About Nordic Swan Ecolabelled

Greaseproof paper– Supplementary Module

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Nordic Ecolabelling

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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
info@ecolabel.dk
www.svanemaerket.dk

Iceland
Ecolabelling Iceland
svanurinn@uos.is
www.svanurinn.is

Finland
Ecolabelling Finland
joutsen@ecolabel.fi
https://joutsenmerkki.fi

Norway
Ecolabelling Norway
info@svanemerket.no
www.svanemerket.no

Sweden
Ecolabelling Sweden
info@svanen.se
www.svanen.se

1 Summary

The Nordic Swan Ecolabel criteria for greaseproof paper have been revised to generation 5. The focus of this revision has mainly been on reduced energy consumption including reduced emissions of greenhouse gases. Requirements concerning energy and greenhouse gases are, thus, stricter than in the previous generation. There is also a new requirement for ban on fossil oil and coal used as fuels in the production of process heat in the paper mill. Regarding emissions to water and air, the requirements have also been tightened.

Requirements for chemicals have been updated. The limit values for impurities of D4, D5 and D6 in silicone coating of greaseporoof paper have been considerably tightened from 800 ppm in a coating bath of silicone emulsions to 1000 ppm on dry silicone basis per each commercial product. The new limit value may sound lowering of the ambition level but is actually significant tightening due to changed functional units. There is also a new requirement for colourants and printing inks. Regarding paper marketed in contact with food, Nordic Swan Ecolabel products must comply with CEPI's Food Contact Guidelines and BfR's Recommendation XXXVI including relevant sub-documents.

The criteria have also been updated from a circular economy point of view, new requirements for packaging have been introduced, which promote recycled materials and recyclability of the packaging.

Nordic Swan Ecolabel Criteria are based on a life cycle perspective. The requirements are set in the phases in the paper's life cycle that have the greatest relevance and potential from an environmental point of view.

Nordic Swan Ecolabel greaseproof paper and finished product:

- Is manufactured in an energy efficient way with absolute limit values for emissions of greenhouse gases, and with no dependence on fossil oil or coal in the production process.
- Meets strict requirements concerning chemicals that are hazardous to health and harmful to the environment. Fluorine and chromium compounds are prohibited.
- Is made of 100% traceable fibres sourced from controlled origins, with a minimum requirement of 70% of fibres originating from certified forests.
- Meets strict requirements for limiting emissions into the air and water during the manufacturing process.

The requirements for paper products are gathered in a so-called modular system, where the Basic Module and the Chemical Module include the general requirements for pulp and paper production, including requirements for fibres. The Basic and Chemical Modules to generation 3 were revised in 2020. The changes made in the last revision of these modules also affect the Greaseproof Paper Criteria.

2 Environmental impact of the greaseproof paper

Nordic Ecolabelling sets requirements concerning the topics and processes in the life cycle that have a high environmental impact – also called hotspots. 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.

Therefore, it makes sense for the criteria to contain requirements in areas in the life cycle that have been found to have a high overall RPS, since there is potential to achieve positive environmental gains. The table below provides an overview of the key areas where requirements are appropriate due to a high RPS.

Lifecycle stages	Area and assessment of R, P, S (high, medium or low)	Comments
Raw materials		
	Sourcing of wood based raw material R: High P: High S: High	There is high relevance for the origin of fibre raw material used in the paper. From environmental point of view, it would be relevant to promote use of recycled fibres but as greaseproof paper is mainly in contact with food, safety and quality aspects are of high priority. Recycled fibres may contain unknown substances and be polluted with substances that should not be present in products used in food contact materials (FCMs). Therefore, only virgin fibres shall be used in Nordic Swan Ecolabel (NSE) greaseproof paper. When virgin fibres are used, forestry operations can have a marked impact on forest life through e.g. loss of species and deterioration of ecosystems. There is high RPS to set requirements for origin and certification of fibre raw materials by using independent third-party certifications schemes such as FSC and PEFC. This is to ensure that fibres come from controlled sources and sustainably managed forests. Nordic Swan Ecolabel also set requirements for restricted tree species that cannot be used in NSE products, in order to protect the forest as a habitat and preserve biodiversity.
Production/distribution		
	Chemical pulp production - Energy - Emissions to water and air - Chemicals R: High P: High S: High	The environmental impact of manufacturing of chemical pulp used in paper is greater than that of paper production. Production of pulp is energy intensive and generate emissions to water and air. Therefore, there is high RPS to set requirements for use of fuel and electricity, to restrict emission of sulphur (S), NOx and greenhouse gases to air that are primarily dependent on the intensive energy production, Emission to water such as chemical oxygen demand (COD), phosphorus (P) and adsorbable organically bound halogens (AOX) are also restricted. By setting requirements for these, Nordic Ecolabelling contributes to reduced climate impact, reduced acidification of the atmosphere and eutrophication of water sources.
	Paper production - Energy - Emissions to water and air - Chemicals R: High P: High S: High	The production of greaseproof paper consumes more energy than other paper products as the pulp needs to be more finely milled in order to achieve the desired properties of paper. The generation and use of energy results in various environmental impact, see closely the pulp production above. In addition to the climate impact and air pollution resulting from combustion, the environment is affected through the production of energy raw material and the landfill disposal of waste products. It is, thus, highly important to focus on energy consumption when trying to reduce the environmental impact of the paper industry.
	Paper conversion R: Low P: Low S: Medium	After manufacturing of paper, reels of paper are converted to final products e.g. by cutting and packing. As the main environmental impact comes from manufacturing of pulp and paper, there are no other requirements set to conversion process due to low R excluding requirements for chemicals and waste.

	Chemicals that are harmful to health and the environment R: High P: High S: High	The paper industry uses various types of chemicals. These include coating agents, wet strength agents, biocides, dispersants, retention agents and colourants. Some chemicals are not readily biodegradable and can bioaccumulate in organisms. Other chemicals may e.g. be carcinogenic and disruptive to endocrine functioning. There is RPS to set strict requirements for production chemicals used in manufacturing of paper including conversion e.g.printing inks used e.g. in muffin cups, in order to reduce the use of chemicals harmful to health and environment and to ensure that production facilities have treatment plants capable of limiting emissions.
	Coating of paper to achieve desired greaseproof properties - Fluorinated substances - Chromium - Silicones R: High P: High S: High	In order to achieve desired greaseproof properties in the paper, paper may be coated with various chemicals. Several of the substances used as coating agents can be harmful to human health and the environment such as fluorinated substances that are not readily biodegradable. The same applies for chromium compounds. Therefore, it is highly relevant to forbid use of these compounds in the production of NSE products. Other substances used to coat greaseproof paper are silicones which may contain small amounts of impurities of cyclic siloxanes, e.g. octamethylcyclotetrasiloxane, D4, decametylcyclopentasiloxane D5 and dodecamethylcyclohexasiloxane, D6. These D4, D5 and D6 are currently on the Candidate List and even on the List II Substances under evaluation for endocrine disruption under an EU legislation Endocrine Disruptor List. These substances should be avoided as much as possible in the NSE products, and therefore the amount of these impurities is restricted.
Use phase		
	Usage in contact with food R: High P: High S: High	Greaseproof paper is a food contact material, therefore it is of high priority to ensure that it is safe to use. For paper products in contact with food, no statutory requirements exist, other than EU Framework Regulation 1935/2004. Therefore, it is of high relevance to set requirements that the paper must fulfil BfR's recommendation XXXVI with subsequent subdocuments and CEPI's guidelines.
End of life		
	Recycability of product R: High P: Medium S: Low	Greaseproof paper is a disposable product which basically can be recycled but due to varying national collection schemes and recyclability protocols e.g. for paper soiled with food, the potential and steerability to set such requirements is low. To promote circular economy, it is, however, relevant to remind consumer that "The pure baking paper can be used more than once" on the packaging.
	Recycability of packaging R: High P: High S: High	To promote circular economy, there is also high RPS to require that packaging can contain recycled materials and must be recyclable.

2.1 UN Sustainable Development Goals

The UN Sustainable Development Goals are a universal call to action to fight poverty and inequalities, protect the planet and tackle climate change by 2030. The Nordic Swan Ecolabel is a powerful tool for securing a sustainable future. The Nordic Swan Ecolabel actively contributes to reach goal 12: responsible consumption and production. Nordic Swan Ecolabel paper products have less impact on the environment, and the requirements ensure control of the value chain.

- Fibre raw materials must be sustainably sourced and energy use in production is limited. This contributes to **sustainable management and efficient use of natural resources**.
- Strict requirements for chemicals and emissions limit the release of harmful substances to air and water. Thus, the Nordic Swan Ecolabel contributes to phasing out substances that are hazardous to health and the environment.
- To reduce the amount of waste, all waste from the production of pulp and paper must be recycled or reused when possible.

Nordic Swan Ecolabel greaseproof paper products also contribute to other UN Sustainable Development Goals, and this is how:

Reduces the use of chemicals harmful to health and the environment

Strict requirements on chemicals

Limits on emissions to water

Contributes to cleaner water

Strict requirements on chemicals

Limits on emissions to water

Improves energy efficiency

Limits on energy consumption

Limits on the emission of greenhouse gases

Requires efficient use of resources

Limits on energy consumption

Limits on the emission of greenhouse gases

Prevents water pollution

Strict requirements on chemicals

Limits on emissions to air and water

Promotes biodiversity and sustainable use of terrestrial ecosystems

Fibre raw materials must be sustainably sourced

Strict requirements on chemicals

3 Justification of the requirements

This chapter presents proposals for new and revised requirements, and explains the background to the requirements, the chosen requirement levels and any changes compared with the previous generation 4 of the Supplementary Module for Greaseproof Paper. Many of the arguments for the proposed changes are also explained in more detail in the background document for paper products – Basic Module and Chemical Module, generation 3.

3.1 Definition of the product group

Greaseproof papers are in this criterion defined as cellulose based papers coated with various substances. Greaseproof paper marketed for use in contact with foodstuffs must be made from virgin fibre. The product group includes:

- greaseproof paper (parchment paper) such as baking paper, cooking paper, food paper, interlay paper, baking tray liner, sandwich paper and other greaseproof paper used for food wrapping.
- converted products made from the aforementioned paper types. Examples of converted products are baking cups (e.g. cupcake and muffin cups).

Greaseproof paper products have a close association with products included in the criterion for 'Disposables for Food', as this product group also includes papers used for food packaging. When greaseproof paper is used to wrap food, e.g. sandwich paper, etc., the paper can be Nordic Swan Ecolabelled under this product group for greaseproof paper. The same applies to greaseproof paper that is converted into various types of baking cases. However, if the greaseproof paper has been converted into/is used in other types of disposable items e.g. paper laminated with a plastic coating, these articles can be labelled based on the criteria for Nordic Ecolabelling for Disposables for Food (047). These in turn require the greaseproof paper used in the disposable items to meet the requirements presented in the Supplementary Module for Greaseproof Paper.

Please contact Nordic Ecolabelling if you have any queries concerning which products can be labelled by these requirements.

Background to product definition:

The definition of the product group has been adjusted. Release paper that is used, for example, as a base for adhesive labels has been removed from the product group definition. During the years, there has not been any interest to ecolabel these kind of products. In addition, release paper is an intermediate product that can be used e.g. as a component in Nordic Swan Ecolabel products such as sanitary products.

3.2 Definitions

Term	Definition
ADt	Air dry tonne (ADt) is dry solid content of pulp and paper where specific chemical and energy consumption and emissions are expressed. ADt for pulp is 90%, while ADt for paper means a solid content of 94%
BAT-AELs	The range of emission levels obtained under normal operating conditions using a best available technique or a combination of best available techniques, as described in BAT conclusions, expressed as an average over a given period of time, under specified reference conditions (Art 3.13. of Directive 2010/75/EU).
Broke	Broke is waste from production (scrap, strips from cutting the rolls at the paper mill etc.) and is not classified as recycled fibre, see also recycled fibre.
CEPI	Confederation of European Paper Industry
COD	Chemical oxygen demand (COD) indicating the amount of chemically oxidisable organic matter in wastewater.
Coating	Process of applying, to the surface of a paper, one or more layers of coating slip or other material in fluid form. Greaseproof paper can e.g. be coated with fluorinated substances, silicones and waxes to attain the desired grease/liquid-repellent properties.
Converting	Manufacturing of a greaseproof paper product by a process or operation applied after the papermaking process.
Fossil fuels	Coal, natural gas, peat and petroleum products (such as oil) from the decayed bodies of animals and plants that died millions of years ago.
Plant based fibres	Cellulosic fibres such as those from wood and bamboo can be used in production of Nordic Swan Ecolabel paper products. If fibres from other plants are included in the product group, contact Nordic Ecolabelling. Nordic Ecolabelling will determine which new fibres may be included in the product group.
Production chemical	Collective term for chemical products used during production of pulp and paper. It can refer to chemical additives, auxiliary chemicals and process chemicals. The term is further used to refer to starch, filler material and so on. Even wastewater treatment chemicals are included, see closely the Chemical Module.
Recycled fibre	Recycled material is defined in accordance with ISO 14021 in the following two categories. Material in the pre-consumer phase. Material that has been taken from the waste flow during the manufacturing process. The exception is the re-use of material that is generated in a process, e.g. waste that can be recycled within the same process that generated it. Material in the post-consumer phase. Material generated by households or by trade, industry or institutional facilities in their role as end-users of a product that can no longer be used for its intended purpose. This includes the return of materials from the distribution chain.
Residue	Residue means a substance that is not the end product(s) that a production process directly seeks to produce; it is not a primary aim of the production process, and the process has not been deliberately modified to produce it.
Reel/roll	Reel/Roll is form in which the paper is produced at the end of the paper machine, a semi-finished product intended to be converted to a finished product
Sales packaging	Sales packaging means packaging conceived so as to constitute a sales unit consisting of products and packaging to the final user or consumer at the point of sale (in line with EU proposal for a Regulation of Packaging and Packaging Waste, November 2022).
Tip fuel	Peak load fuel is only used for short periods when it is really cold.
Wood fibre	Wood fibre may consist of virgin fibre from timber or sawmill chippings. Wood shavings and sawdust are residuals and not regarded as virgin fibres.

3.3 Information about production

O1 Description of the product

Applicant shall provide the following information about the greaseproof paper and product(s):

- Trademark/trade name of the greaseproof paper and product, paper manufacturer, type (e.g. baking paper, cooking paper, sandwich paper, cupcake cups) and grammage (g/m^2) for which paper(s) is/are available.
- Describe the manufacturing process for the product, including conversion and waste water treatment. State also annual production volumes.
- Compile a list of constituent materials, e.g. production chemicals, pulps and packaging materials used. In the case of production chemicals, report all production chemicals used in the production of paper and in conversion, providing documentation regarding the product's complete name, function, process in the mill, supplier and quantities used in kg/ADt paper. For pulps, the production site must be stated.

The documentation required is to be submitted with the aid of the web-based application tool.

Overview of the above points in the web-based application tool.

Representative product samples are to be supplied upon request from Nordic Ecolabelling.

Background to the requirement

The requirement is unchanged. However, it is amended slightly in order to clarify which basic information is required regarding the greaseproof paper and finished product.

O2 Pulp

All pulps used in the manufacture of Nordic Swan Ecolabel greaseproof paper and products must meet the requirements stipulated in the Basic Module and the Chemical Module, generation 3 or later unless otherwise indicated in the requirements below. This also applies to on-site manufactured pulp.

If the pulp has already been inspected by Nordic Ecolabelling, the requirement is fulfilled. Provide information on the trade name, production site and the manufacturer of the inspected pulp.

Pulp inspected by Nordic Ecolabelling: enclose information on the trade name, production site and the manufacturer of the pulp.

Pulp not inspected by Nordic Ecolabelling: **the pulp manufacturer** shall submit documentation required from the pulp mill with the aid of the web-based application tool.

O3 Greaseproof paper and products

Manufacturing of the greaseproof paper and finished product must meet the requirements of the Basic Module and the Chemical Module, generation 3 or later, where relevant, unless otherwise indicated in the requirements below. This also applies to converters (e.g. requirement for waste).

It must be possible to reuse baking paper, see also O16 Labelling.

The greaseproof paper and product manufacturer shall submit documentation demonstrating compliance with relevant requirements in the

Basic and Chemical Modules, generation 3 with the aid of the web-based application tool.

Background to the requirements

Requirements regarding manufacturing of pulp and paper are amended slightly in order to clarify which basic information is required. Instead of following the Basic Module and Chemical Module, generation 2, greaseproof paper and product must meet the requirements set in the Basic Module and Chemical Module, generation 3 (O3). This applies also to pulps used in production of paper (O2). The requirement that it must be possible to reuse baking paper has been moved to this specific requirement O3. The requirement was earlier in the requirement for functional properties which has now been removed, see closely chapter 5.

The Basic and Chemical Modules were revised from generation 2 to generation 3 in 2020[1]. The major changes in the Basic Module are the following:

- Regarding the requirement for fibre raw material (O7), the limit of certification has been increased from 30% to 70% in paper.
- There is also an updated requirement for restricted tree species not to be used in Nordic Swan Ecolabel paper products (O7). Eucalyptus and Acacia used for pulp and paper production are exempted from the list. However, fibre raw material originating from Acacia and Eucalyptus plantations must be a minimum of 70% certified. It is the greaseproof paper manufacturer who shall document, for instance based on invoice or delivery note, that the requirement of minimum 70% certified pulp are purchased on a yearly basis.
- The requirement for emissions of greenhouse gases (O10) has been changed. The greenhouse gas requirement only encompasses fuels used for production of process heat and not electricity as in the previous generation. The same principle for calculation is applied in the Criteria for Greaseproof paper, see also the requirement O7 in this Background.

Major changes in the Chemical Module:

- The requirement for classification of chemical products (O1) has been expanded with hazard class and hazard statement Aquatic Chronic 3 - H412.
- There is a new requirement for prohibited substances (O2), such as substances on the Candidate list shall not be ingoing substances in chemical products used in the production of pulp and paper. Subsequently, some former requirements are removed, such as the requirement concerning residual monomers, as these are now covered by the new requirement.
- The definition of ingoing substances and impurities in chemical products has been updated, the limit for impurities in the chemical product is 1000 ppm.

[1] https://www.nordic-ecolabel.org/product-groups/group/?productGroupCode=044, see documents under Application.

For a product to be granted a licence to carry the Nordic Swan Ecolabel, the relevant requirements in the Basic Module and Chemical Module, generation 3 or later, in addition to the requirements in this Supplementary Module, must be fulfilled. Documentation demonstrating compliance with relevant requirements for the Nordic Swan Ecolabel greaseproof paper and products are to be submitted with the aid of the web-based application tool.

Nordic Ecolabelling has longstanding experience with requirements of pulp and paper products. Since the raw materials, chemicals and manufacturing processes in pulp and paper production are similar, Nordic Ecolabelling has introduced a so-called modular system for paper products.

The Basic Module contains general requirements concerning forestry management, emissions, energy use and waste disposal with regard to pulp and paper production.

The Chemical Module contains general requirements with regard to the use of chemicals in the manufacture of pulp and paper.

Supplementary Modules, e.g. this document, contain those requirements regarding specific paper products, which must be fulfilled in order to grant a licence for the products to carry the Nordic Swan Ecolabel. The requirements' levels in a Supplementary Module may be more stringent or more lenient than those of the Basic or Chemical Module. If the levels in the modules differ, the requirement levels specified in the applicable supplementary module are to be applied.

O4 Requirement for pulp used to manufacture paper for contact with food

Only virgin fibres shall be used in the pulp used to manufacture paper for use in contact with food.

The paper manufacturer shall demonstrate compliance with the requirement in the web-based application tool. Appendix 1 can be used.

Background to the requirement

Requirement O4 for pulp used to manufacture paper for use in contact with food has not been changed.

If the paper is intended for use in contact with food, the pulp must be made up of virgin fibre only. No recycled fibre shall be used. This requirement is derived from previous version 4 of the Criteria and has not been changed in this revision. Recycled fibres may contain unknown substances and be polluted with substances that should not be present in products used in contact with food. This may, for example, include substances that are harmful to health such as heavy metals and traces of printing inks. Therefore, Nordic Ecolabelling wishes that only virgin fibre will be used in papers in contact with food.

3.4 Energy and greenhouse gases

Energy consumption is regulated through requirements on amount of fuel and electricity used while fuel type used for production of heat is regulated by the greenhouse gas emission requirement. The requirements are based on information of actual energy use in production in relation to a specified reference

value. The ratio between actual energy consumption and the reference value translates to an energy score.

Calculations of the energy consumption and emissions of CO_{2e} encompasses the entire production process – both greaseproof paper manufacturing and the constituent pulp. Energy calculations do not include energy consumed during transport of raw materials or in conversion and packaging. The paper manufacturer shall verify fulfilment of the requirements. Pulp manufacturers shall, however, provide details of energy use and greenhouse gas emissions to paper producer. See also Appendix 4 in the Basic Module, generation 3 where instructions for calculations are given.

O5 Energy

The total electricity and fuel points scores for Nordic Swan Ecolabel greaseproof paper and product must be less than 2.3.

$P_{electricity\_total} < 2.3$

$P_{fuel\_total} < 2.3$

$P_{electricity\_total}$ and P_{fuel_total} include the energy scores from paper production and the pulps that are used.

Alternatively,

$P_{paper\ electricity} + P_{paper\ fuel} < 2.3$

$P_{pulp\ electricity} + P_{pulp\ fuel} < 2.3$

A more detailed description of documentation requirements and calculation methods is provided in Appendix 4 of the Basic Module, generation 3 or later, in which $P_{electricity}$ and P_{fuel} are also defined.

The reference values for the manufacturing of greaseproof paper consumption offuel are set at 3000 kWh/ADt, and for electricity at 1400 kWh/ADt.

If steam from electric boilers is used, the energy content of steam must be converted to fuel. The energy of the steam is converted into fuel by multiplying the amount of electricity used by 1.25. The resulting amount of energy is added to the fuel consumption of the production. See closely Appendix 4 in the Basic Module, generation 3.

⇪ **The paper manufacturer** shall submit calculations in accordance with Appendix 4 of the Basic Module, generation 3 showing compliance with the limit values. Worst case calculations shall be enclosed to demonstrate that each pulp recipe meets the requirements in case pulp mixture specific calculations are not documented for each pulp mix. Nordic Ecolabelling also provides a spreadsheet that is to be used for these calculations.

Background to the requirement

In this generation 5 of Nordic Ecolabelling Criteria for Greaseproof Paper and Products, the requirement for energy has been considerably tightened compared to the previous generation. The following key changes have been made:

- Reference values for the manufacturing of paper - consumption of fuel and electricity have been changed. Regarding fuel, from 3 500 kWh/ADt to 3000 kWh/ADt and for electricity from 2 200 kWh/ADt to 1400 kWh/ADt.

The following changes made in the last revision of the Basic Module to generation 3 also affect the manufacturing of greaseproof paper:

- Reference values for the pulps in the Basic Module, generation 3 have been tightened.
- The total point score calculation has been adjusted in order to balance the calculation between the pulp mill and the paper mill. Point scores of the pulp mill dominated the calculation of the final scores and in order to make the comparison equal, the equation has been changed, see also closely section 4.2.3. in Appendix 4 in the Basic Module, generation 3. Consequently, the P_{total} score limit values have been adjusted from 1.15 to 2.3 in the supplementary modules in order to maintain the same degree of flexibility as in the previous generations. A new point limit of 2.3 indicates that the average value of the paper product's total energy consumption may not exceed 15% of the limit under optimal conditions. The points model permits a higher level of energy consumption in order to allow the paper manufacturer an increased degree of flexibility.

The requirement stipulates the declaration of the total energy consumption in pulp and paper production processes per tonne of product, specified for fuel and electricity. This is calculated using actual values from the producer and reference values provided by Nordic Ecolabelling. These reference values specific to greaseproof paper have been considerably tightened in this revision. As a result, only the best mills using the best pulps can be Nordic Swan Ecolabelled. The new ambition levels are based, first and foremost, on data provided by licence holders. Comparison with reference values set in the previous generations 3 and 4 can be found from Table 3 at the end of this Background document.

On February 18, 2025, Nordic Ecolabelling decided to adjust the requirement, by allowing an alternative method for verifying energy consumption. Instead of calculating total scores for paper and pulp, these can be considered separately: the electricity and fuel consumption for paper are considered together, as are those for pulp. This change allows some flexibility in the choice of energy source in the manufacturing of paper. For example, higher electricity consumption is permitted, but only if fuel consumption is reduced at the same time. Similarly, energy consumption in pulp manufacturing is limited in order to keep the level of total energy use ambitious in the criteria. This change in the requirement gives flexibility in the choice of energy source, potentially facilitating future electrification efforts. This revised version is called 5.2.

The Supplementary module of Greaseproof Paper and Products follows the requirements set in the Basic Module, generation 3. Therefore, the changes made in the last revision of the Basic Module also affect Greaseproof Paper Criteria. The background document to the Basic Module, generation 3 provides comprehensive information on the energy requirement and Appendix 4 in the Basic Module describes the calculations in detail. Nordic Ecolabelling also provides a spreadsheet that is to be used for these calculations.

O6 Fossil fuels

Fossil oil and coal must not be used as fuels* for production of process heat in the greaseproof paper mill.

Energy from fossil oil may only be used e.g. inplanned maintenance stops, emergency maintenance stops, as a reserve and tip fuel (peak load fuel) or at start-ups for regulation of the combustion temperature in a heat and co-generation boiler is allowed.

**Use of natural gas and liquefied petroleum gas (LPG) is allowed.*

The paper manufacturer shall confirm that fossil oil and/or coal are not used as fuels to produce process heat in the greaseproof paper mill. Appendix 1 can be used.

In case fossil oil is used as reserve or tip fuel, the paper manufacturer shall report why the use of fossil oil is necessary.

O7 Emissions of greenhouse gases

Emissions of greenhouse gases from fuels and electricity used for production of process heat must not exceed 900 kg CO_{2e} /ADt paper. CO_{2e} calculations include emissions from production of both greaseproof paper and constituent pulps.

If process heat is generated by electricity, CO_{2e} emissions related to electricity are calculated by factor 231 g CO_2/kWh. However, if the greenhouse gas emission intensity of electricity generation given by European Environment Agency* indicates a higher emission calculation factor for the country where the paper mill is located, this shall be used.

** https://www.eea.europa.eu/data-and-maps/daviz/co2-emission-intensity-10#tab-googlechartid_googlechartid_googlechartid_googlechartid_chart_11111*

If steam from electric boilers is used, the energy content of steam must be converted to fuel. The energy of the steam is converted into fuel by multiplying the the energy content of electricity by 1.25. See closely Appendix 4 in the Basic Module, generation 3.

The paper manufacturer shall submit calculations in accordance with Appendix 4 of the Basic Module, generation 3 to demonstrate fulfilment of the requirement. Nordic Ecolabelling also provides a spreadsheet that is to be used for these calculations.

Background to the requirements

The requirement regarding fossil fuels and greenhouse gases has been changed. Compared with previous ecolabelling criteria, the following key changes have been introduced:

- There is a new requirement for ban on fossil oil and coal used for production of process heat in the greaseproof paper mill (O6).
- The limit value for emission of greenhouse gases is set to 900 kWh/ADt (O7). The requirement now encompasses only fuels and eletricity used for production of process heat in the paper mill. In the earlier generation of the Criteria, all electricity used during manufacturing of paper was included in the calculation. If process heat is generated by electricity, CO_{2e} emissions related to electricity are calculated by factor 231 g CO_2/kWh unless the greenhouse gas emission intensity of electricity generation given by European Environment Agency indicates a higher emission calculation factor for the country where the paper mill is located. As in the earlier generation, the CO_{2e} calculation encompasses the emissions from production of both paper and constituent pulps.

Climate change is one of the biggest environmental problems today. It is attributed directly or indirectly to human activity that alters the composition of the global atmosphere. Many paper manufacturers are committed to reduce

greenhouse gas emissions in their production[2,3,4,5,6]. By setting strict energy and CO_{2e} emission requirements, Nordic Ecolabelling wishes to promote a transition towards fossil-free manufacturing. General principles for setting Nordic Swan Ecolabel requirements for energy use and greenhouse gas emissions from energy are:

- Limiting the energy consumption
- Promoting energy sources with low environmental and climate impact

Since the production of greaseproof paper consumes large amounts of energy, strict requirements are set on energy consumption of electricity and fuels (O5). The purpose of the requirements for fossil fuels (O6) and on greenhouse gas emissions (O7) is to further limit the use of fossil fuels and restrict the use of fuels with the highest greenhouse gas emissions.

The requirement for fossil fuels (O6) is new in the Criteria for Greaseproof Paper. Nordic Ecolabelling wishes to encourage fossil-free manufacturing, and therefore a ban on the use of fossil oil and coal as main fuels for production of process heat in paper mill is introduced. However, necessary use of fossil oil e.g. in planned maintenance stops, emergency maintenance stops and as a reserve or tip fuel (peak load fuel) is allowed. Use of coal is, however, completely prohibited. At this point, it is not possible to exclude all fossil fuels in paper manufacturing and therefore, use of natural gas and liquefied petroleum gas (LPG) is still allowed.

In this generation 5 of the Criteria, the greenhouse gas emissions of fuels and electricity used for production of process heat are limited. In the earlier generation of the Criteria, all electricity used in manufacturing of paper was included in the requirement. The new calculation follows the requirement set in the Basic Module, generation 3 but the limit values are specific to greaseproof paper manufacturing. In addition, the requirement also encompasses electricity used for production of process heat. If process heat is generated by electricity, CO_{2e} emissions related to electricity are calculated by factor 231 g CO_2/kWh. However, if the greenhouse gas emission intensity of electricity generation given by European Environment Agency indicates a higher emission calculation factor for the country in which the paper mill is located, this shall be used. The factor of 231 g CO_2/kWh is based on Greenhouse gas emission intensity of electricity generation in Europe[7]. Overall, the limit value for emissions of greenhouse gases is tight at 900 kWh/ADt in order to restrict the use of fuels with the highest greenhouse gas emissions and to promote use of energy sources with a lower climate impact. The new ambition level is based on license data, achievable by the best mills using the best pulps.

The background of the Basic Module provides comprehensive information on the requirement and Appendix 4 in the Basic Module describes the calculations in detail. As in the earlier generation, the CO_{2e} calculation encompasses the emissions from production of both greaseproof paper and constituent pulps.

[2] https://www.drewsen.com/en/the-company/quality-environment-energy#Sustainability
[3] https://www.metsagroup.com/metsatissue/
[4] https://delfortgroup.com/en/location/tervakoski-oy/
[5] http://www.vizille-vicat.com/
[6] https://www.nordic-paper.com/en
[7] https://www.eea.europa.eu/ims/greenhouse-gas-emission-intensity-of-1

Nordic Ecolabelling also provides a spreadsheet that is to be used for these calculations.

3.5 Emissions to water and air

The requirements on emissions to water and air are structured in such a way that the greaseproof paper manufacturer calculates total emissions from pulp and paper production. To do this, the paper manufacturer will need information on the specific emissions from the pulp production.

Measured emissions are compared with the reference values for emissions. The reference values for pulps can be found in Appendix 5 Table 5.1 in the Basic Module, generation 3 or later. These reference values shall be used in the calculation for individual emission parameters. The emission scores for chemical oxygen demand (COD), phosphorus (P), sulphur (S) and nitrogen oxides (NOX) are finally summed to a total emissions score. Requirements regarding the emission of AOX can be found in the Basic Module, generation 3 or later (O14).

The emission value that is reported is primarily based on measured emissions. Instructions for measuring emissions are found in Appendix 5 in the Basic Module. Requirements are also imposed on the laboratory, the method of measurement and frequency of measurement.

O8 Total emissions score

Emissions to air and/or water from the production of pulp and greaseproof paper must be specified in terms of emissions scores for each of the four parameters (P_{COD}, P_P, P_S, P_{NOx}). The measured emissions shall be compared to reference values relating to specific production methods.

The individual point score for P_{COD}, P_P, P_S, and P_{Nox} must not exceed 1.3.

The total emissions score, $P_{emissions\ total}$:

$P_{emissions\ total} = P_{COD} + P_P + P_S + P_{Nox}$ must not exceed 4.0.

The calculation of the product's total emissions for greaseproof paper production ($P_{emission\ total}$) uses the product-specific reference values given in Table 1.

To calculate the individual emission scores for P_{COD}, P_P, P_S, and P_{Nox} and for reference values for difference pulp types, please refer to the Basic Module, generation 3 or later (Appendix 5, Table 5.1).

Table 1 Reference values for emissions of greaseproof paper.

Type of paper	Reference values for emissions (kg/ADt)			
	COD_{ref}	P_{ref}	S_{ref}	NOx_{ref}
Greaseproof paper	2.0	0.007	0.15	0.8

Emissions from the paper mill shall be reported after the wastewater treatment. Water samples must be taken after treatment of the wastewater in a treatment plant and the water flow at the time of sampling must be stated. If the wastewater is treated together with other wastewater, or if campaigns are run, samples must be taken before the treatment plant and before being mixed with other water. The results of the analysis are then reduced by the efficiency of the treatment plant, which must be documented. See also Appendix 5 in the Basic Module, generation 3.

⇪ **The paper manufacturer** shall submit calculations in accordance with Appendix 5 of the Basic Module, generation 3 to demonstrate fulfilment of the requirement. Nordic Ecolabelling also provides a spreadsheet that is to be used for these calculations.

⇪ **The paper manufacturer** shall submit the specific emissions (kg/ADt) of COD, P, S and NO_X during the production of greaseproof paper. For each emission parameter, test results, method of analysis, test frequency, sampling points for emissions and the compliance of laboratories with laboratory requirements shall be enclosed (see also Section 5.3, Analyses in the Basic Module, generation 3).

Background to the requirement

The requirement regarding emissions to water and air is changed.

- The following reference values for greaseproof paper manufacturing have been tightened, regarding specific parameters, from 4.0 to 2.0 kg/ADt for chemical oxygen demand (COD), from 0.01 to 0.007 for phosphorus, from 0.5 to 0.15 for sulphur and from 1.2 to 0.8 for nitrogen oxides (NOx).

The following changes made in the last revision of the Basic Module to generation 3 also affect manufacturing of greaseproof paper:

- Limit value for individual point score has been tightened from 1.5 to 1.3.
- Reference values for pulps have been updated.

The reference values for all emission parametres, namely COD, P, S and NOx have been made more stringent in this criteria generation. The reference values are based upon a review of currently held Nordic Ecolabelling's licences. Comparison with reference values set in the previous generations 3 and 4 can be found from Table 3 at the end of this Background document.

The most important emissions from pulp and paper mills have been collected in the environmental matrix. As previously, these parameters are chemical oxygen demand (COD) and phosphorus (P) to water, and sulphur (S) and nitrogen oxides (NOx) to air. Actual measurements are compared to reference values in the matrix. One point is awarded in the matrix if emissions are measured at the same level as that given in the reference value. If the emissions are recorded at a lower level than the reference value, the points score is < 1. If emissions are higher than allowed by the reference value, the points awarded will be >1. No product receiving a point score above 1.3 will be permitted to carry the Nordic Swan Ecolabel. Limit value for individual point score has been changed from 1.5 to 1.3 in the Basic Module, generation 3. This point score corresponds to the same level as introduced in the EU Ecolabel Criteria for graphic paper and the EU Ecolabel for tissue paper and tissue products[8]. The grand total score corresponds to all emission points when added together and shall not exceed 4.

Text concerning measures of wastewater emissions is clarified. Wastewater can be treated on site or by an external part such as municipal wastewater treatment plant. More information on measuring and analyses can be found in Appendix 5 in the Basic Module, generation 3.

[8] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019D0070&from=EN

3.6 Product safety and quality

3.6.1 Chemicals

All production chemicals involved in the production of greaseproof paper and finished products must comply with the requirements set out in the Chemical Module, generation 3 or later, and the requirements specified in the Supplementary Module for Greaseproof Paper.

Requirements in respect of production chemicals not presented below, e.g. paper colourants, are set out in the Chemical Module, generation 3. See Table 2 below for an overview of the chemical requirements stipulated in the Chemical Module and the Supplementary Module for Greaseproof Paper.

Table 2 Overview of chemical requirements, indicating in which module the requirement is stipulated.

Chemicals	Chemical Module, generation 3	Supplementary Module for Greaseproof Paper and products, generation 5
All production chemicals - Classification (O1) - Prohibited substances (O2)	O1, O2	
Cleaning agents and dispersants	O3	
Deinking chemicals	O4	
Biocidal products and slimicides	O5	
Retention agents and flocculants	O6	
Wet strength agents	O7	
Foam inhibitors and defoamers	O8	
Optical brighteners and antibacterial substances		O9
Chemicals used for impregnation and coating		O10
Paper colourants - Metals (O9) - Amines and phthalates (O10)	O9, O10	
Adhesives	O11	
Starch - GMO	O12	
Colourants and printing inks		O11
Paper in contact with food		O12

O9 Optical brighteners and antimicrobial substances

Optical brighteners must not be used.

Chemicals intended to provide antimicrobial properties of the product must not be added.

An antimicrobial agent is a chemical/product that inhibits or stops growth of microorganism such as bacteria, fungi, or protoza (single-celled organism) and can be applied on a treated article or constituent in a chemical product. Antimicrobial agents such as triclosan, triclocarban and silver are examples. The requirement does not apply to preservatives used to preserve the chemical product, so-called in-can preservatives.

The paper manufacturer shall demonstrate compliance with the requirement in the web-based application tool. Appendix 1 can be used.

Background to the requirement

Optical brighteners

The ban on optical brighteners remains unchanged from the previous version of the criteria. The requirement has been included to limit the use of chemicals that can have a harmful effect on human health and the environment either at the point of use or production.

Optical brighteners include derivatives of 4,4-diaminostilbene-2,2-disulphonic acid. The compounds have a low retention on the paper, resulting that they also enter the wastewater stream. These compounds are not biodegradable. Optical brighteners absorb to the sludge in the water treatment plants, which is not wanted, since there is a wish to keep the sludge as free from chemicals as possible.

The use of optical brighteners such as stilbene sulphonic acid derivatives is approved at concentrations up to 0.3% in paper that comes into contact with foodstuffs pursuant to the German BfR regulations. However, it must be possible to prove that these do not migrate into food[9].

Antimicrobial agents

An antimicrobial agent is a chemical/product that inhibits or stops growth of microorganisms such as bacteria, fungi, or protozoa (single-celled organisms) and can be applied on a treated article or constituent in a chemical product. For treated articles, the antimicrobial agents usually disappear after a few washes and are released to the environment where they can cause adverse effects.

It is suspected that some antimicrobial agents are contributing to the increasing resistance to antibiotics in society. Consequently, the bacteria are developing new methods of resisting the effects of the antibiotic. This, in turn, can lead to certain diseases becoming more difficult to treat. Antimicrobial agents such as triclosan, triclocarban and silver are examples. Furthermore, they can harm bacteria that are necessary for the treatment of water at water treatment plants. Therefore, antimicrobial-treated articles or products containing antimicrobial agents should be avoided. Nordic Ecolabelling has therefore introduced a requirement stating that substances with an antimicrobial effect must not be added. However, the requirement does not apply to preservatives used to preserve the chemical product, so-called in-can preservatives.

O10 Chemicals used for impregnation and coating

Chemicals intentionally added to the pulp or to impregnation/coating of paper must not contain

- chromium or fluorinated substances.
- 34 bisphenols[10] that have been identified by ECHA for further EU regulatory risk management that are known or potential endocrine disruptors for the environment or human health, or that can be identified as toxic to reproduction.

[9] https://www.bfr.bund.de/cm/349/XXXVI-Paper-and-Board-for-Food-Contact.pdf
[10] Assessment of regulatory needs: Bisphenols. ECHA – 16 December 2021: Section2.1:Bisphenols for which further EU RRM is proposed – restriction https://echa.europa.eu/documents/10162/c2a8b29d-0e2d-7df8-dac1-2433e2477b02

If fluorinated substances are used for impregnation/coating of non-ecolabelled paper and products in the mill, total organic fluorine (TOF) in the Nordic Swan Ecolabel paper shall be analysed according to EN ISO 10304-1* (D20) or equivalent standard**. The analysis must be documented on application and tested annually.

** The content of inorganic fluorine compounds is subtracted from the results of the TOF analysis. The indicator value of 20 mg/kg shall not be exceeded in the Nordic Swan Ecolabel paper.*
*** Equivalent standard must be approved by Nordic Ecolabelling.*

The following requirements must be met in connection with silicone treatment of the paper:

- Solvent-based painting/coating agents must not be used.
- Octamethylcyclotetrasiloxane, D4, (CAS 556-67-2), decamethylcyclopentasiloxane, D5, (CAS 541-02-6) and dodecamethylcyclohexasiloxane, D6, (CAS 540-97-6), must not be used. Impurities of D4, D5 and D6 are exempt from this requirement*.
- Organotin catalysts must not be used.

Karstedt's Catalyst described as 1,3-diethenyl-1,1,3,3- tetramethyldisiloxane and its platinum (0) complexes (EC 701-315-2) used in multicomponent silicone release coating of baking paper is exempted from the classification H360D in the requirement O2 in the Chemical Module, gen 3.

** Impurity refers to residues from primary production which may be found in the commercial product at concentrations below 1000 ppm on dry silicone basis (0.1% by weight, 1000 mg/kg dry silicone). The limit value is applied to each substance separately. Impurities do not refer to substances which have been added to a raw material or the product actively and for a particular purpose, irrespective of quantity. The commercial product refers to a single component (e.g. silicone polymer, silicone emulsion and catalyst emulsion) in a multicomponent silicone release coating system.*

Regarding fluorinated substances, chromium and bisphenols, **pulp-/paper manufacturer** shall demonstrate compliance with the requirement in the web-based application tool. Appendix 2 can be used. If fluorinated substances are used e.g. for impregnation/coating of paper in the mill, the **paper manufacturer** shall enclose

- test results of the Nordic Swan Ecolabel paper from an independent third party. Testing shall comply with the method described in the requirement.

- a written procedure showing how an annual test is performed in line with the requirement to ensure that Nordic Swan Ecolabel paper does not contain fluorinated substances.

Regarding silicone treatment, **the chemical supplier** shall demonstrate compliance with the requirement in the web-based application tool. See also Appendix 3 in this Criteria document.

Background to the requirement

The requirement regarding silicone coating has been changed. The limit value for impurities of octamethylcyclotetrasiloxane, D4, (CAS 556-67-2) and decamethylcyclopentasiloxane, D5, (CAS 541-02-6) has been adjusted from 800 ppm in a coating bath of silicone emulsions to 1000 ppm on dry silicone basis per commercial product. The limit value is applied to each substance separately. While the new limit value may appear to reduce the level of ambition, it actually

result in a significant tightening of the limit value due to revised definitions. Firstly, the definition of a "commercial product" has been altered to refer to a single component within a multicomponent silicone release coating system, rather than the entire silicone mixture as in the previous generation. Secondly, the new limit value is now based on dry silicone content in the single component (product) to prevent dilution of the commercial product. Additionally, Dodecamethylcyclohexasiloxane, D6, (CAS 540-97-6) with a limit value of 1000 ppm has been included in the requirement as it was previously omitted from the criteria.

The requirement stating that chemicals added to the pulp or used for coating/impregnation must not contain chromium compounds or fluorinated substances remains the same as in the previous generation. However, a new requirement has been introduced where the content of total organic fluorine in the Nordic Swan Ecolabel greaseproof paper must be analysed if fluorinated substances are used for impregnation/coating of non ecolabelled paper in the mill.

Fluorinated substances

Per- and polyfluoroalkyl substances (PFAS) is a wide group of substances that are highly persistent, of which several have been identified as harmful both to the environment and to human health. PFAS have widespread use in paper products that need to be fat and water resistant[11]. In 2020, Denmark passed into law that food contact materials (FCMs) must not contain PFAS, regardless of whether it has been added directly to the material or if its presence comes from the use of recycled fibre in the FCMs. A restriction proposal with the aim to ban the use of PFAS in Europe was submitted to ECHA in January 2023 by authorities in Sweden, Denmark, Norway, Germany and Netherlands. The restriction proposal will be evaluated during 2023 by ECHA's scientific committees[12].

If fluorinated substances are used in the mill, the presence of PFAS is determined using a so called TOF (Total Organic Fluorine) analysis, with an indicator value of 20 mg/kg. This indicator value is set, as content below this value is considered unintentional background pollution. It is important that the content of inorganic fluorine compounds is subtracted from the results, otherwise a false positive result can be obtained.

Furthermore, the content of organic fluorine can also be determined via an EOF (Extractable Organic Fluorine) analysis[13]. Equivalent standards that measure the total content of organic fluorine may be used but must be approved by Nordic Ecolabelling.

[11] https://www.kemi.se/en/chemical-substances-and-materials/pfas
[12] ECHA publishes PFAS restriction proposal https://echa.europa.eu/sv/-/echa-publishes-pfas-restriction-proposal (accessed 29 March 2023)
[13] https://www.foedevarestyrelsen.dk/english/SiteCollectionDocuments/Kemi%20og%20foedevarekvalitet/UK-Fact-sheet-fluorinated-substances.pdf

Chromium

Chromium coatings are no longer used in Europe, however, the requirement has been included to prevent their reintroduction via greaseproof paper imported from other parts of the world.

Bisphenols

In addition to the ban on bisphenol A, both bisphenol F and S have also been prohibited from use in coating agents, retention agents, flocculants in the Chemical Module of Paper Products, generation 3. The requirement in the greaseproof paper is now extended to cover 34 bisphenols[14] that have been identified by ECHA for further EU regulatory risk management. These identified bisphenols are known or potential endocrine disruptors for the environment or human health, or can be identified as toxic to reproduction. The Nordic Swan Ecolabel applies the precautionary principle and therefore ECHA's limitation of 10 ppm is not applicable. Consequently, these identified bisphenols are strictly prohibited to be used in production chemicals used for coating Nordic Swan Ecolabelled greaseproof paper.

Silicones

As in the previous version of the Supplementary Module, silicone coating is allowed. In the past, silicone coatings were applied using a solvent-based process. However, this method is phased out due to a wish to stop the use of solvents. The European industry phased out organotin catalysts for hardening silicone coatings in 2002[15].

Silicone is the common name for polysiloxanes (polyorganosiloxanes). When it comes to coating, the most commonly used agent is an emulsion consisting of polydimethylsiloxane (PDMS). PDMS is formed through polycondensation of linear siloxanes or through polymerisation of cyclic siloxanes. There are small remnants of cyclic siloxanes in PDMS, such as D4 or D5 dependent on the type of reaction and process conditions in the polymerisation[16,17,18,19].

Siloxanes are a group of substances that have long been a focus area for the environmental authorities. The reason for this is that some of the substances are not readily degradable and tend to bioaccumulate in organisms. These D4, D5 and D6 are currently on the Candidate List and even on the List II Substances

[14] Assessment of regulatory needs: Bisphenols. ECHA – 16 December 2021: Section2.1:Bisphenols for which further EU RRM is proposed – restriction https://echa.europa.eu/documents/10162/c2a8b29d-0e2d-7df8-dac1-2433e2477b02

[15] European Commission (2007), Impact Assessment of Potential Restrictions on the Marketing and Use of Certain Organotin compounds, Final Report – October 2007, Directorate-General Enterprise and Industry. Available at: http://publications.europa.eu/resource/cellar/424ac720-5954-4382-8f3b-5aff32170484.0001.02/DOC_1 (accessed 29 March 2023)

[16] Huse, A and Aas-Aune, S. (2009) Kartlegging av bruk, forekomst, og omfang av siloksaner i Norge. Report SFT TA2557/2009

[17] Lassen et al. (2005) Siloxanes - Consumption, Toxicity and Alternatives. Rapport Miljøstyrelsen no.1031 2005

[18] Environment Canada Health Canada (2011) Screening Assessment for the Challenge Siloxanes and Silicones, di-Me, hydrogen-terminated. Available at: https://www.ec.gc.ca/ese-ees/461AC049-D066-41B6-BCAD-796FEC116EF7/Batch%2011_68952-02-3_EN.pdf (accessed 29 March 2023)

[19] Siloxanes (D3, D4, D5, D6, HMDS) Evaluation of health hazards and proposal of a health-based quality criterion for ambient air. Rapport Miljøstyrelsen no 1531 (2014)

under evaluation for endocrine disruption under an EU legislation Endocrine Disruptor List[20]. These substances should be avoided as much as possible in the Nordic Swan Ecolabel products.

Requirement O10 includes a ban on D4, D5 and D6, therefore coating products must not contain these substances. Impurities are exempt from this requirement. Impurity refers to residues from primary production which may be found in the commercial product at concentrations below 1000 ppm on dry silicone basis (0.1% by weight, 1000 mg/kg dry silicone). The limit value is applied to each substance separately. The proposed limit value is mainly based on reported values from silicone suppliers in My Swan Account. The commercial product refers to a single component (e.g. silicone polymer, silicone emlusion and catalyst emulsion) in a multicomponent silicone release coating system.

On 4 February 2025, Nordic Ecolabelling decided to adjust the requirement for silicone coating of baking paper, by exempting Karstedt's platinium catalyst from the classification H360D in the requirement O2 in the Chemical Module, gen 3. The exemption is applied only to baking paper because silicones are mainly used to improve heat resistant and non-stick properties of the baking paper. Karstedt's catalyst has been reclassified recently[21]. It's widely used in silicone industry and not easily replaceable.

O11 Colourants and printing inks

If colourants* and printing inks are used in the greaseproof paper and converted products in contact with food, they must comply with:

- BfR's recommendation XXXVI. Paper and board for food contact, April 2021 or more recent versions and subsequent subdocuments such as BfR's recommendation XXXVI/2. Paper and Paperboard for baking purposes, April 2022 or more recent versions[22].

or

- EuPIA "Guideline on Printing Inks applied to Food Contact Materials" April 2020 or later

and

- Swiss Ordinance Annex 10.

In addition, the printing ink shall be manufactured in accordance with the EuPIA "Good Manufacturing Practices (GMP) - Printing Inks for Food Contact Materials". A statement of Composition (SoC) shall be available for each printing ink.

The colourant and printing ink must also meet the requirements set out in the Chemical Module for Paper Products, v.3 or later.

**Colourants - product sold by a manufacturer that is used for dyeing, shading or colouring of paper or pulp.*

⇪ For colourants, **the paper and product manufacturer** shall enclose confirmation from an independent third party that BfR's recommendations are followed.

[20] https://edlists.org/
[21] Registration Dossier - ECHA
[22] BfR Recommendations on Food Contact Materials - BfR (bund.de)

For printing inks, **the paper and product manufacturer** shall enclose Declaration of Compliance (DoC) in line with Swiss Ordinance and the EUPIA's Guidelines including a statement of Composition (SOC).

The chemical supplier must demonstrate compliance with the requirements set in the Chemical Module, v.3 in the web-based application tool.

Background to the requirement

Requirement O11 is new and concerns colourants and printing inks in contact with food. Today there are requirements for colourants in the Chemical Module, version 3, but no requirement applies specifically for usage in contact with food. Requirement O12 in this criteria document addresses greaseproof paper and converted products in contact with food. Given the common application of colourants and printing inks on e.g. cupcakes and the varying quality of these it is considered important to ensure not only the paper is safe to use in contact with food but also the colourants/printing inks, therefore, a new requirement for the these has been added.

The colourant used in pulp or paper must comply with BfR's recommendation XXXVI, April 2021[23] or more recent versions and BfR's recommendation XXXVI/2[24], April 2022 or more recent versions. According to the recommendations, only iron oxides and iron hydroxides (E 172) are permitted as colorants in products for baking purposes. Migration tests ensuring no migration of the colourants to the foodstuff must be performed for colorants in greaseproof papers not used for baking purposes.

Printing inks shall comply with EuPIA's guideline, April 2020 or later and with Swiss Ordinance Annex 10. A list with permitted substances for the use in packaging inks is included in the regulation "Swiss Ordinance on materials and articles intended to come into contact with foodstuffs, Annex 10"[25]. The European Printing Ink Association (EuPIA) has introduced the "Guideline on Printing Inks applied to Food Contact Materials"[26]. Due to the lack of harmonised European legislation, the EuPIA guidelines currently represents the best practice. The EuPIA's guideline also includes a subsequent document Good Manufacturing Practices (GMP) - Printing Inks for Food Contact Materials which describe good manufacturing practices of the printing ink. EuPIA has also developed a document called "Statement of Composition" (SoC) where all potential present migrants in the printing ink shall be listed. The SoC has been developed to ensure full transparency along the supply chain and a SoC shall be available for each printing ink. The paper manufacturer shall enclose documentation demonstrating compliance with the requirement including also SoC.

O12 Greaseproof paper and product in contact with food

Greaseproof paper and product marketed for use in contact with food must comply with EU Regulation no. 1935/2004/EC on materials and articles intended to come into contact with food and be labelled as such according to article 15 of EU regulation no. 1935/2004/EC.

Paper, depending on product type, must also comply with:

[23] https://www.bfr.bund.de/cm/349/XXXVI-Paper-and-Board-for-Food-Contact.pdf
[24] https://www.bfr.bund.de/cm/349/XXXVI-2-Paper-and-Paperboard-for-Baking-Purposes.pdf
[25] https://www.blv.admin.ch/blv/en/home/gebrauchsgegenstaende/materialien-in-kontakt-mit-lebensmitteln/verpackungen.html
26 https://www.eupia.org/key-topics/food-contact-materials/general-overview-of-fcm/

- BfR's recommendation XXXVI. Paper and board for food contact, April 2021 or more recent versions or with the subsequent subdocuments such as BfR's recommendation XXXVI/2. Paper and Paperboard for baking purposes, April 2022 or more recent versions[27].

and

- Cepi's Food Contact Guidelines for the Complience of Paper & Board Materials and Articles, 2019[28] or more recent versions.

⇪ **The paper and product manufacturer** shall enclose confirmation from an independent third-party that the Framework Regulation and BfR's recommendations are followed. Declaration of Compliance (DoC) in line with the Cepi's Guidelines shall also be enclosed.

⇪ **The product manufacturer** shall enclose sample of information printed on the product's exterior packaging.

Background to the requirement

The requirement for paper in contact with food is changed. Paper marketed for use in contact with food must comply with EU Regulation no. 1935/2004/EC on materials and articles intended to come into contact with food. In addition, Nordic Swan Ecolabel products must comply with BfR's recommendation XXXVI and subsequent subdocuments such as BfR's recommendation XXXVI/2. Paper and Paperboard for baking purposes, April 2022 or more recent versions. In addition, Cepi's Food Contact Guidelines shall be followed. In the previous generation, the paper had to comply with one of the three alternatives for food contact materials (FCMs); the BfR recommendations, the Council 'Policy statement[29] and CEPI's Industry guideline.

EU Regulation 1935/2004/EC is to be fulfilled by all materials and articles intended to come into contact with food. For paper products, no statutory requirements are made, other than EU Framework Regulation 1935/2004. None of the Nordic countries have comprehensive requirements for paper,[30] except for individual requirements such as e.g. the ban on fluorinated substances in paper and board food contact materials in Denmark[31]. It is therefore important that paper that comes in contact with food is safe to use.

In the previous generation, greaseproof paper marketed in contact with food had to comply with one of the three alternatives for FCMs. Analysis of license data, however, showed that most of the greaseproof paper marketed for use in contact with food followed BfR's recommendation XXXVI. BfR's recommendation is a German legislation that regulates paper for food contact. It is widely used in many countries without specific legislation for paper. The requirement has now been changed to include BfR's updated recommendation in order to give further

[27] https://www.bfr.bund.de/en/bfr_recommendations_on_food_contact_materials-308503.html

[28] https://www.cepi.org/wp-content/uploads/2020/09/Food-Contact-Guidelines_2019.pdf

[29] Council 'Policy statements concerning paper and board materials and articles intended to come into contact with foodstuffs', version 4, 2009

[30] European Commission, Summary of the national legislation, Sanco E6/MS(28/09/2010):http://ec.europa.eu/food/food/chemicalsafety/foodcontact/documents_en.htm

[31] https://www.foedevarestyrelsen.dk/english/SiteCollectionDocuments/Kemi%20og%20foedevarekvalitet/UK-Fact-sheet-fluorinated-substances.pdf

reassurance that the product that is marketed for use in contact with food is safe to use.

In addition to BfR's recommendations, Cepi's Food Contact Guidelines shall be followed. Cepi's Guideline outline the core requirements for paper manufacturers including e.g. Declaration of Compliance (DoC). The Declaration of Compliance (DoC) is the core document which the manufacturer of paper and board materials and articles is expected to produce in order to communicate compliance with the Framework Regulation. The Framework Regulation requires that food contact materials which are subject to a specific measure must be accompanied by a written declaration stating that they comply with the applicable rules. In the case of paper and board, for which no specific measure currently exists, these rules are contained in the Framework Regulation and included in the Cepi's Guidelines. Although not strictly legally required until a specific measure is in place, it is the most appropriate tool for communication in the supply chain and represents current best practice. Cepi's Food contact guidelines shall therefore be followed and as a documentation a declaration of Compliance (DoC) shall be enclosed.

3.7 Packaging and labelling

O13 Raw materials in sales packaging

The requirement covers sales packaging* for the Nordic Swan Ecolabel product.

** Sales packaging means packaging conceived so as to constitute a sales unit consisting of products and packaging to the final user or consumer at the point of sale. Packaging of paper reels (paper to converter) is out of scope of the requirement.*

Plastic packaging

Plastics must contain at least 35% recycled** plastics.

Paper packaging

Paper packaging refers to all paper-based packaging (paper, board etc.). On an annual basis,

1. A minimum of 70% of the fibre raw material that is used in the paper packaging shall originate from forestry certified under the FSC or PEFC schemes,

   or

2. The paper packaging must consist of a minimum of 70% of recycled fibres** or be labelled as FSC or PEFC recycled,

   or

3. A combination of certified and recycled fibres. If the paper packaging contains both recycled and certified fibres, the sum of these fibres shall in total be a minimum of 70%.

The remaining proportion of fibre raw material must be covered by the FSC/PEFC control schemes (FSC controlled wood/PEFC controlled sources).

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

Pre-consumer recycled material: Material diverted from the waste stream during a manufacturing process, requires a reprocessing (e.g. in case of recycled plastic sorting, reclamation and granulation) before it can be reused regardless of whether it is produced in-house or externally. Excluded is reuse of materials such

as e.g. in paper mills broke generated in a process and capable of being reused within the same process that generated it.

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

The product manufacturer shall enclose documentation showing the fulfillment of the requirement e.g. in the form of technical data sheets and through invoices that are checked in connection with an on-site inspection. Appendix 4 Declaration from the manufacturer(s) of the packaging can be used for the documentation.

O14 Recyclable packaging material in the sales packaging

It shall be possible to recycle* the main material** in the sales packaging via existing recycling systems. Furthermore, sales packaging made of plastic must be made of mono-materials***.

** Incineration for energy recovery is not classed as material recycling. Biodegradable/compostable/oxo-degradable plastics cannot be recycled at today's recycling facilities.*

*** The main material is defined as the material that makes up 90 wt% or more of the total packaging.*

**** A mono-material is defined as material components that are not composed of multiple material types, e.g. the same plastic type and cardboard are mono-materials.*

The product manufacturer shall demonstrate compliance with the requirement by enclosing a description of the main material in the packaging and how the material can be recycled in existing waste and resource systems in the Nordic region. Appendix 4 Declaration from the manufacturer(s) of the packaging can be used for the documentation.

Background to requirements

The requirements for packaging are new. The environmental impact of packaging is usually small compared to that of the paper product itself. Therefore, there has only been a few requirements on packaging included in the previous generations of the criteria. The new requirements for the use of recycled material in packaging and recyclability of packaging are in line with the EU Circular economy action plan[32]. The EU's action plan focuses on recovery and reuse, particularly with regard to packaging materials. Nordic Ecolabelling has an opportunity to promote the recycling of packaging by setting requirements that support this process. By setting requirements for using recycled material in packaging, the Nordic Swan Ecolabel promotes a transition to materials with a lower impact on the climate. The material in the packaging must also be recyclable. This provides an opportunity for materials to stay in the resource eco-cycle, thereby reducing the use of virgin resources.

Today, most of the packaging for consumer products consists of paper/board. For sales packaging made of paper, the fiber raw material must come from a minimum of 70% certified sources, be recycled or a combination of both. Plastic packaging must contain at least 35% recycled material. This is in line with minimum recycled content in plastic packaging from 1 January 2030 as set in the

[32] https://ec.europa.eu/environment/topics/circular-economy/first-circular-economy-action-plan_fi

EU proposal for a Regulation of Packaging and Packaging Waste, published in November 2022[33]. The requirement for recycled content of plastic applies to main material in packaging. The main material is defined as the material that makes up 90 wt% or more of the total packaging.

Sales packaging must be recyclable via the existing waste systems operating in the Nordic region. Incineration with energy recovery is not considered as material recovery. The extent to which a material is recycled depends on many factors, such as the sorting options in each country or local authority, and how the consumer ultimately sorts the waste. However, Nordic Ecolabelling has an opportunity to promote the recycling of packaging by setting design requirements that support this process.

It is also emphasized in the requirement that plastic packaging must be made of mono-materials. Packaging of products are usually made of mono-materials, which is the best way to ensure high quality recycling, as multilayered plastics are not possible to recycle.

Bio-based plastics can also be used in packaging, but oxo-degradable and biodegradable plastics must not be used since they "contaminate" the other recycled plastics streams in the Nordic region. Bio-based plastic in PET, PE and PP can be recycled in the same way as fossil-based plastic in PET, PE, and PP.

O15 Chlorinated plastic

Chlorinated plastic, e.g. polyvinyl chloride (PVC) and polyvinylidene chloride (PVDC), must not be used in the packaging (article, group or transport packaging).

The product manufacturer shall declare that chlorinated plastic is not used in the packaging. Appendix 4 Declaration from the manufacturer(s) of the packaging can be used for the documentation.

Background to the requirement

Polyvinyl chloride (PVC) and polyvinylidene chloride (PVDC) must not be used in the packaging. The environmental impact of PVC is associated primarily with emissions of harmful organic chemicals from the entire production chain, use of endocrine disrupters such as phthalates as plasticizers in soft PVC and waste challenges with management during production and end of life.

O16 Labelling

Greaseproof paper products:

The following text must be visibly printed on packaging of baking paper: "The pure paper can be used more than once".

If the product or its packaging carries information on sorting and recycling of product, the information must comply with established sorting and recycling systems available in the country in which the product is to be sold.

Packaging:

The packaging shall carry information on how packaging can be sorted for recycling. This information shall be stated using text or symbols.

For business-to-business, labelling is allowed to be placed in other places than on the packaging, e.g. on the declaration of compliance document.

[33] Proposal Packaging and Packaging Waste (europa.eu)

⇪ **The product manufacturer** shall enclose sample of information printed on the product's exterior packaging showing the fulfillment of the requirement or in case of business-to-business, e.g. the declaration of compliance document.

Background to the requirement

The requirement for labelling has been adjusted. In addition to the text that pure baking paper can be used more than once, the requirement now includes information how packaging can be sorted for recycling. Regarding the product itself, if the product or its packaging carries information about sorting and recycling only the available and existing recycling possibilities for the greaseproof paper in the country in which the product is to be sold shall be allowed.

To stimulate the sorting of packaging for recycling, a new requirement has been introduced concerning the information on the packaging on how it should be sorted for recycling. The waste stage is affected by many factors, such as the sorting options in each country or local authority, and how the consumer ultimately sorts the waste. However, Nordic Ecolabelling can generally encourage greater recycling of packaging by setting requirements that support recycling options. Labelling requirements for business-to-business are allowed to be placed in other places than on the packaging, e.g. on the declaration of compliance document.

Regarding the greaseproof paper, possibilities of setting requirements for the recycling of paper in order to promote circular economy was studied during the revision. Contact with manufacturers showed that it is basically possible to recycle greaseproof paper via paper recycling but since the national collection schemes and recyclability protocols e.g. for paper soiled with food differ in different countries, it is not possible to set a single requirement that the paper must be recycled. However, if there is information regarding the sorting and recycling of the paper product, it must align with the sorting and recyling systems established in the country wherethe product is to be sold. This means e.g that the paper cannot be labelled as "compostable" if industrial composting is not an viable option in the country in question.

4 Licence maintenance

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

O17 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.

⇪ Routines for handling and archiving customer complaints.

Background to the requirement

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.

O18 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.

⇪ Description of the mill's traceability system/routines for the fulfilment of the requirement.

Background to the requirement

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.

O19 Annual follow-up

Every year a follow-up of the environmental requirements must be made in line with instructions from Nordic Ecolabelling, see also requirement O16 in the Basic Module, generation 3 or later.

Nordic Ecolabelling may examine a selection, or all, of the requirements.

5 Areas that are not subject to requirements

This section presents requirements that are not included in the criteria, but which were discussed during the development of the criteria.

Functional requirements

The previous requirement for functional properties, "the product must meet the function requirements applicable within the industry", has been removed. The requirement that baking paper must be possible to reuse has been kept the same, see closely O3 and O16.

Possibilities of setting requirements for the product's function and which properties are the most relevant have been investigated during the current revision. Apart for the paper to be food safe, which is adressed for in another requirement, it was found that the most relevant analysis such as resistance to

grease and oil and non-stick performance had no standardised testing methods available. The industry relies on their own internal methods. Although, some standardised testing methods were identified, these analyses, while relevant, may not be considered the most critical for the paper´s function. In summary, it will be difficult to set requirements including limit values for these properties. Introducing such a requirement would lead to unnecessary administrative burden on both licensees and advisors, without necessarily contributing to environmental and health benefits.

Summary of functional properties

The most important functional property of greaseproof paper is its resistance to grease, fat and oil. There are several standard test methods for various oil and grease resistance such as TAPPI 559, ISO 16532-2, ISO 16532-1, ASTM-F119-82. However, most of them are designed for PFAS treated papers, papers without coating or papers coated with a plastic film. None is found to be really suited for silicone coated papers. There is ongoing research to adjust and develop more suitable analytical methods for grease resistant coating without fluorochemicals[34,35,36,37].

"Non-stick performance" of baking papers, is important for the easy release or separation of the paper from the baked product. This property is assessed by baking e.g., a cake. Upon removal of the baked good from the baking paper, the residue which adheres to the paper is visually observed or weighed. No standardised test method has been found, the industry often use their own internal tests, making it difficult to compare performance and set requirements..

Additional barrier properties such as a barrier against water and the ease of release of the paper from the product are important when greaseproof paper is used for end-uses such as baking paper and baking cups. For water absorptiveness, standard methods are available, e.g. ISO 535 and Tappi T441. Analysing mechanical properties of the paper, such as tearing resistance (ISO 1974) or bursting strength (ISO 2758) ensures that the paper can be handled without bursting or tearing during e.g. wrapping or baking.

Additional requirements for converters

Criteria for Greaseproof paper were evaluated during 2022. To study possibilities to set additional environmental requirements for the converters to support their environmental performance was suggested in the evauation. In the current criteria, only a few environmental requirements such as chemicals and waste apply to converters.

[34] Marianelli et al 2022) "Improvements in oil and grease resistance (OGR) test methodology for waterborne barrier coatings" TAPPI Journal Vol 21, No 11, 2022
[35] (OECD 2020), PFASs and Alternatives in Food Packaging (Paper and Paperboard) Report on the Commercial Availability and Current Uses, OECD Series on Risk Management, No. 58,
[36] Riekki A, 2019) Oil and grease resistant paperboard – factors affecting barrier properties and an evaluation of the test methods" Master's Thesis, Tampere University, Materials Science and Engineering
[37] (Hassanzada S, 2022) "Method development for measuring oil and grease resistance of coated paper- and board materials Evaluation of ASTM- F119 test method" Bachelor's thesis in Chemical Engineering, CHALMERS UNIVERSITY OF TECHNOLOGY.

The requirements in the criteria mainly apply to the pulp and paper manufacturer, as the biggest environmental impact originates from pulp and paper manufacturing. From an environmental point of view, the converter who primarily converts, cuts and pack the finalised product plays a minor role. Potential new requirements that could be set for converters mainly apply to requirements to have environmental management, energy efficiency analysis and measures or initiatives to have e.g. renewable energy such as own solar cells. As relevance and potential to these are low compared to overall environmental impact from production of pulp and paper, it was decided that no additional requirements are imposed to converters in the generation 5 of the Criteria. See also table of RPS in chapter 2 where hotspots of the Criteria are presented closely.

New hazard classes in CLP

New hazard classes have been introduced in the Regulation (EU) 2023/707[38] as regards to hazard classes and criteria for the classification, labelling and packaging of substances and mixtures (CLP). This expansion reflects the need to establish hazard identification for endocrine disruptors and addresses criteria for environmental toxicity, persistency, mobility and bioaccumulation. According to the regulation, there will be transition periods that vary between 2025 and 2028, depending on whether the mixture or substance is new or already on the market.

The Nordic Swan Ecolabel has already incorporated prohibitions on endocrine disruptors and PBT/vPvB substances into the requirement O2 'Prohibited substances' in the Chemical Module, generation 3. However, there are currently no specific requirements for PMT and vPvM-substances. During the revision of the criteria for greaseproof paper it was discussed whether to include these new hazard classes to align with the European Green Deal's goal of a toxic-free environment. It was, however, decided that these new CLP classifications shall be included in the Chemical Module, generation 3, which contains general requirements regarding use of chemicals in the manufacture of pulp and paper. Before amendment, the Chemical Module will be sent to mini-open consultation to gather feedback on potential consequences of the new hazard classes. By incorporating these classifications, the Nordic Swan Ecolabel ensures that its criteria remain aligned with up-to-date scientific understanding and regulatory compliance.

Changes compared to previous generation

Overview of changes to criteria for Greaseproof Paper, generation 5 compared with previous generations 3 and 4 is presented in Table 3 below.

[38] https://eur-lex.europa.eu/eli/reg_del/2023/707

Table 3 Overview of changes to Nordic Ecolabelling (NE) criteria for Greaseproof paper and products, generation 5 compared with previous generations 3 and 4 including requirements in the relevant Basic Module (BM) and the Chemical Module (CM).

Requirement	Nordic Ecolabelling – Greaseproof Paper, generation 3, 2003	Nordic Ecolabelling – Greaseproof Paper, generation 4, 2014	Nordic Ecolabelling – Greaseproof paper, generation 5, 2023
Product definition	Greaseproof paper such as sandwich wrapper and baking paper, and converted products thereof. Release paper included.	Greaseproof papers are defined as cellulose based papers coated with various substances.	Greaseproof papers are defined as cellulose based papers coated with various substances. Release paper removed.
Fibres			
Fibre raw material	20% certified fibre raw material	Virgin fibre for products intended to come into contact with food. 30% certified[39] fibre raw material or 75% recycled fibre. Assessment of forestry standards[40].	Virgin fibre for products intended to come into contact with food. 70% certified[41] or recycled fibre in paper, allocated to paper/production line. New req. for pulp: fibre from euca or acacia must be 70% certified.
Fibre raw material	Traceability requirements for all wood and fibre raw materials.	Pulp and paper mills must be CoC certified. Traceability requirements for all wood and fibre raw materials.	Pulp and paper mills must be CoC certified. List of restricted tree species not allowed to be used in NSE paper.
Chemicals in the Chemical Module[42]			
Exclusion list, Restrictions on substances of very high concern (SVHC)	No	No	Ban on substances in the Candidate List in concentrations greater than 0,1% (w/w), applied to production chemicals used.
General prohibition of classified chemicals	No	Yes, applied to production chemicals used.	Yes, applied to production chemicals used. The new classification category has been introduced (H412).
Alkylphenol ethoxylates (APEOs)	Prohibited in specific chemical groups	Prohibited in specific chemical groups	Prohibited in specific chemical groups
De-inking chemicals	Yes	As previous	Yes, slightly amended. All surfactants used must be readily or inherently biodegradable.
Biocides	Yes	As previous	Yes, slightly amended. Now includes reference to regulation (EC) No 528/2012.

[39] In addition to wood fibres, Nordic Ecolabelling permits the use of bamboo, cotton linters, linen and flax.
[40] Nordic Ecolabelling stipulates strict requirements in respect of standards according to which forestry must be certified
[41] FSC or PEFC
[42] In EU Ecolabel criteria wastewater treatment chemicals excluded unless the treated wastewater is recirculated back into the process. Pulp chemicals not included in the EU Ecolabel Criteria.

Residual monomers	Yes Acrylamide limit 700 ppm	New requirement on classified residual monomers. Ban on bisphenol A.	See the Exclusion list above. Acrylamide limit 1000 ppm
Foam inhibitors	Yes	As previous	Yes, slightly amended
Wet strength agents (WSAs)	Yes, no more than 0,01% for total of ECH, DCP and CPD in WSAs.	As previous	As previous
Bleaching agents	Chlorine gas prohibited	As previous	As previous
Dyes for printing and colouring	Yes	New requirement on classified constituent substances	Removed, included in req. for classified chemicals in the Chemical Module, v3
Heavy metals in pigments and dyes	Yes	Clarification of requirement on heavy metals	Metals included, harmonised partly with EU Ecolabel
Impurities in dyes	Pb, Hg, Cr and Cd under 100 ppm	As previous	Harmonised with EU Ecolabel
Phthalates	Prohibited	As previous	As previous
Amines/Azo dyes	Yes	As previous	Yes, clarified that the requirement regards azo dyes, link to Regulation (EC) No 1907/2006 Annex XVII, Appendix 8
Adhesives	Yes	As previous	Yes, slightly amended. Now regards only those ethylene glycol ethers which are classified.
GMO starch	No	Yes, prohibited	As previous
Emissions to air / water			
Score - emissions of COD, P, S and NOx	Pemissions total = $P_{COD} + P_P + P_S + P_{NOx} \leq 4.0$, none of the points for individual emissions (P_{COD}, P_P, P_S, and P_{NOx}) must exceed 1.5.	As previous	Individual emissions points <1.3, Total <4
COD, P, S and NOx	8.0 COD kg/tonne paper 0.01 P kg/tonne paper 0.6 S kg/tonne paper and 0.29 g/kWh NOx (multiplied by)	4.0 COD kg/tonne paper 0.01 P kg/tonne paper 0.5 S kg/tonne paper and 1.2 NOx kg/tonne paper	2.0 kg/ADt for COD 0.007 kg/ADt for P 0.15 for S and 0.8 for NOx kg/ADt
AOX	Weighted average from used pulps <0.25 kg/t paper, each individual pulp <0.40 kg/t	Weighted average from used pulps <0.17 kg/t, each individual pulp <0.25 kg/t	Weighted average from used pulps < 0.14 kg/t in paper, each individual pulp < 0.16 kg/t
Chelating agents	Yes	Yes	Removed
CO_2	Not specific for Grease proof paper, gen 3. In BM, gen 1 threshold values for CO_2 from combustion of fossil fuels for different pulp types and processes	1,750 kg/tonne paper, applied to fossil fuels and purchased electricity	900 kg/ADt, applied to fuels and electricity used for production of process heat.
CO_{2e}, transport	No	CO_{2e} from transport (from forest to mill)	Removed

Energy			
Score	No, not specific for greaseproof paper In BM gen 1 Score $P_{electricity}$<1.75 and$P_{energytotal}$: ($P_{electricity}$+P_{fuel})/2<1.25	Score $P_{electricity}$ ≤1.15 Score P_{fuel}≤1.15	Score $P_{electricity}$ ≤2.3, Score P_{fuel} ≤2.3 Refer to calculation changed in the BM, gen 3.
Fuel (heat)	No specific ref value for grease proof paper. In BM, gen 1 different ref. values for different pulp types and subprocesses included in paper manufacturing.	3,500 kWh/t	3000 kWh/ADt
Electricity	See fuel (heat) above	2,200 kWh/t	1400 kWh/Adt
Waste			
Sorting of waste (Basic Module)	Yes	As previous	Yes
Packaging			
Packaging material and recyclability	Must not contain chlorine-based plastics. The packaging shall be recyclable.	No	Plastics must contain at least 35% recycled plastics, made of mono-materials. The paper packaging must consist of 70% certfiied (FSC/PEFC) or recycled fibers or a combination of both. Packaging must be recyclable, ban on PVC and PVDC.
Labelling -sorting of packaging	No	No	Yes
Product	Nordic Ecolabelling – Grease-proof paper, generation 3, 2003	Nordic Ecolabelling – Grease-proof paper, generation 4, 2014	Nordic Ecolabelling – Grease-proof paper, generation 5, 2023
Optical brighteners and antibacterial substances	Optical whiteners forbidden. No requirement for antibacterial substances.	Forbidden	Forbidden
Chemicals used for impregnation and coating	Chromium and fluorine compounds forbidden in coating chemicals.	Chromium and fluorine compounds forbidden in coating and impregnation.Silicones, - Must be solvent based - ban on organotin compounds - D4 (CAS 556-67-2) or D5 (CAS 541-02-6) must not be used. As impurities allowed up to 800 ppm.	As previous + D6 (CAS 540-97-6) must not be used. As impurities D4, D5 and D6 are allowed up to 1000 ppm on dry silicone basis each. If fluorinated substances used in the mill, test results of TOF for Nordic Swan Ecolabel paper is needed.
Colourant and printing inks	See CM above	See CM above	New. The colourants must comply with Bfr XXXVI and printing inks with - EuPIA "Guideline on Printing Inks applied to Food Contact Materials", SoC to be attached and - Swiss Ordinance Annex 10,

Function properties	The product must fulfil the normal requirements relating to performance properties for greaseproof paper.	The product must meet the function requirements applicable within the industry. Reuse of baking paper.	Removed except reuse of baking paper that is moved to the O3.
Paper that comes into contact with foodstuffs	Comply with one of the following: - Council of Europe's resolution - BfR/Germany - Warenwet/the Netherlands - FDA/USA.and National regulations	Comply with one of the following: - European Council 'Policy statement - BfR's recommendation XXXVI. - CEPIs Industry guideline	Comply with both BfR and Cepi's Guidelines. Declaration of Compliance (DoC) to be attached.
Labelling	For baking paper, text on the packaging:" This paper may be used more than once before disposal".	As previous.	For baking paper text on the packaging: "The pure paper can be used more than once". Sorting and recycling of packaging. If sorting and recycling of product then in line with the existing recycling systems in the country where the product is sold.