4, which clearly shows that the requirement is fulfilled.

Background to requirement O22

The quality of the sealant is to be tested in accordance with ISO 11600. To ensure that it is possible to test sealant quality, an alternative to the standardised test method is given in the form of a comparative test that clearly shows the quality of the sealant. In drawing up the first version of the criteria, Nordic Ecolabelling contacted various suppliers and reviewed product sheets and MSDS to determine the standardised method and to allow for a comparative test.

5.8 Fillers, putty and levelling compound (screed)

O23 Volatile aromatic compounds (VAC)

Volatile aromatic compounds (VAC) must not be actively added to the product but may occur as residuals to a total maximum of 100 ppm (0.01 w%, 100 mg/kg) in the final product.

Volatile aromatic compounds are volatile organic compounds where one or more benzene rings are contained within the molecule.

- ☒ Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- ☒ Calculation of the level of volatile aromatic compounds in the product (based on data for all ingoing raw materials).

Background to requirement O23

See background for requirement O15 for background information.

O24 Volatile organic compounds (VOC)

Fillers are permitted to contain no more than 3.0w% volatile organic compounds in ready-mixed filler.

Note that if, during use, volatile organic compounds form, these must meet all applicable obligatory requirements.

- ☒ Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- ☒ Calculation of the level of volatile organic compounds in the product (based on data for all ingoing raw materials).

Background to requirement O24

See background for requirement O16 for background information.

O25 Emission of total volatile compounds (TVOC) and semi-volatile organic compounds in fillers

For fillers, the emissions of carcinogenic VOC and Total Volatile Organic Compounds (TVOCs), and emissions of total Semi-Volatile Organic Compounds (TSVOCs) must not exceed limits given in Table 13.

Note: If the product is intended for both outdoor and indoor use, it must meet the requirements concerning indoor filler.

Test method: Emission testing after 28-days according to EN 16516 or EN 16402 or other equivalent test methods.

Fillers for indoor use sold in packs of less than 125 ml are exempted from this requirement.

The test laboratory must fulfil the requirements in appendix 5.

Table 13 Emission limits for the final product for fillers after 28 days

Product description	1A and 1B carcinogenic VOC*	TVOC	TSVOC
Fillers	≤ 0,001 mg/m ³	≤ 0,06 mg/m ³	≤ 0,03 mg/m ³

* Carcinogenic 1A and 1B VOCs listed in Annex H of EN 16516.

- Specification of packaging size.
- Test report in accordance with EN 16516, EN 16402 or other equivalent standardised test conditions and determination methods for products sold in packs greater than 125 ml.
- Documentation showing that the test laboratory fulfils the requirements in appendix 5.

Background to requirement O25

See background for requirement O17 for background information.

O26 Quality requirements for fillers, putty and levelling compounds (screed)

The manufacturer must describe how the filler is tested in order to ensure good, consistent quality, particularly in terms of viscosity, adhesion, gap-filling properties, shrinkage, minimal sinking and durability.

Test of filler for plasterboard conducted in accordance with the standard EN 13963. Test of other filler in accordance with EN 15824 or other relevant harmonised standards. For fillers tests of adhesion can also be approved according to EN 16566 and for products to be used in wet areas it is also required to do wet scrub measurements according to the standard.

The products can also be tested using a comparative test (see Appendix 4) that clearly shows the quality of the filler.

For cement-based products within Fillers/Screed EN 13813 with relevant measurements according to table 1 chapter 5.2 in the standard, or equivalent methods, are accepted.

- Test report from a laboratory in line with Appendix 5 or comparative test in line with Appendix 4, which clearly shows that the requirement is fulfilled.

Background to requirement O26

Under the requirement, the manufacturer has to describe how the filler has been tested to ensure good, consistent quality with a special focus on: viscosity, adhesion, gap-filling properties, shrinkage, minimal sinking and durability. Tests of filler for plasterboard must be conducted in accordance with the standard EN 13963. Other fillers are to be tested in accordance with EN 15824 or other relevant harmonised standards. The products can also be tested with a comparative test that clearly shows the quality of the filler.

5.9 Impregnating agents for tile, stone, and concrete

O27 Volatile aromatic compounds (VAC)

Volatile aromatic compounds (VAC) must not be actively added to the product but may occur as residuals to a total maximum of 100 ppm (0.01 w%, 100 mg/kg) in the final product.

Volatile aromatic compounds are volatile organic compounds where one or more benzene rings are contained within the molecule.

- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- Calculation of the level of volatile aromatic compounds in the product (based on data for all ingoing raw materials).

Background to requirement O27

See background for requirement O15 for background information.

O28 Volatile organic compounds (VOC)

Impregnating agents for tile, stone and concrete may contain a maximum of 1.0% by weight volatile organic compounds.

Note that if, during use, volatile organic compounds form, these must meet all applicable obligatory requirements.

- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- Calculation of the level of volatile organic compounds in the product (based on data for all ingoing raw materials).

Background to requirement O27

The requirement has been changed from previous version as it was expanded to include impregnating agents for concrete indoors. Requirement for VOC has been set to similar values as other product groups concerning indoor exposure of VOC. In the previous requirement, VOC was not listed with a limit value, therefore being set to the standard impurity limit and thus the requirement has been eased compared to the previous version.

O29 Emission of total volatile compounds (TVOC) and semi-volatile organic compounds (TSVOC) in impregnating agents

For indoor impregnating agents, the emissions of carcinogenic VOC and Total Volatile Organic Compounds (TVOCs), and emissions of total Semi-Volatile Organic Compounds (TSVOCs) must not exceed limits given in Table 14.

Note: If the product is intended for both outdoor and indoor use, it must meet the requirements concerning indoor impregnating agents.

Test method: Emission testing after 28-days according to EN 16516 or EN 16402 or other equivalent test methods.

The test laboratory must fulfil the requirements in appendix 5.

Table 14 Emission limits for the final product for fillers after 28 days

Product description	1A and 1B carcinogenic VOC*	TVOC	TSVOC
Indoor impregnating agents	≤ 0,001 mg/m ³	≤ 0,1 mg/m ³	≤ 0,05 mg/m ³

* Carcinogenic 1A and 1B VOCs listed in Annex H of EN 16516.

- Test report in accordance with EN 16516, EN 16402 or other equivalent standardised test conditions and determination methods.
- Documentation showing that the test laboratory fulfils the requirements in appendix 5.

Background to requirement O28

See background for requirement O17 for background information.

O30 Quality requirements for impregnating agents for tile, stone and concrete

A test must be carried out for wear according to EN 13892-4. The product must live up to the minimum AR 1 (i.e. AR 1 or lower numerical value for AR).

If the product is claimed to reduce coatings and fouling, a field test must be performed where tiles, stone or concrete with impregnation are applied according to the instructions for the product and visually compared with identical untreated tiles, stone, or concrete. The test period must be appropriate so that the effect can be detected.

The applicant must show that the product is effective in relation to the claims of the product. The applicant must describe the test method, send photo documentation, and describe how the results are evaluated.

For other claims, the applicant must perform tests that demonstrate compliance with the claims on the product. The applicant must state the test method, any data, how the results are evaluated and send photo documentation.

If there is no relevant quality test for a specific type of impregnating agent, Nordic Ecolabelling can extend the requirements for quality tests during the validity of the criteria to include other relevant tests.

- Test report for EN 13892-4, which clearly shows that the requirement is met.
- For claims: Test report with the test method description, possible data, description of how results are evaluated and photo documentation.

Background to requirement O27

Test methods and pass levels have been chosen in dialogue with the industry.

Test method EN 13892-4 tests the wear resistance on e.g. cement surfaces.

Resistance is measured in unit AR, which is the average depth of wear in µm.

The AR classes are AR 5.0, AR 1, AR 2, AR 4 and AR6. The lower AR value the better the wear resistance. The requirement level is set minimum AR 1, so that the Nordic Ecolabelled impregnating agents for tile, stone and concrete have a

good quality and efficiency. There are no other relevant international test methods available. Possible claims must be proven with an appropriate test method in relation to the claimed effects, e.g. to reduce coatings and fouling. Testing must show that the product has the claimed effect and is documented by describing the test method, results, and photo documentation.

5.10 Mortar and plaster

O31 Volatile aromatic compounds (VAC)

For ready-mixed mortars and plasters, volatile aromatic compounds (VAC) must not be actively added to the product but may occur as residuals to a total maximum of 100 ppm (0.01 w%, 100 mg/kg) in the final product.

Volatile aromatic compounds are volatile organic compounds where one or more benzene rings are contained within the molecule.

- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- Calculation of the level of volatile aromatic compounds in the product (based on data for all ingoing raw materials).

Background to requirement O31

See background for requirement O15 for background information.

O32 Volatile organic compounds (VOC)

Ready-mixed mortars and plasters may contain a maximum of 1.0% by weight volatile organic compounds.

Note that if, during use, volatile organic compounds form, these must meet all applicable obligatory requirements.

- Declaration in line with Appendix 1 from the manufacturer of the product and Appendix 2 from the manufacturer of each raw material.
- Calculation of the level of volatile organic compounds in the product (based on data for all ingoing raw materials).

Background to requirement O32

See background for requirement O16 for background information.

O33 Emission of total volatile compounds (TVOC) and semi-volatile organic compounds in internal plasters and mortars

For indoor plasters and mortars, the emissions of carcinogenic VOC and Total Volatile Organic Compounds (TVOCs), and emissions of total Semi-Volatile Organic Compounds (TSVOCs) must not exceed limits given in Table 15.

Note: If the product is intended for both outdoor and indoor use, it must meet the requirements concerning indoor plaster and mortar.

Test method: Emission testing after 28-days according to EN 16516 or EN 16402 or other equivalent test methods.

The test laboratory must fulfil the requirements in appendix 5.

Table 15 Emission limits for the final product for fillers after 28 days

Product description	1A and 1B carcinogenic VOC*	TVOC	TSVOC
Indoor plaster and mortar	≤ 0,001 mg/m ³	≤ 0,1 mg/m ³	≤ 0,05 mg/m ³

* Carcinogenic 1A and 1B VOCs listed in Annex H of EN 16516.

- Test report in accordance with EN 16516, EN 16402 or other equivalent standardised test conditions and determination methods.
- Documentation showing that the test laboratory fulfils the requirements in appendix 5.

Background to requirement O33

See background for requirement O17 for background information.

O34 Quality requirement for mortars and plasters

Mortars and plasters are subjected to testing according to EN 1015 or EN 998 where the report shall show results for compressive strength, bond strength and durability. The product must live up to the values listed in table below and the specific use of the mortar or plaster must be described and fulfilled if applicable.

If there is no relevant quality test for a specific type of mortar or plaster, Nordic Ecolabelling can extend the requirements for quality tests during the validity of the criteria to include other relevant tests.

Table 16 Quality requirement for mortars

Test method	Result
Compressive strength according to EN 1015-11	<p>Mortars intended for general purpose applications must not exceed a compressive strength of 5 MPa or higher at 28 days with conditions according to EN 1015-11.</p> <p>Mortars intended for specialized structural applications, such as load-bearing elements, must not exceed a compressive strength of 10 MPa or higher at 28 days with conditions according to EN 1015-11.</p>
Bond strength according to EN 1015-12	<p>Mortars intended for general masonry applications must not exceed a bond strength of 0.20 MPa or higher at 28 days.</p> <p>Mortars intended for specialized structural applications that requires enhanced adhesion, must not exceed a bond strength of 0.25 MPa or higher at 28 days.</p>
Durability according to EN 1015-18	<p>Mortars for outdoor use intended for general purpose applications must exhibit durability through resistance to freeze-thaw cycles, carbonation and other environmental factors.</p>

	Mortars for application in aggressive environments (e.g., marine or industrial settings) must meet the criteria for general purpose applications as well as resistance to chemical.
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Table 17 Quality requirement for rendering mortars and plasters

Test method	Result
Compressive strength according to EN 998-1	<p>Rendering mortars and plasters intended for general purpose applications must not exceed a compressive strength of 5 MPa or higher at 28 days with conditions according to EN 998-1.</p> <p>Rendering mortars and plasters intended for specialized structural applications, such as load-bearing elements, must not exceed a compressive strength of 15 MPa or higher at 28 days with conditions according to EN 998-1.</p>
Bond strength according to EN 998-1	<p>Rendering mortars and plasters intended for general masonry applications must exhibit a minimum bond strength of 0.10 MPa at 28 days.</p> <p>Rendering mortars and plasters intended for specialized structural applications that requires enhanced adhesion, must exhibit a minimum bond strength of 0.20 MPa at 28 days.</p>
Durability according to EN 998-2	<p>Rendering mortars and plasters for outdoor use intended for general purpose applications must exhibit durability through resistance to freeze-thaw cycles, carbonation and other environmental factors.</p> <p>Rendering mortars and plasters for application in aggressive environments (e.g., marine or industrial settings) must meet the criteria for general purpose applications as well as resistance to chemical.</p>

- Test report according to EN 1015 or EN 998 clearly showing the requirement being met.
- Documentation showing that the test laboratory fulfils the requirements in appendix 5.

Background to requirement O34

Nordic Ecolabelling has included mortars and plasters in the criteria, making sure they meet specific quality standards as with previous product groups. Setting these requirements aligns with promoting sustainable construction practices.

EN 1015 and EN 998 has been chosen as testing standards. EN 1015 covers various properties like consistency, strength, and durability of mortars. On the

other hand, EN 998 specifically addresses rendering and plastering mortars, giving clear criteria for their composition and performance.

The limit values have been set to act as important benchmarks, while having considerations in terms of durability, performance, and environmental aspects. Compressive strength has been set in order to limit the amount of binder needed for national architectural purposes, as increased compressive strength can result in increased CO₂ of the product from a life cycle perspective.

5.11 Requirements concerning packaging, labelling, consumer information, and recycling

O35 Packaging

If the packaging material contains plastic the following requirement must be met:

- Plastic packaging must contain a minimum of 30 weight% recycled material*.

Packaging made from aluminium is not allowed for use.

Information on how the packaging should be sorted as dried or emptied must be written on the packaging (see requirement O35).

Exemption to the requirement is given for the following:

- Packaging (e.g., pouches) that amounts to less than 25 grams per litre of product.

**Recycled material is defined in the requirement according to ISO 14021 in the following two categories:*

"Pre-consumer/commercial" is defined as material diverted from the waste stream during a manufacturing process. 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/commercial material. This is whether it is produced in-house or externally.

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

- Description and documentation from plastic manufacturers showing that the plastic is recycled in compliance with the requirement's definition or has EuCertPlast certification or Global Recycled Standard certification.
- Calculation or statement from the packaging manufacturer showing the percentage of recycled material in the packaging.

Background to requirement O35

The impact of packaging on the environment is influenced by various factors, many related to what happens to the packaging at the end of life. Whether a chemical building product packaging can be recycled is governed by whether the packaging is empty and dried or contains residue. If the packaging is empty and dried, its climate benefit is considerably increased, as it can be recycled.

Recycling would be a better option for the climate compared to producing new virgin material.

Some of the plastic used today for chemical building products packaging consists of a certain proportion of recycled material. It is technically possible to use more than 30 weight% of recycled material in the packaging, but this requires that the recycled material is of high quality, i.e., cleaner fractions, in order for the plastic to achieve the desired properties that make it suitable as packaging. With a proportion of 30 weight% recycled, the plastic collected from Nordic households will be of good enough quality to be used, and this will then contribute to creating a larger market for the collected plastic. It is theoretically possible to use up to 50% recycled material, but this would compromise the technical structure of the packaging.

Furthermore, use of aluminium packaging is prohibited as, compared to traditional metal packaging made from tinplate or plastic packaging, it has a much higher climate impact.

O36 Consumer information

The following information must be stated on the packaging. If there are any space issues, parts of the text can be moved to the technical data sheet or can be made available at the manufacturer's website with information. In addition, parts of the text can be translated into symbols.

- The purpose, substrate, and other conditions of application for which the product is intended. This shall include advice on preparation, e.g., correct preparation of the substrate or temperature.
- Estimate of “normal” coverage (e.g., l/m² or equivalent).
- Recommended preventive safety measures for users, such as safety equipment and ventilation (particularly when working in enclosed spaces or similar).
- The label must contain information on how the packaging should be sorted in the relevant country of sale. If the relevant country of sale has any possibility to sort the empty and dry packaging, then information must be placed on the packaging that it should be sorted as plastic or metal recycling.
- Remove the handle before sorting (only relevant if the handle is made of metal).
- Information that liquid products or residues must not be emptied down the drain but delivered to an approved hazardous waste collection point.
- Recommendations on cleaning used tools and how waste products from cleaning can best be disposed of (to limit water pollution). These recommendations are to be adapted to the product types and areas of application. Pictograms may also be used where appropriate.
- Recommendations on how the product is to be stored after opening, including safety instructions where relevant.

Label, product sheet or equivalent and description of how the information accompanies each product.

Background to requirement O36

Consumer information requirements have been set to facilitate the correct use of the product and to minimise the impact of the product on health and the

environment. The recommendation concerning preventive safety measures has been clarified to explicitly include safety equipment and ventilation. It must be made clear what level of ventilation is required when using each type of product.

Recommendations on how to store the products after opening and how to handle residues to minimise the risk of incorrect handling is required to inform the user. Correct handling of residues and washing water is important to avoid the spread of microplastics.

Information for the user on how to use the product, on which substrates and how much product is estimated to give “normal” coverage can help to reduce waste through correct handling of the product.

5.12 Licence maintenance

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

O37 Customer complaints

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

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

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

Background to requirement O37

Nordic Ecolabelling requires that your company has implemented a customer complaint handling system. To document your company's customer complaint handling, you must upload your company's routine describing these activities. The routine should be dated and signed and will normally be part of your company's quality management system.

If your company does not have a routine for customer complaint handling, it is possible to upload a description of how your company perform these activities. During the on-site visit, Nordic Ecolabelling will check that the customer complaint handling is implemented in your company as described. The customer complaints archive will also be checked during the visit.

O38 Traceability

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

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

- Please upload your routine or a description.

Background to requirement O38

Nordic Ecolabelling requires that your company has implemented a traceability system. To document your company's product traceability, you must upload your

company's routine describing these activities. The routine should be dated and signed and will normally be part of your company's quality management system.

If your company does not have a routine for product traceability, it is possible to upload a description of how your company perform these activities. During the on-site visit, Nordic Ecolabelling will check that the product traceability is implemented in your company as described.

6 Environmental impact of the chemical building products

The criteria for Nordic Swan Ecolabel chemical building products are based on the principles of life cycle assessment and RPS⁵² (Relevance, Potential and Steerability) analysis. Additionally, parts of the criteria for paints and varnishes have been used as a reference due to the similarity of raw materials used.

This product group was set up on the basis of experiences that Nordic Ecolabelling had of ecolabelling houses, which led to an evaluation of Relevance, Potential and Steerability for chemical building products being developed in 2004.

To achieve environmental gains, each individual requirement must be relevant to the environmental objectives of Nordic Ecolabelling⁵³. There must also be a proven potential to differentiate between the environmentally better products and others (there must be a difference and it has to be large enough that it "pays" to set the requirement). There must also be scope to steer the environmental problem in question via ecolabelling requirements. These three parameters are to be seen together and as such are referred to as Relevance-Potential-Steerability, RPS. Choosing the requirements that together have the greatest relevance, potential and steerability in terms of the product's life cycle achieves the greatest environmental gain.

Experiences from the licensing work were drawn on in combination with a light RPS, and a MECO analysis (which looks at the combined impact of materials, energy, chemicals and other aspects such as waste, transport and so on) was conducted as part of the assessment of the product group in 2012. Furthermore, parts of the RPS and MECO that were developed for paints and varnishes version 4.0 have been used in the criteria development for chemical building products. The conclusion was that this remains a highly relevant product group for which to set ecolabelling criteria.

The MECO analysis showed that the key parameter for chemical building products is the properties of the constituent substances.

Relevance (R)

There are four product types within chemical building products, including fillers, sealants, adhesives, impregnating agents and mortars and plasters. The product types can in turn contain a number of subcategories for different functions and

⁵² <https://www.nordic-ecolabel.org/nordic-swan-ecolabel/criteria-process/rps-tool/>

⁵³ <https://www.nordic-swan-ecolabel.org/nordic-ecolabelling/environmental-aspects/>

applications. What links the four product types (fillers, sealants, adhesives, and impregnating agents) is that they contain chemicals that may be harmful to the environment and/or health, such as: binders, solvents, catalysts, hardeners, monomers, flame retardants and preservatives/biocides. The same types of ingredients also tend to appear in different chemical building products.

A consultant studied the classification of chemical building products based on information in safety data sheets, and the study showed that many of the constituent ingredients in these products are classed as harmful to the environment and/or health⁵⁴. It has also become apparent that many of the finished chemical building products may be classed as harmful to the environment and/or health^{55,56}. Chemical building products are used in large volumes⁵³. 562,000 tonnes per year in the Nordic region of the products within the product group "Chemical building products".

Potential (P)

Through active choices of ingredients or the formulation/reformulation of their recipe, producers are often able to reduce the environmental/health impact of their products.

Even minor adjustments to the product formulation (such as replacing an ingredient with one that is not as harmful to the environment and/or health, or one with less VOC) can generate a real environmental gain, because the products sell in such large volumes.

The useful life of the products also plays a major role in that increasing the lifespan for these products directly results in raw material and production savings. The quality requirements in this product group are therefore also directly associated with environmental gains.

Steerability (S)

There are many large manufacturers of sealants, fillers, adhesives and impregnating agents, as well as numerous raw material suppliers for them to use. This creates a competitive situation which means that Nordic Ecolabelling can work well in stimulating the development of more environmentally friendly products.

Reports from public authorities and the industry itself indicate that ecolabelling can be a tool for steering development towards more environmentally aware products. The construction industry in general is highly competitive and price can often be a more important factor than the environment in procurement processes. However, there is an increasing demand for sustainable construction, which means that demand is also rising for products with a good environmental and health profile, giving them a stronger position in the market.

⁵⁴ Inneklimakrav til kemiske byggprodukter, TI, (February 2008).

⁵⁵ Official Statistics of Sweden; Statistiska Meddelanden MI 45 SM 1001: pp 25-26.

⁵⁶ Inneklimakrav til kemiske byggprodukter, TI, (February 2008).

6.1 Relevance

Survey of substances that are harmful to the environment and health in chemical building products – National Institute of Technology (TI).

As part of the feasibility study for chemical building products, before development of the criteria began, the National Institute of Technology in Norway⁵⁷ conducted a survey of chemical building products on behalf of Nordic Ecolabelling. The study was completed in February 2008. It covered products on the Norwegian market but was taken as being representative of the whole Nordic region, since the products in the various countries are more or less of the same type.

The conclusions of the report were that emphasis should be placed on the following general considerations when setting criteria for the Nordic Ecolabelling of chemical building products.

- Prioritise polymers with the lowest emissions
- Avoid ecolabelling the most harmful products
- Focus on environmentally harmful additives
- Reduce the content of volatile organic compounds (VOC)
- Look at the performance of the product
- Ensure good information for the end user

Raw material phase

It is relevant to set requirements concerning constituent substances, since there are often different variants of these raw materials which have differing impacts on health and the environment. The manufacturers of the products are largely able to influence which raw materials are chosen for each product.

Minerogenic raw materials are mined and processed before they are used in chemical building products (function in the products: filler, binder, pigment, etc.).

Fossil raw materials are mined and processed before they are used in chemical building products (function in the products: solvent, binder, filler, pigment, and preservative).

More than 300 raw materials go into manufacturing of chemical building products. Of those, around 70% are based on petroleum, but renewable oils can/could be used instead of petroleum. In the raw materials phase, in which raw materials for the chemical building products are produced, there are several clear and relevant environmental problems (associated with: mining operations, open-cast mining, oil drilling, oil palm growing, etc).

Plant raw materials are harvested/extracted before they are used in chemical building products (function in the products: rheology modifier, filler, pigment, polymer, etc). Binders are the main/key component in all subgroups, and also control the products' areas of use.

⁵⁷ National Institute of Technology, Miljøkrav til kjemiske byggprodukter, 2007

Fillers have an important function in determining the products' mechanical properties. Common fillers include chalk, calcium carbonate and talc.

Viscosity regulators are used to enable smooth application of the products onto surfaces without running/dripping and to give the product the right consistency. Substances commonly used include vegetable oils, resins, starches, and polyamide wax.

Solvents are organic substances used in relatively small quantities to allow easier application.

Plasticisers are added to certain products to give the "dried/hardened" end product the right elasticity. Phthalic acid esters and benzoic acid esters have previously been common, but rapid advances are being made in the area and other substances are also commonly used.

Pigments are used to give the product the desired colour and may make up 0-30% of these products. The most common pigments are probably titanium dioxide (TiO₂) and carbon black. Pigments are a wide-ranging and heterogeneous group of substances comprising inorganic compounds (usually metal oxides), organic compounds and mixtures of organic and inorganic compounds in the same pigment molecule.

Preservatives and fungicides are used because the contents of the chemical building products are generally fodder for microorganisms, plus raw materials are used that are already hosts to microorganisms. Preservatives are therefore highly necessary in this context and usually the raw materials already come preserved. There are major health differences between different preservatives.

Additives such as hardeners and accelerators are also used to varying degrees.

Production phase

During the manufacture of chemical building products, raw materials are blended together to create finished chemical building products, which are then packaged before they leave the factory. The greatest risk of exposure to substances that are harmful to health is via the airways. This risk is minimised in factories where the majority of production takes place in closed systems, but since it is not always possible for the whole production line to be a closed system, it remains relevant to limit the use of substances that are harmful to health in the products.

Energy consumption during manufacture is judged to be relatively low in terms of energy consumption per litre of product without water, since the process primarily involves raw materials being mixed to form the finished product, which is then packaged in plastic, metal or paper packaging. There is therefore less relevance in setting requirements concerning energy consumption in the process.

The "Other" section in the MECO analysis includes the working environment, and in this context dust-producing raw materials are a consideration. It is relevant to set requirements concerning these, since dust-producing raw materials pose a health risk.

Usage phase

The products are applied manually or using a machine, and this subjects the user and the environment to exposure and/or risk of exposure to substances that are harmful to health and the environment in the products, and to emissions of various volatile organic compounds (VOC) and allergens. During hardening/drying, the products may emit “new” substances arising from the hardening reaction, including methanol and formaldehyde (carcinogenic substances). It is therefore relevant to set requirements concerning the impact on health and the environment of the raw materials and the end products.

During the usage phase, chemical building products have an important secondary function in that they must last/perform for many years, perhaps 10-30 years depending on the subgroup. This makes it relevant to set requirements concerning quality and performance.

Waste phase

It is common to both recycle and reuse building materials. This is, however, governed by the building material itself and not the surface treatment of the chemical building product. The building material may comprise a number of different materials. It is therefore not practical to consider whether the chemical building product is recycled or reused, since it is the building material itself that steers the whole recycling process. This phase is therefore extremely difficult to assess within the MECO analysis and thus the relevance of setting direct requirements for this waste phase is low. Nordic Ecolabelling’s requirements to ingoing substances and their classifications steer the products toward it being more likely to recycle/reuse them. It is, however, relevant to consider the residues that remain in tins/packs of used chemical building products. These can vary in quantity and content, depending on how they are used.

Transport

Transport in the raw material production phase from mining to manufacture of finished chemical building product is often extensive. Raw materials tend to be transported by rail and road within Europe, but also by sea from other continents.

The manufacture of chemical building products involves almost no vehicular transport, with transport primarily via pipeline and conveyor. From the factories, the products will usually be distributed to retailers/builder’s merchants but may also be transported directly to a building site. Transport will usually be by lorry.

Transport in the usage phase occurs between the stores/builder’s merchants and the “building site” and transport of empty packaging from the site to the recycling station by lorry or car.

In the usage phase, waste material is removed by lorry from “large” demolition projects and by car for “small” DIY projects.

It is not relevant to set requirements concerning transport that the manufacturer of chemical building products cannot influence i.e., raw material transport and transport to the customer.

6.2 Potential and Steerability

Potential and steerability are considered here according to the structure of the MECO analysis, which divides the environmental impact of the various life cycle phases into the subgroups materials, energy, chemicals and other (MECO).

The text below outlines the various constituent parts in the MECO analysis for each phase according to the MECO model.

Raw material phase

When it comes to machinery and permanent factories, we see no direct potential. However, there are differences in how the raw materials are extracted/produced and how much of an impact on the environment/ecosystem the raw material production causes. Some raw materials are plant extracts, such as raw materials used for rheology, fillers and polymers, and when extracting them in large scale they effect the biodiversity. Nordic Ecolabelling does not consider this to be done in a very large scale for chemical building products and will therefore not add separate requirements regarding plant extracts. There is also potential when it comes to emissions from factories, as well as choice of energy source.

These differences in themselves indicate potential to set ecolabelling requirements. However, the problem is that this often lies far beyond the licensee's control; perhaps 3-4 stages back in the production chain (see Figure 1). This means that in the current situation, it is difficult to see how it would be steerable/controllable to set requirements concerning extraction and production of raw materials.

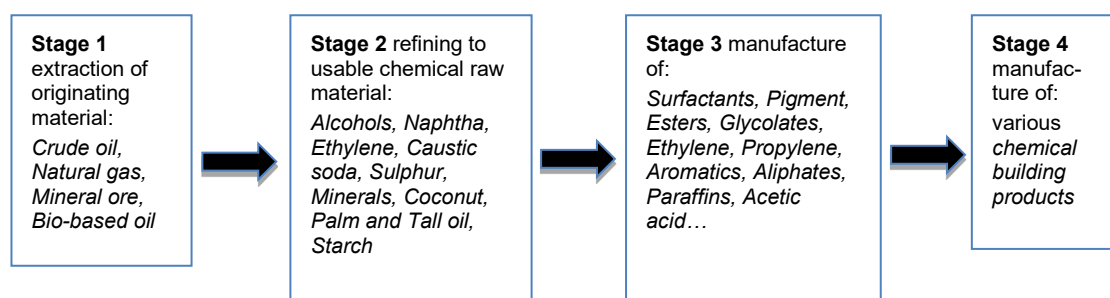


Figure 1: Examples of common stages in the production chain⁵⁸.

In terms of polymer production, it is extremely difficult to judge whether a polymer manufactured in a more energy efficient process can be used instead of a polymer manufactured in a more energy demanding process (and there is thus a lack of both potential and steerability). It may, however, be the case that the “same sort” of polymer has been manufactured with greater energy efficiency in one factory than in another (in which case only the steerability is difficult).

⁵⁸ Evaluation of Nordic Ecolabelled Chemical Building Products, 14 September 2012, Evaluation of Nordic Ecolabelled Paints and Varnishes and Chemical Building Products, 8 February 2022.

Production phase

In the production phase, the raw materials are mixed to form finished chemical building products. The factories and machines already in existence have a long lifetime and the process technology to manufacture adhesives, fillers, impregnating agents, and sealants is not particularly energy heavy. The process largely involves storage and internal transport of raw materials that are then batched and mixed to form finished products. The products are packaged and transported internally to a warehouse, before being sent for sale. We therefore see no potential or steerability for Materials and Energy in the production phase.

The “Other” category in the MECO analysis includes the working environment, where there is also potential for setting requirements and for steerability. It is possible for the producers to influence the raw materials used (they can choose raw materials that are better for the environment and health). They can also influence how the raw materials are added to the products (i.e. their form, enclosed systems, etc.) and can ensure that safety equipment is used where necessary (e.g. with dust-producing raw materials). Setting requirements concerning raw materials can therefore steer improvements in the working environment during manufacturing.

Usage phase

In the usage phase, the finished chemical building products are used by tradesmen and private individuals. The steerability of material and energy use in this phase is non-existent.

The chemicals used in this phase are directly linked to what is contained in the chemical building products, and here there is potential to replace raw materials that are harmful to health and the environment with less harmful or non-classified raw materials. Emissions from the chemical building products used may also pose an environmental or health risk. This can be influenced by means of requirements concerning the product in question.

In the usage phase, it is also important that the products are used correctly and with the correct safety equipment where necessary. Requirements concerning instructions for the end user on usage and safety therefore have both potential and steerability, since correct adherence to the product and safety instructions reduces the risks during usage and improves the quality of the filling/glueing, etc.

Waste phase

The waste phase is the stage during which used chemical building products are disposed of. The steerability of what happens in the waste phase is non-existent for everything except effects associated with the chemical content of the products, for which there is both potential and steerability. Chemical building products do not influence the recycling/reuse of old building materials and therefore we see no potential or steerability in this context.

The way packaging and any remains of the products are handled and disposed of or recycled is, however, steerable and has the potential to make a difference.

Nordic Ecolabelling sets requirements that information concerning the handling of residues and empty packaging is made available to the user of the product.

There is also potential to reduce how much remains of the products in the discarded packaging by emptying/scraping out the packaging thoroughly. However, there is very little steerability when it comes to verifying and documenting this.

Transport

A great deal of transport is involved in the life cycle of chemical building products, which means that there is potential to make savings on transport. However, the majority of the transport remains outside the control of the manufacturers. Steerability is therefore almost non-existent for all transport except for the transport that takes place in the manufacture of the chemical building products, i.e. within the factory (e.g. from receipt of raw materials to warehousing). The amount of transport that takes place within the factories is, however, negligible in overall terms, and there is therefore no great potential or relevance.

7 Areas without requirement

A requirement for the energy consumption for production of polymers was investigated as it is an energy intensive industry for the conversion of raw material to final polymer which requires a large amount of electricity for thermal energy. Sources for the energy are mainly conventional fossil coal-based resources, e.g., coal, petrol, and natural gas and there are several improvements that could be made within the industry. This includes improvements to reduce energy intensity through energy efficient synthesis and alternative energy sources for primary energy, e.g., green hydrogen and renewable electricity.

For steerability, the project group looked at factors such as rising energy prices being of great importance in getting the polymer industry to invest in alternative energy measures. However, there are steerability issues regarding an energy requirement, as it is dependent on variables such as energy infrastructure, climate zone and ambient temperature, which differ depending on the location of production globally.

The main environmental problem described in the reference document on best available techniques in the production of polymers⁵⁹ (BAT) is primarily a focus on emissions of volatile organic compounds and waste. For energy there are general recommendations, such as increased amount of polymers in the reactors leads to energy efficiency linked to reduced downtime, which is the major energy problem. Development of the requirement concluded and was not included in this version of the criteria due to insufficient information from stakeholders and outdated information from the BAT, however, may be investigated upon in further revisions.

⁵⁹ "Best Available Techniques for the Production of Polymers reflects an information exchange carried out under Article 16(2) of Council Directive 96/61/EC (IPPC Directive).

8 Changes compared to previous generation

Table 18 Overview of changes to criteria Chemical building products generation 3 compared with previous generation 2.

Overview of changes compared to previous versions of the respective criteria					
Proposed requirement generation 3	Requirement generation 2	Same req.	Change	New req.	Comment
Product definition			X		Mortars and plasters are now included in the scope.
O1 Information of the product	O1	X			
O2 Classification of the product	O2		X		EUH208 restriction has been removed. Exemptions for H317 and H412 for outdoor paints and industrial paints and H400, H410 and H411 for anti-corrosion paints have been removed as they are no longer in the scope of the criteria.
O3 Classification of ingoing substances	O3			X	New CLP-classifications have been added. Exemption for preservatives classified as H370 and H372 removed. Time-limited exemption for trimethylolpropane (TMP) has been removed. Bisphenol A exemption removed.
O4 Environmentally harmful substances	O4		X		Limit value changed from 11 to 3%. Zink and zinc compounds exemption removed. Zinc oxide used as stabilizer is now exempted from the calculation up to 2500 ppm.
O5 Preservatives	O5		X		Total preservatives and IPBC limit values have been lowered for all product types. DBNPA clarified to be exempted from calculation of total preservatives.
O6 Formaldehyde	O6		X		Formaldehyde emission testing now as an additional requirement for indoor products. Limit for in-can lowered to 10 ppm.
O7 Residual monomers in polymers	O7		X		Limit of vinyl acetate monomer lowered to 700 ppm.
O8 Heavy metals	O8		X		Limit value for lead in raw materials has been increased to 200 ppm for mortars and plasters.
O9 Titanium dioxide	O9		X		Energy related requirements added for the manufacturer.
O10 Powdered raw materials		X			
O11 Nanomaterials	O11		X		New definition.
O12 Prohibited substances	O12		X		EU's priority list for potential endocrine disrupters has been replaced by the EU member state initiative "Endocrine Disruptor Lists", List I, II and III.

Overview of changes compared to previous versions of the respective criteria					
Proposed requirement generation 3	Requirement generation 2	Same req.	Change	New req.	Comment
					DBNPA is exempted in all forms used in the production of chemical building products or used as an in-can preservative in raw materials or the chemical building product. New prohibited substances added.
O13 Acrylic and alkyd resin binders				X	Policy requirement for renewable raw materials.
O14 Cement/hydraulic binders				X	EPD requirement and GWP-limit for different types of hydraulic binders.
O15 Volatile aromatic compounds (adhesives)	O13		X		Requirement divided into two requirements.
O16 Volatile organic compounds (adhesives)	O13		X		Requirement divided into two requirements.
O17 Emission of total volatile compounds (TVOC) and semi-volatile organic compounds (TSVOC) in adhesives	O14		X		Requirement has been changed to emission testing according to EN 16516. Emission limit values for adhesives has been tightened. Emission requirement for TSVOC has been added.
O18 Quality requirements (adhesives)	O15	X			
O19 Volatile aromatic compounds (sealants)	O16		X		Requirement divided into two requirements.
O20 Volatile organic compounds (sealants)	O16		X		Requirement divided into two requirements.
O21 Emission of total volatile compounds (TVOC) and semi-volatile organic compounds (TSVOC) in sealants	O17		X		Requirement has been changed to emission testing according to EN 16516. Emission limit values for sealants has been tightened. Emission requirement for TSVOC has been added.
O22 Quality requirements (sealants)	O18	X			
O23 Volatile aromatic compounds (fillers)	O19		X		Requirement divided into two requirements.
O24 Volatile organic compounds (fillers)	O19		X		Requirement divided into two requirements.
O25 Emission of total volatile compounds (TVOC) and semi-volatile organic compounds (TSVOC) in sealants	O20		X		Requirement has been changed to emission testing according to EN 16516. Emission limit values for fillers has been tightened. Emission requirement for TSVOC has been added.
O26 Quality requirements (fillers)	O21	X			
O27 Volatile aromatic compounds (impregnating agents)	O29		X		Requirement divided into two requirements.
O28 Volatile organic compounds (impregnating agents)	O29		X		Requirement divided into two requirements. VOC limit increased to 1% to align with other product types and allow more diverse products.

Overview of changes compared to previous versions of the respective criteria					
Proposed requirement generation 3	Requirement generation 2	Same req.	Change	New req.	Comment
O29 Emission of total volatile compounds (TVOC) and semi-volatile organic compounds (TSVOC) in impregnating agents				X	New requirement for emission testing according to EN 16516.
O30 Quality requirements (impregnating agents)	O30		X		
O31 Volatile aromatic compounds (mortars and plasters)				X	Requirement in line with other product types.
O32 Volatile organic compounds (mortars and plasters)				X	Requirement in line with other product types.
O33 Emission of total volatile compounds (TVOC) and semi-volatile organic compounds (TSVOC) in mortars and plasters				X	New requirement for emission testing according to EN 16516.
O34 Quality requirements (mortars and plasters)				X	Quality requirements for mortars and plasters in line with other product types.
O35 Packaging	O33		X		Previous requirements removed and changed to require 30% recycled material in plastic packaging.
O36 Consumer information	O35		X		Minor changes to align with the criteria of 096.

Regulations for the Nordic Ecolabelling of products

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

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

Follow-up inspections

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

The licence may be revoked if it is evident that the chemical building product does not meet the requirements.

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

9 Future criteria generation

- Determine environmental gains with energy requirement for polymer producers.
- Evaluate the possibility of stricter requirement for biobased binders.
- Evaluate the possibility of requiring a larger amount of recycled plastic in packaging materials.
- Evaluate the possibility of setting a requirement for biobased plastic in packaging materials.

10 Criteria version history

Draft for consultation, 4 April 2024.

11 How to apply and regulations for the Nordic Ecolabeling

Application and costs

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

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

Licence validity

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

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

On-site inspection

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

Queries

Please contact Nordic Ecolabelling if you have any queries or require further information. For contact information see first in this document. Further

information and assistance (such as calculation sheets or electronic application help) may be available. Visit the relevant national website for further information.

Follow-up inspections

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

The licence may be revoked if it is evident that chemical building products does not meet the requirements.

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

Regulations for the Nordic Ecolabelling of products

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Appendix 1 Declaration from the manufacturer of the chemical building product

To be used in conjunction with an application for a licence for the Nordic Ecolabelling chemical building product. To complete the following declaration, you will need declarations for all raw materials (Appendix 2 or equivalent declaration) and Appendix 3 or equivalent declaration).

Declaration is made by the manufacturer based to the best of their knowledge at the given time, also based on information from raw material manufacturers, recipe, and available knowledge on the chemical product with reservations for new advances and new knowledge. Should such new knowledge arise, the undersigned is obliged to submit an updated declaration to Nordic Ecolabelling.

Product name: _____

Product's function/product group (e.g., filler, sealant, adhesive):

The requirements in the criteria document and accompanying appendices apply to all ingoing substances in the Nordic Swan Ecolabelled chemical building product. Impurities are not regarded as ingoing substances and are exempt from the requirements.

Ingoing substances and impurities are defined below, unless stated otherwise in the requirements.

- **Ingoing substances:** all substances in the Nordic Swan Ecolabelled product regardless of amount, including additives (e.g., preservatives and stabilizers) in the raw materials. Substances known to be released from ingoing substances (e.g., formaldehyde, arylamine, in situ-generated preservatives) are also regarded as ingoing substances.
- **Impurities:** residuals, pollutants, contaminants etc. from production, incl. production of raw materials, that remain in the Nordic Swan Ecolabelled product in concentrations less than 100 ppm (0,0100 w%).
- Impurities in the raw materials exceeding concentrations of 10 000 ppm (1.0000 w%) are always regarded as ingoing substances, regardless of the concentration in the Nordic Swan Ecolabelled 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.

The impurity limit of 100 ppm (0.0100 w%) applies to each individual substance that is excluded, i.e., Impurities with the same classification in different raw materials shall not be summed up to comply with the limit. The same contaminants in different raw materials also do not need to be summed.

O2 Classification of the product		
Is the product classified with any of the hazard phrases below? <i>Including all combinations of stated exposure routes and stated specific effect. For example, H350 also covers classification H350i.</i>	Yes	No
If the answer to all the classifications below is No, mark here		<input type="checkbox"/>
H400 – Toxic to aquatic life, Acute 1	<input type="checkbox"/>	<input type="checkbox"/>
H410 – Toxic to aquatic life, Chronic 1	<input type="checkbox"/>	<input type="checkbox"/>
H411 – Toxic to aquatic life, Chronic 2	<input type="checkbox"/>	<input type="checkbox"/>
H412 – Toxic to aquatic life, Chronic 3	<input type="checkbox"/>	<input type="checkbox"/>
H413 – Toxic to aquatic life, Chronic 4	<input type="checkbox"/>	<input type="checkbox"/>
H350 – May cause cancer, hazard category 1A and 1B	<input type="checkbox"/>	<input type="checkbox"/>
H351 – Suspected of causing cancer, hazard category 2	<input type="checkbox"/>	<input type="checkbox"/>
H340 – May cause genetic defects, hazard category 1A and 1B	<input type="checkbox"/>	<input type="checkbox"/>
H341 – May cause genetic defects, hazard category 2	<input type="checkbox"/>	<input type="checkbox"/>
H360 – Toxic for reproduction, hazard category 1A and 1B	<input type="checkbox"/>	<input type="checkbox"/>
H361 – Toxic for reproduction, hazard category 2	<input type="checkbox"/>	<input type="checkbox"/>
H362 – Toxic for reproduction, effects on or through breastfeeding (supplementary cat.)	<input type="checkbox"/>	<input type="checkbox"/>
H300 – Acute toxicity	<input type="checkbox"/>	<input type="checkbox"/>
H310 – Acute toxicity	<input type="checkbox"/>	<input type="checkbox"/>
H330 – Acute toxicity	<input type="checkbox"/>	<input type="checkbox"/>
H301 – Acute toxicity	<input type="checkbox"/>	<input type="checkbox"/>
H311 – Acute toxicity	<input type="checkbox"/>	<input type="checkbox"/>
H331 – Acute toxicity	<input type="checkbox"/>	<input type="checkbox"/>
H302 – Acute toxicity	<input type="checkbox"/>	<input type="checkbox"/>
H312 – Acute toxicity	<input type="checkbox"/>	<input type="checkbox"/>
H332 – Acute toxicity	<input type="checkbox"/>	<input type="checkbox"/>
H370 – Specific target organ toxicity: single exposure and repeated exposure	<input type="checkbox"/>	<input type="checkbox"/>
H371 – Specific target organ toxicity: single exposure and repeated exposure	<input type="checkbox"/>	<input type="checkbox"/>
H372 – Specific target organ toxicity: single exposure and repeated exposure	<input type="checkbox"/>	<input type="checkbox"/>
H373 – Specific target organ toxicity: single exposure and repeated exposure	<input type="checkbox"/>	<input type="checkbox"/>
H304 – Aspiration hazard	<input type="checkbox"/>	<input type="checkbox"/>
H334 – Respiratory sensitising	<input type="checkbox"/>	<input type="checkbox"/>
H317 – Skin sensitising	<input type="checkbox"/>	<input type="checkbox"/>
H200 – Unstable explosive	<input type="checkbox"/>	<input type="checkbox"/>
H201 – Explosive: mass explosion hazard	<input type="checkbox"/>	<input type="checkbox"/>
H202 – Explosive: severe projection hazard	<input type="checkbox"/>	<input type="checkbox"/>
H203 – Explosive: fire, blast or projection hazard	<input type="checkbox"/>	<input type="checkbox"/>
H204 – Fire or projection hazard	<input type="checkbox"/>	<input type="checkbox"/>
H205 – May mass explode in fire	<input type="checkbox"/>	<input type="checkbox"/>
H206 – Fire, blast, or projection hazard: increased risk of explosion if desensitizing agent is reduced	<input type="checkbox"/>	<input type="checkbox"/>
H271 – May cause fire or explosion: strong oxidizer	<input type="checkbox"/>	<input type="checkbox"/>
H272 – May intensify fire: oxidizer	<input type="checkbox"/>	<input type="checkbox"/>
H240 – Heating may cause an explosion	<input type="checkbox"/>	<input type="checkbox"/>
H241 – Heating may cause a fire or explosion	<input type="checkbox"/>	<input type="checkbox"/>

H242 – Heating may cause a fire	<input type="checkbox"/>	<input type="checkbox"/>
H222 – Flammable material	<input type="checkbox"/>	<input type="checkbox"/>
H224 – Extremely flammable liquid and vapour	<input type="checkbox"/>	<input type="checkbox"/>
EUH380 – Endocrine disruption for human health, category 1	<input type="checkbox"/>	<input type="checkbox"/>
EUH381 – Endocrine disruption for human health, category 2	<input type="checkbox"/>	<input type="checkbox"/>
EUH430 – Endocrine disruption for the environment, category 1	<input type="checkbox"/>	<input type="checkbox"/>
EUH431 – Endocrine disruption for the environment, category 2	<input type="checkbox"/>	<input type="checkbox"/>
EUH440 – Persistent, Bioaccumulative and Toxic properties	<input type="checkbox"/>	<input type="checkbox"/>
EUH441 – Very Persistent, Very Bioaccumulative properties	<input type="checkbox"/>	<input type="checkbox"/>
EUH450 – Persistent, Mobile, and Toxic properties	<input type="checkbox"/>	<input type="checkbox"/>
EUH451 – Very Persistent, Very Mobile properties	<input type="checkbox"/>	<input type="checkbox"/>

If the answer to any of the above questions is Yes, state the CAS no. (where possible), chemical name and level (in ppm, w% or mg / kg). Also state whether the substance is contained in the form of an impurity or an added substance.

O3 Classification of ingoing substances		
Does the product contain substances classified with any of the hazard phrases below? <i>Including all combinations of stated exposure routes and stated specific effect. For example, H350 also covers classification H350i.</i>	Yes	No
If the answer to all the classifications below is No, mark here		<input type="checkbox"/>
H350 – May cause cancer, hazard category 1A and 1B	<input type="checkbox"/>	<input type="checkbox"/>
H351 – Suspected of causing cancer, hazard category 2	<input type="checkbox"/>	<input type="checkbox"/>
H340 – May cause genetic defects, hazard category 1A and 1B	<input type="checkbox"/>	<input type="checkbox"/>
H341 – May cause genetic defects, hazard category 2	<input type="checkbox"/>	<input type="checkbox"/>
H360 – Toxic for reproduction, hazard category 1A and 1B	<input type="checkbox"/>	<input type="checkbox"/>
H361 – Toxic for reproduction, hazard category 2	<input type="checkbox"/>	<input type="checkbox"/>
H362 – Toxic for reproduction, effects on or through breastfeeding (supplementary category)	<input type="checkbox"/>	<input type="checkbox"/>
H334 – Respiratory sensitising 1 / 1A / 1B	<input type="checkbox"/>	<input type="checkbox"/>
H370 – Specific organic toxicity, STOT SE 1	<input type="checkbox"/>	<input type="checkbox"/>
H372 – Specific organic toxicity, STOT RE 1	<input type="checkbox"/>	<input type="checkbox"/>
EUH380 – Endocrine disruption for human health, category 1	<input type="checkbox"/>	<input type="checkbox"/>
EUH381 – Endocrine disruption for human health, category 2	<input type="checkbox"/>	<input type="checkbox"/>
EUH430 – Endocrine disruption for the environment, category 1	<input type="checkbox"/>	<input type="checkbox"/>
EUH431 – Endocrine disruption for the environment, category 2	<input type="checkbox"/>	<input type="checkbox"/>
EUH440 – Persistent, Bioaccumulative and Toxic properties	<input type="checkbox"/>	<input type="checkbox"/>
EUH441 – Very Persistent, Very Bioaccumulative properties	<input type="checkbox"/>	<input type="checkbox"/>
EUH450 – Persistent, Mobile, and Toxic properties	<input type="checkbox"/>	<input type="checkbox"/>
EUH451 – Very Persistent, Very Mobile properties	<input type="checkbox"/>	<input type="checkbox"/>

If the answer to any of the above questions is Yes, state the CAS no. (where possible), chemical name and level (in ppm, w% or mg / kg). Also state whether the substance is contained in the form of an impurity or an added substance. If it is residual monomers in polymers, please state in point O7 instead.

O4 Environmentally harmful substances		
Does the product contain any substances classified as harmful to the environment with the following risk phrases or combinations of them?	Yes	No
H410 – Toxic to aquatic life, Chronic 1	<input type="checkbox"/>	<input type="checkbox"/>
H411 – Toxic to aquatic life, Chronic 2	<input type="checkbox"/>	<input type="checkbox"/>
H412 – Toxic to aquatic life, Chronic 3	<input type="checkbox"/>	<input type="checkbox"/>

If the answer to any of the above questions is Yes, state the CAS no. (where possible), chemical name and level (in ppm, w% or mg / kg). Also state whether the substance is a preservative.

O4 Environmentally harmful substances		
Does the product fulfil the requirement regarding maximum content of substances classified as harmful to the environment?	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>

Please do calculation below clearly showing that requirement is fulfilled:

O5 Preservatives		
Does the product contain any preservatives?	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>
If yes, please state: Does the preservatives comply with product-type 6 and product-type 7 according to Regulation (EU) No 528/2012 (The Biocidal Products Regulation)?	<input type="checkbox"/>	<input type="checkbox"/>
If yes, please state: Does the product fulfil the requirement regarding maximum contents of preservatives and total isothiazolinones according to Table 3 of the criteria document?	<input type="checkbox"/>	<input type="checkbox"/>

If the answer to any of the above questions is Yes, state the CAS no. (where possible), chemical name and level (in ppm, w% or mg / kg) and calculation showing that the requirement for total amount of preservatives and isothiazolinones is fulfilled.

O6 Formaldehyde		
Does the product contain formaldehyde or formaldehyde releasing agents?	Yes	No
If yes , please state: Is the product only used in an indoor environment? If yes , please attach test report according to requirement O6, e.g., EN 16516	<input type="checkbox"/>	<input type="checkbox"/>
If yes , please state: Is the product only used in an outdoor environment? If yes , please attach test report according to requirement O6 e.g., EPA 8315A, VdL-RL03, Merckoquant method, HPLC	<input type="checkbox"/>	<input type="checkbox"/>
O7 Residual monomers		
Does the product contain residual monomers in polymers present in product > 1% classified with any of the hazard phrases below? Including all combinations of stated exposure routes and stated specific effect. For example, H350 also covers classification H350i.	Yes	No
If the answer to all the classifications below is No, mark here		<input type="checkbox"/>
H350 – May cause cancer, hazard category 1A and 1B	<input type="checkbox"/>	<input type="checkbox"/>
H351 – Suspected of causing cancer, hazard category 2	<input type="checkbox"/>	<input type="checkbox"/>
H340 – May cause genetic defects, hazard category 1A and 1B	<input type="checkbox"/>	<input type="checkbox"/>
H341 – May cause genetic defects, hazard category 2	<input type="checkbox"/>	<input type="checkbox"/>
H360 – Toxic for reproduction, hazard category 1A and 1B	<input type="checkbox"/>	<input type="checkbox"/>
H361 – Toxic for reproduction, hazard category 2	<input type="checkbox"/>	<input type="checkbox"/>
H362 – Toxic for reproduction, effects on or through breastfeeding (supplementary category)	<input type="checkbox"/>	<input type="checkbox"/>
H334 – May cause allergy or asthma symptoms or breathing difficulties if inhaled 1 / 1A / 1B	<input type="checkbox"/>	<input type="checkbox"/>
H370 – Specific target organ toxicity: STOT SE 1 or 2	<input type="checkbox"/>	<input type="checkbox"/>
H371 – Specific target organ toxicity: STOT SE 1 or 2	<input type="checkbox"/>	<input type="checkbox"/>
H372 – Specific target organ toxicity: STOT RE 1 or 2	<input type="checkbox"/>	<input type="checkbox"/>
H373 – Specific target organ toxicity: STOT RE 1 or 2	<input type="checkbox"/>	<input type="checkbox"/>

If the answer to any of the above questions is Yes, state the CAS no. (where possible), chemical name and level (in ppm, w% or mg / kg) of residual monomers in newly produced polymers and based on the content in the raw material. (If vinyl acetate is present in an amount over 100 ppm, please also state the amount in ppm in each polymer).

O8 Heavy metals		
Does the product contain any heavy metals (cadmium, lead, chromium VI, mercury, arsenic, barium, selenium, antimony)? <i>Traces of the above-mentioned metals from residuals can be included up to 100 ppm (100 mg/kg, 0.0100 w%) per single metal in the raw material.</i> <i>- Residual lead in mortars and plasters can be included up to 200 ppm (200 mg/kg, 0.0200w%).</i> <i>- Barium sulphate and other insoluble barium compounds are exempted.</i> <i>- An exception is made for antimony in pigments contained in a TiO2 rutile lattice on the following terms: test results must prove that the molecular structure is inert and that the environmental and health effects of the pigment are on the same level as, or better than, the results for C.I Pigment Brown 24 CAS no. 68186-90-3 and C.I Pigment Yellow 53 CAS no. 8007-18-9 in the report: UNEF Publications, OECD SIDS Initial Assessment Profile (www.inchem.org)*.</i>	Yes <input type="checkbox"/>	No <input type="checkbox"/>

If the answer to any of the above questions is Yes, state the chemical name and level (in ppm, w% or mg / kg). For antimony in pigments that are exempted by the above terms, please attach test according to test method DIN 53770-1 or equivalent, showing that terms are fulfilled).

O9 Titanium dioxide		
Does the product contain titanium dioxide?	Yes <input type="checkbox"/>	No <input type="checkbox"/>

If yes, please state amount in w% and raw material manufacturer name. If the product contains more than 3.0 w% titanium dioxide, the raw material manufacturer must supply information in accordance with requirement O9 and O10 in the criteria document.

O10 Powdered raw materials		
Have any of the raw materials used in the product been in powder form?	Yes <input type="checkbox"/>	No <input type="checkbox"/>

If yes, please attach documentation describing how powdered raw materials have been handled during the production process in accordance with requirement O10 in the criteria document.

O11 Nanomaterials/-particles		
Does the product contain nanomaterials/-particles? <i>Nanomaterials/-particles are defined according to the EU Commission Recommendation on the Definition of Nanomaterial (2022/C 229/01):</i> <i>'Nanomaterial' means a natural, incidental, or manufactured material consisting of solid particles that are present, either on their own or as identifiable constituent particles in aggregates or agglomerates, and where 50 % or more of these particles in the number-based size distribution fulfil at least one of the following conditions:</i> <i>(a) one or more external dimensions of the particle are in the size range 1 nm to 100 nm;</i> <i>(b) the particle has an elongated shape, such as a rod, fibre or tube, where two external dimensions are smaller than 1 nm and the other dimension is larger than 100 nm;</i> <i>(c) the particle has a plate-like shape, where one external dimension is smaller than 1 nm and the other dimensions are larger than 100 nm.</i>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<p>The following are exempted from the requirement:</p> <ul style="list-style-type: none"> • <i>Pigments. This exemption does not apply to pigment added for other purposes than imparting colour. Please note that Nano-TiO₂ is not considered a pigment.</i> • <i>Naturally occurring inorganic fillers. This exemption applies to fillers subject to Annex V, paragraph 7 of REACH.</i> • <i>Synthetic amorphous silica (SAS). This exemption applies to non-modified SAS. Chemically modified colloidal silica can be included in the products if the silica particles form aggregates in the final product. Surface-treated nanoparticles must fulfil requirement O3 (Classification of constituent chemical substances) and requirement O12 (Prohibited substances).</i> • <i>Unmodified calcium carbonate (grounded calcium carbonate, GCC) and unmodified precipitated calcium carbonate (PCC).</i> • <i>Polymer dispersions.</i> 		

If yes, please state if one of the above exceptions apply and add additional information if needed:

O12 Prohibited substances		
Does the product contain any of the following substances or substance groups?	Yes	No
If the answer to all the bulletins below is No, mark here		<input type="checkbox"/>
Substances on the REACH Candidate list of SVHC: http://echa.europa.eu/candidate-list-table)	<input type="checkbox"/>	<input type="checkbox"/>
Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH and substances that have not yet been investigated, but which meet these criteria.	<input type="checkbox"/>	<input type="checkbox"/>
Potential or identified endocrine disruptors according to any of the EU member state initiative "Endocrine Disruptor list" List I; List II; and/or List III <ul style="list-style-type: none"> 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 Substances on the List II sublist "Substances no longer on list"? https://edlists.org/the-ed-lists/substances-no-longer-on-list-ii <p><i>If Yes, please write chemical name and Cas no. below. Nordic Ecolabelling will evaluate the circumstances on a case-by-case basis, through the background information indicated for the substance on the sublist.</i></p> <ul style="list-style-type: none"> <i>2,2-dibromo-2-cyanoacetamide (DBNPA) used for disinfecting process water is exempted from the requirement as it is not constituent or part of the manufacturing of the product.</i> <i>Butylated hydroxytoluene (CAS. No 128-37-0) exempted from the requirement up to 100 ppm in the final product.</i> 	<input type="checkbox"/>	<input type="checkbox"/>
Organotin compounds	<input type="checkbox"/>	<input type="checkbox"/>
Phthalates Esters of phthalic acid (ortho-phthalic acid / phthalic acid / 1,2- benzene dicarboxylic acid)	<input type="checkbox"/>	<input type="checkbox"/>
Bisphenols and bisphenol derivatives: <i>EC/List No. 201-245-8 (BPA), 201-025-1 (BPB), 401-720-1 (4,4'-Isobutylethylidenediphenol), 216-036-7 (BPAF) and its 8 salts (278-305-5; 425-060-9; 443-330-4; 468-740-0; 469-080-6; 479-100-5; 943-265-6; 947-368-7), 201-250-5 (BPS), 201-240-0 (BPC), 204-279-1 (TBMD), 201-618-5 (6,6'-di-tert-butyl-4,4'-butylidenedi-m-cresol), 242-895-2, 248-607-1, 405-520-5 (D8), 217-121-1 (DAB), 227-033-5 (TMBPA), 210-658-2 (BPF), 411-570-9, 277-962-5 (contains BPS), 500-086-4 (contains BPA), 500-263-6 (contains BPA), 500-607-5 (contains BPA), 701-362-9, 904-653-0 (contains BPA), 908-912-9 (contains BPF), 926-571-4 (contains BPA), 931-252-8 (contains BPA), 941-992-3 (contains BPS), 943-503-9 (contains BPA).</i>	<input type="checkbox"/>	<input type="checkbox"/>
APEO – alkylphenol ethoxylates and alkylphenol derivatives (substances that release alkylphenols on degradation).	<input type="checkbox"/>	<input type="checkbox"/>
Halogenated organic substances, including perfluorinated substances and polyperfluorinated alkylated substances (PFAS). Exempted are: <ul style="list-style-type: none"> Preservatives that fulfil O5 Pigments that meet the EU's requirements concerning colourants in food packaging under Resolution AP (89) point 2.5 	<input type="checkbox"/>	<input type="checkbox"/>
Isocyanates Water-based polyisocyanates with a chain length of more than 10 are exempted, where the concentration of isocyanates with a chain length of less than 10 as an impurity is documented.	<input type="checkbox"/>	<input type="checkbox"/>
Fragrances	<input type="checkbox"/>	<input type="checkbox"/>
Boric acid, borates, and perborates	<input type="checkbox"/>	<input type="checkbox"/>

Ethylenediamine tetraacetate (EDTA) and its salts and Diethylenetriamine pentaacetate (DTPA)	<input type="checkbox"/>	<input type="checkbox"/>
<p>If the answer to any of the above questions is Yes, state the CAS no. (where possible), chemical name and level (in ppm, w% or mg / kg). If an exemption applies as above, please attach document as appropriate.</p> <p>_____</p> <p>_____</p> <p>_____</p>		
O13 Acryl and alkyd resin binders		
Please state:	Yes	No
Does the product contain acrylic resins*?	<input type="checkbox"/>	<input type="checkbox"/>
<p><i>* Synthetic resin resulting from the polymerization or copolymerization of acrylic and/or methacrylic monomers, frequently together with other monomers e.g., styrene.</i></p>		
Is the acrylic resin based on renewable raw material or feedstock?	<input type="checkbox"/>	<input type="checkbox"/>
Does the product contain alkyd resins?	<input type="checkbox"/>	<input type="checkbox"/>
<p>If the answer to the above questions is Yes, state the proportion of acrylic/alkyd resins made from renewable raw material. Please attach enclosed procedures for policy or equivalent documentation of the work with environmental goals, showing fulfilment of the requirement. The manufacturer of the raw material must enclose documentation in accordance with appendix 4 and documentation showing valid certificates if palm oil is used for acrylic resins.</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		
O15, O19, O23, O27, and/or O31 Volatile Aromatic Compounds		
Please state the following:	Yes	No
Does the product contain any Volatile Aromatic Compounds (VAC)? <i>Volatile aromatic compounds are volatile organic compounds where one or more benzene rings are contained within the molecule.</i>	<input type="checkbox"/>	<input type="checkbox"/>
<p>If yes, please state if actively added or as a residue in ppm:</p> <p>_____</p>		
O16, O20, O24, O28, and/or O32 Volatile Organic Compounds		
Please state the following:	Yes	No
Does the product contain Volatile Organic Compounds?	<input type="checkbox"/>	<input type="checkbox"/>
<p>If yes, please state the VOC content in % for the final product</p> <p>_____</p>		

<p>Definitions of VOC and SVOC</p> <p>Volatile organic compounds (VOC) mean any organic compounds having an initial boiling point less than or equal to 250 °C measured at a standard pressure of 101,3 kPa as defined in Directive 2004/42/EC and which, in a capillary column, are eluting up to and including n-Tetradecane (C₁₄H₃₀).</p> <p>Semi volatile organic compounds (SVOCs) mean any organic compound having a boiling point greater than 250 °C and less than 370 °C measured at a standard pressure of 101,3 kPa and which, in a capillary column are eluting with a retention range after n-Tetradecane (C₁₄H₃₀) and up to and including n-Docosane (C₂₂H₄₆).</p>		
O17, O21, O25, O29 and/or O33 Emissions of Volatile and Semi-Volatile Organic Compounds		
Please state: Which product category:	Yes	No
Adhesives	<input type="checkbox"/>	<input type="checkbox"/>
Sealants	<input type="checkbox"/>	<input type="checkbox"/>
Fillers, putty and levelling compound (screed)	<input type="checkbox"/>	<input type="checkbox"/>
Mortars and plasters	<input type="checkbox"/>	<input type="checkbox"/>
Does the emission of the final product meet the emission limits as stated in requirement O17, O21, O25 O29 and/or O33 ?	<input type="checkbox"/>	<input type="checkbox"/>
<p>Please attach test report in accordance with EN 16516, EN 16402 or other equivalent standardised test conditions and determination methods.</p> <p>TVOC and TSVOC are defined as stated in EN 16516 and carcinogenic 1A and 1B VOCs are listed in Annex H of EN 16516.</p>		

Place and date:	Company name/stamp:
Responsible person:	Signature of responsible person:
Phone:	Email:

Appendix 2 Declaration from the manufacturer of the raw material

To be used in conjunction with an application for a licence for the Nordic Ecolabelling of chemical building product.

Declaration is made by the chemical supplier based to the best of their knowledge at the given time, also based on information from raw material manufacturers, recipe, and available knowledge on the chemical product with reservations for new advances and new knowledge. Should such new knowledge arise, the undersigned is obliged to submit an updated declaration to Nordic Ecolabelling.

Raw material name: _____

Raw material's function: _____

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

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

Impurities: residuals, pollutants, contaminants etc. from production, incl. production of raw materials, that remain in the Nordic Swan Ecolabelled product in concentrations less than 100 ppm (0,0100 w%).

Impurities in the raw materials exceeding concentrations of 10 000 ppm (1.0000 w%) are always regarded as ingoing substances, regardless of the concentration in the Nordic Swan Ecolabelled 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.

The impurity limit of 100 ppm (0.0100 w%) applies to each individual substance that is excluded, i.e., Impurities with the same classification in different raw materials shall not be summed up to comply with the limit. The same contaminants in different raw materials also do not need to be summed.

O3 Classification of ingoing substances		
Does the raw material contain substances classified with any of the hazard phrases below? <i>Including all combinations of stated exposure routes and stated specific effect. For example, H350 also covers classification H350i.</i>	Yes	No
If the answer to all the classifications below is No, mark here		<input type="checkbox"/>
H350 – May cause cancer, hazard category 1A and 1B	<input type="checkbox"/>	<input type="checkbox"/>
H351 – Suspected of causing cancer, hazard category 2	<input type="checkbox"/>	<input type="checkbox"/>
H340 – May cause genetic defects, hazard category 1A and 1B	<input type="checkbox"/>	<input type="checkbox"/>

H341 – May cause genetic defects, hazard category 2	<input type="checkbox"/>	<input type="checkbox"/>
H360 – Toxic for reproduction, hazard category 1A and 1B	<input type="checkbox"/>	<input type="checkbox"/>
H361 – Toxic for reproduction, hazard category 2	<input type="checkbox"/>	<input type="checkbox"/>
H362 – Toxic for reproduction, effects on or through breastfeeding (supplementary category)	<input type="checkbox"/>	<input type="checkbox"/>
H334 – May cause allergy or asthma symptoms or breathing difficulties if inhaled 1 / 1A / 1B	<input type="checkbox"/>	<input type="checkbox"/>
H370 – Specific organic toxicity, STOT SE 1	<input type="checkbox"/>	<input type="checkbox"/>
H372 – Specific organic toxicity, STOT RE 1	<input type="checkbox"/>	<input type="checkbox"/>
EUH380 – Endocrine disruption for human health, category 1	<input type="checkbox"/>	<input type="checkbox"/>
EUH381 – Endocrine disruption for human health, category 2	<input type="checkbox"/>	<input type="checkbox"/>
EUH430 – Endocrine disruption for the environment, category 1	<input type="checkbox"/>	<input type="checkbox"/>
EUH431 – Endocrine disruption for the environment, category 2	<input type="checkbox"/>	<input type="checkbox"/>
EUH440 – Persistent, Bioaccumulative and Toxic properties	<input type="checkbox"/>	<input type="checkbox"/>
EUH441 – Very Persistent, Very Bioaccumulative properties	<input type="checkbox"/>	<input type="checkbox"/>
EUH450 – Persistent, Mobile, and Toxic properties	<input type="checkbox"/>	<input type="checkbox"/>
EUH451 – Very Persistent, Very Mobile properties	<input type="checkbox"/>	<input type="checkbox"/>

If the answer to any of the above questions is Yes, state the CAS no. (where possible), chemical name and level (in ppm, w% or mg / kg). Also state whether the substance is contained in the form of an impurity or an added substance. If it is residual monomers in polymers, please state in point O7 instead.

O4 Environmentally harmful substances		
Does the raw material contain any substances classified as harmful to the environment with the following risk phrases or combinations of them?	Yes	No
H410 – Toxic to aquatic life, Chronic 1	<input type="checkbox"/>	<input type="checkbox"/>
H411 – Toxic to aquatic life, Chronic 2	<input type="checkbox"/>	<input type="checkbox"/>
H412 – Toxic to aquatic life, Chronic 3	<input type="checkbox"/>	<input type="checkbox"/>

If the answer to any of the above questions is Yes, state the CAS no. (where possible), chemical name and level (in ppm, w% or mg / kg). Also state whether the substance is a preservative.

O5 Preservatives		
Please state:	Yes	No
Does the product contain any preservatives?	<input type="checkbox"/>	<input type="checkbox"/>
If yes , please state: Does the preservatives comply with product-type 6 and product-type 7 according to Regulation (EU) No 528/2012 (The Biocidal Products Regulation)?	<input type="checkbox"/>	<input type="checkbox"/>

If the answer to any of the above questions is Yes, state the CAS no. (where possible), chemical name and level (in ppm, w% or mg / kg) for each preservative.

O6 Formaldehyde		
Please state:	Yes	No
Does the raw material contain formaldehyde or formaldehyde releasing agents?	<input type="checkbox"/>	<input type="checkbox"/>
If yes , please specify source of formaldehyde, i.e., actively added or because of release or decomposition from another substance and theoretical amount of formaldehyde in the raw material:		

O7 Residual monomers		
Does the raw material contain residual monomers in polymers present in product > 1% classified with any of the hazard phrases below? Including all combinations of stated exposure routes and stated specific effect. For example, H350 also covers classification H350i.	Yes	No
If the answer to all the classifications below is No, mark here		<input type="checkbox"/>
H350 – May cause cancer, hazard category 1A and 1B	<input type="checkbox"/>	<input type="checkbox"/>
H351 – Suspected of causing cancer, hazard category 2	<input type="checkbox"/>	<input type="checkbox"/>
H340 – May cause genetic defects, hazard category 1A and 1B	<input type="checkbox"/>	<input type="checkbox"/>
H341 – May cause genetic defects, hazard category 2	<input type="checkbox"/>	<input type="checkbox"/>
H360 – Toxic for reproduction, hazard category 1A and 1B	<input type="checkbox"/>	<input type="checkbox"/>
H361 – Toxic for reproduction, hazard category 2	<input type="checkbox"/>	<input type="checkbox"/>
H362 – Toxic for reproduction, effects on or through breastfeeding (supplementary category)	<input type="checkbox"/>	<input type="checkbox"/>
H334 – May cause allergy or asthma symptoms or breathing difficulties if inhaled 1 / 1A / 1B	<input type="checkbox"/>	<input type="checkbox"/>
H370 – Specific target organ toxicity: STOT SE 1 or 2	<input type="checkbox"/>	<input type="checkbox"/>
H371 – Specific target organ toxicity: STOT SE 1 or 2	<input type="checkbox"/>	<input type="checkbox"/>
H372 – Specific target organ toxicity: STOT RE 1 or 2	<input type="checkbox"/>	<input type="checkbox"/>
H373 – Specific target organ toxicity: STOT RE 1 or 2	<input type="checkbox"/>	<input type="checkbox"/>

If the answer to any of the above questions is Yes, state the CAS no. (where possible), chemical name and level (in ppm, w% or mg / kg) of residual monomers in newly produced polymers and based on the content in the raw material. (If vinyl acetate is present in an amount over 100 ppm, please also state the amount in ppm in each polymer).

O8 Heavy metals		
Please state:	Yes	No
<p>Does the raw material contain any heavy metals (cadmium, lead, chromium VI, mercury, arsenic, barium, selenium, antimony)?</p> <p><i>Traces of the above-mentioned metals from residuals can be included up to 100 ppm (100 mg/kg, 0.0100 w%) per single metal in the raw material.</i></p> <p><i>- Residual lead in mortars and plasters can be included up to 200 ppm (200 mg/k, 0.0200w%).</i></p> <p><i>- Barium sulphate and other insoluble barium compounds are exempted.</i></p> <p><i>- An exception is made for antimony in pigments contained in a TiO₂ rutile lattice on the following terms: test results must prove that the molecular structure is inert and that the environmental and health effects of the pigment are on the same level as, or better than, the results for C.I Pigment Brown 24 CAS no. 68186-90-3 and C.I Pigment Yellow 53 CAS no. 8007-18-9 in the report: UNEF Publications, OECD SIDS Initial Assessment Profile (www.inchem.org)*.</i></p>	<input type="checkbox"/>	<input type="checkbox"/>

If the answer to any of the above questions is Yes, state the chemical name and level (in ppm, w% or mg / kg). For antimony in pigments that are exempted by the above terms, please attach test according to test method DIN 53770-1 or equivalent, showing that terms are fulfilled).

O9 Titanium dioxide																
Does the raw material contain titanium dioxide?	Yes	No														
<p>Does the raw material contain titanium dioxide?</p>	<input type="checkbox"/>	<input type="checkbox"/>														
<p>As the supplier of TiO₂ for chemical building products that comply with the Nordic Swan, I hereby declare that: I the undersigned, undertake to formally respect the following values, concerning the production of Titanium dioxide on the following site(s):</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Sulphate process</th> <th>Limit</th> </tr> </thead> <tbody> <tr> <td>SO_x expressed as SO₂:</td> <td>7.0 kg/tonne TiO₂</td> </tr> <tr> <td>Sulphate waste:</td> <td>500 kg/tonne TiO₂</td> </tr> <tr> <th>Chloride process</th> <th>Limit</th> </tr> <tr> <td>When using natural ore:</td> <td>103 kg chloride waste/tonne TiO₂</td> </tr> <tr> <td>When using synthetic ore:</td> <td>179 kg chloride waste/tonne TiO₂</td> </tr> <tr> <td>When using slag ore:</td> <td>329 kg chloride was/tonne TiO₂</td> </tr> </tbody> </table> <p>If more than one type of ore is used, the values apply proportionately to the ore type used.</p>	Sulphate process	Limit	SO _x expressed as SO ₂ :	7.0 kg/tonne TiO ₂	Sulphate waste:	500 kg/tonne TiO ₂	Chloride process	Limit	When using natural ore:	103 kg chloride waste/tonne TiO ₂	When using synthetic ore:	179 kg chloride waste/tonne TiO ₂	When using slag ore:	329 kg chloride was/tonne TiO ₂	<input type="checkbox"/>	<input type="checkbox"/>
Sulphate process	Limit															
SO _x expressed as SO ₂ :	7.0 kg/tonne TiO ₂															
Sulphate waste:	500 kg/tonne TiO ₂															
Chloride process	Limit															
When using natural ore:	103 kg chloride waste/tonne TiO ₂															
When using synthetic ore:	179 kg chloride waste/tonne TiO ₂															
When using slag ore:	329 kg chloride was/tonne TiO ₂															
<p>As the supplier of TiO₂ for chemical building products that comply with the Nordic Swan, I hereby declare that: I the undersigned, will attach document that shows that the manufacturing plant has full or pending implementation of an energy management system in accordance with ISO 50 001.</p>	<input type="checkbox"/>	<input type="checkbox"/>														
<p>As the supplier of TiO₂ for chemical building products that comply with the Nordic Swan, I hereby declare that: I the undersigned, will attach document to support how the raw material is added in closed systems, or in means of methods to promote a "low-dust" working environment.</p>	<input type="checkbox"/>	<input type="checkbox"/>														

If yes, please state amount in w%, and supply documentation in accordance with requirement O9 and O10 in the criteria document.

O11 Nanomaterials/-particles		
<p>Does the raw material contain nanomaterials/-particles? <i>Nanomaterials/-particles are defined according to the EU Commission Recommendation on the Definition of Nanomaterial (2022/C 229/01):</i></p> <p><i>'Nanomaterial' means a natural, incidental, or manufactured material consisting of solid particles that are present, either on their own or as identifiable constituent particles in aggregates or agglomerates, and where 50 % or more of these particles in the number-based size distribution fulfil at least one of the following conditions:</i></p> <p><i>(a) one or more external dimensions of the particle are in the size range 1 nm to 100 nm;</i></p> <p><i>(b) the particle has an elongated shape, such as a rod, fibre or tube, where two external dimensions are smaller than 1 nm and the other dimension is larger than 100 nm;</i></p> <p><i>(c) the particle has a plate-like shape, where one external dimension is smaller than 1 nm and the other dimensions are larger than 100 nm.</i></p> <p>The following are exempted from the requirement:</p> <ul style="list-style-type: none"> • <i>Pigments. This exemption does not apply to pigments added for other purposes than imparting colour. Please note that Nano-TiO2 is not considered a pigment.</i> • <i>Naturally occurring inorganic fillers. This exemption applies to fillers subject to Annex V, paragraph 7 of REACH.</i> • <i>Synthetic amorphous silica (SAS). This exemption applies to non-modified SAS. Chemically modified colloidal silica can be included in the products if the silica particles form aggregates in the final product. Surface-treated nanoparticles must fulfil requirement O3 (Classification of constituent chemical substances) and requirement O12 (Prohibited substances).</i> • <i>Unmodified calcium carbonate (grounded calcium carbonate, GCC) and unmodified precipitated calcium carbonate (PCC).</i> • <i>Polymer dispersions.</i> 	<p>Yes <input type="checkbox"/></p>	<p>No <input type="checkbox"/></p>

If yes, please state if one of the above exceptions apply and add additional information if needed:

O12 Prohibited substances		
Does the raw material contain any of the following substances or substance groups?	Yes	No
If the answer to all the bulletins below is No, mark here		<input type="checkbox"/>
Substances on the REACH Candidate list of SVHC: http://echa.europa.eu/candidate-list-table)	<input type="checkbox"/>	<input type="checkbox"/>
Substances evaluated by the EU to be persistent, bioaccumulative, and toxic (PBT) or very persistent and very bioaccumulative (vPvB), in accordance with the criteria in Annex XIII of REACH and substances that have not yet been investigated, but which meet these criteria.	<input type="checkbox"/>	<input type="checkbox"/>
<p>Potential or identified endocrine disruptors according to any of the EU member state initiative "Endocrine Disruptor list" List I; List II; and/or List III</p> <ul style="list-style-type: none"> • 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 • Substances on the List II sublist "Substances no longer on list"? https://edlists.org/the-ed-lists/substances-no-longer-on-list-ii <p><i>If Yes, please write chemical name and Cas no. below. Nordic Ecolabelling will evaluate the circumstances on a case-by-case basis, through the background information indicated for the substance on the sublist.</i></p> <ul style="list-style-type: none"> • <i>2,2-dibromo-2-cyanoacetamide (DBNPA) used for disinfecting process water is exempted from the requirement as it is not constituent or part of the manufacturing of the product.</i> • <i>Butylated hydroxytoluene (CAS. No 128-37-0) exempted from the requirement up to 100 ppm in the final product.</i> 	<input type="checkbox"/>	<input type="checkbox"/>

	<input type="checkbox"/>	<input type="checkbox"/>
Organotin compounds	<input type="checkbox"/>	<input type="checkbox"/>
Phthalates Esters of phthalic acid (ortho-phthalic acid / phthalic acid / 1,2- benzene dicarboxylic acid)	<input type="checkbox"/>	<input type="checkbox"/>
Bisphenol and bisphenol derivatives: <i>EC/List No. 201-245-8 (BPA), 201-025-1 (BPB), 401-720-1 (4,4'-Isobutylethylenediphenol), 216-036-7 (BPAF) and its 8 salts (278-305-5; 425-060-9; 443-330-4; 468-740-0; 469-080-6; 479-100-5; 943-265-6; 947-368-7), 201-250-5 (BPS), 201-240-0 (BPC), 204-279-1 (TBMD), 201-618-5 (6,6'-di-tert-butyl-4,4'-butylidenedi-m-cresol), 242-895-2, 248-607-1, 405-520-5 (D8), 217-121-1 (DAB), 227-033-5 (TMBPA), 210-658-2 (BPF), 411-570-9, 277-962-5 (contains BPS), 500-086-4 (contains BPA), 500-263-6 (contains BPA), 500-607-5 (contains BPA), 701-362-9, 904-653-0 (contains BPA), 908-912-9 (contains BPF), 926-571-4 (contains BPA), 931-252-8 (contains BPA), 941-992-3 (contains BPS), 943-503-9 (contains BPA).</i>	<input type="checkbox"/>	<input type="checkbox"/>
APEO – alkylphenol ethoxylates and alkylphenol derivatives (substances that release alkylphenols on degradation).	<input type="checkbox"/>	<input type="checkbox"/>
Halogenated organic substances, including perfluorinated substances and polyperfluorinated alkylated substances (PFAS). Exempted are: <ul style="list-style-type: none"> • Preservatives that fulfil O5 • Pigments that meet the EU's requirements concerning colourants in food packaging under Resolution AP (89) point 2.5 	<input type="checkbox"/>	<input type="checkbox"/>
Isocyanates Water-based polyisocyanates with a chain length of more than 10 are exempted, where the concentration of isocyanates with a chain length of less than 10 as an impurity is documented.	<input type="checkbox"/>	<input type="checkbox"/>
Fragrances	<input type="checkbox"/>	<input type="checkbox"/>
Boric acid, borates, and perborates	<input type="checkbox"/>	<input type="checkbox"/>
Ethylenediamine tetraacetate (EDTA) and its salts and Diethylenetriamine pentaacetate (DTPA)	<input type="checkbox"/>	<input type="checkbox"/>

If the answer to any of the above questions is Yes, state the CAS no. (where possible), chemical name and level (in ppm, w% or mg / kg). If an exemption applies as above, please attach document as appropriate.

O13 Acrylic and alkyd resin binders		
Please state the following:	Yes	No
Does the raw material contain acrylic resins*?	<input type="checkbox"/>	<input type="checkbox"/>
<i>* Synthetic resin resulting from the polymerization or copolymerization of acrylic and/or methacrylic monomers, frequently together with other monomers e.g., styrene.</i>		
Is the acrylic resin based on renewable raw material or feedstock?	<input type="checkbox"/>	<input type="checkbox"/>
Does the raw material contain alkyd resins?	<input type="checkbox"/>	<input type="checkbox"/>

If the answer to the above questions is Yes, the manufacturer of the raw material must enclose documentation in accordance with requirement O13 and appendix 4 of the criteria and documentation showing valid certificates if palm oil is used for acrylic resins.

O14 Cement/Hydraulic binder		
Please state the following:	Yes	No
Does the raw material contain cement or alternative hydraulic binder?	<input type="checkbox"/>	<input type="checkbox"/>

If the answer to the above question is Yes, the raw material manufacturer must enclose documentation in accordance requirement O14 of the criteria document showing that the requirements are met.

O15, O19, O23, O27, and/or O31 Volatile Aromatic Compounds		
Please state the following:	Yes	No
Does the product contain any Volatile Aromatic Compounds (VAC)? <i>Volatile aromatic compounds are volatile organic compounds where one or more benzene rings are contained within the molecule.</i>	<input type="checkbox"/>	<input type="checkbox"/>
<p>If yes, please state if actively added or as a residue in ppm:</p> <p>_____</p>		
O16, O20, O24, O28, and/or O32 Volatile Organic Compounds		
Please state the following:	Yes	No
Does the product contain Volatile Organic Compounds?	<input type="checkbox"/>	<input type="checkbox"/>
<p>If yes, please state the VOC content in % for the final product.</p> <p>_____</p>		
<p>Definitions of VOC and SVOC</p> <p>Volatile organic compounds (VOC) mean any organic compounds having an initial boiling point less than or equal to 250 °C measured at a standard pressure of 101,3 kPa as defined in Directive 2004/42/EC and which, in a capillary column, are eluting up to and including n-Tetradecane (C14H30).</p> <p>Semi volatile organic compounds (SVOCs) mean any organic compound having a boiling point greater than 250 °C and less than 370 °C measured at a standard pressure of 101,3 kPa and which, in a capillary column are eluting with a retention range after n-Tetradecane (C14H30) and up to and including n-Docosane (C22H46).</p>		

Place and date:	Company name/stamp:
Responsible person:	Signature of responsible person:
Phone:	Email:

Appendix 3 Example of recipe structure

Example of recipe structure to be used when applying for the Nordic Ecolabelling of chemical building products. The formulation should include a worst-case formulation detailing the use of minor adjustments that can be made during product, i.e., pH changes, and viscosity adjustments. If the formulation uses intervals in the production, intervals should be stated in the formulation sent to Nordic Ecolabelling.

Chemical building product: <name>											
Raw material reference number	Company name	Raw material name	Function in the product	CAS No.	Substance content	% Substance	Cas No.	Classification per substance	Raw material content in the product	Substance content in the product	
1...	-	Water	Solvent	7732-18-5	Water	100,000	7732-18-5	-Not Classified (NC)	14,97	14,9700	
2...	Xxx	Xxx	pH regulator	1310-73-2	Sodium hydroxide	95,000	1310-73-2	H314	9	8,5500	
					Water	5,000	7732-18-5	NC			0,4500
3...	Xxx	Xxx	Dispersing agent	-	Acrylic resins	30,000	-	NC	7	2,1000	
					Water	69,995	7732-18-5	NC			4,9000
					1,2-Benzisothiazol-3(2H)-one	0,005	2634-33-5	H314, H317, H412			0,0004
And so on											

Appendix 4 Declaration from the manufacturer of raw materials used in acrylic/alkyd resins

To be used in conjunction with an application for a licence for the Nordic Ecolabelling of chemical building products.

Name of acrylic/alkyd resin binder: _____

Manufacturer of acrylic/alkyd resin binder: _____

	Yes	No
O13: Does the acrylic/alkyd resin binder contain renewable raw materials?	<input type="checkbox"/>	<input type="checkbox"/>
<p>If yes, please state the type(s) of renewable raw material (e.g., castor oil, soybean oil, palm oil...) and whether the renewable raw materials are derived from primary feed stock or residues or waste: If the acrylic resin raw material contains palm oil (incl. by-products and waste fractions), please submit an RSPO-certificate.</p> <p>_____</p> <p>_____</p>		
<p>Please indicate which of the renewable raw material(s) are certified according to sustainability standard(s) or certification identity number.</p> <p>_____</p> <p>_____</p>		
<p>Please describe the level of traceability (Identity Preserved, Segregated, Mass Balance, Book & Claim) on both the renewable raw materials used in acrylic resin binder and the acrylic resin binders itself.</p> <p>_____</p> <p>_____</p>		

Signature

We declare that the requirements have been met and that the information provided is correct.

Company name:	Date:
Address:	
Telephone:	E-mail:
Signature:	Name in block letters:
Person in charge of marketing:	Date:
Telephone:	E-mail:
Signature	

In the event of personnel changes, a new confirmation must be submitted to the ecolabelling organization.

Appendix 5 Requirements on the analysis laboratory

The analysis laboratory used shall be certified according to standard EN ISO 17025 or have official GLP status.

Company's own laboratory may act as a test laboratory if:

- The manufacturer has a quality management system encompassing sampling and analysis and has been certified to ISO 9000.
- The test method for performance test is part of the quality system.
- Nordic Ecolabelling shall have access to all raw data from performance testing.