Nordic Ecolabelling for

Candles

Version 3.0 • date – date

CONSULTATION

Nordic Ecolabelling

Contents

Contact information

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

Denmark

Ecolabelling Denmark

www.svanemaerket.dk

Iceland

Ecolabelling Iceland

www.svanurinn.is

Finland

Ecolabelling Finland

www.joutsenmerkki.fi

Norway

Ecolabelling Norway

www.svanemerket.no

Sweden

Ecolabelling Sweden

www.svanen.se

1 Summary

The Nordic Ecolabelling criteria for candles have been revised to generation 3. Nordic Swan Ecolabelled candles must comply with strict requirements to reduce the environmental and climate impact throughout the whole life cycle. The candles have a reduced environmental and health impact due to the high amount of renewable raw materials in the candles, restrictions on health and environmentally hazardous chemicals and low particle emissions to indoor air. In addition, the candles must comply with requirements regarding fire safety, burning time and safety labelling.

To reduce the climate impact from burning of candles, Nordic Ecolabelling requires that at least 90% of the candle raw materials must be renewable. A high share of renewable sustainable raw materials will reduce the release of CO_2 during burning, and thus contribute to reduce the greenhouse effect compared with burning of fossil raw materials.

Palm- or soy oil is not allowed as these raw materials are associated with significant environmental and social problems in both the cultivation and the production phase.

Genetically modified raw materials are not allowed either. Nordic Ecolabelling emphasizes the precautionary principle and discourages the use of GMOs that are commercially available today due to the risk for negative consequences when genetically modified plants, animals and microorganisms are propagated in nature.

Nordic Swan Ecolabelled candles must also comply with strict requirements for the material used in the wick, the wick holder, the container and the packaging.

New and strict chemical requirements have been introduced in this generation of the criteria. The requirements apply to chemicals such as stearin, paraffin, wax, oil, printing inks, dyes, adhesives, pigments and similar used in the candle production. Perfume is still not allowed.

Chemical requirements have been introduced for surface treatment of containers in generation 3. The background is the increased use of renewable non-combustable wood fiber containers which often require the application of flame retardant to enhance fire resistance. [14]

Emissions to indoor air/sooting is an important health impact from burning of candles, and Nordic Ecolabelling has kept the strict requirements for testing of soot index for both indoor and outdoor candles. In addition, Nordic Ecolabelling has set a stricter limit in this generation for the total content of organic solvents in candles.

A new requirement regarding fire safety test of candle containers, is included. It will now be required to test the fire safety of candles containers separately and according to a specific test standard in addition to the tests for fire safety of candles and candle burning time.

For an overview of the changes in this revised generation 3, see the table in the next section 1.1.

1.1 Changes compared to previous generation

Table A. Overview of changes to criteria for candles generation 3 compared with previous generation 2.

Proposed requirement generation 3	Requirement generation 2	Same require-ment	Change	New require-ment	Comments
O1	O1	x			The requirement text has been rephrased and restructured to be more clear. Appendix 1 has been changed from text to table format.
O2	O1	x			The requirement for description of the production has been moved to a separate requirement (O2) in this generation 3.
O3	O2, O3	x			The requirement text has been rephrased and restructured to be more clear. For all renewable raw materials, it is specified that source and supplier must be given. For clarity, O2 and O3 in gen.2 has been merged into 1 requirement (O3) in this generation 3.
O4	O4	x			The requirement text has been rephrased and restructured to be more clear. Information on supplier has been added in Appendix 2.
O5	O5		x		The text is updated to be accordance with the latest version of the GMO framework requirements
O6	O6	x			No changes
O7	O7	x			No changes
O8	O8		x		The chemicals used for surface treatment of the disposable containers, must comply with the chemical requirements. The heading has been changed.
O9	O9		x		The chemicals used for surface treatment of the reuseable containers, must comply with the chemical requirements. The heading has been changed.
O10	O10		x		Minor update of the excluded metals. Aluminium has been removed and arsenic (As) has been added to be in line with the new and updated chemical requirements prohibited list.
O11	O11	x			No changes
O12	O12		x		The requirement is updated according to the new chemical framework requirements.
O13	O13		x		The requirement is updated according to the new chemical framework requirements.
O14	O14, O16		x		The requirement is updated according to the new chemical framework requirements. The requirement for azo dyes is not a separate requirement as in last generation, but is included in the prohibited list.

O15	O15		x		The limit for content of organic solvents is made more strict.
O16	O17	x			No changes
O17	O18	x			No changes
O18	O19		x		A new requirement for fire safety test of candle containers according to the standard ASTM F2417-23 has been included.
O19	O20		x		Accepted difference in claims for burning time and actual test results, is included. Test report for burning time is included as documentation. The heading has been changed.
O20	O23	x			No changes
O21	O26	x			No changes

2 Environmental communication guideline for Nordic Swan Ecolabel candles

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

Nordic Swan Ecolabelled candles:

- Consist of at least 90% renewable material, resulting in a significantly lower climate impact compared to paraffin candles
- Ensure no use of palm- or soy oil
- Prohibit perfume
- Restrict hazardous chemicals like dyes and additives ensuring lower emissions of particles and VOC to indoor air
- Are tested for low emissions of soot to indoor air
- Meet criteria for fire safety, burning time and safety labelling

3 What can carry the Nordic Swan Ecolabel?

Product group definition

The product group comprises candles/oil candles made up of one or more wicks surrounded by a solid or liquid material. The two material types are described in more detail below:

Solid material: Candles comprising one or more wicks, surrounded by a material that is solid/semi-solid at room temperature (20°C – 27°C). The candle material must consist of at least 90% renewable materials by weight.

Liquid material: Candles comprising one or more wicks, surrounded by a material that is liquid at room temperature (20°C – 27°C), generally known as **oil candles/-lamps**. The liquid material (the oil) must be made from 100% renewable raw materials by weight. The oil's flash point must be at least 65°C. The oil candle must be in a single-use container such that it cannot be refilled. The wick must not be adjustable.

It is thus possible to Nordic Swan Ecolabel taper candles, pillar candles, tea light candles, outdoor candles (graveyard candles and garden candles) and oil candles/-lamps in single-use containers.

It is not possible to ecolabel only containers without candles or candles that contain a high proportion of paraffin, scented candles or aromatherapy candles.

3.1 Justification of the product group definition

The requirement concerning candles comprising one or more wicks, surrounded by a material that is solid/semi-solid at room temperature (20°C – 27°C) remains unchanged in this version of the criteria. The requirement follows the definition in EN 15493 Candles – Specification for fire safety, EN 15426 Candles – Specification for sooting behaviour and EN 15494 Candles – Product safety labels.

The requirement that the proportion of renewable materials must be a minimum of 90% by weight remains unchanged in this generation 3 of the criteria. A renewable material is a material that is composed of biomass and that can be continually replenished, according to the standard EN 16575:2014. It includes the degradable part of products, waste and residues from agriculture (both plant-based and animal), sustainable forestry and similar industries and the biodegradable fraction of industrial waste and municipal waste. Peat is not included as it cannot be continually replenished. Paraffin is a synthetic petroleum product and is therefore never renewable.

Both biomass (plant-based raw materials) and fossil fuels release carbon dioxide during burning and thus contribute to the greenhouse effect. The benefit of burning biomass is that it does not contribute additional carbon dioxide to the atmosphere, as is the case with fossil fuels, if the biomass comes from sustainable sources[1].

Biomass removes carbon dioxide from the air as it grows. When wood, for example, is then burned or decays, it releases the carbon dioxide again and it can them be absorbed by other trees. The benefit for the climate comes when the wood is burned instead of being left to decay, since it is possible to use the energy in the wood and avoid taking energy and carbon from the Earth in the form of coal, oil and gas. This then avoids adding atmospheric carbon dioxide that is not already part of the plants' carbon dioxide cycle. The fundamental condition for the carbon neutrality of wood is that the size of the forest is maintained, and more trees are not harvested than can be counterbalanced by ongoing growth. Carbon dioxide from biofuels is also absorbed much more quickly than from fossil sources. Biomass therefore has a relatively short impact on the climate compared with fossil carbon dioxide where the effect lasts for several thousands of years.

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[1] "Nordic Swan Ecolabelled Candles", RISE, E.E.Lindvall and K.Lorentzon, 20.11.2023

It is currently possible to produce certain types of candles from 100% renewable materials with the help of certain production techniques. This applies in particular to white dinner/taper candles with no over-dipping.

When it comes to pillar and ball candles, it is often necessary to add a small amount of paraffin for quality reasons. This is to ensure that the candle does not split/crack during hardening. Paraffin is also often used to ensure that stearin candles release from their molds, since stearin has a tendency to stick.

Paraffin is also used in the dyes generally used for the over-dipping of candles. This paraffin typically has a higher melting point (70–75°C) than stearin (60–62°C) and thus makes sure that the candle will not bend in sunlight for example. The paraffin also gives a smooth, uniform surface and smooth, round edges. The over-dipping is around 1 mm thick.

Paraffin also tends to be used in the dyes used for colouring a whole candle.

It will therefore still be possible to use a small amount of paraffin in a Nordic Swan Ecolabelled candles to allow for ecolabelling of several types of candles and candles in different colours.

The product definition includes oil candles/oil lamps. This is candles comprising one or more wicks, surrounded by a material that is liquid at room temperature (20°C-27°C). The liquid material (the oil) must be made from 100% renewable raw materials by weight. The increasingly dominant lamp oil that is available on today's market is based on petroleum (n-paraffin), i.e. it has been developed from fossil fuels. This type of oil is classified as H304 ("May be fatal if swallowed and enters airways") and is therefore subject to separate rules for the labelling of the oil. The requirement that the liquid material must have a flash point of at least 65°C ensures that liquid materials classified as flammable are not used in a Nordic Swan Ecolabelled oil candle. Data from producers of oil candles based on 100% plant-based oil indicates good burning properties compared with traditional fossil-based lamp oil and candles made from solid wax[2].

The oil candle must be in a single-use container such that it cannot be refilled. This ensures steerability of the product, i.e. that it is not refilled with a type of lamp oil other than the one used in the soot test. The wick must also not be adjustable, which ensures that the oil candle burns in the same way as at the time of testing.

[2] "Test af 3 forskjellige lampeolier i 2 forskjellige typer lamper", Anne Gry Hemmersam and Susanne Borg Calundann, Teknologisk Institut, 3.11.2009

4 How to read this criteria document

Each requirement is marked with the letter O (obligatory requirement) and a number. All requirements must be fulfilled to be awarded a licence. The background for each requirement is described in the background document.

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

- ⭱ Upload
- Requirement checked on site

To be awarded a Nordic Swan Ecolabel licence:

- All obligatory requirements must be fulfilled.

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

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

5 Requirements and justification of requirements

Criteria document: This chapter presents all requirements and the chosen requirement levels. The background for all requirements is explained in the background document.

Background document: This chapter explains the background for all requirements.

Definitions

Table 1 Definitions

Term	**Definition/Explanation**
Candle	Candle comprising one or more wicks, surrounded by a material that is solid/semi-solid at room temperature (20°C – 27°C).
Halogenated organic solvent	Halogenated organic solvent means an organic solvent which contains at least one atom of bromine, chlorine, fluorine or iodine per molecule.
GMO	Genetically modified organisms (GMO) are defined in EU Directive 2001/18.
Ingoing substances in chemical products	Ingoing substances: All substances* in the chemical product regardless of amount, including additives (e.g. preservatives and stabilizers) from the raw materials. Substances released from ingoing substances (e.g. biocidal active substances generated by preservatives, such as formaldehyde) are also regarded as ingoing substances. **N.B. the difference from the definition of substances in the REACH Regulation (EC) No 1907/2006. Whereas a REACH substance encompasses a chemical element or compound as well as its stabilising additives and process impurities, a substance here refers to each of the constituents separately. The constituents of a UVCB substance (Unknown or Variable composition, Complex reaction products or of Biological materials) are also regarded separately, and all known constituents must be regarded.* *Limit values: The limit for excluded ingoing substances is 0 ppm (unless otherwise stated), while there's a specific defined limit for impurities. The impurity limit applies separately to each individual excluded substance, from each individual raw material. Concentrations of different impurities with the same excluded classification or substance group characteristics shall not be summed up to meet the impurity limit in the labelled product. Also, concentrations of an individual impurity, originating from different raw materials, shall not be summed.* *UVCB substances: UVCB substances (Unknown or Variable composition, Complex reaction products or of Biological materials) have a composition of constituents that is not completely known or is variable from time to time. For substances registered under REACH as UVCBs, all constituents that are known must be declared in the Nordic Swan Ecolabel raw material appendix based on the best available knowledge. All constituents are considered individually and are subject to the chemical requirements, including for instance those on excluded substances and excluded classifications.*
Impurities in chemical product	Impurities: Trace levels of pollutants, contaminants and residues from production, incl. production of raw materials, that remain in the chemical product in concentrations ≤ 1 000 ppm (≤ 0.1000 w%). *Examples of impurities: Background environmental pollutants from feedstock, as well as contaminants and residues from production such as reactants (incl. monomers), reagents, catalysts, by-products, scavengers, detergents for production equipment, carry-over from other or previous production lines.*

	Impurities in the raw materials in concentrations ≥ 10 000 ppm (1.0000 w%) are always regarded as ingoing substances, regardless of the concentration in the chemical product.
MECO-analysis	A MECO describes the key areas that have impact on the environment and health throughout the life cycle of the product – including consumption of materials/resources (M), energy (E), chemicals (C) and other impact areas (O).
Organic solvents	Organic solvents as defined in Directive 1999/13/EC: Organic substances with a vapour pressure of at least 0.01 kPa at 20 °C.
Oil candle	Candle comprising one or more wicks, surrounded by a material that is liquid at room temperature (20°C – 27°C). Also called oil lamps.
PFAS	Per- and polyfluoroalkyl substances (PFASs) are defined as fluorinated substances that contain 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 noted exceptions, any chemical with at least a perfluorinated methyl group ($–CF_3$) or a perfluorinated methylene group ($–CF_2–$) is a PFAS, as described in the OECD recommendations.
PVC	Polyvinyl chloride
Recycled material	Recycled material is defined in line with ISO 14021 which applies the following two categories: “Pre-consumer/commercial” is defined as material that is diverted from the waste stream during a manufacturing process. Materials that are reworked or reground, or waste that has been produced in a process, and can be recycled within the same manufacturing process that generated it, are not considered to be pre-consumer recovered material. Nordic Ecolabelling considers reworked, reground or scrap material that cannot be recycled directly in the same process, but requires reprocessing (e.g., in the form of sorting, remelting, and granulating) before it can be recycled, to be pre-consumer/commercial material. This is irrespective of whether the processing is done in-house or externally. “Post-consumer/commercial” is defined as material generated by households or commercial, industrial, or institutional facilities in their role as end-users of a product that can no longer be used for its intended purpose. This includes materials from the distribution chain.
Renewable/biobased material	A renewable material is a material that is composed of biomass and that can be continually replenished, see EN 16575:2014. Biobased material relevant for these criteria is renewable. Paraffin is by definition a synthetic petroleum product and is therefore never renewable.
Residues	Ref. EU Directive 2018/2001 (Renewable Energy Directive). Residues come from agriculture, aquaculture, fisheries, and forestry, or they can be processing residues. A processing residual product is a substance that is not one of the end products that the production process directly strives for. Residues must not be a direct target of the process, and the process must not be changed to intentional production of the residual product. Examples of residual products are e.g., straw, husks, pods, the non-edible part of maize, manure, and bagasse. Examples of processing residues are e.g., raw glycerine or brown lye from paper production. Palm Fatty Acid Distillate (PFAD) or Palm Oil Mill Effluent (POME) from palm oil is not considered a residual/waste product and can therefore not be used.
RPS-analysis	Based on the MECO analysis, an RPS tool is used to identify where ecolabelling can have the greatest effect. R represents the environmental relevance, P is the potential to reduce the environmental impact, and S is the steerability on how compliance with a requirement can be documented and followed up. The criteria contain requirements in those areas in the life cycle that have been found to have a high or medium RPS, since there is potential to achieve reduced environmental impact.

Waste	Ref. EU Directive 2018/2001 (Renewable Energy Directive). Waste is any substance or object which the holder discards or intends or is required to discard. This means the material has no intended further use by its holder and is considered unwanted or destined for disposal, recovery or recycling. Raw materials that have been intentionally modified to count as waste (e.g. by adding waste material to a material that was not waste) should not be considered as qualifying.

5.1 Description of the product and the production

The candle and the container, the manufacturing process and the suppliers/production chain must be described to know which requirements apply for the product.

O1 Description of the product

The applicant must provide the following information for each product:

- Product type (taper candle, pillar candle, tealight candle, oil candle, outdoor candle etc.) and trade name.
- A description of the product (diameter/thickness, height, coloured or non-coloured, weight in kg)
- The composition of the product (candle, container, wick, wick holder) and the packaging with an overview of the materials and chemicals used.

  For each component of the candle, the material type must be given.

  For chemicals used in the candle (stearin, paraffin, wax etc.) or as surface treatment for the container, an overview list must be made with following information for each chemical product:

  a) Trade name and supplier

  b) The function of the chemical

  c) Whether the chemical used for the candle is based on renewable materials or not

  d) For all renewable raw materials used in candle, the source (beeswax, tallow, rapeseed wax, coconut wax, sunflower wax etc) and the supplier must be stated

  e) % by weight of the renewable materials in the candle related to the total weight of the candle.

  See an example of how an overview of materials and chemicals for candles might be structured in Appendix 1.

⊼ Description in relation to the above points. Appendix 1 gives an example on how the information might be structured in a table. Product data sheets and photos can be submitted as part of the documentation.

O2 Description of the production

The manufacturing processes and supply chain must be described. The description can be done by using a flow chart. For the manufacturing process, the following information must be submitted:

- Company name of the supplier which performs the process.

- Production site (full address and country) and contact person.
- The manufacturing processes performed, e.g. candle dying.

⊼ Description in relation to the above points. Feel free to use a flowchart to describe the production process.

Background to requirement O1 and O2

The requirements for the description of the product and the production are unchanged in this generation. Some text is clarified, among others it is clearly stated that for renewable raw materials, both source and supplier must be given.

The intention of these requirements is to provide a sufficient picture of the life cycle of the product, product packaging and the production: what materials and chemicals are used, what production processes are used, what surface treatment or additives are used and so on. The information about the product and the production will give an insight about in order to ensure correct processing of the application.

The requirement for description of the production has been established as a separate requirement in this generation of the criteria.

5.2 Material requirements

The material requirements are divided into the following sections:

- Candle raw materials
- Wick and wick holder materials
- Container materials
- Packaging materials

5.2.1 Candle raw materials

O3 Amount of renewable raw materials in candles/oil candles

The amounts of raw materials in the candle produced from renewable raw materials must exceed 90% of the total weight of the candle.

The amounts of raw materials in the oil used in an oil candle must be made from 100% renewable raw materials.

Renewable raw materials from palm- and soy oil must not be used.

The following information must be provided for all raw materials used in candles/oil candles:

- Whether the raw material used for the candle is based on renewable materials or not.
- For all the renewable raw materials used in the candle, the source (beeswax, tallow, rapeseed wax, coconut wax, sunflower wax etc) and the supplier must be stated.
- % by weight of the renewable materials in the candle related to the total weight of the candle.
- For renewable raw materials of animal origin, name of production site(s) and approval number (EU Code) must be enclosed.

- Description and calculation according to the list above. Appendix 1 may be used.
- For renewable raw materials of animal origin, name of production site(s) and approval number (EU Code) must be enclosed.

Background to requirement O3

The requirement for the minimum share of renewable materials in the candle/oil candle at respectively 90% and 100% by weight, remains unchanged in this generation 3 of the criteria. The requirement for no use of renewable raw materials from palm- and soy oil, remains as in generation 2, but is not kept as a separate requirement, but is merged into this requirement.

Background for the requirement for high proportion of renewable materials is previously described in the background for the product group definition, refer 3.1.

It is currently possible to produce some types of candles from 100% renewable materials with the help of certain production techniques. This applies in particular to white taper candles. When it comes to pillar and ball candles, it is often necessary to add a small amount of paraffin for quality reasons. This is to ensure that the candle does not split/crack during setting. Paraffin is also often used to ensure that stearin candles release from their mould, since stearin has a tendency to stick.

Paraffin is also used in the dyes generally employed in the over-dipping of candles. This paraffin typically has a higher melting point (70–75°C) than stearin (60–62°C) and thus makes sure that the candle will not bend in sunlight, for example. The paraffin also gives a smooth, uniform surface and smooth, round edges. The over-dipping is around 1 mm. Paraffin also tends to be used in the dyes used for colouring a whole candle. Nordic Ecolabelling would like to continue to allow to ecolabel several types of candles and in different colours, which is why it will remain possible to use a small amount of paraffin.

If raw materials of animal origin are used, name of production site(s) and approval number (EU Code) must be disclosed. Raw materials of animal origin are subjected to Regulation (EC) No 1069/2009 concerning health rules concerning animal by-products, not intended for human consumption. The requirement ensures traceability to where waste and residue arise.

Palm oil is used as raw material in the production of stearin or oil to oil candles while soy is used in soya candles. Both raw materials are, however, associated with significant environmental and social problems in both the cultivation and the production phase and are therefore not allowed as raw materials in ecolabelled candles.

O4 Traceability and control of plant-based renewable raw materials

Plant-based renewable raw materials must meet the following requirements:

1. State name (Latin and an English language) and geographical origin (country/state and region/province) and suppliers of the plant-based raw material used. Appendix 2 may be used.
2. There must also be a written procedure in place from the producer/supplier of the plant-based raw material or the manufacturer of the candle. The procedure must

describe the system for traceability and for the purchase of plant-based raw materials ensuring that all plant-based raw materials are coming from legal sources.

The description must include that the raw materials must not be sourced from:

- protected areas or areas under preparation as protected areas
- areas where ownership or usage rights are unclear
- illegally harvested crops

Nordic Ecolabelling may require further documentation in the event of uncertainty about the raw materials origin.

If the plant-based raw material comes from waste or residues, there must be traceability back to the production/process from which the waste or residues derive by means of invoices.

- Name (Latin and an English language) and geographical origin (country/state and region/province) and suppliers of the plant-based raw materials used. Appendix 2 can be used for documentation purposes.
- A written procedure from the producer/supplier of the plant-based raw material or the manufacturer of the candle, documenting how the requirement is fulfilled.
- If the plant-based raw material comes from waste or residues, invoices to document traceability.

Background to requirement O4

This requirement is unchanged from generation 2.

For Nordic Swan Ecolabelled candles/oil candles made from plant-based renewable raw materials, it is important to set requirements concerning the areas from which the raw materials are sourced since use of land is a relevant environmental aspect for this product group. The aim is to ensure that areas of high biological or social value are not used for cultivation.

To know where the raw material comes from and who produced it, it is important to check the traceability back to the origin of the raw material. There must be a written procedure in place that describes the system for traceability and for the purchase of raw materials that ensures that all raw materials come from legal sources. The plant-based renewable raw materials must not be sourced from the following:

- protected areas or areas under preparation as protected areas
- areas where ownership or usage rights are unclear
- illegally harvested crops

If the raw material can be defined as a waste or residue, there must be traceability to the process from which the waste or residue derived by means of invoices.

Plant-based raw materials for candles/oil candles can be for example coconut-, sunflower- or rapeseed (canola) oil.

O5 Genetically modified plants

Raw materials used in Nordic Swan Ecolabelled candles/oil candles must not be genetically modified.

This requirement does not include residuals or waste defined according to the Renewable Energy Directive (2018/2001/EC).

Note that Nordic Ecolabelling does not define by-products, residues and waste fractions from palm and soybean oil industries (e.g., Palm Fatty Acid Distillate: PFAD, Palm Effluent Sludge: PES and soybean meal) as residuals or waste.

⊼ Declaration of compliance with the requirement from the raw material supplier. Appendix 3 may be used.

Background to requirement O5

The requirement has been updated according to Nordic Ecolabelling's general requirement for GMO. Genetically modified organisms (GMOs) are controversial. Topics that are discussed include food security, land use, lack of scientific knowledge about long term effects and effects under local agricultural/forest conditions and risk of adverse effects on health and the environment.

Four GM crops dominate: soybean, cotton, maize, and rapeseed. The dominating traits are resistance to one or several herbicides and production of one or several insecticidal proteins or a combination of the two. Research has not clearly shown that GMOs contribute to development towards sustainable agriculture with less use of pesticides. Problems include herbicide resistant weeds due to GM agricultural practises, resistance among target insect pests and gene flow from GM plants to agricultural or wild relatives. Research shows conflicting results on performance and environmental effects of GMOs, especially on yield and non-target organisms. There are knowledge gaps on effects on microorganisms in the soil and aquatic organisms, GMOs with combined traits, socioeconomic consequences, and risks in an ecosystem perspective.

Nordic Ecolabelling emphasizes the precautionary principle and discourage the use of GMOs that are commercially available today. Nordic Ecolabelling is concerned about the consequences when genetically modified plants, animals and microorganisms are propagated in nature. However, Nordic Ecolabelling is not against genetic engineering or GMOs as such, and we believe that GMOs should be assessed on a case-by-case basis. We promote a holistic approach to GMOs and assess sustainability, ethics, and benefit to society as well as possible risks to health and the environment. We believe that GMOs made with new gene editing techniques should be assessed according to the same guidelines as other GMOs, which is in line with EU regulations. For more information on Nordic Ecolabelling's approach on GMO: https://www.nordic-swan-ecolabel.org/nordic-ecolabelling/environmental-aspects/

O6 Fossil raw materials

All fossil raw materials, like paraffin waxes, used in Nordic Swan Ecolabelled candles must be fully refined (i.e. hydrogenated) or match the hydrogenated grade stated in the standard Quality Assurance RAL-GZ 041[16].

- Invoice or similar documentation from the manufacturer of the candle showing that the requirement is fulfilled.

Background to requirement O6

The requirement has not been changed for this generation 3 of the criteria.

The aim of the requirement for hydrogenated paraffin is to ensure that only high quality paraffin/fully purified paraffin is used in the candle. The quality of the paraffin has a major effect on the burning process and emissions from the candle.

Crude oil contains many different chemical compounds, made up primarily of carbon and hydrogen. In addition, crude oil always contains compounds of sulphur, nitrogen and trace elements. There are, in fact, several thousand different compounds. Most important of these in the production of crude oil products is the saturated hydrocarbons, a group known as alkanes. There are also olefins, naphthenes and aromatics which are defined by their different carbon bonds.

The German quality standard for candles, Quality Assurance RAL-GZ 041, is a voluntary standard used by a large number of candle manufacturers in Europe[3]. The standard sets tough requirements concerning the quality of the paraffin, which matches the hydrogenated grade.

The candle manufacturer must document fulfilment of the requirement through invoices or similar documentation.

5.2.2 Wick and wick holder materials

O7 Wick and wick holder materials

Wick:

The wick must not contain any kind of metal.

The cotton in the wick must be Oeko-tex standard 100 certified. The use of alternative materials such as paper, flax or other vegetable fibre is permitted to stabilise or improve the burning properties of the wick.

Wick holder/sustainer:

The following metals must not be added to the wick holder:

Aluminium (Al), lead (Pb), mercury (Hg), chromium VI (Cr), cadmium (Cd), cobalt (Co), antimony (Sb), zinc (Zn), copper (Cu) or nickel (Ni).

This requirement does not apply to wick holders made of steel.

- Oeko-tex standard 100 certificate for the cotton in the wick.
- Declaration from the manufacturer of the wick that the requirement is fulfilled. Appendix 4 may be used.
- Declaration from the manufacturer of the wick holder that the requirement is fulfilled. Appendix 5 may be used.

[3] http://guetezeichen-kerzen.com/en/home/

Background to requirement O7

The wick: The requirement has not been changed in this generation 3.

Wicks are generally made from cotton and can have different thicknesses and shapes. Some wicks contain paper fibres to stiffen the wick. It used to be normal to stiffen the wick with a metal, such as lead, tin and zinc, but this is no longer standard practice. It may, however, still happen and there is therefore a ban on the use of metal in wicks. All heavy metals are more or less toxic to people and the environment, and many are classified as potentially CMR-substances.

The wick controls the melting, evaporation and burning of the candle material and transports the liquid wax from the melting area to the burning zone. To keep the wicks stiff and upright, they can be impregnated with various waxes, or they can be interwoven with paper fibres. The stiffness of the wick is an important factor in avoiding bends in the wick, which will increase the level of sooting.

For stearin candles, it is necessary to impregnate the cotton wick, otherwise it will be “eaten away” by the acid in the stearin. This impregnation usually takes the form of inorganic potassium or sodium salts.

The production of a wick traditionally involves three steps:

1. Washing the cotton to remove any impurities.
2. Bleaching the cotton wick. This has no effect on the burning properties of the wick and is done entirely for cosmetic reasons to keep the wick white.
3. Impregnating the wick to determine its strength, acid resistance and burning properties.

Nordic Ecolabelling considers bleaching the cotton wick to be an unnecessary process in environmental terms, if its purpose is purely cosmetic. The chemicals used tend to be oxidisers and reducing agents. Feedback from manufacturers and resellers of candles is, however, that consumers only want candles with white wicks. This is due to the fact that candles are also an interior design item used for decoration. Bleaching cotton wicks is therefore permitted.

Wick holder: The requirement has not been changed in this generation 3.

Wick holders are used primarily in tea lights to ensure that the wick does not collapse when the wax becomes liquid. The hot liquid wax requires that the wick holder shall withstand high temperatures and is the reason that wick holders are made of metal. The requirement prohibits to add in the wick holder heavy metals that are particularly harmful to health and the environment.

The manufacture of **aluminium** is associated with high energy consumption and emissions of environmentally harmful substances, which is why its' use is not permitted in containers for Nordic Swan Ecolabelled candles (e.g. tea lights). It is therefore relevant to ensure that any metal used in a candle’s wick holder is free from aluminium (Al) also in addition to the following metals: lead (Pb), mercury (Hg), chromium VI (Cr), cadmium (Cd), cobalt (Co), antimony (Sb), zinc (Zn,), copper (Cu) and nickel (Ni). These metals are more or less toxic to people and the environment, and many are classified as potentially CMR-substances. This "free from" requirement for certain metals does not apply to wick holders of steel.

Wick holders of **steel**: The carbon content of steel is between 0.002% and 2.1% by weight for plain iron–carbon alloys. These values vary depending on alloying elements such as manganese, chromium, nickel, iron, tungsten, carbon and so on. Other materials are often added to the iron/carbon mixture to produce steel with desired properties. Stainless steel contains at least 11% chromium, often in combination with nickel, in order to resist corrosion.

5.2.3 Container materials

Material requirements for containers sold with candles/oil candles are given in this chapter. For disposable containers (containers intended only to be used once), requirement O8 apply. For reusable containers (containers intended to be used several times), requirement O9 apply. Containers (both disposable and reuseable) containing plastic must additionally also apply to requirement O10.

O8 Materials in disposable containers

Disposable containers must not contain:

- glass or ceramic
- polyvinyl chloride (PVC) and polyvinyl dichloride (PVDC)
- metal (exception for lids)

The chemicals used for surface treatment of the disposable containers, must comply with the chemical requirements in chapter 5.3.

Containers made of plastic

If plastic is included in the container, at least 75% by weight of the plastic materials used must be made from either renewable/biobased or post-consumer recycled raw materials. This requirement does not apply to silicone.

Lids made of metal

Lids on graveyard candles and oil candles are exempted from the requirement for metal i.e. metal can be used for lids, for instance steel.

However, the following metals must not be added to the metal lid:

Aluminium (Al), lead (Pb), mercury (Hg), chromium VI (Cr), cadmium (Cd), cobalt (Co), antimony (Sb), zinc (Zn,), copper (Cu) or nickel (Ni). This requirement does not apply to lids made of steel. See Appendix 12 for what is meant by a lid.

⊺ Declaration from the manufacturer of the container, showing that the requirement is fulfilled. Appendix 6 may be used.

⊺ Declaration from the manufacturer/supplier of the plastic that the requirement is fulfilled. Appendix 7 may be used.

Background to requirement O8

The requirement for materials in disposable containers is kept unchanged except for the inclusion of a new requirement for chemicals used for surface treatment of containers.

All chemicals used for surface treatment of disposable containers must now comply with the chemical requirements. The increased use of renewable non-combustable wood fiber containers and thereby use of flame retardants on these containers[14], is the background for the decision of letting the chemical requirements apply to surface treatment chemicals. As flame retardants might be used on all types of container materials, the chemical requirements apply to all types of container materials.

Glass and ceramic:

Nordic Ecolabelling does not wish to promote Nordic Swan Ecolabelled candles in disposable/single-use containers made from glass and ceramic, known as filled glass or ceramic candles. Production of glass and ceramic is highly energy-intensive, and the product is relatively heavy in relation to the actual candle, and even with a long burning time (40 hours), the environmental impact remains considerable if the container is disposed after use.

Metal:

Nordic Ecolabelling does not wish to allow disposable containers in metal, as there are environmentally preferable alternatives such as plastics with a high share of recycled plastic and renewable wood fiber containers which is a more recent innovation aimed at reducing environmental impact compared to aluminium and plastic.

Aluminium is the most widely used material for containers in tea lights. Tea light aluminium containers should be recycled as recycling the aluminium considerably reduces the environmental impact in terms of the container life cycle[4]. Due to the small steel wick holder, recycling of aluminium becomes more difficult in practice. If the steel wick holder is not separated from the aluminium container, the aluminium will “follow” the magnetic steel and thus be destroyed as aluminium.

In practice, the majority of tea light aluminium containers are incinerated as domestic waste at end-of-life, and thereby there is a substantial environmental impact from aluminium tea light containers, compared with the alternatives. This is the reason for maintaining the prohibition on aluminium containers for candles also in this criteria generation.

The lid on graveyard candles and oil candles are exempted from the general prohibition on metal. Graveyard candles are designed to be used outside, why it is in most cases designed in a plastic container with a metal lid to withstand the elements. The lid must be able to withstand high temperatures and therefore often made of metal (often steel coated with another metal coating). The oil candle must be in a disposable container in order to obtain the Swan ecolabel. In order to ensure that the container is leak proof, a special metal lid is used, which simultaneously also serves as wick holder that must withstand high temperatures. For the background on the heavy metals requirement, refer the background for wick holders.

[4] "LCA Screening of aluminium and plastic cups", Nordic Ecolabelling, Marie Kampmann Eriksen, 2024

Plastic:

It is considered to be an environmental aspect to use a greater proportion of renewable or recycled plastic in candle containers. The requirement limit of 75% by weight post-consumer recycled raw material was set based on dialogue with the candle industry.

Silicone is technically a polymer that can be classified as a plastic, but its chemical structure and properties differ significantly from common plastics. Silicone is therefore not subject to the requirement for plastic requiring at least 75% of the plastic materials used to be made of either biobased or post-consumer recycled raw materials as silicone is not currently re-used in the same manner as other plastic materials. Silicone is considered as hazardous waste, and silicone consists of inorganic polymers of polysiloxanes in which the chain is built up of silicon and oxygen atoms.

PVC is not known to be used in candle containers, but chlorinated polymers such as PVC (polyvinyl chloride) and PVDC (polyvinyldiklorid) is still explicitly prohibited. There are several environmental challenges regarding both the production of PVC and the handling of waste PVC.

O9 Materials in reuseable containers

Reuseable containers must not contain:

- The following metals: aluminium (Al)*, lead (Pb), mercury (Hg), chromium VI (CrVI), cadmium (Cd), cobalt (Co), antimony (Sb), zinc (Zn), copper (Cu) or nickel (Ni). The requirement does not apply to steel.
- Polyvinyl chloride (PVC) and polyvinyl dichloride (PVDC).

** It is allowed to use aluminium in the container if the amounts are less than 15% of the container's total weight.*

The chemicals used for surface treatment of the reuseable containers, must comply with the chemical requirements in chapter 5.3.

Reuseable containers/containers that are designed to be used multiple times for the same purpose, have to be sold/marketed together with at least two candles.

Containers made of plastic

Any plastic in containers must contain, at least 50% by weight renewable/biobased or post-consumer recycled raw materials. This requirement does not apply to silicone.

⊤ Declaration from the manufacturer of the container, showing that the requirement is fulfilled. Appendix 6 may be used.

⊤ Declaration from the manufacturer/supplier of the plastic that the requirement is fulfilled. Appendix 7 may be used.

Background to requirement O9

The requirement for materials in reusable containers is kept unchanged except for the inclusion of a new requirement for chemicals used for surface treatment of containers. For further background for this, please refer the background for O8.

There is an exception for banning the use of aluminium in containers that are designed to be used multiple times. It is allowed to use aluminium in the container, if the amount is less than 15% of the container's total weight. It has been found that it can be difficult to clean containers (e.g., glass cups) of stearic when used several times. Refills are available on the market, wherein the container consists of parts which are easy to dismantle in order to remedy the cleaning and waste in the end. These refill systems consist of a base plate made of aluminium and the sides of either glass or plastic. Refill systems using plastic cups cannot comply with the limit at 15% of the container's total weight. Refill systems which use glass cups will be able to meet the requirement limit.

O10 Additives in virgin, biobased and recycled plastic in containers

The following substances must not actively be added in the plastic/plastic parts made of virgin, biobased or recycled plastic:

- halogenated organic compounds in general (including chlorinated polymers, chlorinated paraffin's, fluorinated compounds and flame retardants)
- pigments and substances based on mercury (Hg), chromium VI (Cr), cobalt (Co), zinc (Zn), copper (Cu), nickel (Ni), cadmium (Cd), lead (Pb), arsenic (As), antimony (Sb) and their compounds
- phthalates (Ester of 1,2-benzenedicarboxylix acid (orthophtalic acid, CAS No. 88-99-3))
- Substances on the REACH Candidate list of SVHC substances https://www.echa.europa.eu/candidate-list-table

The requirement concerns constituents added to master batches or compounds. The requirement does not concern the actual polymer production.

Recycled plastic granules must not contain halogenated flame retardants in concentrations above 100 ppm.

Background to requirement O10

The requirement is unchanged except for a minor update of the excluded metals. Aluminium has been removed and arsenic (As) has been added to be in line with the new and updated chemical requirements, please refer the background for O14.

Container made from polycarbonate: Polycarbonate is produced from bisphenol A (BPA). Nordic Ecolabelling is aware that there may be small residues of BPA present in the plastic after the polymerisation (ppm) levels. We accept this risk because the alternative is actively added flame-retardants. People are only marginally exposed to this kind of product.

It is also possible to use other types of plastic than polycarbonate in candle containers, but this would then require that the plastic is added flame-retardants. Flame-retardants function is mainly to protect the product in the use phase. Therefore, they are deliberately constructed so that they do not break easily, making the flame-retardants persistent if spread in the nature. The greatest attention is directed toward the brominated flame-retardants, partly because they are detected in breast milk and in blood. Because of this, halogenated flame-retardants must not actively be added in the plastic/plastic parts.

The requirement also apply for recycled plastic. According to manufacturers of candle containers made from recycled polycarbonate, it is possible to produce containers from 100% recycled polycarbonate. In order to ensure a sufficiently strong and good quality of the plastic, they often use a lower proportion (50-60%) recycled polycarbonate.

It is not necessary to add additives to the polycarbonate granules in order to produce candle containers. Because of this, a number of substances must not actively be added in the plastic/plastic parts (virgin, biobased and recycled plastic). The requirement includes constituents to master batches or compounds. The requirement does not concern the actual polymer production.

Recycled plastic granules must not contain halogenated flame-retardants. The manufacturer or supplier of the recycled plastic granules must therefore test/declare that recycled plastic granules do not contain halogenated flame-retardants in concentrations above 100 ppm..

Nordic Ecolabelling wishes to promote products that can be used multiple times rather than just once. Therefore, the requirement regarding the share of bioplastic or recycled plastic in container is differentiated between containers designed to be used only ones and multiple times.

Halogenated organic compounds include many substances that are harmful to the environment and health, highly toxic for aquatic organisms, carcinogenic or harmful to health in other ways. The halogenated organic compounds are degraded slowly in the environment, which also increases the risk of harmful effects from the substances. Halogenated organic compounds may, for example, appear as flame retardants in plastic.

5.2.4 Packaging materials

O11 Product and transport packaging

Chlorine-based plastic (PVC) must not be used in product and transport packaging.

⊺ Description of the product and transport packaging.

Background to requirement O11

The requirement is unchanged from previous generation. PVC is not allowed to be used in product or transport packaging since PVC might lead to adverse environmental impacts in waste handling systems.

5.3 Chemical requirements

The chemical requirements apply to all chemical products and their ingoing substances used:

- In the manufacture of candles/oil candles and containers.
- At the candle/oil candle production site or by suppliers.

The requirements apply to:

- Chemical products such as stearin, paraffin, wax, oil, fat, printing inks, dyes, lacquers, adhesives, pigments, hardeners and similar used in the candle production.
- Chemical products used for surface treatment of containers.

The requirements do not cover:

- Wicks, wick sustainers or candle/oil candle containers except from the surface treatment of containers
- Auxiliary chemicals used during manufacture, such as lubricants, cleaning chemicals and so on.
- Refining processes, i.e., refining of plant-based or fossil oil.
- Packaging such as printing inks and adhesives.
- Printing inks used to print on candle surface that remain in the chemical product in concentrations less than 1000 ppm (0.100 w%).

Impurities are not regarded as ingoing substances and are exempt from the requirements. Ingoing substances and impurities are defined in the definitions section.

O12 Chemical products, classification

Chemical products used in the manufacture of candles/oil candles must not be classified with the hazard codes listed in the table below, in accordance with the CLP Regulation (EC) 1272/2008.

Table 2 Prohibited classifications of chemical products

Hazard Class	Hazard Category	Hazard Statement Code
Hazardous to the aquatic environment	Aquatic Acute 1 Aquatic Chronic 1 Aquatic Chronic 2 Aquatic Chronic 3 Aquatic Chronic 4	H400 H410 H411 H412 H413
Hazardous to the ozone layer	Ozone	H420
Acute toxicity	Acute Tox. 1 or 2 Acute Tox. 1 or 2 Acute Tox. 1 or 2 Acute Tox. 3 Acute Tox. 3 Acute Tox. 3	H300 H310 H330 H301 H311 H331

Specific target organ toxicity: single or repeated exposure	STOT SE 1 STOT SE 2 STOT SE 3 STOT RE 1 STOT RE 2	H370 H371 H335*, H336* H372 H373
Respiratory or skin sensitisation	Resp. Sens. 1, 1A or 1B Skin Sens. 1, 1A or 1B	H334 H317
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
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 Very persistent, very bioaccumulative properties	PBT vPvB	EUH440 EUH441
Persistent, Mobile and Toxic properties Very Persistent, Very Mobile properties	PMT vPvM	EUH450 EUH451

* *Applies only to spray products.*

** *Includes all classification variants (e.g. H350 also covers H350i).*

- A Safety data sheet (SDS), prepared in accordance with Annex II of REACH Regulation (EC) No 1907/2006) for the chemical product that is used in the candle/oil candle.
- Appendix 1 or equivalent, completed and signed.
- Appendix 8 or equivalent, completed and signed by all raw material manufacturers/suppliers.

Background to requirement O12

The requirement has been tightened compared to the previous generation and is based on the chemical framework requirements.

Nordic Ecolabelling aims to minimize the health and environmental impact of chemical products. Therefore, chemical products used in the manufacture of candles/oil candles with the following classifications cannot be used in the Nordic Swan Ecolabelled product: Hazardous to the aquatic environment, hazardous to the ozone layer, very toxic, toxic, causes damage to organs, sensitising, carcinogenic, mutagenic, toxic for reproduction, endocrine disruptive, and persistent, bioaccumulative/mobile and toxic.

The updated CLP classifications now include endocrine disruptors, PBT/vPvB and PMT/vPvM substances, covering environmental toxicity, persistence, mobility and bioaccumulation. Including PMT and vPvM substances is essential due to their persistence, mobility and potential impact on water quality. The new rules entered into force 20 April 2023. From this date, the Member States may propose harmonized classification and labelling (CLH) with the new hazard classes and manufacturers, importers, downstream users and distributors may also self-classify their substances and mixtures accordingly.

There are transitional periods following the Delegated Regulation's into force. During these periods classification under the new hazard classes is voluntary. which manufacturers, importers, downstream users and distributors are not yet required to classify their substances or mixtures according to the new hazard classes. During these periods, the new hazard classes can be applied on a voluntary basis. However, if an ingoing substance is classified according to these new hazard classes and used in a product, it will be excluded under these criteria.

This is a standard requirement, based on the precautionary principle and is only partially tailored to the specific product group. The requirement is intended to exclude problematic substances that are not necessarily found in products on the market today.

Nordic Ecolabelling has removed the exemption that paraffin may be classified as H412 and/or H350. Input from industry representatives indicates that the exemption is redundant.

O13 Classification of ingoing substances

Ingoing substances in the chemical product used in the production of candles/oil candles must not be classified with any of the hazards from CLP Regulation (EC) No 1272/2008 listed below.

Table 3 Prohibited classifications of ingoing substances

Hazard Class	Hazard Category	Hazard Statement Code
Hazardous to the ozone layer	Ozone	H420
Specific target organ toxicity: Repeated exposure	STOT RE 1	H372
Respiratory or skin sensitisation	Resp. Sens. 1, 1A or 1B Skin Sens. 1, 1A or 1B	H334 H317
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
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** Very Persistent, Very Bioaccumulative properties**	PBT vPvB	EUH440 EUH441
Persistent, Mobile and Toxic properties	PMT	EUH450

Very Persistent, Very Mobile properties	vPvM	EUH451

** Includes all classification variants (e.g. H350 also covers H350i).*

*** See also requirement O14 Excluded Substances for additional requirements for potential or identified endocrine disruptors and PBT/vPvB substances.*

- A safety data sheet (SDS) for all ingoing substances, prepared in accordance with Annex II of REACH Regulation (EC) No 1907/2006.
- Appendix 1 or equivalent, completed and signed.
- Appendix 8 or equivalent, completed and signed by all raw material manufacturers/suppliers.

Background to requirement O13

The requirement has been tightened compared to the previous generation and is based on the chemical framework requirements.

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 ingoing substances with the following classifications cannot be used in the chemical product: Hazardous to the ozone layer, causes damage to organs, sensitising, carcinogenic, mutagenic, toxic for reproduction, endocrine disruptors, and persistent, bioaccumulative/mobile and toxic.

The new CLP classifications for endocrine disruptors, PBT/vPvB and PMT/vPvM (environmental toxicity, persistency, mobility and bioaccumulation) are included. The inclusion of PMT and vPvM substances is crucial due to their persistence, mobility and potential impact on water quality. The new rules are in force as of 20 April 2023. From this day on, the Member States can make proposals for harmonized classification and labelling (CLH) with the new hazard classes and manufacturers, importers, downstream users and distributors can self-classify their substances and mixtures accordingly.

There are transitional periods from the entry into force of the Delegated Regulation, during which manufacturers, importers, downstream users and distributors are not yet required to classify their substances or mixtures according to the new hazard classes. During these periods, the new hazard classes can be applied on a voluntary basis. If applied to an ingoing substance it is excluded in these criteria.

This is a standard requirement, that is set by the precautionary principle and is only partially adapted to the product group. The requirement is intended to exclude problematic substances that are not necessarily found in products on the market today.

O14 Excluded Substances

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

- Alkylphenols (AP) (e.g. butylated hydroxy anisole (BHA, CAS No. 25013-16-5), butylated hydroxytoluene (BHT, CAS No. 128-37-0), alkylphenol ethoxylates (APEOs) and other alkylphenol derivates (APD)

- Aromatic solvents* and carriers, incl. chlorotoluenes, chlorophenols and chlorobenzenes

  * Solvents are defined in Directive 1999/13/EC: Organic substances with a vapour pressure of at least 0.01 kPa at 20 °C
- Azo dyes that may release aromatic amines with carcinogenic and/or mutagenic properties listed in Appendix 10.
- Bisphenols and bisphenol derivatives, defined as 34 bisphenols identified by ECHA[5] for further EU regulatory risk management due to known or potential endocrine disruption or reproductive toxicity.
- Heavy metals and metalloids: Mercury (Hg), chromium VI (Cr), cobalt (Co), zinc (Zn), copper (Cu), nickel (Ni), cadmium (Cd), lead (Pb), arsenic (As), antimony (Sb)
- Halogenated flame retardants
- Halogenated organic compounds

  Exemptions* for:

  Pigments that meet the EU's requirement concerning colourants in food packaging under Resolution AP (89) point 2.5

  * Perfluorinated and Polyfluorinated alkyl substances are covered by their own bulletin and are not included in the exemption.
- PBT and vPvB as defined in REACH Annex XIII, including those under ECHA PBT assessment https://echa.europa.eu/da/pbt
- Per- and polyfluoroalkyl substances (PFAS)*

  * PFAS: as any substance that contains at least one fully flourinated methyl (CF_3-) of methylene (-CF_2-) carbon atom (without any H/Cl/Br/I attached to it).
- Phthalates (Ester of 1,2-benzenedicarboxylix acid (orthophtalic acid, CAS No. 88-99-3))
- Potential or identified endocrine disruptors, listed in any of the following "Endocrine Disruptor Lists" List I; II and III

Note: Substances moved to “Substances no longer on list” and not present on Lists I-III, are no longer excluded, except for those on sublist II where concern remains. Nordic Ecolabelling will assess these on a case-by-case basis.

- Substances on the REACH Candidate list of SVHC substances https://www.echa.europa.eu/candidate-list-table

[5] 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).
[1] Assessment of regulatory needs: Bisphenols. ECHA – 16 December 2021: Section 2.1: Bisphenols for which further EU RRM is proposed https://echa.europa.eu/documents/10162/5e60f2fe-12d0-7f6b-5868-f199cfd7f984

- Appendix 8 or equivalent, completed and signed by all raw material manufacturers/suppliers.

Background to requirement O14

The requirement has been tightened compared to the previous generation and is based on the chemical framework requirements.

Certain problematic substances and substance groups are difficult to exclude through general chemical requirements. To address this, Nordic Ecolabelling has compiled a list of substances that must not be present as ingoing substances in the ecolabelled product/chemical product.

The purpose of this list is to prohibit substances that may not be excluded by other requirements but are associated with environmental and health hazards. Some substances are included for clarity, even if they are already prohibited under other requirements.

This is a standard requirement, based on the precautionary principle and is only partially tailored to the specific product group. The requirement is intended to exclude problematic substances that are not necessarily found in products on the market today.

Alkylphenols (AP) (e.g. butylated hydroxy anisole (BHA, CAS No. 25013-16-5), butylated hydroxytoluene (BHT, CAS No. 128-37-0), alkylphenol ethoxylates (APEO) and other alkylphenol derivates (APD)

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 (APDs). Ethoxylated nonylphenol and several other alkylphenols are included in the Candidate List due to endocrine disrupting properties.

Aromatic solvents and carriers, incl. chlorotoluenes, chlorophenols and chlorobenzenes

Aromatic solvents, including substances like benzene, toluene, xylenes, chlorobenzenes, chlorotoluenes, and chlorophenols, are used for their strong solvency but pose serious health and environmental risks. They can cause neurological, reproductive, and organ toxicity, and some are carcinogenic. Many are persistent in the environment, toxic to aquatic life, and contribute to air pollution.

Azo dyes that may release aromatic amines with carcinogenic properties

Aromatic amines released by azo dyes may be carcinogenic, allergenic, irritating, and toxic.

Bisphenols and bisphenol derivatives

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, 34 substances were identified in need for further regulatory risk management in EU[6].

Halogenated flame retardants

Flame retardants are suspected of contributing to a number of unwanted health effects. Several of the substances are suspected of causing birth defects, cancer, and endocrine disrupting effects. Many of them are on the EU candidate list under REACH.

Many brominated flame retardants are persistent and bio accumulative chemicals that can now be found dispersed in nature. The focus on phasing out brominated flame retardants has led to the use of alternatives such as phosphorus and nitrogen-based flame retardants.

Halogenated organic compounds

Halogenated organic compounds, including short-chain chlorinated paraffins (C10-C13), medium-chain chlorinated paraffins (C14-C17), chlorophenols and dimethyl fumarate derivates, is a large group of substances that are harmful to both the environment and human health. They are often carcinogenic, highly toxic to aquatic organisms and very persistent to degradation.

Heavy metals and metalloids: Mercury (Hg), chromium VI (Cr), cobalt (Co), zinc (Zn), copper (Cu), nickel (Ni), cadmium (Cd), lead (Pb), arsenic (As), antimony (Sb)

Heavy metals refer to heavy and particularly environmentally harmful metals as specified in the requirement. They are prohibited/restricted 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[7]. 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 exposure[8]. Mercury, cadmium, arsenic, and lead are toxic to the human nervous system and kidneys, amongst other things, and the metals can accumulate in living organisms[9]. Chromium VI is classified as: very toxic, CMR and harmful to the environment.

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[6] Assessment of regulatory needs: Bisphenols. ECHA – 16 December 2021: Section 2.1: Bisphenols for which further EU RRM is proposed https://echa.europa.eu/documents/10162/5e60f2fe-12d0-7f6b-5868-f199cfd7f984

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

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

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

PBT and vPvB as defined in REACH Annex XIII, including those under ECHA PBT assessment

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.

Per- and polyfluoroalkyl substances (PFAS)

Per- and polyfluoroalkyl substances (PFAS) are used in many types of products due to their water and dirt repellent properties. These compounds constitute a group of substances that have highly problematic intrinsic hazardous properties. They are extremely persistent and accumulate in the body. They are spread all over the globe, from the large oceans to the Arctic, and are found in e.g. wild birds and fish and their eggs. Also, shorter chain compounds (2–6 carbon atoms) have been discovered in nature. The substances in this group are suspected to be endocrine disruptors, carcinogenic and to have a negative impact on the human immune system.

Phthalates (Esters of 1,2-benzenedicarboxylic acid (orthophthalic acid, CAS No. 88-99-3))

A number of 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.

Potential or identified endocrine disruptors, listed in any of the following "Endocrine Disruptor Lists" List I; II; and III

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.

Substances on the REACH Candidate list of SVHC substances

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

O15 Total amount of organic solvent

The content of organic solvent must be below 0.1% by weight of the candle or in the oil of an oil candle.

Alternatively, reference may be made to test results, which show the Total Volatile Organic Compounds (TVOC) in the candle/oil candle to be less than 200 µg/m^3 of air using ISO 16000-6, EN 16739 and EN16738 or similar.

⊺ Declaration from the candle/oil manufacturer that the requirement is met. Appendix 9 may be used. Alternatively, test report, which shows that TVOC is less than 200 µg/m^3 of air using ISO 16000-6, EN 16739 and EN 16738, or similar.

Background to requirement O15

The requirement for permitted level of organic solvents in candles has been tightened compared to the previous version of the criteria based on input from candle producers[14]. The limit for the content of organic solvents has been reduced from 1% to 0,1% by weight of the candle, and for the alternative requirement, test results which show the Total Volatile Organic Compounds (TVOC) in the candle, the limit is reduced from 1200 to 200 µg/m3 of air.

Several organic solvents are harmful to health. They can be absorbed through lungs and skin, causing acute or chronic organ damage. Acute effects include headaches, tiredness, etc. Organic solvents may also irritate eyes, nose, throat, dry out skin and cause eczema. Long-term exposure can damage the brain and nervous system, and some solvents might cause cancer or damage to reproduction. Additionally, certain solvents contribute to the greenhouse effect, ozone depletion or photochemical smog. Organic solvents are generally hazardous due to CMR risks and potential tissue damage, including brain tissue.

WHO proposes a maximum TVOC in the range of 200–1000 µg/m³ for living spaces. Studies[10] show that TVOC emissions can deteriorate indoor air quality and affect human health. Nordic Ecolabelling has therefore set the emission limit at the low end of the proposed range[11].

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[10] Volatile Organic Compounds' Impact on Indoor Air Quality: https://www.epa.gov/indoor-air-quality-iaq/volatile-organic-compounds-impact-indoor-air-quality (visited 2025-11-11)

[11] Kortlægning og risikovurdering af partikel- og tungmetalemission fra levende lys: https://www2.mst.dk/Udgiv/publikationer/2017/04/978-87-93529-81-6.pdf (visited 2025-11-11)

O16 Perfumes, aromas, and other aroma compounds

Perfume, aromas, or other aroma compounds (eg. essential oils, plant oils and plant extracts) may not be included in chemical products used to manufacture candles/oil candles.

Background to requirement O16

The requirement was also included in the previous version of the criteria. Nordic Swan Ecolabelled candles/oil candles must not contain perfumes, aromas or other aroma compounds. Aromas, flavourings, perfume, essential oils, plant oils, and plant extracts often contain several allergens or carcinogenic substances. Many candles contain aroma compounds to make them attractive to consumers, and in some cases to conceal odours that occur when burning the other substances in the candle. Aroma compounds may also be used in candles/oil candles to irritate insects and keep them away from the area around the candle.

To avoid adverse health effects from this type of substance the use of aromas, flavourings, perfume, and aroma compounds is prohibited. As aromas, perfumes, and other aroma compounds are not necessary and entail unnecessary use of chemicals, a prohibition has been included in the criteria.

5.4 Requirements for test of emissions, fire safety and burning time

Requirements for test of emissions to air (sooting), fire safety and burning time are given in this chapter in addition to requirements for the product safety label of candles.

Candles with the same candle mass, wick and thickness, but which is found in many different colours, only need to test one coloured candle according to the requirements in this chapter. For decorative candles, the testing must be done on candles with the final decoration.

O17 Soot index

The requirement applies to candles/oil candles with one or more wicks for indoor use or for outdoor use. Oil candles must meet the requirements concerning dimensions and burning periods that currently apply to ordinary candles.

Candles for indoor use:

- Taper candles:

  The average value for the soot index from 3 tests must be ≤ 0.3 per hour. No single test must exceed 0.6 per hour. Testing must be in line with EN 15426.
- Pillar candles:

  The average value for the soot index from 3 tests must be ≤ 0.2 per hour. No single test must exceed 0.4 per hour. Testing must be in line with EN 15426.
- Tea-light candles and oil candles:

  The average value for the soot index from 3 tests must be ≤ 0.1 per hour. No single test must exceed 0.2 per hour. Testing must be in line with EN 15426.

Candles for outdoor use:

- The average value for the soot index from 3 tests must be ≤ 1.0 per hour. No single test must exceed 2.0 per hour. Testing must be in line with EN 15426.

The requirements concerning laboratories are stated in Appendix 11.

⊤ Test report for soot index in line with EN 15426.

Background to requirement O17

The requirement for the soot index for indoor and outdoor candles remains the same in generation 3 as in the previous generation.

Nordic Ecolabelling has evaluated the possibility of setting more requirements to emissions of particles from burning candles in addition to the testing for soot particles. As there per today are no standardized test methods[12] for such extended testing, no new requirement for particle emissions testing is included as expanded testing in addition to the testing for sooting.

Air movement around a candle will tear particles free faster, and more particles will be emitted to the air per hour due to air movement and faster burning of a candle. Wick design and wax composition and purity are also very important for the combustion and the emissions from candles[13].

The reason for providing a differentiated requirements for soot index by type of candle is that there is a correlation between how much raw material is burned per hour and soot index/amount of particles. A normal taper candles burn faster than the pillar candles and tea-light candles.

Candles/oil candles for outdoor use (such as garden candles and graveyard candles) often need to burn more strongly than a candle for indoor use due to wind and lower temperatures. The reason for setting requirements for soot index regarding candles/oil candles for outdoor use, is that these candles might be used at dining tables outdoors and therfore might be relatively close to the consumer.

Oil candles are not covered by the standard EN 15426, which only applies for solid/semi-solid materials at room temperature. The method is, however, judged to be transferable to the analysis of sooting from oil candles, since the key aspect of the test standard is the height from the fuel to the collection plate. Oil candles must meet the requirements concerning dimensions and burning periods that currently apply to candles made from a solid/semi-solid material.

[12] E-mail from Danish Technological Institute, P.Egholm Bøgh Pedersen, 31.10.2025
[13] Ultrafine Particles: Exposure and Source Apportionment in 56 Danish Home, Technical University of Denmark, Bekö, Gabriel; Toftum, Jørn; Clausen, Geo, et al:, 2013

O18 Fire safety

Candles and oil candles for indoor use must comply with the standard EN 15493 (Candles – Specification for fire safety).

Candles for outdoor use must comply with the standard EN 17616 (Outdoor candles - Specification for fire safety).

Containers accompanying the candle/oil candle, must comply with an additional fire safety test only for containers and according to the standard ASTM F2417-23 (Standard Specification for fire safety for candles).

- Test report for fire safety of the candle.
- Test report for fire safety of candle containers if applicable.

Background to requirement O18

Candles can cause accidental fires if they are not used correctly, and the requirement for testing of fire safety of candles remains the same in this generation 3 as in the previous generation.

The licensee must test fire safety in line with standard EN 15493 for indoor candles or EN 17616 for outdoor candles. For taper candles with the same candle mass, wick and thickness, but with varying length, it is seen as sufficient to test one white and one coloured candle. The reason for testing the coloured candle, is that it may have been dipped in paraffin.

The requirement for fire safety for oil candles was adjusted in generation 2 so that oil candles too must comply with EN 15493 and not EN 14059 (Decorative oil lamps – Safety requirements and test methods). EN 14059 includes oil lamps which is based on petroleum (n-paraffin), i.e. developed from fossil fuels. This type of oil is classified with H304 (harmful particularly if swallowed), and therefore subject to special rules for the labelling of the oil product. Nordic Ecolabelling does not allow fossil oil in oil lamps, so the safety standard EN 14059 is not relevant.

The requirement for the fire safety of candle containers is updated and made stricter because new container materials like renewable non-combustable wood fiber are introduced in the market. Fire safety testing of containers must now be done according to the standard ASTM F2417-23 (Standard Specification for fire safety for candles). This standard is used by container producers[14] and recommended by test laboratories[15] and the quality certification RAL[16].

O19 Burning time and product safety labels

Burning time

The burning time must be measured in accordance with EN 15493, and the candle’s/oil candle’s burning time (expressed in hours of burning) must be included on the candle’s/oil candle’s label/packaging.

[14] Contact with candles producers, autumn 2025
[15] E-mail contact with DEKRA, autumn 2025
[16] https://www.ral-c.com/, visited autumn 2025

As there are no standardized tests for burning time for outdoor candles, candle producers of outdoor candles, often test according to EN 15493[14]. Therefore, information about the temperature range for the testing of burning time, must be included on the label together with the candle's burning time.

When declaring a burning time like “approx.” or “±“, a maximum minus tolerance of 10% is admissible.

Product safety labels

- Candles for indoor use: safety information, safety labelling and warnings in accordance with EN 15494 must be provided. Also safety information according to Annex A, figs. A1, A2, A5 and A6 must be provided even though this is optional supplementary safety information in the standard.
- Candles for outdoor use: safety information, safety labelling and warnings in accordance with EN 17617 must be provided.
- Oil candles: safety information, labelling and warnings in accordance with EN 14059 must be provided.
- For containers of fireproof glass: information that the fireproof glass must not be sorted with normal waste glass.

⊺ Test report for burning time.

⊺ Copy of label/packaging text and confirmation that the label is according to the safety information, labelling and warning requirements listed above.

Background to requirement O19

Only 2 minor changes regarding the requirement for burning time have been included in this requirement in generation 3:

For outdoor candles it is included as a requirement that information on testing temperature, must be written on the candle's label for burning time as also used by the quality certification RAL[14]. The reason for the requirement is that outdoor candles most probably are used at temperatures outside the testing temperature range at 15-25°C which again will affect the burning time.

For documentation of the burning time, it is now a requirement to send in the test report.

Candles might impose a risk for fire if they are not used correctly. The licensee must therefore label the candles with safety information and warnings according to specific standards relevant for indoor candles (EN 15494), outdoor candles (EN 17617) and oil candles (EN 14059).

Fireproof glass has a higher melting point compared to normal glass, and therefore it cannot be recycled together with normal glass. A small proportion of fireproof glass can ruin a ton of glass packaging sent for recycling.

5.5 Licence maintenance

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

O20 Customer complaints

The licensee must guarantee that the quality of the Nordic Swan Ecolabel product 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 O20

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.

O21 Traceability

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

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

⤒ Please upload your routine or a description.

Background to requirement O21

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 candles

The relevant environmental impacts found in the life cycle of candles are set out in a MECO analysis, see below. A MECO describes the key areas that have impact on the environment and health throughout the life cycle of the product – including consumption of materials/resources (M), energy (E), chemicals (C) and other impact areas (O).

Nordic Ecolabelling sets requirements concerning the topics and processes in the life cycle that have a high environmental impact – also called hotspots. Based on the MECO analysis, an RPS tool is used to identify where ecolabelling can have the greatest effect. R represents the environmental relevance, P is the potential to reduce the environmental impact, and S is the steerability on how compliance with a requirement can be documented and followed up. The criteria contain requirements in those areas in the life cycle that have been found to have the highest RPS, since there is potential to achieve reduced environmental impact.

RPS analysis

Table B. Summary of the RPS analysis

Life cycle stages	Area and assessment of R, P, S (high, medium or low)	Comments
Raw materials		
	Raw material extraction R: High P: High S: Medium	R: The extraction of raw materials for candle wax are associated with different environmental issues as described below. **Fossil raw material:** Depletion of fossil resources **Renewable raw material:** *Animal fat:* Since it is a waste product it may be considered to have low environmental impact. However, there may be different views related to animal welfare, religious beliefs, in relation to animal fat extraction. *Soy & Palm:* Land use: Cultivation are linked to deforestation and biodiversity issues. Soy is often a GMO-crop. Possible issues with pesticides, fertilizers. Competition with food cultivation. *Rapeseed:* Land use: Competition with food cultivation and biodiversity issues. However, the sourcing is often European which means less risk of deforestation. *Shea:* Wild growing fruit (less land use and biodiversity issues). Also gives work opportunities and economic growth in less developed populations. *Pine oil:* Competition with biofuel industry. No competition with food crops. Issues (i.e. biodiversity) related to forestry.

		P: There is a potential to reduce impact by choosing raw materials that are sustainably sourced. S: There are medium high possibilities for NSE to prohibit specific raw materials or demand traceability or raw material certifications. Candle producers are not totally free to choose between different raw materials, since the production lines are adapted to specific raw materials. And some raw materials are not possible to use for production of specific candle types. Religious matter (Islamic and Kosher) make animal fat impossible in some markets.
	Energy use in candle wax refining/production R: Medium/Low P: Low S: Low	R: For stearin candles from animal fat, the main part of the energy use lies in the extraction and refining of animal fat. The energy mix can vary between different suppliers (electricity, natural gas, oil) and is relevant for the climate impact. We do not have knowledge of energy use of other raw materials. P: The potential to reduce energy use is limited but there is a potential choose less fossil fuels in the extraction/refining process. S: The steerability is limited, since the main energy is used at subcontractor's subcontractors which makes it difficult to regulate and follow-up.
	Wick material R: Medium/Low P: Medium S: High	R: Wick is most often produced from cotton yarn. Cotton has a high water demand, use of pesticedes and chemicals. However, the amount and thus the relevance of wick is minor compared to the candle as a whole. P&S: There is medium – high potential and steerability to choose organic or certified cotton.
Production/distribution		
	Energy use in candle production R: Low P: Medium S: Medium	R: Energy is needed in the production of candles for heating/melting or pressing of the material. A minor part of the energy use in the life cycle renders from the production in the candle factory. The energy mix can vary and has an impact on the climate impact. However, it is still a small part of the overall climate impact over the life cycle. P: There may be a potential to reduce the use of fossil fuels and possibly energy efficiency measures to some extent. S: There are issues with finding reliable energy data for candle production, especially for specific candle types that are produced in the same factory as others.
	Chemicals in candle production R: Medium	R: Chemicals are used for dyeing the wax or printing on the candle. Could also be used in the wick, and in cups (plastics and wood fiber based).

	P: Medium S: High	Perfumes and aromas are used for scented candles. There is a risk of emissions to air and water, and risk for enhanced exposure of hazardous emission at production site. The more additives in the candle the more emissions. Overall the relevance is medium high. P: There is a potential to some extent to choose less harmful chemicals, or to totally skip colours, prints, scents etc. S: There is a demand for coulored and scented candles, why the producers steerability is low. For other chemicals it is possible to use pigments and dyes that meets our chemical requirements. Overall steerability is high.
	Container’s material R: Medium P: Medium S: Medium	R: There is a need for material extraction/refining for cups used for container candles. The cups can be made from different material: Aluminium, plastics, glass, wood fiber based etc. The climate impact from containers are assessed to be a minor part in the life cycle of one candle. However, there is a relatively large issue with recycling of cups. There are new alternatives entering the market, for example wood fiber based cups which are assessed to have less climate impact and less recycling issues. P: There are different choices of candle containers, and thus there is a potential. S: The steerability are assessed to be medium. The producers can change cups but there may be special demands from consumers.
	Packaging R: Low P: Medium S: High	R: Standard materials like cardboard and plastics are used today, which can be recycled in ordinary recycling systems. Chemicals for printing on packaging or in glues etiquettes. P: There is a potential to use less packaging material and to use paper packaging instead of plastics. S: No specific issues related to steerability. The producers are free to choose packaging material and design.
Use phase		
	Greenhouse gas emissions R: High P: High S: Medium	R: Greenhouse gas emissions occur when burning any type of candle. Stearin is of biogenic origin and generate biogenic CO_2 when burning. Paraffin is of fossil origin and generate fossil CO_2 when burning. Biogenic carbon is assessed to have no climate impact in the use phase due to it’s shorter carbon cycle. However, it is not climate neutral in the life cycle and it’s of great significance that the biogenic raw material is sustainably produced.

		Thus, requirements on raw materials are very important. The choice of raw material has a significant impact on the overall climate impact. The climate impact from a Nordic Swan Ecolabelled candle (90% animalic stearin) is assessed to be 55-60% lower than a paraffin candle. P: There is a potential to reduce impact by choosing a sustainable source renewable or waste based raw material. S: Medium high steerability to prohibit specific raw materials or demand traceability or raw material certifications. Candle producers are not totally free to choose between different raw materials, since the production lines are adapted to specific raw materials. And some raw materials are not possible to use for production of specific candle types. Religious matter make animal fat impossible in some markets.
	Emissions/pollutants to indoor air R: High P: Medium S: Low/Medium	R: During combustion of candles there are exposure to gases and particles that may be harmful to health like soot (carbon black), PAH:s , inorganic salts, VOC, small particles, formaldehyde etc. The concentration in indoor air can be significantly higher than in outdoor air. P: No significant difference in pollutants to indoor air between different candle wax types (paraffin, stearin etc..). It is the combination wax vs wick that mainly affects the emissions of soot (BC black carbon), PM2.5, and particle-bound PAHs. Nevertheless the composition of wax- wick does not influence level of emissions of NOx, formaldehyde, and gas-phase PAHs – they remain unaffected. Also, the more additives (pigments, perfumes etc.) the more pollutants. Scented candles give more indoor pollutants especially VOC and can give rise to allergenic substances in indoor air. Also, the conditions during combustion is important to minimise emissions of soot particles etc. S: The candle producer can design the candle (combination of wick and wax) and minimize the use of additives and thus affect the emissions to some extent. However, there will still be emissions from all candles. The producer does not have steerability over the consumer's behaviour and how/when/where/how often they light candles.
End of life		
	End-of-life handling R: High P: High S: Low	R: The main part of candle cups, regardless of material (Aluminium or Plastic), goes to incineration (with household waste). Plastic cups are made of PC (or PC+PET). Plastics incineration leads to emissions of fossil or biogenic carbon depending on plastic type. Aluminium is mixed with other metals in the waste

		fraction and degraded to ash and combustion residue. The high value of aluminium is therefore lost. If aluminium cups instead are sorted as alumina for material recycling the small steal circle holding the wick in place must be removed - which not very many consumers actually do. P: The climate impact of the life cycle of an aluminium cup is heavily dependent on the end-of-life handling (40% less CO_2 if recycled). S: The steerability is low. Nordic Ecolabelling cannot set requirements directly at the consumers. And there are also issues with recycling systems for candle cups.

The following aspects have the highest RPS and are subject to requirements in the revised criteria:

- Raw material extraction
- Wick material
- Chemicals in candles and containers
- Container material
- Greenhouse gas emissions in use phase
- Emissions to indoor air
- End-of-life handling

MECO analysis

Functional unit 1 kg candle	Raw material	Production	Use	End of life
Material	Extraction of material resources for paraffin candles causes depletion of fossil resources. Growth of vegetable raw materials such as rapeseed, shea, palm oil, soy: - Risk of deforestation, lack of biodiversity and food production competition (see Other) Animal fat is defined as waste/residue which means lower carbon impact. Cultivation of cotton for the wick.	Material for primary packaging (paper & plastics). Material for containers/cups: aluminum, plastic, glass, wood fiber. Aluminum cups contain less material than plastic cups (1g vs. 3g) which significantly affects the climate impact. The difference is not much affected by recycled content of the cup. (8) Renewable, non-combustible fiber-based materials are entering the market with significantly lower climate impact than alumina cups. Risk of burden-shift due to needed flame-retardants.	Greenhouse gas emissions from burning candles (fossil CO_2 from paraffin, biogenic CO_2 from renewable candle mass) (2) No significant difference in other pollutants to indoor air between different candle wax types (paraffin, stearin etc.). It is the combination wax vs wick that affects the emissions. (7) Single-use containers/cups causes material demand. Burning behavior and quality of the candle may have an impact on the consumption pattern (for example if there are a lot of residues left)	Candle cups are, in the best case, recycled. But main part, both aluminium and plastics, goes to incineration (with household waste) (5) Incineration give rise to fossil emissions or biogenic emissions depending on plastic type. When aluminum is incinerated the value of the material is more or less destroyed. The climate impact of the life cycle of an aluminum cup is heavily dependent on the end-of-life handling (40 % less CO_2 if recycled) (8) Due to the little steel circle that holds the wick recycling of aluminium becomes more difficult in practice. Aluminum will “follow” the magnetic steel and thus destroyed as aluminium. The new fiber-based cups are fully recyclable. If incinerated the climate impact is significantly lower than aluminium and plastics. Packaging material (cardboard and plastics) is sorted as packaging to material recovery.
Energy	Energy to extract and process raw materials for the candle mass Energy use for production of candle mass (refining animal fat, hydrogenation, etc..) (1): - Stearin (animalic): 8 kWh/kg - Paraffin: 15 kWh/kg The energy mix can vary and is relevant for the climate impact (see next slide). No knowledge about energy consumption of other raw materials. Energy is also needed for extraction and production of aluminum and plastics.	Energy for candle manufacturing: ca 1 kWh/kg candle (ex. 80% electricity, 6 % fuel, 15 % stearin). (2) (4) The energy mix can vary. Energy use for production of containers (aluminum, plastics). (see slides 4-5) Energy used for transporting raw material and final products.	Tealights are sometimes used to keep liquids warm, but candles are primarily used for the “coziness factor”:	Energy recovery if candle wax and plastic containers are incinerated.

Functional unit 1 kg candle	Raw material	Production	Use	End of life
Chemicals	In the production of vegetable raw material + cotton: pesticides and fertilizers for cultivation (except for Shea which is a fruit from a wild growing tree)	Chemicals (pigments) used for dyeing and printing on the candle. Chemicals for printing on packaging. Perfumes and aromas are used for scented candles. Additives to the wick to obtain the preferred burning properties. Possible additives to plastic cup. Possible additives, surface treatment and flame retardants of fiber-based cups.	Exposure to chemicals that can be harmful to health through breathing the exhaust gases. Exposure of soot (Black carbon) , PAHs, inorganic salts, VOC, small particles and formaldehyde . (3) The more additives (flame retardant additives to the wick, pigments and perfumes in the candle wax) the more pollutants. Scented candles give more indoor pollutants especially VOC and can give rise to allergenic substances in indoor air.(7) The design of the candle does affect the combustions properties, and thus the emissions. Also, the conditions during combustion is important to minimize emissions of soot particles etc.	na
Other	Animal fat: +Waste fraction (can be considered "burden free") - Animal welfare issues - Religious issues (Halal, Kosher) Shea: +wild growing fruit (no land use/biodiversity issues) +social advantages (work opportunities and economic growth in least developed countries) Rapeseed: +European sourcing – less risk of deforestation. - Land use – competition with food - Biodiversity loss risk Soy & Palm - Linked to deforestation and biodiversity issues - GMO (Soy) Pine oil is a new raw material for candles not linked to deforestation and food competition Bioplastic cups. –Sugar cane: land use, biodiversity etc..	na	na	na

Sources for MECO

1) RISE (2021) LCA of Stearin and Paraffin

2) RISE (2023) Climate impact from Nordic Swan Ecolabelled Candles Climate case_Candles.pdf (nordicecolabel.org)

3) Salthammer et. Al. (2021) Measurement and evaluation of gaseous and particulate emissions from burning scented and unscented candles

4) Delsbo Candle (2020) Hållbarhetsrapport Delsbo Candle 2020 Microsoft Word - Hållbarhetsrapport Delsbo Candle 2020.docx

5) Nordic Ecolabelling (2013). Evaluering af Svanemærkede Levende lys.

6) The Danish Environmental Protection Agency (2018). Environmentally friendly candles with reduced particle emissions (mst.dk)

7) Svt Nyheter (2024). Levande ljus kan vara hälsofarliga – så minskar du föroreningarna

8) Nordic Ecolabelling (2024) LCA Screening of aluminium and plastic cups. Marie Kampmann Eriksen

7 Criteria version history

Nordic Ecolabelling adopted version 3.0 of the criteria for candles on DAY MONTH YEAR. The criteria are valid until DAY MONTH YEAR.

8 How to apply and regulations for the Nordic Ecolabelling

Application and costs

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

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

Licence validity

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

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

Responsibility for Compliance with Applicable Legislation

When applying for the Nordic Swan Ecolabel, the applicant/licensee confirms compliance with all current regulatory requirements related to both the exterior and interior environment in connection with the production and handling of the product(s) covered by the application. Furthermore, the applicant declares that all applicable regulatory requirements within the Nordic region are met for the product(s). Compliance with these regulations is a prerequisite for obtaining a licence.

On-site inspection

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

Follow-up inspections

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

The licence may be revoked if it is evident that licence holders do not meet the requirements.

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

Regulations for the Nordic Ecolabelling of products

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

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

Queries

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

Appendix 1 Description of the candle including materials and chemical products overview

Product type (taper candle, pillar candle, tealight candle, oil candle or outdoor candle)	Brand/trade name	Description of the candle (diameter, height, coloured/non-coloured)	Total weight of the candle (kg)	Product part (candle, wick, wick holder, container, packaging)	Material in the wick (cotton, plastic etc.), wick holder (metal, plastic etc.) container (plastic, wood fiber etc.) and packaging	Chemical products used in the production of the candle (stearin, paraffin, wax, dyes, wick wax, wick glue, printing inks etc.) and chemical products used as surface treatment for containers	Chemical product trade name and manufacturer/supplier	Chemical function	Is the chemical product used in the production of the candle based on renewable raw materials? Yes or no?	For all renewable raw materials used in candle, please state the source (beeswax, tallow, rapeseed wax, coconut wax, sunflower wax etc) and the supplier	% by weight of the renewable raw materials related to the total weight of the candle (%)

Appendix 2 Traceability and control of plant-based raw materials

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Appendix 3 Declaration for GMO

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Appendix 4 Declaration for the wick

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Appendix 5 Declaration for the wick holder

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Appendix 6 Materials in the candle container

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Appendix 7 Declaration for plastic in the candle container

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Appendix 8 Declaration of chemical products

To be submitted with an application for a Nordic Swan Ecolabel licence of candles/oil candles.

This declaration shall be completed and signed by the manufacturer of the chemical product based on the best of their knowledge at the given time, also based on information from raw material manufacturers 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:

Type of product:

The chemical requirements in the criteria document and accompanying appendices apply to all chemical products and their ingoing substances used in the candles/oil candles or container surface treatment at the candle/oil candle production site and by suppliers.

The requirements do not cover:

- Wicks, wick sustainers or candle/oil candle containers except from the surface treatment of containers
- Auxiliary chemicals used during manufacture, such as lubricants, cleaning chemicals and so on.
- Refining processes, i.e., refining of plant-based or fossil oil.
- Packaging such as printing inks and adhesives.
- Printing inks used to print on candle surface that remain in the chemical product in concentrations less than 1000 ppm (0.100 w%).

Impurities are not regarded as ingoing substances and are exempt from the requirements. Ingoing substances and impurities are defined below.

Ingoing substances: All substances in the Nordic Swan Ecolabelled/chemical product regardless of amount, including additives (e.g. preservatives and stabilizers) from the raw materials. Substances released from ingoing substances (e.g. biocidal active substances generated by preservatives, such as formaldehyde) are also regarded as ingoing substances.*

**N.B. the difference from the definition of substances in the REACH Regulation (EC) No 1907/2006. Whereas a REACH substance encompasses a chemical element or compound as well as its stabilising additives and process impurities, a substance here refers to each of the constituents separately. The constituents of a UVCB substance (Unknown or Variable composition, Complex reaction products or of Biological materials) are also regarded separately, and all known constituents must be regarded.*

Impurities: Trace levels of pollutants, contaminants and residues from production, incl. production of raw materials, that remain in the chemical product in concentrations ≤ 1 000 ppm (≤ 0.1000 w%).

Examples of impurities: Background environmental pollutants from feedstock, as well as contaminants and residues from production such as reactants (incl. monomers), reagents, catalysts, by-products, scavengers, detergents for production equipment, carry-over from other or previous production lines.

Impurities in the raw materials in concentrations ≥ 10 000 ppm (1.0000 w%) are always regarded as ingoing substances, regardless of the concentration in the chemical product.

Limit values: The limit for excluded ingoing substances is 0 ppm (unless otherwise stated), while there's a specific defined limit for impurities. The impurity limit applies separately to each individual excluded substance, from each individual raw material. Concentrations of different impurities with the same excluded classification or substance group characteristics shall not be summed up to meet the impurity limit in the labelled product. Also, concentrations of an individual impurity, originating from different raw materials, shall not be summed.

UVCB substances: UVCB substances (Unknown or Variable composition, Complex reaction products or of Biological materials) have a composition of constituents that is not completely known or is variable from time to time. For substances registered under REACH as UVCBs, all constituents that are known must be declared in the Nordic Swan Ecolabel raw material appendix based on the best available knowledge. All constituents are considered individually and are subject to the chemical requirements, including for instance those on excluded substances and excluded classifications.

O12 Classifications of chemical products according to CLP regulation 1272/2008		
Is the chemical product classified with any of the hazard phrases below? Including all classification variants (e.g. H350 also includes H350i).	Yes	No
H400 – Toxic to the environment Aquatic Acute 1	☐	☐
H410 – Toxic to the environment Aquatic Chronic 1	☐	☐
H411 – Toxic to the environment Aquatic Chronic 2	☐	☐
H412 – Toxic to the environment Aquatic Chronic 3	☐	☐
H413 – Toxic to the environment Aquatic Chronic 4	☐	☐
H420 – Toxic to the environment Ozone	☐	☐
H300 – Acute toxicity; Acute Tox 1 or 2	☐	☐
H310 – Acute toxicity; Acute Tox 1 or 2	☐	☐
H330 – Acute toxicity; Acute Tox 1 or 2	☐	☐
H301 – Acute toxicity; Acute Tox 3	☐	☐
H311 – Acute toxicity; Acute Tox 3	☐	☐
H331 – Acute toxicity; Acute Tox 3	☐	☐
H370 – Specific organic toxicity, STOT SE 1	☐	☐
H371 – Specific organic toxicity, STOT SE 2	☐	☐

H335*, H336* – Specific organic toxicity, STOT SE 1	☐	☐
H372 – Specific organic toxicity, STOT RE 1	☐	☐
H373 – Specific organic toxicity, STOT RE 2	☐	☐
H334 – Respiratory sensitisation, Resp. Sens. 1, 1A or 1B	☐	☐
H317 – Skin sensitisation, Skin Sens. 1, 1A or 1B	☐	☐
H350 – Carcinogenic, Carc. 1A or 1B	☐	☐
H351 – Carcinogenic, Carc. 2	☐	☐
H340 – Germ cell mutagenic, Mut. 1A and 1B	☐	☐
H341 – Germ cell mutagenic, Mut. 2	☐	☐
H360 – Reproductive toxicity, Repr. 1A or 1B	☐	☐
H361 – Reproductive toxicity, Repr. 2	☐	☐
H362 – Reproductive toxicity, Lact.	☐	☐
EUH380 – Endocrine disruption for human health, ED HH 1	☐	☐
EUH381 – Endocrine disruption for human health, ED HH 2	☐	☐
EUH430 – Endocrine disruption for the environment, ED ENV 1	☐	☐
EUH431 – Endocrine disruption for the environment, ED ENV 2	☐	☐
EUH440 – Persistent, bioaccumulative and toxic properties, PBT	☐	☐
EUH441 – Very persistent, very bioaccumulative properties, vPvB	☐	☐
EUH450 – Persistent, Mobile and Toxic properties, PMT	☐	☐
EUH451 – Very Persistent, Very Mobile properties, vPvM	☐	☐
* Applies only to spray products		

If the answer to any of the above questions is Yes, state the CAS No. (where possible), chemical name and level (in ppm, % by weight or mg / kg). Also state whether the substance is contained in the form of an impurity or an added substance. Please state also if the above-mentioned exceptions apply.

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O13 Classification of ingoing substances according to CLP regulation 1272/2008		
Is the chemical product classified with any of the hazard phrases below? Including all classification variants (e.g. H350 also includes H350i).	Yes	No
H420 – Toxic to the environment Ozone	☐	☐
H372 – Specific organic toxicity, STOT RE 1	☐	☐
H334 – Respiratory sensitisation, Resp. Sens. 1, 1A or 1B	☐	☐
H317 – Skin sensitisation, Skin Sens. 1, 1A or 1B	☐	☐
H350 – Carcinogenic, Carc. 1A or 1B	☐	☐
H351 – Carcinogenic, Carc. 2	☐	☐
H340 – Germ cell mutagenic, Mut. 1A and 1B	☐	☐
H341 – Germ cell mutagenic, Mut. 2	☐	☐

H360 – Reproductive toxicity, Repr. 1A or 1B	☐	☐
H361 – Reproductive toxicity, Repr. 2	☐	☐
H362 – Reproductive toxicity, Lact.	☐	☐
EUH380 – Endocrine disruption for human health, ED HH 1	☐	☐
EUH381 – Endocrine disruption for human health, ED HH 2	☐	☐
EUH430 – Endocrine disruption for the environment, ED ENV 1	☐	☐
EUH431 – Endocrine disruption for the environment, ED ENV 2	☐	☐
EUH440 – Persistent, bioaccumulative and toxic properties, PBT	☐	☐
EUH441 – Very persistent, very bioaccumulative properties, vPvB	☐	☐
EUH450 – Persistent, Mobile and Toxic properties, PMT	☐	☐
EUH451 – Very Persistent, Very Mobile properties, vPvM	☐	☐

If the answer to any of the above questions is Yes, state the CAS No. (where possible), chemical name and level (in ppm, % by weight or mg / kg). Also state whether the substance is contained in the form of an impurity or an added substance. Please state also if the above-mentioned exceptions apply.

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O14 Excluded substances		
Does the chemical product contain any of the following as ingoing substances or impurities?	Yes	No
Alkylphenols (AP) (e.g. butylated hydroxy anisole (BHA, CAS No. 25013-16-5), butylated hydroxytoluene (BHT, CAS No. 128-37-0), alkylphenol ethoxylates (APEOs) and other alkylphenol derivates (APD)	☐	☐
Aromatic solvents* and carriers, incl. chlorotoluenes, chlorophenols and chlorobenzenes ** Solvents are defined in Directive 1999/13/EC: Organic substances with a vapour pressure of at least 0.01 kPa at 20 °C*	☐	☐
Azo dyes that may release aromatic amines with carcinogenic and/or mutagenic properties listed in Appendix 10	☐	☐
Bisphenols and bisphenol derivatives, defined as 34 bisphenols identified by ECHA for further EU regulatory risk management due to known or potential endocrine disruption or reproductive toxicity. *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)*	☐	☐
Heavy metals and metalloids: Mercury (Hg), chromium VI (Cr), cobalt (Co), zinc (Zn), copper (Cu), nickel (Ni), cadmium (Cd), lead (Pb), arsenic (As), antimony (Sb)	☐	☐
Halogenated flame retardants	☐	☐
Halogenated organic compounds *Exemptions* for:*	☐	☐

• *Pigments that meet the EU's requirements concerning colourants in food packaging under Resolution AP (89) point 2.5.* ** Perfluorinated and polyfluorinated alkyl substances are covered by their own bulletin and are not included in this exemption.*		
PBT and vPvB as defined in REACH Annex XIII, including those under ECHA PBT assessment https://echa.europa.eu/da/pbt	☐	☐
Per- and polyfluoroalkyl substances (PFAS)* **PFAS is defined as any substance that contains at least one fully fluorinated methyl (CF3-) or methylene (-CF2-) carbon atom (without any H/Cl/Br/I attached to it).*	☐	☐
Phthalates (Ester of 1,2-benzenedicarboxylix acid (orthophtalic acid, CAS No. 88-99-3))	☐	☐
Potential or identified endocrine disruptors, listed in any of the following "Endocrine Disruptor Lists" List I; II and III	☐	☐
Substances on the REACH Candidate list of SVHC substances https://www.echa.europa.eu/candidate-list-table	☐	☐

If the answer to any of the above questions is Yes, state the CAS No. (where possible), chemical name and level (in ppm, % by weight or mg / kg). Also state whether the substance is contained in the form of an impurity or an added substance. Please state also if the above-mentioned exceptions apply.

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If the product composition changes, a new declaration confirming compliance with the requirements must be submitted to Nordic Ecolabelling.

Place and date	**Company name**
Responsible person	**Signature of responsible person**
Telephone	**Email**

Appendix 9 Organic solvents and perfumes

To be submitted with an application for a Nordic Swan Ecolabel licence of candles/oil candles.

This declaration shall be completed and signed by the manufacturer of the candle/oil candle based on the best of their knowledge at the given time, also based on information from raw material manufacturers 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.

O15 Total amount of organic solvent		
The content of organic solvent is below 0.1% by weight of the candle/oil candle or… If yes, please specify the amount: ________	Yes ☐	No ☐
Alternatively, Total Volatile Organic Compounds (TVOC) in the candle/oil candle is below 200 µg/m^3 of air using ISO 16000-6, EN 16739 and EN16738 or similar.	☐	☐

If the total amount of organic solvent is documented by test using ISO 16000-6, EN 16739 and EN16738 or similar, please attach the test report.

O16 Perfumes, aromas, and other aroma compounds		
Does the chemical product contain perfume, aroma or other aroma compounds (e.g. essential oils, plant oils and plant extracts)?	Yes ☐	No ☐

If the product composition changes, a new declaration confirming compliance with the requirements must be submitted to Nordic Ecolabelling.

Place and date	**Company name**
Responsible person	**Signature of responsible person**
Telephone	**Email**

Appendix 10 Carcinogenic and/or mutagenic aromatic amines released from azo dyes

Carcinogene aromatic amines	CAS no
4-aminodiphenyl	92-67-1
Benzidine	92-87-5
4-chlor-o-toluidine	95-69-2
2-naphthylamine	91-59-8
o-amino-azotoluene	97-56-3
2-amino-4-nitrotoluene	99-55-8
p-chloraniline	106-47-8
2,4-diaminoanisol	615-05-4
4,4´-diaminodiphenylmethane	101-77-9
3,3´-dichlorbenzidine	91-94-1
3,3´-dimethoxybenzidine	119-90-4
3,3´-dimethylbenzidine	119-93-7
3,3´-dimethyl-4,4´-diaminodiphenylmethane	838-88-0
p-cresidine	120-71-8
4,4'-oxydianiline	101-80-4
4,4'-thiodianiline	139-65-1
o-toluidine	95-53-4
2,4-diaminotoluene	95-80-7
2,4,5-trimethylaniline	137-17-7
4-aminoazobenzene	60-09-3
o-anisidine	90-04-0
2,4-Xylidine	95-68-1
2,6-Xylidine	87-62-7
4,4'-methylene-bis-(2-chloro-aniline)	101-14-4
2-amino-5-nitroanisole	97-52-9
m-nitroaniline	99-09-2
2-amino-4-nitrophenol	99-57-0
m-phenylenediamine	108-45-2
2-amino-5-nitrothiazole	121-66-4
2-amino-5-nitrophenol	121-88-0
p-aminophenol	123-30-80
p-phenetidine	156-43-4
2-methyl-pphenylenediamine; 2,5diaminotoluene	615-50-9
2-methyl-pphenylenediamine; 2,5diaminotoluene	95-70-5
2-methyl-pphenylenediamine; 2,5diaminotoluene	25376-45-8
6-chloro-2,4-dinitroaniline	3531-19-9

Appendix 11 Laboratories and methods for testing and analysis

Appendix 12 Type of lid covered by the exception in requirement O8