About Nordic Ecolabelling for

Protective and Absorbent Hygiene Products

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Nordic Ecolabelling

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

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1 Summary

Nordic Swan Ecolabel Criteria for Protective and Absorbent Hygiene Products have been revised from generation 6 to 7. Focus points during the revision have been to promote use of raw materials with low climate impact, such as sustainable sourced bio-based materials or recycled plastics instead of fossil-based material in both the product and packaging. New mandatory requirements have been introduced. These include a minimum share of bio-based and/or recycled content for certain product types, exclusion or limitations for plastic materials in specific other product types and energy efficiency measures for manufacturing facilities handling fossil-based components. In addition, existing requirements for raw materials, including wood raw material, fluff pulp, regenerated cellulose, bio-based polymers and recycled plastic are tightened. Furthermore, plastic packaging must be recyclable and contain a minimum of 35% recycled plastic.

The criteria also impose strict requirements on the chemicals in manufacturing of the hygiene products. Given that these products come into close contact with the body and many of the products are intended for young children, there is high relevance to set requirements that decrease potential exposure to chemicals harmful to health. In addition to the updated chemical requirements, the following product types, children's diapers, incontinence care products, sanitary towels (pads and panty liners), and tampons, must undergo impurity assessments to ensure that consumers are not exposed to harmful substances during use.

The Criteria have been expanded with the reusable menstrual cups made of silicone and other elastomers, as they fulfil the same function as disposable options. This is in line with the latest revision of EU Ecolabel absorbent hygiene products. The reusable menstrual cup has been reported to have substantially lower environmental impact than the single-use menstrual products. In the beginning of the revision, an analysis was conducted whether disposable hygiene product should continue to be Nordic Swan Ecolabelled or if reusable should be promoted instead. Disposable products are, however, commonly used today and needed due to different user experience. The analysis concluded that disposable products should continue to be Nordic Swan Ecolabelled, providing there is a clear environmental difference between Nordic Swan Ecolabel products contra similar non-ecolabelled products in the market. There remains a considerable potential for improving disposable products by maintaining the ecolabel and enforcing requirements for the raw materials phase.

The structure of the criteria has also been clarified by e.g. merging certain requirements into one. This is mainly done to improve the user experience and future licensing. The criteria changed name from "Sanitary Products" to "Protective and Absorbent Hygiene Products" to better describe what products are in scope and to align with the term "AHP" used in the industry.

For an overview of the changes in this revised generation 7, see Table in chapter 2.

2 Changes compared to previous generation

Overview of changes to criteria for protective and absorbent hygiene products, generation 7 compared with previous generation 6.

Gen. 7	Gen. 6	Same req.	Change	New req.	Comment
Product and packaging					
O1 Description of the product	O1	X			Adjusted, no significant changes.
O2 Material composition	O2		X		Recycled material have been updated and merged to O2. The exemption of requirements for specific material types under 1-w% of H+A has been removed. As well as the 5% limit for allowing materials for which no requirements are imposed.
O3 PVC	O26	X			Adjusted, no significant changes.
O4 Packaging, raw materials	O38		X		Plastic and paper packaging Plastic packaging must contain minimum 35% recycled plastic.
O5 Packaging, recycling				X	Packaging must be recyclable in the Nordic Countries
O6 Packaging, information				X	Information how to sort the packaging
Chemicals in production					
O7 Chemical products, classification	O3		X		Updated in line with the NSE guidelines for chemicals, it includes new CLP classifications to support the European Green Deal's goal of a toxic-free environment, addressing endocrine disruptors, environmental toxicity, persistency, mobility, and bioaccumulation. Endocrine disruption for human health: EUH380, EUH381 Endocrine disruption for the environment: EUH430, EUH431 Persistent, Bioaccumulative and Toxic properties: EUH440 Very Persistent, Very Bioaccumulative properties: EUH441 Persistent, Mobile, and Toxic properties: EUH450 Very Persistent, Very Mobile properties: EUH451
O8 Chemical substances, classification	O4		X		Updated in line with the NSE guidelines for chemicals, it includes new CLP classifications, see O7 classification above.
O9 Prohibited substances	O5		X		The list of prohibited substances has been expanded with the following substances: Volatile aromatic carbons (VAC), Ethylenediamine tetraacetate (EDTA, CAS No. 6381-92-6) and its salts and Diethylenetriamine pentaacetate (DTPA, CAS No. 67-43-6) and its salts, 34 bisphenols and nanomaterials. Exemption for CMIT is specified to water based inks where CMIT C(M)IT/MIT (3:1) may be used in raw materials, with a concentration limitation of 15 ppm in the ink due to its potential to cause skin sensitizing.
O10 Silicone	O6		X		Limit values for each D4, D5 and D6 has been tightened from 800 ppm in the ready to use silicone mixture or the finished cured silicone to 1000 ppm on dry silicone basis on the ingoing silicone chemical products and aligns with the Criteria for Grease-proof paper, generation 5. For comparison, previous limit value of 800 ppm in a coating bath containing 10% dry silicone corresponds to a limit value of 8000 ppm in the ingoing silicone chemical product. Silicon cups have limit values aligned with EU Ecolabel for menstrual cups.

O11 Adhesives/Binders	O7		X		Adjusted, phthalates removed since they are covered by O9. The limit value for formaldehyde has been adjusted from 10 to 16 ppm to align with the overall product limit and has been applied to the ready-to-use adhesive instead of the hardened adhesive to simplify the analytical procedure.
O12 Fragrances and skin care preparations	O8	X			Adjusted, no significant changes, except that silicon menstrual cups included.
O13 Odour control substances	O9	X			Adjusted, no significant changes.
O14 Medicaments and antibacterial agents	O10	X			Adjusted, no significant changes, except that silicon menstrual cups included.
O15 Colouration	O11		X		Adjusted and clarified with definitions. Chemical substance classifications (O8) and prohibited substances (O9) at the pigment level have been removed. Pigments must now comply with chemical classification (O7) and BfR's (Federal Institute for Risk Assessment) recommendations: "IX. Colorants for Plastics and other Polymers Used in Commodities" regardless of whether the coloured component is in contact with the skin. Silicon cups have a requirement aligned with EU Ecolabel for menstrual cups. Colourants in the reusable menstrual cup shall not exceed 2% of total weight of the cup.
O16 Printing inks	O12		X		A ban on printing on components in direct contact with skin has been added. Printing inks must comply with the EuPIA Exclusion Policy (6th Edition 2024 or later) or with the Swiss Ordinance Annex 10.
Materials					
O17 Forbidden and restricted tree species	O15, O18, O20		X		Updated with Nordic Ecolabelling's requirement concerning restricted tree species.
O18 Traceability and certification	O15, O18, O20		X		Updated with Nordic Ecolabelling's requirement concerning certified wood.
O19 Cellulose-based pulp/fluff pulp, general	O14	X			Adjusted, no significant changes.
O20 Cellulose-based pulp/fluff pulp, production	O16		X		Reference value for energy and emissions to water and air have been tightened, airlaid removed. Fluff pulp Elref = 900 to 870 kWh/ADt Fuelref = 6000 to 5900 kWh/ADt CO2 emission 450 to 350 kg/ADt CTMP fluff pulp Elref = 2000 to 1700 kWh/ADt Fuelref = 1000 to 900 kWh/ADt CO2 emission 900 to 150 kg/ADt AOX 0.15 to 0.14 kg /ADt pulp mixture AOX 0.17 to 0.16 kg/ADt individual pulp
O21 Paper, general	O17	X			Adjusted, no significant changes.
O22 Tissue paper, production	O19		X		Applicable only to tissue paper.
O23 Cotton, bleaching	O21	X			Adjusted, no significant changes, except that other natural cellulosic seed fibres included.
O24 Cotton, raw fibre	O22	X			Adjusted, no significant changes, except that other natural cellulosic seed fibres included.

O25 Cotton, additives	O23	X			Adjusted, no significant changes, except that other natural cellulosic seed fibres included. But also refers to chemical requirements O7-O9 that has been updated.
O26 Regenerated cellulose, bleaching	O24		X		Limit values for AOX tightened from 0.15 to 0.14 kg/ADt.
O27 Regenerated cellulose, production	O25		X		Closed loop processes included as an alternative. Limit values for emissions to water and air tightened. S from 20 to 16 g/kg fibre COD from 45 to 30 g/kg fibre Zn from 0.2 to 0.05 g/kg fibre
O28 Plastics included in components	O27	X			Adjusted, no significant changes. But refers to chemical requirements O7-O9 that has been updated.
O29 Polyurethane/elastane	O28	X			Adjusted, no significant changes.
O30 Polyamide	O29	X			Adjusted, no significant changes.
O31 Bio-based polymers	O30		X		Threshold value has been removed previously it was set to 20%. Updated with Nordic Ecolabelling's requirement for bio-based polymers, which means that palm oil, including PFAD, soybean oil, and soy flour must not be used for bio-based polymer. And the origin of the raw materials shall be verified as either waste/residuals or be Bonsucro/ISCC EU/ISCC Plus certified. Additionally, genetically modified plants, GMO, must not be used.
O32 Recycled plastics	O31		X		The requirement has been clarified and updated with stricter traceability and certification requirements. Recycled plastic raw material must now not come from production lines that are EFSA or FDA approved as food contact material or marketed as compatible with these. Furthermore, recycled plastic in product must come from a closed loop, with a known source to ensure its safe use in the hygiene product. Additionally, it must not be directly in contact with the skin. The list of restricted substances for recycled plastic in packaging and additional components has been updated to include Bisphenol A. The requirement now also specifies which substances must be included in the analysis of restricted impurities (Table 1 in the Appendix 2).
O33 SAP, residual monomers and extracts	O32	X			Adjusted, no significant changes.
O34 SAP, additives	O33	X			Adjusted, no significant changes. But refers to chemical requirements O7-O9 that has been updated.
O35 Nonwoven, general	O34	X			Adjusted, no significant changes.
O36 Nonwoven, chemical products	O35	X			Adjusted, no significant changes. But refers to chemical requirements O7-O9 that has been updated.
O37, Silicone and elastomers, general requirements				X	Applicable to menstrual cups
Silicones and elastomers, emissions of dust and chlorides				X	Applicable to menstrual cups
O38 Silicones and elastomers, emissions of copper and zinc				X	Applicable to menstrual cups

O40 Silicones and elastomers, emissions of CO2				X	Applicable to menstrual cups

Manufacturing of final product					
O41 Material efficiency				X	Applicable both to hygiene products and menstrual cups
Product specific requirements					
O42 Synthetic polymers used in single-use products				X	Applicable to single-use hygiene products
O43 Impurities in the final product				X	Applicable to single-use hygiene products
O44 Performance	O39	X			Adjusted, no significant changes, except that silicon menstrual cups included.
O45 Tampons	O40	X			Adjusted, no significant changes.
O46 Menstrual cups				X	User instructions, applicable to menstrual cups
O47 Information	O41	X			Adjusted, no significant changes.
Quality and regularity					
O48 Customer complaints	O44	X			Adjusted, no significant changes.
O49 Traceability	O47	X			Adjusted, no significant changes.
Removed requirement from gen. 6					
Other materials	O37				Removed because plastic sticks in cotton buds are covered by EU 2019/904.
Responsible person and organisation	O42				Covered by application portal
Documentation	O43				Covered by application portal
Planned changes	O45				Covered by application portal
Unplanned nonconformities	O46				Covered by application portal
Take-back system	O48				
Legislation and regulations	O49				Covered by application portal
O38 Silicones and elastomers, emissions of copper and zinc				X	Applicable to menstrual cups
O40 Silicones and elastomers, emissions of CO2				X	Applicable to menstrual cups
Manufacturing of final product					
O41 Material efficiency				X	Applicable both to hygiene products and menstrual cups

Product specific requirements					
O42 Synthetic polymers used in single-use products				X	Applicable to single-use hygiene products
O43 Impurities in the final product				X	Applicable to single-use hygiene products
O44 Performance	O39	X			Adjusted, no significant changes, except that silicon menstrual cups included.
O45 Tampons	O40	X			Adjusted, no significant changes.
O46 Menstrual cups				X	User instructions, applicable to menstrual cups
O47 Information	O41	X			Adjusted, no significant changes.
Quality and regularity					
O48 Customer complaints	O44	X			Adjusted, no significant changes.
O49 Traceability	O47	X			Adjusted, no significant changes.
Removed requirement from gen. 6					
Other materials	O37				Removed because plastic sticks in cotton buds are covered by EU 2019/904.
Responsible person and organisation	O42				Covered by application portal
Documentation	O43				Covered by application portal
Planned changes	O45				Covered by application portal
Unplanned nonconformities	O46				Covered by application portal
Take-back system	O48				
Legislation and regulations	O49				Covered by application portal

3 Justification of the product group definition

The current Nordic Swan Ecolabel criteria for sanitary products, generation 6 has comprised of disposable hygiene products. The Nordic Swan Ecolabel aims to reduce unnecessary consumption of disposable products. Although hygiene products are single-use and cannot currently be recycled, Nordic Ecolabelling is open to labelling disposable products in the hygiene sector, in order to support and enhance the environmentally best disposable products on the market. In this generation 7 of the criteria, the product group is extended to cover reusable menstrual cups made of silicone and other elastomers. The menstrual cups comprise reusable flexible cups or barriers worn inside the body to retain and collect menstrual fluid. They are usually made from stable materials which allows them to be washed and reused for up to 10 years. More information about Nordic Swan Ecolabel and single-use contra reusable products can be found from the chapter 6.

The product group definition describes the types of disposable products that can be Nordic Swan Ecolabelled: it focuses on the type of function that the product has (absorbent, protective and removing). The definition also makes it clear what is being absorbed, protected or removed (bodily fluids and faecal matter, or cosmetics). Both products for private and professional use in health care sector can be ecolabelled. However, products with added cosmetics, medication/medicines, disinfecting substances and similar cannot be ecolabelled in this product group.

Products that may have a similar function but a different use such as disposable bedlinen in hotels are excluded as well as disposable washing clothes for kitchen or other cleaning, as the criteria for hygiene products encompass only products for personal hygiene. Nordic Ecolabelling does not wish to promote disposable articles in such use and refers to the Criteria for Textiles for labelling of reusable bedlinen. In general, related reusables such as wash cloths, textile diapers and mesh pants can be ecolabelled under the criteria for the Nordic Swan Ecolabel for Textiles, Hide/skins and Leather. This is also applied to hybrid products combining both reusable and disposable parts: the textile part shall fulfil the Criteria for Textiles and the disposable part the Criteria for Protective and Hygiene Products.

Examples of other products that cannot be ecolabelled under the Criteria for Protective and Hygiene Products, but may be under other Nordic Ecolabelling Criteria are following:

- Wet wipes for personal use (Criteria for Cosmetic Products).
- Dry wipes, serviettes and paper wash cloths (Criteria for Tissue Paper and Tissue Paper Products).
- Reusable wash cloths, cloth baby diapers, cloth pads and period underwear (Criteria for Textiles).
- Microfibre cloths for cleaning (Criteria for Supplies for Microfibre Based Cleaning).

Upon request, relevant disposable hygiene products in addition to those specified in the product group definition may be included in the product group. This applies only to products made of materials for which requirements are imposed in the criteria. Nordic Ecolabelling will decide which new products may be included in the product group.

4 Justification for requirements

4.1 Product and packaging

Background to O1-O2 Description and material composition of the product
The requirements O1 and O2 have been set to provide an overview of the licensed product and it’s sales packaging. This will make it easier to determine which requirements have to be fulfilled for the raw materials. Unlike in the previous generation 6, the requirement O2 includes also overall requirement for

recycled material in the final product. Recycled material is not allowed in the hygiene product (e.g. in cotton, paper and fluff pulp) with the exemption of recycled plastic. Thus, several requirements are now combined into a single requirement describing the material composition. Compared to the previous generation, a triviality limit for specific material types present in quantities of maximum 1.0 weight-% has been removed. As well as the 5% limit for allowing materials for which no requirements are imposed.

Composition and threshold values

For a Nordic Swan Ecolabelled hygiene product, 100% of the contents must be stated. Similarly, the composition of sales packaging must be specified so it later in the document becomes clear which requirements apply to each material type.

The weight-% of a specific material is calculated as the total weight of the material type in the hygiene product (H) and in the additional components (A) divided by the total weight of the hygiene product and additional components in a pack (excluding the weight of information sheets and sales packaging). This represents the total weight required for the product to be usable. The weight of the materials in the sales packaging is not included in (H+A). The calculation is preferably done per single product unit.

Recycled material

Use of recycled material in the hygiene product itself is limited as recycled material may contain substances that can be harmful for health and environment. As the product most often is in direct contact with the body such substances are not wanted in the final product. However, recycled plastic can be used if the plastic fulfils the requirement set, see closely O32 for specific requirements set for recycled plastics. Use of recycled material in additional components, like in release paper that are removed before use is, , allowed, see requirement O32.

Recycled material is defined according to ISO 14021 which contain definitions of "post-consumer" and "pre-consumer" materials. Recycled materials can be post-consumed material like discarded plastic products and packaging from the end-user as households or commercial, industrial or institutional facilities or be pre-consumed material like reprocessed production scrap. Rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it is not considered as recycled material. This means that reuse of plastic from the use of the plastic material, and that is sent back to the producer of the plastic is considered pre-consumed. Cuttings from the plastic production that are used again in the same process are not considered as pre-consumer.

Background to O3 Chlorinated plastic

The requirement is set to ensure that chlorinated plastics such as PVC (polyvinyl chloride) and PVDC (polyvinyl dichloride) are not included in the product, components or product’s 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 challenges with waste management during production and end of life. The requirement for packaging is applied only for sales packaging.

Background to O4-O6 Packaging

The requirement for packaging is updated. The environmental impact of packaging is usually small compared to that of the raw materials used in the hygiene product itself. Therefore, there has only been a few requirements on packaging in the previous generation, consisting mainly of a ban on PVC and ban on certain harmful substances in the packaging or during its manufacturing. Recycled material in the packaging has, however, been fostered in the previous generation 6 by setting an alternative requirement for content of recycled material (a minimum of 20%). The requirement for recycled content in plastic packaging is made compulsory in the generation 7. Sales packaging made of plastic must contain a minimum of 35% of recycled plastic. An individual packaging around the single packed product such as tampons is not covered by the requirement for recycled content. The new Packaging and Packaging Waste Regulation (PPWR) sets a minimum recycled content in plastic packaging from 2030. Packaging for contact sensitive products such as absorbent hygiene products shall contain a minimum of 10% of recycled content recovered from post-consumer plastic waste, if made from plastic materials other than polyethylene terephthalate (PET). The percentage is 30% for contact sensitive packaging made from PET as the major component.

There is a new design for recycling requirement that plastic packaging must be made of mono-materials. Material requirements for virgin plastic remain almost the same as in the previous version. Virgin plastic shall not contain certain harmful chemicals (O28a). If recycled or bio-based plastics are used in packaging, then relevant requirements (O32 and O31) for these must be fulfilled. These requirements have been updated, and for more information, see closely the relevant requirements that are referred to.

For paper-based packaging, the requirement is extended to cover general requirements for paper (O21). In addition to chemical requirements banning e.g. fluorinated chemicals, the producer of paper-based packaging must be Chain of Custody (CoC) certified by the FSC/PEFC schemes.

To foster circular economy, new requirements have been introduced for recycling and concerning the information about 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. These requirements also prepare manufacturers for recently published Packaging and Packaging Waste Regulation (PPWR)[1]. The Commission shall adopt delegated acts for design for recycling criteria and recyclability performance grades by 1 January 2028. The Commission shall also adopt implementing acts to establish a harmonised label and specifications for material composition in order to

[1] Regulation - EU - 2025/40 - EN - EUR-Lex

facilitate consumer sorting. Until then, the packaging shall be marked with pictograms given in the requirement. Pictograms of EUPicto (eupicto.com) are developed in the Nordic countries. DIN 6120-2 is a standard for marking of packaging and packaging materials for recycling.

4.2 Chemicals

The chemical requirements are split into two sections: general chemical requirements and function-specific requirements.

4.2.1 General chemical requirements

Background to the O7-O9 general chemical requirements
The general chemical requirements are updated in line with the Nordic Ecolabeling's guidelines for chemicals. The requirements are divided into three specific requirements. The first concerns classification of the chemical products used, while the next two concern chemical substances that are included in these chemical products. The latter two requirements place special emphasis on substances that are considered to be Substances of Very High Concern (SVHC). Certain specific chemical groups such as phthalates, organotin compounds and flame retardants are also covered.

The requirements apply to chemical products and chemical substances used in production of hygiene products, components, materials and additional components. Responsibility for documenting compliance is specified in each requirement and may not always be the chemical supplier.

Chemical products and chemical substance classifications

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

Titanium dioxide, TiO2

In August 2025, the EU Court of Justice upheld the annulment of the harmonised Carc. 2 (H351i) classification of TiO2. Since TiO2 is no longer CMR classified, the exemption from the requirement is removed. Coloration with TiO2 is allowed, see closely background for O15.

Prohibited substances list

The list of prohibited substances has been expanded with the following substances: CMIT (CAS no. 26172-55-4), Volatile aromatic carbons (VAC),

Ethylenediamine tetraacetate (EDTA, CAS No. 6381-92-6) and its salts and Diethylenetriamine pentaacetate (DTPA, CAS No. 67-43-6) and its salts, 34 bisphenols, and nanomaterials. The motivation for each substance on the list can be seen below.

REACH Candidate list of Substances of Very High Concern, SVHC

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

Organotin compounds

Organotin compounds are harmful and toxic to the aquatic organisms at low concentration and have been linked to adverse effects in humans, such as reproductive toxicity and therefore many of these compounds are listed as substances of very high concern.

Organotin compounds are regulated in Annex XVII, point 20 of REACH. Subsection 6a states that dioctyltin (DOT) must not appear at more than 0.1% by weight of tin in feminine hygiene products, for example. A report from 2005 written by Risk & Policy Analysts Limited (RPA), on behalf of the European Commission,[2] states that organotin compounds have been reported in products that include diapers and feminine hygiene products. According to the report, organotin has historically been used as a catalyst in polymer production, as a stabiliser in polymers and as a biocide in various products.

Phthalates

Several phthalates are identified as endocrine disruptors and some of them are classified as reprotoxic. For these reasons several phthalates are included in the Candidate list. Based on their hazardous properties, phthalates pose a threat to the environment and human health and there is a ban on this group of substances. The exclusion of phthalates covers esters of phthalic acid (orthophthalic acid / phthalic acid /1,2- benzene dicarboxylic acid) or commonly known as ortho-phthalates.

[2] Risk assessment studies on targeted consumer applications of certain organotin compounds, Final Report - September 2005 prepared for the European Commission by Risk & Policy Analysts Limited (RPA)

CMIT C(M)IT/MIT (3:1), CAS No. 55965-84-9 CAS No. 26172-55-4

CMIT (CAS no. 26172-55-4) is a type of isothiazolinones which are commonly used as biocides not alone but in mixture 3:1 with MIT. In generation 6 of the criteria, there was an exemption for CMIT. For generation 7 of the criteria, the exemption is specified to water based inks where CMIT C(M)IT/MIT (3:1) may be used in raw materials, with a concentration limitation of 15 ppm in the ink due to its potential to cause skin sensitizing.

APEO

APEOs and its derivatives are a large group of different substances commonly used in products containing polymers, e.g. adhesives. The non-ionic APEO group of surfactants are produced in large volumes and their uses lead to widespread release to the aquatic environment. APEOs are highly toxic to aquatic organisms and degrade to more environmentally persistent compounds (alkylphenols). Ethoxylated nonylphenol and several other alkylphenols are included in the Candidate List due to endocrine disrupting properties. Exception in the requirement applies to phenolic antioxidants that are sterically hindered with a molecular weight> 600g/mole.

Halogenated organic substances and Perfluorinated and polyfluorinated alkylated substances (PFAS)

Halogenated organic compounds is a large group of organic substances that contain halogenated substances such as chlorine, bromine, fluorine, or iodine that are harmful to both the environment and human health. They are often carcinogenic, highly toxic to aquatic organisms and very persistent to degradation.

Per- and polyfluoroalkyl substances (PFAS) are used in many types of products due to their water and dirt repellent properties. PFASs are defined as fluorinated substances containing at least one fully fluorinated methyl or methylene carbon atom (without any H / Cl / Br / I atom attached to it), i.e., with a few listed exceptions, all chemicals with at least one perfluorinated methyl group (–CF3) or a perfluorinated methylene group (–CF2–) is a PFAS as described in OECD 2021. These compounds constitute a group of substances that have highly problematic intrinsic hazardous properties. They are extremely persistent and accumulate in the body. They are spread all over the globe, from the large oceans to the Arctic, and are found in e.g. wild birds and fish and their eggs. Also, short-chain compounds (2–6 carbon atoms) have been discovered in nature. The substances in these groups are suspected to be endocrine disruptors, carcinogenic and to have a negative impact on the human immune system.

Flame retardants

Flame retardants are suspected of contributing to a number of unwanted health effects. Several of the substances are suspected of causing birth defects, cancer, and endocrine disrupting effects. Many of them are on the EU candidate list under REACH. Many brominated flame retardants are persistent and bio accumulative chemicals that can now be found dispersed in nature. The focus on phasing out brominated flame retardants has led to the use of alternatives

such as phosphorus and nitrogen-based flame retardants. Nordic Ecolabelling is not aware of any use of flame retardants in hygiene products.

Volatile aromatic carbons, VAC

Volatile aromatic compounds (VACs) have a chemical structure with one or more benzene rings within the molecule, e.g. toluene, benzene and xylene. Some VACs are very stable and have a specific impact on the environment and human health, including damage to DNA. They are used as additives in plastics or as monomers in production of binders for paints (e.g., styrene).

Ethylenediamine tetraacetate, EDTA and Diethylenetriamine pentaacetate, DTPA

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

Bisphenols

Several bisphenols with the general bisphenol structure and 'bisphenol derivatives' which have constituents with structural properties common to bisphenols are now prohibited. Based on the potential for widespread use and available information on potential endocrine disruptors, reproductive toxicity and PBT/vPvB properties, 34[3] substances were identified in need for further regulatory risk management in EU[4].

Nanomaterials

Nanomaterials are a diverse group of materials, defined in these criteria according to the EU Commission Recommendation on the Definition of Nanomaterial (2022/C 229/01). Due to their small size and large surface area nanoparticles are often more reactive and may have other properties compared to larger particles of the same material. Further, different sizes, shapes, surface modifications and coatings can also change their physical and chemical properties. Nanoparticles can cross biological membranes and thus be taken up by cells and organs. One of the main concerns are linked to free nanoparticles, as some of these – when inhaled – can reach deep into the lungs, where the uptake into the blood is more likely.

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

[4] Annex XV restriction report https://echa.europa.eu/documents/10162/450ca46b-493f-fd0c-afec-c3aea39de487

There is concern among public authorities, scientists, environmental organisations, and others about the insufficient knowledge regarding the potential detrimental effects on health and the environment. Nordic Ecolabelling takes these concerns seriously and applies the precautionary principle to exclude potentially hazardous nanomaterials from products.

Pigments are finely ground, insoluble particles that are used to give products a specific colour. There are no substitutes that can fulfil pigments' function as colourants, and many pigments consist partly or entirely of nanoparticles. It is generally more efficient to use pigments with smaller particles than larger ones to obtain the same colour. Thus, nano-sized pigments are exempted.

Endocrine disruptors

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

A substance listed on any of List I; II; and/or III, on www.edlists.org, is excluded in the product group. List I contain substances identified as EDs at EU legislative level; List II contains substances under EU legislative ED evaluation; and List III is for substances considered by a national authority to have ED properties.

The requirement concerns the main lists (List I-III) and not the corresponding sub lists called "Substances no longer on list". A substance which is transferred to a sub list is thus no longer excluded, unless it also appears on any of the other main lists I-III.

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

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

Antibacterial agents

An antibacterial 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 antibacterial agents usually disappear after a few washes and are released to the environment where they can cause adverse effects.

It is suspected that some antibacterial 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. Antibacterial agents such as triclosan, triclocarban and silver are examples. Triclosan has been banned for use in human hygiene products since 2016[5] in EU. Furthermore, antibacterial agents can harm bacteria that are necessary for the treatment of water at water treatment plants. Therefore, antibacterial-treated articles or products containing antibacterial agents should be avoided.

The requirement specifies that in-can preservatives used to preserve the chemical product are excluded. However, deliberately adding chemicals with antibacterial effects to the hygiene product is not permitted (see also O14).

4.2.2 Function-specific chemical requirements

This section contains specific requirements for chemical products and chemical substances that may be used in the manufacture of hygiene products or added to the constituent components.

Background to O10 Silicone
Silicone is used primarily to achieve a grease- or water-repellent effect as a coating on materials or as an additive in materials.

The requirement applies where silicone is used, for example as a silicone release coating on paper or plastic component. The limit value for impurities of octamethylcyclotetrasiloxane (D4, CAS 556-67-2), decamethylcyclopentasiloxane (D5, CAS 541-02-6) and dodecamethyl cyclohexasiloxane, (D6, CAS no. 540-97-6) has been adjusted from 800 ppm in a coating bath of silicone emulsions to 1000 ppm on a dry silicone basis per commercial product/chemical product. This limit applies to each substance separately. Although the new limit might seem less stringent, it represents a significant tightening due to revised definitions. The updated limit value aligns with the Criteria for Grease-proof paper, adopted 2023. Revisions to definitions and wording have been made to improve clarity and avoid misunderstandings.

In practice, component manufacturers (e.g. release liner or tape producers, who are customers of Silicone chemical suppliers) typically purchase various raw materials from silicone suppliers and blend them in-house. This process results in a silicone mixture (or formulation), which is then cured onto the component (release liner/tape). The new limit values are applied to the silicone chemical products delivered from the silicone producer to the component manufacturer, rather than to the final silicone formulation or mixture.

[5] COMMISSION IMPLEMENTING DECISION (EU) 2016/110 of 27 January 2016 not approving triclosan as an existing active substance for use in biocidal products for product-type 1.

The requirement has also been updated to include limit values for impurities of D4, D5 and D6 for silicone used in reusable menstrual cups. The limit values are based on the EU Ecolabel criteria for Reusable Menstrual Cups[6].

For more information on the requirement concerning silicone, see the background document about the criteria for grease-proof paper[7] and the final technical report for EU Ecolabel criteria for Absorbent Hygiene Products and Reusable Menstrual Cups[8].

Background to O11 Adhesives/binders

The requirement has not been changed in this version of the criteria. However, phthalates are not explicitly banned in this requirement anymore because phthalates are already on the list of forbidden substances in O9. Rosin is prohibited because it can cause contact allergies. Rosin is derived from the resin of pine trees. The mixture contains several allergens and can cause a rash after prolonged skin contact. According to the website of Astma-Allergi Danmark[9], the use of rosin is especially pronounced in plasters, sticky bandages and cosmetics, and may also go by the following names: colophony, abietin, abietic acid, methyl abietate or abiethyl alcohol. It is allowed to be used in adhesives based on derivatives of colophony if they are not classified as sensitizing.

The requirement that the content of formaldehyde must not exceed 250 ppm in newly produced polymer dispersion and the restriction to 16 ppm in the ready-to-use adhesive have been set because formaldehyde is carcinogenic and may cause allergic reactions. The limit value has been adjusted from 10 to 16 ppm to align with the overall product limit for formaldehyde which is 16 ppm and has been applied to the ready-to-use adhesive to simplify the analytical procedure. Hotmelts are, however, exempted from this requirement, since formaldehyde is not relevant for hotmelt adhesives.

Background to O12 Fragrances and skin care preparations

The ban on fragrances and skin care preparations remains unchanged in this revision. However, the requirement is now also applied to reusable menstrual cups. Fragrance and other scents in the form of essential oils, plant oils and plant extracts must not be included in the final product. Fragrances may contain allergens or CMR substances. To avoid unnecessary effects on health from these types of substances, the use of fragrance and scents is entirely prohibited. This is also applied to skin care preparations. Moisturising and skin care preparations might include aloe vera, chamomilla recutita, glyceryl stearate and pretolatum (Vaseline). Allergens and carcinogens can occur in lotion preparations. Since

[6] COMMISSION DECISION (EU) 2023/1809 of 14 September 2023 - establishing the EU Ecolabel criteria for absorbent hygiene products and for reusable menstrual cups (notified under document C(2023) 6024)
[7] About Nordic Swan Ecolabelled Greaseproof paper – Supplementary Module, version 5.0, 14 December 2023.
[8] Revision of EU Ecolabel criteria for Absorbent Hygiene Products and Reusable Menstrual Cups (previously Absorbent Hygiene Products) - Final Technical Report: Final criteria, JRC Science for policy report.
[9] Astma-Allergi Danmark. Kolofonium. https://www.astma-allergi.dk/viden-om/kontakteksem/allergisk-kontakteksem/limstoffer/kolofonium/ (from 9. December 2024)

lotion and skin care or moisturising preparations are not necessary for the function of the hygiene products, this type of additive is excluded from use on health grounds.

The requirement shall be documented by a declaration from the producer of the final product even if potential additives to materials can be done earlier in the supply chain. These substances are not added to the product or its components intentionally without agreement with the manufacturer.

Background to O13 Odour control substances
As in the previous version, odour control substances are prohibited in hygiene products, with the exception of incontinence care products. The criteria specify that any odour control substances must fulfil the general chemical requirements O7-O9. Odour control substances classified as H332, H373, H400 and/or H410 are, however, permitted. These classifications are only allowed for products designed for lighter incontinence such as pads and panty liners. The delimitation is made as odour inhibitors are an important part of the function of such products for people who have an active everyday life.

Background to the O14 Medicaments and antibacterial agents
To avoid any doubt about the extent to which a product with added medication or disinfecting substances is effective and meets the health requirements set for the product in question, Nordic Ecolabelling has chosen to entirely prohibit medicaments in ecolabelled hygiene products. In this context, medicaments mean chemical substances/products designed to prevent, alleviate or cure illness, sickness symptoms, pain and bacterial growth or to alter bodily functions (cf. definition in Section 2 of the Cosmetics Directive). This definition also extends to chemical substances such as silver compounds (healing). Antibacterial agents are also named in the title of the requirement, to make it absolutely clear that the addition of antibacterial agents to the hygiene product is not permitted.

Lactic acid bacteria added to tampons are exempted from the requirement. These are currently added in one type of tampon to maintain the pH balance in the vagina. Lactic acid bacteria occur naturally in the body and are therefore not considered a medicament, see also requirement .

Background to the requirements O15 and O16
The requirements concerning colouration and printing inks are almost the same as in the previous generation, but have been clarified and simplified to ease the verification process. The requirements apply now for the hygiene product and the components in the hygiene product if the component makes up 1 weight-% or more of (H+A). As in the previous generation, the requirement does not apply to additional components, information sheet or sales packaging. The requirement for colouration is also applied to menstrual cups. However, colourants in the reusable menstrual cup shall not exceed 2% of total weight of the cup.

The ban on colouration of hygiene products has been set to minimise the presence of harmful colourants in products that come into close contact with the skin, and to avoid unnecessary colouration.

Exemptions may be made for special products used in hospitals and nursing homes, if there are justified reasons, such as the need for staff to differentiate between different sizes. For incontinence products, colouration is only allowed for incontinence products for adults and children over the age of five, excluding women's hygiene products like panty liners. Coloured products can reduce the stigma associated with incontinence by resembling regular underwear. Colouration is also allowed for children's incontinence products to help reduce embarrassment and protect self-esteem. Materials not in direct contact with the skin may be exempted if the colour serves a specific function, such as colouring the outer side of breast pads to make them less visible under white clothing. Tampon strings are also exempt, as colouring them helps users distinguish the string from the tampon without damage.

Exemptions are allowed for colouration with TiO2 which is commonly used in polymers and regenerated cellulose to prevent a grey appearance. Since TiO2 is not used in powder form and does not pose inhalation or ingestion risks.

The majority of materials in hygiene products that are subjected to colouration are plastic based. Colouring these plastic materials is usually made by mixing pigments to a carrier resin to create a masterbatch. The carrier resin is a type of polymer that is compatible with the base polymer, e.g. the main plastic material. During the plastic manufacturing process, the masterbatch is added to the base polymer. The amount of masterbatch used is typically a small percentage of the total polymer mixture, as the pigments are highly concentrated.

The polymer in the master batch shall comply with the requirements set out for plastics (O28), while the specific pigment/dye requirements are detailed in this requirement. Pigments/dye must e.g. meet the requirements set out in O7 and the BfR's (Federal Institute for Risk Assessment) recommendations: "IX. Colorants for Plastics and other Polymers Used in Commodities" which e.g. contains purity requirements regarding metals. If the colourant (pigment/dye) is used to colour cellulose material it must fulfil the BfR´s recommendation XXXVI. Paper and board for food contact, from February 2023 or later versions.

As mentioned above, when colouring a hygiene product, it usually means colouring a plastic material. However, if a cellulosic material is being coloured, it is typically made by using a colour formulation. If a colour formulation is used, it must meet the requirements of O16 for printing inks, except for committing to the EuPIA Exclusion Policy listed on the website (www.eupia.org) 6th Edition 2024 or later versions or compliance with the Swiss Ordinance Annex 10.

Printing on hygiene products, is usually applied to the backside of diapers, on the back of the release paper under panty-liners and incontinence care products. Printing is not allowed to materials in direct contact with the skin. Exemptions may be made for print that serves a functional purpose (e.g. product orientation markings identifying the back part of a product), provided that the print itself does not come into contact with the skin and compliance is supported by a third-party test report confirming that the print does not migrate. This exemption does not apply to children's products.

Printing inks must meet the chemical requirements set out in this criteria document, metal purity limits and committing to the EuPIA Exclusion Policy listed on the website (www.eupia.org) or comply with the Swiss Ordinance Annex 10, which is a list of permitted substances for the production of printing inks in contact with foodstuffs.

4.3 Materials

This chapter includes requirements for different materials such as wood, fluff pulp, regenerated cellulose, paper, cotton and plastic used in final product.

4.3.1 Wood raw materials

Background to O17 Prohibited and restricted tree species
Several tree species are restricted or not permitted for use in Nordic Swan Ecolabel products. Many of the restricted tree species are grown in countries which still have large areas of Intact Forest Landscape (IFLs). These are important to protect due to biodiversity and climate. A lot of these countries also have a high risk of corruption, and the national legislation related to environment, human rights and ownership to land are weak and/or not controlled by the authorities. Applying a precautionary approach, the use of listed restricted tree species must comply with strict requirements on origin, traceability and certification.

The list of prohibited species contains species on the CITES list while the list of restricted species contains species on the IUCN red list (categorized as critically endangered (CR), endangered (EM) and vulnerable (VU)), Rainforest Foundation Norway list and Siberian Larch (originated outside the EU). Restricted species can be used in Nordic Swan Ecolabelled products if certain strict conditions on origin, certification and traceability are met.

The requirement only applies to virgin wood and not wood defined as recycled material in accordance with ISO 14021. For more information about Nordic Swan Ecolabelling's approach on forest, click here.

Background to O18 Traceability and certification
Nordic Ecolabelling's requirements concerning raw material based on wood raw material including bamboo have focus on sustainable forestry and traceability of raw materials.

The many benefits that sustainably managed forests deliver to society include wood for materials and energy, protection against global warming, homes and livelihoods for local communities and indigenous peoples, support of biodiversity and protection of water and soil from pollution and erosion. By setting a requirement that wood raw material must originate from certified, sustainable managed forests, Nordic Ecolabelling is supporting the move towards more sustainable forestry practices.

The requirement for wood raw material has been tightened. Certification percentage, a minimum of 70% is not only applied to wood raw material used in

finalized product such as cotton buds but also to pulp and paper if the amount of pulp/paper is over 10 weight-% in the final hygiene product. The share of certification was 30% for pulp and 50% for paper in the previous generation of the criteria. The remaining proportion of wood raw material must meet the requirements of FSC controlled wood or PEFC controlled sources. The requirement limit, a minimum of 70% of all wood raw material, correspond to the FSC and PEFCs requirement limits for use of the respective labels on products, such as "FSC Mix" and "PEFC certified".

The pulp and paper manufacturers and suppliers of the wood raw material must be Chain of Custody certified by the FSC/PEFC's schemes. The requirement for Chain of Custody certification contributes to traceability in the supply chain within the FSC and PEFCs guidance and control systems for traceability.

There is a requirement that certified raw material must be assigned/allocated to the raw material used in Nordic Swan Ecolabelled product in the accounts for certified/non-certified material. This ensures that FSC/PEFC credits are used for the Nordic Swan Ecolabelled production and that the credits are "used up" and not sold twice. This will stimulate increased demand for certified wood raw material because more certified wood raw material must be purchased if the manufacturer wants to label other products, and not just those used in the Nordic Swan Ecolabelled products, with the FSC/PEFC logo. It should be noted that Nordic Ecolabelling approves both the percentage system and the credit system for accounting and sale of certified material.

Eucalyptus and Acacia used for pulp and paper production are exempted from the list of restricted tree species. However, fibre raw material originating from Acacia and Eucalyptus plantations must be a minimum of 70% certified. This also applies if several pulps are mixed in the finished pulp. It is the user of the eucalyptus/acacia pulp 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.

4.3.2 Cellulose-based pulp/fluff pulp

Background to O19 Pulp, general requirements
The requirement for all pulps remains almost same as in the previous generation. The requirement is mainly associated with the use of chemicals in manufacturing. In addition to requirements for chemicals, pulp manufacturer(s) must be Chain of Custody (CoC) certified by the FSC/PEFC's schemes. The requirement for CoC certification contributes to traceability in the supply chain within the FSC and PEFC's guidance and control systems for traceability.

Chemicals added to the finished pulp to provide specific properties must fulfil the chemical requirements O1 and O2 in the Chemical Module, version 3, to be in line with the general chemical requirements set for pulps. This has been changed from the previous generation, where chemicals had to fulfil chemical requirements set for hygiene products. This requirement only applies to

chemicals added to pulp to provide specific properties associated with hygiene products, and during the fluffing of the pulp. This may mainly relate to debonding agents and softeners.

The pulp must not be bleached with chlorine gas (Cl_2) and optical brightener or fluorinated chemicals must not be added to the pulp. Bleaching with chlorine gas is no longer used in Europe, but the requirement remains in place to cover imported pulps. It is less common for fluorinated chemicals to be added to the pulp. Nordic Ecolabelling is, however, particularly concerned about the unnecessary use of fluorinated chemicals and therefore, the ban remains. In addition to these, the pulp must not have a growth inhibiting effect on microorganisms, under test method EN 1104. The use of chemicals intended to have an antibacterial effect is unnecessary in hygiene products, and residues of process chemicals are also undesirable.

Background to O20 Pulp, production requirements (≥10.0 weight-%)
The requirement for manufacturing pulp/fluff pulp has been updated and follow the updated requirements in the Basic Module and the Chemical Module for Nordic Ecolabelling Paper Products, generation 3, as revised in 2020. If the amount of cellulose-based pulp/fluff pulp is 10.0 weight-% or more in the product, requirements for restricted tree species, traceability and certification of wood raw material (O17-O18) in this criteria for hygiene products must also be met. In addition to wood raw material and bamboo, other relevant cellulosic fibres may be included in the pulp upon request. In that case, contact Nordic Ecolabelling for the approval process.

The environmental impact of hygiene products is highly related to raw materials used. Cellulose pulp/fluff pulps are one of those raw materials that are used in hygiene products. During recent years, the focus in updating Nordic Swan Ecolabel requirements for cellulose pulp-based products has mainly been on reduced energy and greenhouse gas emissions and these requirements for pulp/fluff pulp are also made more stringent than in the previous version of the Criteria for Hygiene Products.

Compared with generation 6, the following key changes have been introduced:

- Reference values for manufacturing fluff pulp, consumption of fuel and electricity, have been tightened. Regarding fuel, from 6 000 kWh/ADt to 5900 kWh/ADt and for electricity from 900 kWh/ADt to 870 kWh/ADt. The new reference values are based on the licence data and data received during the consultation. The values have also been compared with the reference values proposed for the EU Ecolabel's criteria for absorbent hygiene products.
- For mechanical fluff pulp (CTMP) the reference values have been decreases from 1000 to 900 kWh/ADt for fuel and 2000 to 1700 kWh/ADt for electricity.
- Reference values for the pulps in the Basic Module[10], generation 3 have been tightened.

[10] Nordic Ecolabelling for paper products – Basic Module, version 3 basic-module-3.1_005_tissue-paper-005_english.pdf

- There is a new requirement for ban on fossil oil and coal used for production of process heat in the pulp/fluff pulp mill.
- The requirement for emissions of greenhouse gases has been changed. Greenhouse gas requirement only encompasses fuels used for production of process heat and not electricity as in the previous generation. The limit value is now set to 350 kg CO_2/ADt, previously 450 kg CO_2/ADt. For mechanical fluff pulp (CTMP) the limit value for emissions of CO_2 is 150 kg CO_2/ADt, previously 900 kg CO_2/ADt. For pulp comprising a mixture of chemical pulps and mechanical pulps, a weighted limit value is calculated based on the proportion of each pulp type.

The background document to the Basic Module, version 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.

Requirements for emissions to air and water are also tightened:

Regarding emissions to water and air, the limit value for individual point score has been tightened from 1.5 to 1.3. The reference values for all emission parameters, namely COD, P, S and NOx have been updated in the Basic Module, version 3. The weighted average value of AOX released from the mixed pulps must not exceed 0.14 kg/ADt pulp. AOX emissions from each individual pulp must not exceed 0.16 kg/ADt. For southern U.S. pine species from regions with higher levels of phosphorus, the reference value of 0.05 kg/ADt is applied.

Major changes in the Chemical Module[11], version 3 also affect the manufacturing of pulp/fluff pulp:

- 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. 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.

4.3.3 Paper

Background to O21 Paper, general requirements and O22 Tissue paper
The requirements for paper are separated into different levels, dependent on the amount of paper in the product.

All types of paper in hygiene products and additional components (H+A) must fulfil O21. Paper must not be coated with fluorine compounds or have fluorine added to the cellulose pulp. If the paper is coated with silicone, requirement O10

[11] Nordic Ecolabelling for paper products – Chemical Module, version 3 criteria-document-chemical-module-3.4_005_tissue-paper-005_english.pdf

must also be fulfilled. The requirement concerning microbial activity remains unchanged. The paper's microbial activity gives an indication of whether the paper contains antimicrobial agents.

The paper manufacturer(s) must be Chain of Custody certified by the FSC/PEFC's schemes. The requirement for Chain of Custody certification contributes to traceability in the supply chain within the FSC and PEFC's guidance and control systems for traceability.

If the product contains 10.0% by weight of paper or more, the requirements for wood raw material must be fulfilled, to be in line with the Nordic Ecolabelling guidelines for forestry[12]. In this revision the, the limit of certification has been increased from 50% to 70% in paper, see closely requirement O18. Regarding requirements for paper manufacturing (O22), the requirement has been changed to have focus only on tissue paper. Tissue paper is most widely used paper type in the hygiene products, apart from release paper that is especially used as an additional component in e.g. pads. In the previous generation, release paper was, however, exempted from the manufacturing requirements. More information on the requirements for the tissue paper can be found in the "Background document for the Tissue Paper and Tissue Products, version 6[13]. See also chapter 6 for environmental benefit in the background for hygiene products.

4.3.4 Cotton

Background to O23-O25 cotton and other cellulosic seed fibres
The requirements for cotton have not been changed in this version except that the requirements now apply to other cellulosic seed fibres as well. All cotton or other cellulosic seed fibres more than 5.0 % by weight in hygiene products and additional components must be organically cultivated. The requirement is strict but steerable for the manufacturers. Cultivation of cotton is linked to serious health and environmental problems caused by use of pesticides, fertilisers, irrigation water and monocultures[14], [15]. Nordic Ecolabelling has chosen to require organic cotton for most of the products that carry the Nordic Swan Ecolabel. This is in line with Nordic Ecolabelling's view of organic farming as a means of sustainably protecting soil, water resources and biodiversity.

The ban on bleaching with chlorine gas (O23) in manufacturing aims at minimising the negative effects on the environment caused by chlorine (e.g. prevention of the formation of dioxins and other highly carcinogenic pollutants).

[12] https://www.nordic-swan-ecolabel.org/pulp-paper-declaration-portal/what-can-be-declared/forestry-requirements/forestry_requirements_2020/
[13] Nordic Ecolabelling background for Tissue Paper and Tissue Products, version 6 https://www.nordic-swan-ecolabel.org/criteria/tissue-paper-005/

[14] https://issuu.com/pan-uk/docs/cottons_chemical_addiction_-_update?e=28041656/62705601
[15] Kooistra K, Termorshuizen A, Pyburn R (2006) The sustainability of cotton – consequences for man and the environment. Wageningen University & Research, report no. 223.

If additives are added in manufacturing of cotton, then they shall fulfill the general requirements O7-O9 for chemicals. The requirement is applicable to both raw cotton and cotton manufacturing in the supply chain.

4.3.5 Regenerated cellulose

Background to the O26 Regenerated cellulose, bleaching
The requirement has been updated by tightening the limit value for emissions of adsorbable organic halogens (AOX) to water from 0.15 to 0.14 kg/ADt. This requirement is applied to pulps used in manufacturing of regenerated cellulose fibres. Otherwise, the requirement is the same as before.

Cellulose pulp must not be bleached with chlorine gas. Chlorine gas is no longer used in Europe but may still be used in some parts of the world. Chlorine gas is an effective bleaching agent, but it causes considerable emissions of organochlorine substances. There are good alternative bleaching methods for pulps. Bleaching can be done total chlorine free (TCF) or by using elemental chlorine free (ECF) process. If ECF is used, then the annual average emissions of AOX in cellulose pulp production shall not exceed 0.14 kg/ADt which is the same as in the EU Ecolabel. When bleaching with chlorine dioxide, residues may arise as a by-product, and these are therefore exempt from the requirement. In addition to AOX emissions of pulps, organically bound chlorine (OCl) shall be analysed in the actual finished regenerated cellulose fibre. The amount shall not exceed 150 ppm in the fibre.

Manufacturer of the regenerated cellulose shall enclose information of the pulps used in manufacturing. Manufacturer also compiles information from the pulp producers regarding emissions of AOX and sends it to Nordic Ecolabelling. Alternatively, pulp manufacturer can send the information directly to Nordic Ecolabelling.

Background to the requirement O27 regenerated cellulose, production
The requirement for manufacturing of regenerated cellulose has been updated. There is a new alternative to comply with the requirement for emissions either by having alternative a) that if the regenerated cellulose fibre production is based on "closed loop" process such as the lyocell process. Or alternative b) to comply with limit values for sulphur emissions to air and chemical oxygen demand (COD) and zinc emissions to water. All limit values for emissions have been tightened. As for pulp and paper, the requirement is applied only when the material is included with 10.0% by weight or more in the hygiene product (H+A). Additionally which is new for this criteria generation is that the requirements for forestry are also applied when the amount of regenerated cellulose is over 10.0 weight-% in the hygiene product, see closely O17-O18.

The requirements regarding the production of regenerated cellulose have been tightened in this generation of the criteria. The purpose is to promote the more environmentally friendly manufacturing methods such as the lyocell process with more than 99% recycling rate for chemicals used or processes without the use of chemicals. This limits emissions of harmful chemicals to air and water.

Other newly developed processes can be approved as "closed loop" after the assessment of Nordic Ecolabelling.

Man-made cellulose fibres (MMCF), also known as regenerated cellulose fibres are commonly produced by the chemical sulphite pulping process, more specifically by the dissolving pulp process. By far, the most common MMCF is viscose fibre[16]. Regenerated cellulose fibre is based on cellulose fibres, made from raw materials such as wood, bamboo and cotton (cotton linters). Emissions of COD originating from manufacturing of cellulose pulp may be substantial. Therefore, the requirement for COD is set for both manufacture of the ingoing pulps and subsequent production of the regenerated cellulose fibres. For ingoing pulp, emissions of COD from the production of pulp must not exceed 23 kg/ADt expressed as an annual average. For manufacturing of regenerated cellulose, the limit value is set to 5 g/kg of regenerated cellulose fibre. In the previous generation, the limit value for COD was in total 45 kg/ADt covering both the ingoing pulps and regenerated cellulose production. The updated limit values indicate a significant tightening compared to the previous requirement. The updated limit values are based on the EU's Reference Document on Best Available Techniques (BAT-reports)[17] and data from licensing. Instead of measuring COD, total organic carbon (TOC) may be measured, if there is a correlation between the two values for the production process. This is to avoid mercury which is used in the COD analysis.

The manufacture of regenerated cellulose fibres also generates emissions of sulphur to air and zinc to water if closed loops are not applied. The requirement concerning emissions of sulphur to air has been decreased from 20 to16 kg/ADt and regarding zinc, the limit value 0.05 g/kg in EU Ecolabel is applied. The requirement set in these criteria are applied to stable fibres because they are usually used as raw material in nonwovens of hygiene products.

4.3.6 Plastic

Background to O28 Plastic included in components
Requirement for plastic components remains the same as in the previous generation, except for minor editing. Background for forbidden substances and requirements for additives can be found in O9. Regarding antimony in polyester, antimony trioxide (CAS no. 1309-64-4) is carcinogenic and the key catalyst in PET production. Nordic Ecolabelling wants to limit the content of antimony as it is a substance of concern. Therefore, a limit value is set at 260 ppm, as in the previous generation.

In the part a, forbidden substances in plastic components shall be declared by the component manufacturer or by the use of a test. A test can be carried out by a manufacturer of the plastic or later in the supply chain, for example, by nonwoven supplier. If the testing is done later in the supply chain, the pure

[16] European Man-made Fibres Association https://www.cirfs.org/
[17] Reference Document on Best Available Techniques in the Production of Polymers, August 2007 https://eippcb.jrc.ec.europa.eu/sites/default/files/2019-11/pol_bref_0807.pdf

plastic material must be tested, that is, the material that the supplier receives without further compilation with, for example, glue or other additives.

The responsibility for fulfilling the requirement throughout the supply chain is placed on the component manufacturer. Declaration by the component manufacturer must be based on knowledge gathered and requirements set to suppliers. Nordic Ecolabelling is aware that it is generally difficult to obtain information from the polymer producers and the plastics industry. The long supply chain makes it even more challenging. Requiring the component manufacturer's declaration to be based on ongoing discussions with suppliers helps to ensure that any changes in supply chain are included. Nordic Ecolabelling does not require documentation for the component manufacturer's dialogue with suppliers during licensing but may request this on audits.

Part b includes components of plastic included in the hygiene product and additional components (H + A) with 5% by weight or more. If the component manufacturer adds chemical products to the plastic component, these additives must meet the chemical requirements O7-O9. It is also clarified in the text that the requirement concerns chemical products added to the plastic component not additives added to the masterbatch, or the polymer production itself. As in part a, this can be confirmed with a declaration from the component manufacturer.

Background to O29 Polyurethane/elastane
Requirement for polyurethane/elastane remains the same as in the previous generation, except for minor editing. Elastane is a polyurethane elastomer. It is not used alone as a textile fibre but is incorporated into other materials to make them elastic. If elastane/polyurethane is used more than 5 weight- % in the product, then the requirements for manufacturing must be fulfilled. Organotin compounds can be used as catalysts in the polymerisation. Organotin compounds are very toxic, both for humans and animals (see closely O9), and a requirement is set that organotin compounds shall not be used. Requirements are also set for emissions of aromatic diisocyanates in the polymerisation and spinning. These compounds can cause allergic reactions in the eyes, lungs and skin in the event of emissions to the air. The requirement shall be documented through test reports and/or detailed information that shows that emissions of aromatic diisocyanates do not exceed 5 mg/kg produced fibre, or with a valid EU Ecolabel licence.

More information of the justification of the requirement can be found from the background of the previous generation 6. For organotin compounds, see also O9.

In addition to the manufacturing requirements, there is also additional requirement for PUR foams and thermoplastic PUR. PUR foam is used in wash cloths and thermoplastic polyurethane used in adhesive plaster. In these product types, a significant amount of PUR can be included. If these are used, then manufacture of PUR shall meet Criterion 2 in EU Ecolabel criteria for Bed mattresses[18]. This includes requirements for biocides, plasticisers, heavy

[18] COMMISSION DECISION - of 23 June 2014 - establishing the ecological criteria for the award of the EU Ecolabel for bed mattresses - (notified under document C(2014) 4083) - (2014/391/EU) (europa.eu)

metals, monomers, organotin compounds, VOC emissions, total chlorine content and blowing agents.

Background to O30 Polyamide
Requirement for polyamide remains the same as in the previous generation, except for minor editing. The two commercial polyamide products (nylon) on the market are polyamide 6.6 and polyamide 6. Polyamide 6.6 is created through the polymerisation of adipic acid and hexamethylenediamine, while polyamide 6 is created through the polymerisation of melted ε-caprolactam. For PA 6 and PA 6.6, there is a requirement regarding emission of nitrogen dioxide to the air from the production of the monomers caprolactam (PA 6) and adipic acid (PA 6.6). This value is the same as in the previous generation.

Background to O31 Bio-based polymers
The requirement for bio-based plastics is updated in line with the Nordic Ecolabelling guidelines for renewable raw materials. Threshold value when the requirement is applied, have been removed, and is applied both to product and packaging.

Biobased plastic can be defined as polymers produced from renewable resources. It is therefore an alternative to conventional plastics based on fossil resources. The biomass currently originates mainly from plants grown specifically to be used as feedstock to substitute fossil resources, such as sugarcane, cereal crops, oil crops or non-food sources like wood. Other sources are organic waste and by-products, such as used cooking oil, bagasse and tall oil.

Renewable raw materials can have a potential to give better environmental impact than fossil alternatives, but it depends on many parameters such as type of crop, where it is cultivated, cultivation conditions, land use change, further processing of the renewables and waste. Converting forest to cropland can have a huge impact on climate change and biodiversity. So, the possible benefits of replacing fossil-based raw materials with renewable raw materials will vary much and depend on responsible farming/forestry practices.

The establishment of palm oil and soybean plantations has led to vast areas of deforestation and destruction of natural habitats, thereby driving the loss of biodiversity in some of the world´s most precious places like the Amazon and Cerrado in Brazil and Borneo in Indonesia[19]. Voluntary certification schemes for palm and soy are not yet considered good enough (by Nordic Ecolabelling) to protect against deforestation, and palm oil, soybean oil and soy flour are therefore banned as raw materials for bio-based polymers. This also applies to waste or residual product from the palm oil production such as palm Fatty Acid Distillate (PFAD) or Palm Oil Mill Effluent (POME).

Other renewable raw materials must be a) waste or residual products from i.e., agriculture, fishing, forestry or processing residual product defined in accordance with (EU) Renewable Energy Directive 2018/2001 or b) certified

[19] https://www.worldwildlife.org/stories/deforestation-fronts (May 2024)

according to approved certifications schemes. Certified virgin raw materials must also not be genetically modified.

Nordic Ecolabelling has so far recognised Bonsucro EU and ISCC EU/Plus as valid certification schemes. The supplier of the bio-based polymer must have a valid chain of custody (CoC) certificate according to the standard by which the raw material is certified. Traceability must at least be ensured by mass balance. Book and claim systems are not accepted. The ban on GMO also applies when mass balance is used i.e. that GMOs may not be included in the specific mass balance system.

Nordic Ecolabelling emphasizes the precautionary principle and discourage the use of GMOs that are commercially available today. Nordic Ecolabelling is concerned about the consequences when genetically modified plants, animals and microorganisms are propagated in nature. However, Nordic Ecolabelling is not against genetic engineering or GMOs as such, and we believe that GMOs should be assessed on a case-by-case basis. For more information on Nordic Swan Ecolabelling's approach on GMO: https://www.nordic-swan-ecolabel.org/nordic-ecolabelling/environmental-aspects/

Background to O32 Recycled plastics

The requirement for recycled plastics has been updated. It consists of general requirements for all recycled plastics (1-3) and then parts a-c, depending on whether recycled plastics is used in components, sales packaging or hygiene products itself.

All recycled plastics (1-3)

In line with circular economy, use of recycled plastics should be promoted in the product and packaging. Regarding packaging, recently published Packaging and Packaging Waste Regulation (PPWR)[20] will also increase content of recycled post-consumer plastic in sales packaging. Use of recycled plastic imposes, however, additional requirements on its origin, traceability and purity, to ensure its safe use in contact sensitive products such as hygiene products.

All recycled plastics used in sales packaging, components and product must be defined according to the ISO 14021 and be traceable either by certification schemes such as EUCertPlast, RecyClass, Global Recycling Standard (GRS), Recycled Claim Standard (RCS), ISCC or other equivalent certification scheme that may be approved by Nordic Ecolabelling. Alternatively, a declaration from the manufacturer can be approved if supplemented with all documentation required. Recycled plastic raw material must not come from production lines that are EFSA[21] or FDA[22] approved as food contact material or marketed as compatible with these. Plastic materials approved for food packaging require the highest traceability and purity of the plastic raw material and it will therefore be down cycling to use this plastic for anything other than food contact products.

[20] Regulation - EU - 2025/40 - EN - EUR-Lex

[21] Commission Regulation (EU) 2022/1616 on recycled plastic materials and articles intended to come into contact with foods.

[22] Code of Federal Regulations Title 21: Food and Drugs, Part 177 – Indirect food additives: polymers.

Additional components and sales packaging

In the previous generation 6 of the criteria, some chemical requirements for recycled plastic in additional components and sales packaging were included. Recycled plastic that are used in additional components and sales packaging must not contain polybrominated biphenyls or diphenyl ethers, phthalates, organotin compounds, lead, cadmium, mercury or chromiumVI. Impurities up to 100 ppm are, however, permitted. The requirement shall be documented by a test report, or a description and traceability to the source that substantiate that the given substances do not occur in the plastic.

The list of restricted substances has been updated with Bisphenol A, commonly found in plastics. Generation 7 of the criteria also specifies substances for polybrominated biphenyls, diphenyl ethers, phthalates, and organotin compounds. The specified phthalates are based on the OEKO-TEX Standard 100, Annex 5. The majority of phthalates specified is on the Candidate list and restricted by Regulation No 1907/2006 and No 2018/2005, Annex XVII, entries 51 and 52.

Recycled Plastics in Hygiene Products

Recycled materials are not commonly used in the hygiene products due to high purity and quality reasons. In the previous generation 6, recycled plastic in hygiene product was allowed if it was approved according to EU Commission Regulation (EC) No 282/2008 on recycled plastic materials and articles intended to come into contact with foods. From this generation 7, recycled plastics approved for food contact have been removed since it will be down cycling to use this plastic for anything other than food contact products. Nordic Ecolabelling wishes, to enable use of recycled plastics however safety will take priority. If recycled material is used in hygiene product, it must come from a closed loop, with a known source to ensure its safe use in the hygiene product. An example is recycling of PET-bottles to recycled polyester (e.g. if PET-granulate are used from this process or from bottles that no longer can be reused. It is, however, always, the license holder`s responsibility to ensure that the products are safe to use.

Recycled plastic should not be directly in contact with the skin. This can be achieved using e.g. multilayer extrusion methods within the same polymer. Barrier layers are especially important in contact-sensitive products such as hygiene products made of recycled plastics because recycled materials can sometimes contain contaminants or substances that are not suitable for direct contact with skin. Using barrier layers is essential for maintaining safety and minimizing the risk of migration of unwanted chemicals. Exemptions are made for the product types, covers sheets (mattress covers/protectors, draw sheets, bed linen for hospital use), surgical gowns, patient gowns/patient covers, surgical caps, bibs). Provided that the final product or individual materials do not contain impurities according to Table 2 specified in Appendix 2 in the criteria document or have Oeko-tex Standard 100, Class I (Baby) together with test results for total fluorine. This exemption does not apply to children´s diapers, incontinence care products, sanitary towels (pads and panty-liners), tampons, breast pads, plasters, compresses, absorbent under pads (multilayer sheets with absorbent core) or sterile products.

Just as for plastic components constituting ≥5 weight-% in the hygiene product, any chemicals added to the recycled plastic must comply with chemical requirements O7-O9.

4.3.7 Superabsorbent polymers

Background to O33-O34 superabsorbent polymers
Requirements for superabsorbent polymers (SAP) remain the same as in the previous generation, except for minor editing. SAP is a synthetic material, manufactured mainly by the polymerisation of acrylic acid with ammonium persulphate as an initiator and can absorb and retain huge quantities of liquids. It was reported that 1 kg of SAP can absorb up to 418 L of water and for this reason it is used to retain high amounts of fluids in baby, incontinence and menstrual products[23]. Regarding the LCA-analysis of hygiene products, SAP has a significant impact on global warming potential (GWP). There is considerable relevance in setting requirements concerning constituent materials like SAP in hygiene products. However, the potential and steerability are low due to lack of site-specific data and therefore, the requirement is the same as in the previous generation, focusing on harmful chemicals in SAP. See also chapter 6 for environmental impact of hygiene products.

The requirement for residual monomers and extracts in SAP is the same as in EU Ecolabel requirements for absorbent hygiene products[24]. Amount of classified residual monomers is restricted to 1000 ppm and use of acrylamide as a monomer (CAS 79-06-1) is totally prohibited. Acrylamide is classified as mutagenic and carcinogenic, amongst other things[25]. Water-soluble extracts in SAP are restricted to a maximum of 10.0 weight-%. Water-soluble extracts are mainly monomers and oligomers of acrylic acid with a lower molecular weight than the one of SAP, and salts.

If SAP accounts for 10.0 weight-% or more of hygiene product (H+A), then possible additives to SAP must fulfil chemical requirements O7-O9.

4.3.8 Nonwoven

Background to the O35-O36 Nonwovens
Requirements for nonwovens concerning materials and additives used in manufacturing are basically the same as before. However, requirements for raw materials these requirements are referring to have been updated, such as those for fluff pulp and regenerated cellulose, as well as general chemical requirements regarding additives (O7-O9).

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[23] Bachra., Y., Grouli, A., Damiri, F., Bennamara, A. and Berrada, M. 'A new approach for assessing the absorption of disposable baby diapers and superabsorbent polymers: A comparative study', Results in Materials, Vol. 8, Elsevier, 2020, pp. 100156.https://doi.org/10.1016/j.rinma.2020.100156
[24] Faraca, G., Perez Camacho, M.N., Lag Brotons, A., Perez Arribas, Z., Kowalska, M.A. and Wolf, O., Revision of EU Ecolabel criteria for Absorbent Hygiene Products and Reusable Menstrual Cups (previously Absorbent Hygiene Products), Publications Office of the European Union, Luxembourg, 2023, doi:10.2760/209936, JRC134197. EU Ecolabel - Personal and animal care products (europa.eu)
[25] https://echa.europa.eu/da/registration-dossier/-/registered-dossier/15534

Nonwovens are defined by ISO 9092 and CEN EN 29092. Nonwovens are widely used in baby diapers, feminine hygiene, adult incontinence and personal care products, in multiple components of the products, such as top sheet, acquisition/distribution layer and back sheet[26]. Main nonwoven technologies used in adsorbent hygiene products are airlaid, carded nonwovens and spunmelt[27]. Because nonwoven may be produced from a variety of materials, the requirements refer to the requirements for the constituent materials and to the chemical requirements if additives have been used during the manufacture of the nonwoven. Although the processes associated with the manufacture of nonwoven use energy and may generate emissions to water, no requirements concerning these have been included in this generation of the criteria. There are also no requirements concerning process chemicals such as spinning additives, but with the exception of requirement to sensitising substances in the process water. If allergenic substances are used in the process water, it should be declared that the content in the finished nonwoven is <0.10 ppm for each sensitising substance.

4.3.9 Silicones and elastomers used in menstrual cups

Background to O37-O40 Silicones and elastomers in menstrual cups
Requirements for production of raw materials - silicones and elastomers - used in reusable menstrual cups are new in the criteria. Background for these requirements is presented only shortly as more information can be found from EU Ecolabel's Technical Report[28].

Requirement for emissions to air (O38) aims at minimising the emissions of dust and chlorides during production of silicon. Dust is emitted during i.e. elemental silicon grinding, storage and handling. Different measures such as filtering can be used to decrease these emissions. A Best Available Technique-Associated Emission Levels (BAT-AEL) for channeled emissions of dust in all chemical plants is 1-5 mg/Nm3. Therefore, a 5 mg/Nm3 dust emission level is set as a limit value (yearly average).

During silicone material production, chlorides emissions occur during the methyl chloride synthesis, the direct synthesis and the distillation process steps. The off-gases from these processes shall undergo thermal oxidation followed by scrubbing. Thermal oxidation step is to minimise the risk of polychlorinated dibenzodioxins/furans (PCDD/Fs) formation. Polychlorinated dibenzodioxins (PCDDs) and dibenzofurans (PCDF) emissions shall be below 0,01 ng TEQ/Nm3 and is applied to elastomers other than silicones.

As it was not possible to retrieve detailed information on the production of TPE, requirement for emissions water applies to silicon menstrual cups only. Inorganic impurities in wastewater arise from the use of different catalysts and

[26] https://www.edana.org/nw-related-industry/nonwovens-in-daily-life/absorbent-hygiene-products
[27] https://www.edana.org/nw-related-industry/nonwovens-in-daily-life/absorbent-hygiene-products
[28] Faraca, G., Perez Camacho, M.N., Lag Brotons, A., Perez Arribas, Z., Kowalska, M.A. and Wolf, O., Revision of EU Ecolabel criteria for Absorbent Hygiene Products and Reusable Menstrual Cups (previously Absorbent Hygiene Products), Publications Office of the European Union, Luxembourg, 2023, doi:10.2760/209936, JRC134197. EU Ecolabel - Personal and animal care products (europa.eu)

other additives during silicon production. The main inorganic compounds present in the wastewater are copper and zinc. To minimise the concentration of copper and zinc in the effluent, the wastewater from PDMS production can be treated in two steps: a pre-treatment by precipitation/flocculation, and a sedimentation step to remove heavy metals.

The production of silicones is related to significant amounts of energy; therefore, GHG emissions are one of the most important sustainability parameters. This requirement (O39) thus aims at reducing the emissions of CO_2 occurring during the production of the raw material (silicone). CO_2e emissions related to electricity are calculated by factor 210 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 manufacturing is located, this shall be used. The factor of 210 g CO_2/kWh is based on Greenhouse gas emission intensity of electricity generation in Europe[29].

The requirement O36 includes BfR Recommendation XV for silicones to provide additional assurance that the product is safe to use. This German recommendation for silicones in food contact materials specifies permitted starting materials, production aids, and testing requirements, such as limit value for volatile organic compounds (VOCs). Additives added to the silicones and elastomers must fulfil the chemical requirements O7-O9.

4.4 Manufacturing of the final product

Background to the requirements O41 material efficiency
Requirement for material efficiency is new in the criteria. The main objective of this requirement is to limit the amount of waste that is sent to landfill or incineration from the final product manufacturing assembly site. The waste recovered for reuse, recycling or energy production is not targeted by this requirement.

In line with the Circular Economy Action Plan 2020, the design and production phases are among the key drivers to achieve circular economy objectives and ensure that the resources used are kept within the EU economy for as long as possible. In line with this, the threshold for waste generated during the manufacturing and packaging of the products which is sent to landfill or incineration was set at 8 % w/w for tampons and 4 % w/w for all the other products. This quantity of waste, sent to landfill or incineration, shall be calculated as the difference between the amount of waste produced and the amount of waste recovered (reused, recycled, etc.) As incineration with energy

[29] https://www.eea.europa.eu/en/analysis/indicators/greenhouse-gas-emission-intensity-of-1

recovery is preferable to simple landfilling, it is only incineration without energy recovery that is targeted by this requirement. For more information see closely EU Ecolabel's Technical Report[30].

4.5 Product requirements

Background to O42 Synthetic polymers used in single-use products
This new requirement aims to promote materials with lower environmental impact in certain single-use hygiene products. This is achieved e.g. by promoting sustainable sourced bio-based materials or recycled plastics instead of virgin fossil-based material. The requirement consists of three parts: Part a requires that a minimum share of synthetic polymers used must be bio-based or recycled, Part b restricts or limit the use of plastic and Part c requires energy efficiency measures for facilities producing fossil-based components.

Part a – Minimum share of bio-based/recycled polymers
A minimum share of bio-based and recycled polymers is applied to children's diapers, incontinence care products and hygiene towels (pads and panty-liners). The consultation responses clearly indicated that the initial proposal of achieving 10% recycled or bio-based polymers relative to the total weight of polymers in the product is not possible. The inclusion of recycled polymers is problematic due to both safety and technical concerns. Additionally, including bio-based polymer content poses challenges related to technical performance, price and availability. After the consultation, the requirement was adjusted to apply to the total annual use of synthetic polymers across all licensed products, with stepwise implementation: a minimum of 1% bio-based and/or recycled content in 2026–2027, increasing to 2% from 2028 until the end of the criteria's validity period. Although the %-limit was reduced the requirement remains in place to encourage a gradual shift away from virgin fossil-based materials, balancing environmental ambition with what is practical and achievable in the market.

Part b – Exclusion of plastic for certain product types
This part of the requirement aims to exclude plastic in wipes and wash cloths where it is not considered essential and instead promote the use of renewable raw materials that meet relevant environmental requirements (e.g. certified wood fibers, limit values for energy and greenhouse gases in the production of pulp/fluff pulp and limit values for emissions to air and water from pulp/fluff pulp and regenerated cellulose production. E.g. the ban does not apply to product types where plastic film is needed for functionality such as pads, cover sheets, breast pads, patient and surgical gowns. An exemption is made for the use of fossil-based binders in airlaid materials , enabling continued production of wipes made primarily from renewable cellulosic fibres.

[30] Faraca, G., Perez Camacho, M.N., Lag Brotons, A., Perez Arribas, Z., Kowalska, M.A. and Wolf, O., Revision of EU Ecolabel criteria for Absorbent Hygiene Products and Reusable Menstrual Cups (previously Absorbent Hygiene Products), Publications Office of the European Union, Luxembourg, 2023, doi:10.2760/209936, JRC134197. EU Ecolabel - Personal and animal care products (europa.eu)

Nordic Ecolabelling had an initial proposal to fully exclude plastic in tampons, however, it was considered too strict. Plastic in the outer cover film is necessary to keep the fibres intact and ensure safety. Therefore, the ban on fossil-based materials was limited to the absorbent core and withdrawal cord in tampons. Products that fall within the scope of the Single-Use Plastic, SUP, directive include menstrual products such as pads and tampons. These products must be marked with a symbol indicating that they contain plastic.

Part c – Energy efficiency in manufacturing for facilities producing plastic components
For manufacturing facilities producing plastic components and superabsorbent polymers (SAP) that represent > 5 w% of the product and additional component (H+A), energy saving actions must be in place, either through energy audit with an action plan or with ISO certifications. Manufacturers must also report energy consumption data (kWh/kg component), to improve transparency. After the open consultation, the requirement was adjusted with adding a ban for use of fossil oil and coal as fuel. Limiting the use of fossil oil and coal is considered a realistic and effective way to reduce CO_2 emissions. However, this ban is expected to have relatively small effect since electricity is the main energy source. Though some manufacturers report up to 20% of site energy use coming from fuel, it is mostly natural gas that is used. Nevertheless, it is aimed to exclude the manufacturers that may use it.

Background to O43 Impurities in the final product
The requirement for impurities in the final product is new. Concerns have been raised about hazardous chemicals in hygiene products, such as those highlighted in the ANSES opinion from 2018[31]. However, no health risks have been demonstrated[32],[33]. To enhance transparency regarding trace substances, EDANA introduced a voluntary Stewardship Programme[34], which identifies and sets limits for trace substances that may be present in absorbent hygiene products. These substances include PAHs, DL-PCBs, dioxins, furans, phthalates, formaldehyde, heavy metals, pesticides, organotins and phenols. Companies participating in the program commit to ensuring that impurity levels do not exceed the established limits.

The proposed new requirement aligns with EDANA's recommendations while introducing an additional limit for total fluorine. Although the use of PFAS chemicals is already restricted (e.g. in the prohibited substance list O9), this

[31] ANSES Opinion on the safety of feminine hygiene products, Request No 2016-SA-0108. https://www.anses.fr/en/system/files/CONSO2016SA0108EN.pdf
[32] Committee for Risk Assessment (RAC) Opinion on an Annex XV dossier proposing restrictions on Substances in single-use baby diapers https://echa.europa.eu/documents/10162/c374b7bb-b0e2-e01f-d55d-398dc270343f

[33] Kemikalieinspektionen, 2018. Survey of hazardous chemical substances in feminine hygiene products A study within the government assignment on mapping hazardous chemical substances 2017–2020. https://www.kemi.se/download/18.6df1d3df171c243fb2331064/1589120703821/report-8-18- survey-of-hazardous-chemical-substances-in-feminine-hygiene-products.pdf
[34] https://www.edana.org/how-we-take-action/edana-stewardship-programme-for-absorbent-hygiene-products

limit has been added due to the persistence and widespread of these substances. Fluorinated chemicals can be used e.g. as lubricants in polymer processing industry[35].

The applicant can demonstrate compliance by either submitting a test report or demonstrate compliance with the EDANA Stewardship Programme, together with a separate test result for total fluorine. The applicant can also document the requirement by certifying the product under Oeko-tex Standard 100 Class I Baby, which has the lowest threshold values[36]. Oeko-tex standard 100 list of substances exceeds the one for EDANA, such as the inclusion of total fluorine but also lack some of the substances DL-PCBs, dioxins, furans which is connected to raw material contamination. Dioxins and furans can also be formed during chlorinated bleaching of cellulose.

Background to O44 Performance

The requirement remains unchanged except that menstrual cups have been included in the requirement. In the case of menstrual cups, the performance test must as a minimum include biocompatibility test, in accordance to ISO 10993 series. No relevant biological effects in the studies performed for cytotoxicity, pyrogenicity, sensitization, dermal irritation and implantation (90 days) as indicated by ISO 10993 shall be detected. Alternatively, compliance with USP Class VI standard (acute systemic toxicity, intracutaneous toxicity and implantation test) can be reported. Technical tests shall be conducted for the material(s) used for the manufacturing of reusable menstrual cups.

It is in the interest of both licensees and Nordic Ecolabelling that Nordic Swan Ecolabelled products should have satisfactory performance characteristics.

Standard performance tests do not exist for most types of hygiene products. Manufacturers may accordingly use their own modified tests for children's diapers, hygiene towels, breast pads and other hygiene products. In other words, there is a certain degree of freedom in relation to documentation.

In its criteria for absorbent hygiene products from 2023, the EU Ecolabel has similar requirements but has specified testing practices required. These relate to absorption ability and protection against leakage e.g. for diapers and tampons, plus a skin dryness test using the TEWL method for baby diapers and feminine care pads, see closely Criterion 10. Fitness for use and quality of the product in EU Ecolabel[37].

[35]The Danish Environmental Protection Agency, 2024. PFAS and fluorine-free alternatives in lubricants and construction products. PFAS and fluorine-free alternatives in lubricants and construction products - use, emissions and socioeconomic analysis of a Reach-restriction

[36] https://www.oeko-tex.com/importedmedia/downloadfiles/OEKO-TEX_STANDARD_100_Standard_EN_DE.pdf

[37] Decision - 2023/1809 - EN - EUR-Lex (europa.eu)

Background to O45 Tampons

The requirement has not been changed in the revision and has a limitation in relation to the content of aerobic microorganisms per gram of product. This requirement is set by hygienic reasons.

Background to O46 Menstrual cups

The requirement for information for the user regarding menstrual cups is new in the criteria. The manufacturer shall make sure that the user receives basic instructions on how to use the product. The use phase of the menstrual cup is the most relevant life cycle phase, accounting for 96-99% of the impacts, depending on the impact category[38]. While Ecolabel cannot set requirements to limit the impacts during the use phase, as the behavior of the user is out of control, it is possible to make sure that the users receive the relevant information needed to correctly use the products. More information about the requirement can be found from the EU Ecolabel's Technical Report[39].

Background to O47 Information on the sales packaging

The requirement concerning the information text on the products remains unchanged from the previous version of the criteria, except that reusable menstrual cups have been included.

The requirement concerning information that the products must not be discarded down the toilet applies to products such as cotton buds, diapers, hygiene towels, panty-liners, tampons and menstrual cups. Cotton buds get caught in the mechanical filters of wastewater treatment plants, creating problems. Disposal of hygiene products down the toilet causes blockages and build-ups in sewage pipes in many municipalities which, in turn, can lead to basement flooding and the discharge of pollutants into nature. Such information is not relevant to other, larger, products such as bed linen.

The other requirements applicable to the information text, such as the disclosure of information on the absorption of the relevant products and the specification of the size of the product are unchanged. This information is important to consumers, because they want products that perform satisfactorily from first use. The parameters that are of interest to consumers are the purpose of the product, if applicable the age or size of the consumer (this applies in particular to children's diapers) and the time at which the product is to be used.

4.6 Licence maintenance

Background to O48 Customer complaints

Nordic Ecolabelling requires that your company has implemented a customer complaint handling system. To document your company's customer complaint

[38] Sinkko T. Screening LCA study : Reusable Menstrual Cup in Europe. https://susproc.jrc.ec.europa.eu/product-bureau/sites/default/files/2022-06/LCA%20screening%20study%20RMC_April%202022.pdf

[39] Faraca, G., Perez Camacho, M.N., Lag Brotons, A., Perez Arribas, Z., Kowalska, M.A. and Wolf, O., Revision of EU Ecolabel criteria for Absorbent Hygiene Products and Reusable Menstrual Cups (previously Absorbent Hygiene Products), Publications Office of the European Union, Luxembourg, 2023, doi:10.2760/209936, JRC134197. EU Ecolabel - Personal and animal care products (europa.eu)

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.

Background to O49 Traceability
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's traceability is implemented in your company as described.

5 Environmental impact of the hygiene products

Single-use versus reusable hygiene products

The Nordic Swan Ecolabel aims to reduce unnecessary consumption of disposable products. While hygiene products are typically single-use and currently cannot be recycled[40], alternative reusable options are emerging on the market, such as cloth baby diapers, menstrual cups, cloth pads and hybrid products combining both reusable and disposable parts.

Regarding environmental impact of single use versus reusable products, a comparative LCA study of disposable and reusable baby diapers showed that while disposable options obtain their highest environmental impact primarily during production and consumption of raw materials, reusable diapers' impacts are influenced more by use stage. Consumer behaviour including e.g. the choice of washing temperature and the energy efficiency of the washing machines significantly affect the environmental footprint of reusable diapers. Optimised reusable systems, which minimise energy and water consumption, tend to have lower environmental impact than single-use options[41].

In the evaluation of the generation 6 of the criteria, an analysis was conducted to determine whether disposable hygiene product should continue to be Nordic Swan Ecolabelled or if Nordic Ecolabelling should promote reusable products instead. The evaluation, based on Nordic Ecolabelling principles for disposables, concluded that disposable products should continue to be Nordic Swan

[40] Wegwerpluiers en incontinentiemateriaal (vlaanderen.be)
[41] Hoffmann, B. S., Morais, J. de S. and Fonseca Teodoro, P., 'Life cycle assessment of innovative circular business models for modern cloth diapers', Journal of Cleaner Production, Vol. 249, No 10, Elsevier, 2020, pp. 119364. https://doi.org/10.1016/j.jclepro.2019.119364

Ecolabelled, providing there is clear environmental difference between Nordic Swan Ecolabel products contra similar non-ecolabelled products in the market.

Secondly, Nordic Swan Ecolabel cannot control consumer choices such as whether consumers and purchasers choose disposable or reusable products, or how these products are used and disposed in the end-of life. Therefore, there remains a considerable potential for improving disposable products by maintaining the ecolabel and enforcing requirements for the raw materials phase. Disposable products are commonly used today and needed due to different user experiences. In addition, health related issues, have high awareness among consumers such as e.g. diapers that are close to the babies' skin. Labels on the products are needed and appreciated.

Regarding reusable alternatives, Nordic Ecolabelling has decided to expand the Criteria for Protective and Absorbent Hygiene Products to include reusable menstrual cups made of silicone and other elastomers. Other reusables, such as wash cloths, cloth baby diapers and cloth pads are not covered under these criteria but can be Nordic Swan Ecolabelled under Nordic Ecolabelling criteria for textiles.

RPS for single-used products

The relevant environmental impacts found in the life cycle of hygiene products are set out in a MECO scheme (below). A MECO describes the key areas that have impact on the environment and health throughout the life cycle of the product – including consumption of materials/resources (M), energy (E), chemicals (C) and other impact areas (O). Nordic Ecolabelling establish criteria focusing on areas of the life cycle that have a high environmental impact – also called hotspots. An RPS tool is used to identify where ecolabelling can apply the greatest influence. In this context, R represents the environmental relevance; P is the potential to reduce the environmental impact and S is the steerability on how compliance with a requirement can be documented and followed up.

The criteria contain requirements aiming for areas of the life cycle with high RPS, offering the potential for notable environmental improvements. From a life cycle perspective, the raw materials used in disposable hygiene products have the

most significant environmental impact. Key constituent materials that generate the greatest impact are fluff pulp, SAP and nonwovens. Relevant lifecycle stages are presented in the following table below and are based e.g. for following references[42,43,44,45,46,47.48,49,50,51].

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[45] Mendoza, J. M. F., Popa, S. A., D'Aponte, F., Gualtieri, D., Azapagic, A., 'Improving resource efficiency and environmental impacts through novel design and manufacturing of disposable baby diapers', Journal of Cleaner Production, Vol. 210, Elsevier, 2019, pp. 916-928. https://doi.org/10.1016/j.jclepro.2018.11.046

[46] Cordella, M., Wolf, O., Schulz, M., Bauer, I., Lehmann, A., 'Evolution of disposable baby diapers in Europe: life cycle assessment of environmental impacts and identification of key areas of improvement', Journal of Cleaner Production, Vol. 95, Elsevier, 2015, pp.322-331. https://doi.org/10.1016/j.jclepro.2015.02.040
Khoo, S. C., Phang, X. Y., Ng, C. M., Lim, K. L., Lam, S. S. and Ma, N. L., 'Recent technologies for treatment and recycling of used
disposable baby diapers', Process Safety and Environmental Protection, Vol. 123, Elsevier, 2019, pp. 116-129. https://doi.org/10.1016/j.psep.2018.12.016

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Lifecycle stages	Area and assessment of R, P, S (high, medium or low)	Comments
	Raw materials	
	Wood based raw materials R: High P: High S: High Manufacturing – pulps R: High P: High S: High Manufacturing – paper R: High P: High S: High	Wood-based raw materials used in hygiene products have a high RPS. While wood can be directly used as such in cotton buds, it serves as the main raw material for fluff pulps and regenerate cellulose. From an environmental point of view, it would be relevant to promote use of recycled fibres but as hygiene products are high quality products close to the skin, 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 the products. Therefore, only virgin wood fibres shall be used in Nordic Swan Ecolabel (NSE) hygiene products. In addition to the hygiene products, wood fibres can be used as raw material in cardboard packaging. 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, to protect the forest as a habitat and preserve biodiversity. Regarding wood fibres in fluff pulps, regenerated cellulose and paper-based products, there are several key areas of environmental impact such as energy consumption, chemical use, emissions to water and air, and forestry practices. Production of pulp is energy intensive and generate emissions to water and air. Therefore, NSE sets requirements on fuel and electricity use, emissions of sulphur (S), NOx and greenhouse gases to air. Emissions 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 manufacturing is highly energy intensive. The generation and use of energy results in various environmental impact, see the pulp production above. It is, thus, highly important to focus on energy consumption when trying to reduce the environmental impact of the paper.
	Polymers R: High P: Medium S: Medium	Plastic is extensively used in hygiene products and its production is energy and resource intensive. To reduce the impact, incorporating recycled or bio based plastic can reduce the climate impact compared to fossil based virgin plastic. Recycled plastic, however, may contain unknown substances and be polluted with substances that should not be present in hygiene products. Use of recycled plastic is allowed in the NSE hygiene product. All recycled plastic must be traceable and must not come from production lines that are EFSA or FDA approved as food contact material or marketed as compatible with these Recycled plastics can also be used in sales packaging to promote circular economy. Fossil-based polymers, such as super absorbents (SAP) and polypropylene in nonwovens have a significant impact on global warming potential (GWP). There is considerable relevance in setting requirements concerning these constituent materials. However, the potential and steerability are low due to lack of site-specific data. Bio-based polymers can be used instead of fossil-based polymers. Renewable materials contribute to sustainable development through reduced CO_2 emissions and reduced use of materials from fossil sources. However, materials based on renewable raw materials are not automatically sustainable. There are several key problems concerning the cultivation and production of the renewable materials, such as land use in competition with food production, use of genetically modified organisms and energy and chemical use in the processes. Nordic Ecolabelling wishes to contribute to the “green shift” through increased use of sustainable bio-based materials In addition to the products, plastic can be used in the packaging.

	Cotton R: High P: High S: High	A high RPS has been found for requiring 100% organic cotton for hygiene products – either 100% organic or transitioning to organic cultivation. The cultivation and harvesting of cotton are associated with serious environmental and health problems. This is largely due to the use of pesticides and other chemicals in production, but other factors, such as water consumption, can also have a major impact on the environment. The environmental and social consequences of using genetically modified (GMO) cotton plants in conventional cultivation are also a debated subject. By using organic cotton, GMO and use of harmful chemicals in cultivation can be avoided.
	Chemicals harmful to health and environment R: High P: High S: High	In manufacturing of raw materials, chemicals are used. 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 high RPS to set strict requirements for chemicals used in manufacturing of raw materials in order to reduce the use of harmful chemicals and to ensure that consumers are not exposed to these in the use stage.
Production/distribution		
	Manufacturing of hygiene product R: Low P: Low S: Medium	Assembly of the final hygiene product requires mainly electricity. Some chemicals such as adhesives may also be used. The environmental impact of hygiene products can be reduced through the manufacturers focus on a reduction in the weight of the product, and on optimizing the material composition of the products. The latter area is, however, difficult for Nordic Ecolabelling to steer, because even small changes in the product composition can change the function or other properties of the products which consumers appreciate. As main environmental impact comes from raw materials used, there are no requirements set for manufacturing of finalized hygiene product except those for chemicals and material efficiency in the manufacturing of the final product. Quantity of waste sent to landfill or incineration without energy recovery is limited. Regarding chemicals, see also chemicals in use phase below.
Use phase		
	Chemicals R: High P: High S: High	Given that hygiene products come into close contact with the body and many of the products are intended for young children, there is high relevance to set requirements that decrease potential exposure to chemicals harmful to health such as CMR substances, allergenic substances, endocrine disrupting substances etc. in the final product. This can be achieved by setting strict requirements for chemical products that are used in the production of the ingoing materials and the finalized hygiene product. Chemicals can be banned such as fragrances and skin care preparations while unwanted substances like acrylamide, residual monomers and water-soluble extracts in SAP can be either restricted or banned. Steerability is reasonably good as manufacturers are able to impose requirements on their suppliers and choose the best materials within each material type, so that both the raw materials and the production conditions are among the best they can be.
	Quality R: High P: High S: High	There is relevance to set requirements for quality of product such as tests for absorption and leakage protection. This is to ensure good quality and that the product fulfils the intended functions. By doing this, unnecessary consumption and production can be decreased. Therefore, requirements are set for the performance of the product.
End of life		
	Materials in the product R: High P: Low S: Low	The large amount of waste associated with disposable hygiene products is a major environmental problem. Hygiene products cannot be recycled nor composted due to hygienic reasons. Most of the hygiene products in the Nordic region are sent for incineration after use. Consequently, the RPS for requirements to promote that materials in the product must be recycled is low.
	Materials in the packaging R: High P: High S: Medium	There is high RPS for requirements stating that the packaging must be recyclable and guidance on the disposal of it. See also materials above.

MECO scheme for single used hygiene products:

	Raw material	Production	Use	End of life
Material	Pulp, fluff pulp and regenerated cellulose - Sustainable managed forests, FSC/PEFC Cotton - Organic (fertilisers, pesticides) Fossil based synthetic polymers/plastic – SAP, PE, PP, PET Biobased plastic Recycled fibres not allowed except recycled plastic. Materials for packaging PE virgin and recycled, corrugated board. Water uses for all raw materials.	Choice of ingoing materials (weight, composition). Material efficiency and recycling of waste possible.	Product used close to skin.	Product disposed of after use, cannot be recycled or composted. Products either go to incineration or landfill (Eurostat). Handling of manufacturing and packaging waste Packaging could be recycled.
Energy	Pulp, fluff pulp – Fossil/biofuel, and internal produced electricity Regenerated cellulose, Cotton, fossil based synthetic polymers – fossil/biobased fuel and electricity	Electricity for assembling the product. Transport of products.	Transport of products for consumers/ professional use	Energy recovery from incineration of products. Landfill should be avoided. Transport of waste.
Chemicals	Pulp, fluff pulp – pulp processing chemicals, bleaching agents. Emissions to water (COD, AOX, P) and to air (NOx, CO_2, S) Regenerated cellulose – emission to water (COD, AOX, Zn, SO_4) and air (S) Cotton and other plants – Pesticides SAP – emissions of HCl and HF Polyurethane (PUR)/Elastane emission of diisocyanate, DMAc	Adhesives, printing inks, Wetness indicator	Potential exposure to chemicals harmful to health. Acrylamide, residual monomers, water soluble extracts – SAP Formaldehyde – Adhesive D4, D5, D6 – Silicones Heavy metals – Print inks VOC, PAHs, PCDD, dioxins, furans, pigments, antibacterial agents Ban on fragrances and skin care preparations.	Potential exposure to chemicals to environment
Other	Sustainable sourced raw materials to maintain biodiversity and protect natural areas. Social and ethical challenges associated with working conditions outside of EU.		Good performance to reduce the number of products used and avoid unnecessary consumption	

RPS for reusable menstrual cups

Nordic Ecolabelling has decided to expand the Criteria for Protective and Absorbent Hygiene Products, gen 7 to include reusable menstrual cups made of silicone and other elastomers, as they fulfil the same function as disposable options. The reusable menstrual cup has been reported to have substantially lower environmental impacts than the single-use menstrual products. This was shown to be the case across all impact categories and regardless of the material from which the menstrual cup was produced. Relevant lifecycle stages are

presented in the following table and are based for following references [52,53,54, 55,56,57,58]. MECO scheme is not presented here but the reader is referred to have a closer look on LCA study[59], introduced during the revision of EU Ecolabel criteria.

Lifecycle stages	Area and assessment of R, P, S (high, medium or low)	Comments
	Raw materials	
	Silicones R: High P: High S: High Thermoplastic elastomer R: High P: Medium S: Medium	Reusable menstrual cups can be made out of various materials, where medical-grade silicon and thermoplastic elastomer (TPE), are the most demanded types due to their hypoallergenic properties. Silicones There is high RPS to set requirements for silicones. When excluding the use phase which has the biggest environmental impact in the LCA analysis of silicone menstrual cups, and analysing only the other life cycle phases, the production of silicone contributes to 29% of the environmental impacts in terms of climate change. The production of silicones is related to significant amounts of energy; therefore, GHG emissions are one of the most important sustainability parameters. The other main environmental issues associated with the production of silicones are dust and chlorides emissions to air, as well as emission of copper and zinc to water. Thermoplastic elastomers (TPE) Being a type of elastomer, the production process of the raw material can be assumed to be roughly similar. Potential and steerability are, however, lower due to the lack of information. Requirements can, however, be set to emissions of dust and of chlorides to air.
	Wood raw materials in packaging R: High P: High S: High	Menstrual cups are usually packed in a bag/pouch, placed in a box made of cardboard/paper or plastic, which constitutes the sales packaging. There is high RPS to set requirements for traceability of wood fibres. See also wood raw materials in the disposable hygiene products above.

[52] Weir, C. S., In The Red: A private economic cost and qualitative analysis of environmental and health implications for five menstrual products. Master Thesis, Dalhousie University, 2015. Available at: https://cdn.dal.ca/content/dam/dalhousie/pdf/science/environmental-science-program/Honours Theses/2015/ThesisWeir.pdf

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[57] Vilabrille Paz, C., Ciroth, A., Mitra, A., Birnbach, M. and Wunsch, N. (2020) Comparative Life cycle assessment of menstrual products. GreenDelta GmbH, commissioned by einhorn products GmbH https://einhorn.my/wp-content/uploads/2022/03/Comparative-Life-Cycle-Assessment-of-Menstrual-Products.pdf

[58] JRC Publications Repository - Revision of EU Ecolabel criteria for Absorbent Hygiene Products and Reusable Menstrual Cups (previously Absorbent Hygiene Products) (europa.eu)

[59] Sinkko, T., Screening LCA: Reusable Menstrual Cup in Europe, EUR (where available), European Commission, Ispra

	Plastic in packaging R: High P: High S: High	There is high RPS to set requirements for recycled plastic in the packaging in line with circular economy.
	Cotton R: High P: High S: Low	Most menstrual cups are sold within a cloth bag or pouch made of textile, usually cotton, that is considered an additional component and is used to store the cup when not in use. See closely cotton in the disposable hygiene products above. Requirements for cotton bags are not set in the first generation of the criteria due to low steerability but shall be considered in the next revision.
	Chemicals harmful to health and environment R: High P: High S: High	Menstrual cups are not considered as medical devices and do not fall under the Medical Device Regulation (Regulation (EU) 2017/745). As a result, they are not required to be manufactured from medical grade materials. Instead, it is, for example common to see menstrual cups made of food grade silicone. In manufacturing, additives are used. 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 high RPS to set strict requirements for chemicals used in manufacturing of raw materials in order to reduce the use of harmful chemicals and to ensure that consumers are not exposed to these in the use phase.
Production/distribution		
	Manufacturing of menstrual cup R: Medium P: Medium S: Medium	During the production of menstrual cups, the majority of environmental burdens are associated with a demand for energy, usually electricity used for the moulding of the cups. However, the potential for setting requirement is considered limited due to the lack of information on the consumption of energy per unit of product. As main environmental impact comes from raw materials used (apart from use phase), there are no other requirements set for manufacturing of finalized menstrual cup except those regarding material efficiency in the manufacturing and additives, see the chemicals in use phase.
Use phase		
	Use R: High P: Low S: Low Chemicals R: High P: High S: High	According to the LCA analysis, the use phase is the most relevant life cycle phase, accounting for 96-99% of the environmental impacts, depending on the impact category. Electricity required to boil the water to sterilise the cup, soap production and wastewater treatment are the main contributors. Possibilities for NSE to set requirements for use phase are limited. It is, however, possible to make sure that the consumers receive the relevant information needed to correctly use the menstrual cups, by setting requirement for information on the use of the product. Given that menstrual cups come into close contact with the body, there is high relevance to set requirements for additives used in products. See closely use phase chemicals in the disposable hygiene products above.
	Quality R: High P: High S: High	There is relevance to set requirements for quality of product such as leakage protection. This is to ensure good quality and that the product fulfils the intended functions. By doing this, unnecessary consumption and production can be decreased. Therefore, requirements are set for the performance of the product.
End of life		
	Materials in the product R: Low P: Low S: Low	Among the environmental advantages of menstrual cups (compared to single-use ones), waste prevention is one of the biggest factors. It has been estimated that the use of a menstrual cup results in a reduction of 99% of the waste that would be generated using single-use products. The RPS for setting requirements is, however, rather low at the end of menstrual cups life except guidance on the correct disposal of the product. Silicone rubber cannot be recycled by simple processes today. Thermoplastic elastomer can be recycled without problems.
	Materials in the packaging R: High P: High S: Medium	There is high RPS for requirements stating that the packaging must be recyclable and guidance on the disposal of it. See also materials above.

6 Areas that are not subject to requirements

Other materials

There was a requirement O37 for other materials in the previous generation 6: the stick in cotton buds shall not be made of plastic or a blend of plastic and paper. This has now been removed since cotton bud sticks including plastics are covered by Directive EU 2019/904 on the reduction of the impact of certain plastic products on the environment. Cotton bud sticks shall not be placed on the market, except if they fall within the scope of Council Directive 90/385/EEC or Council Directive 93/42/EEC.

Incontinence care products in Performance

During revision, it was discussed to include a new requirement for incontinence care products in the requirement for Performance (O43). The aim of the requirement was to promote the effective use of incontinence care products by encouraging measures such as wetness indicators, incontinence care support services such as staff education, or digital monitoring solutions to reduce unnecessary consumption. However, after further evaluation, it was determined that the potential impact of this requirement in achieving the desired outcome was limited. Consequently, the requirement was not included in the Criteria.