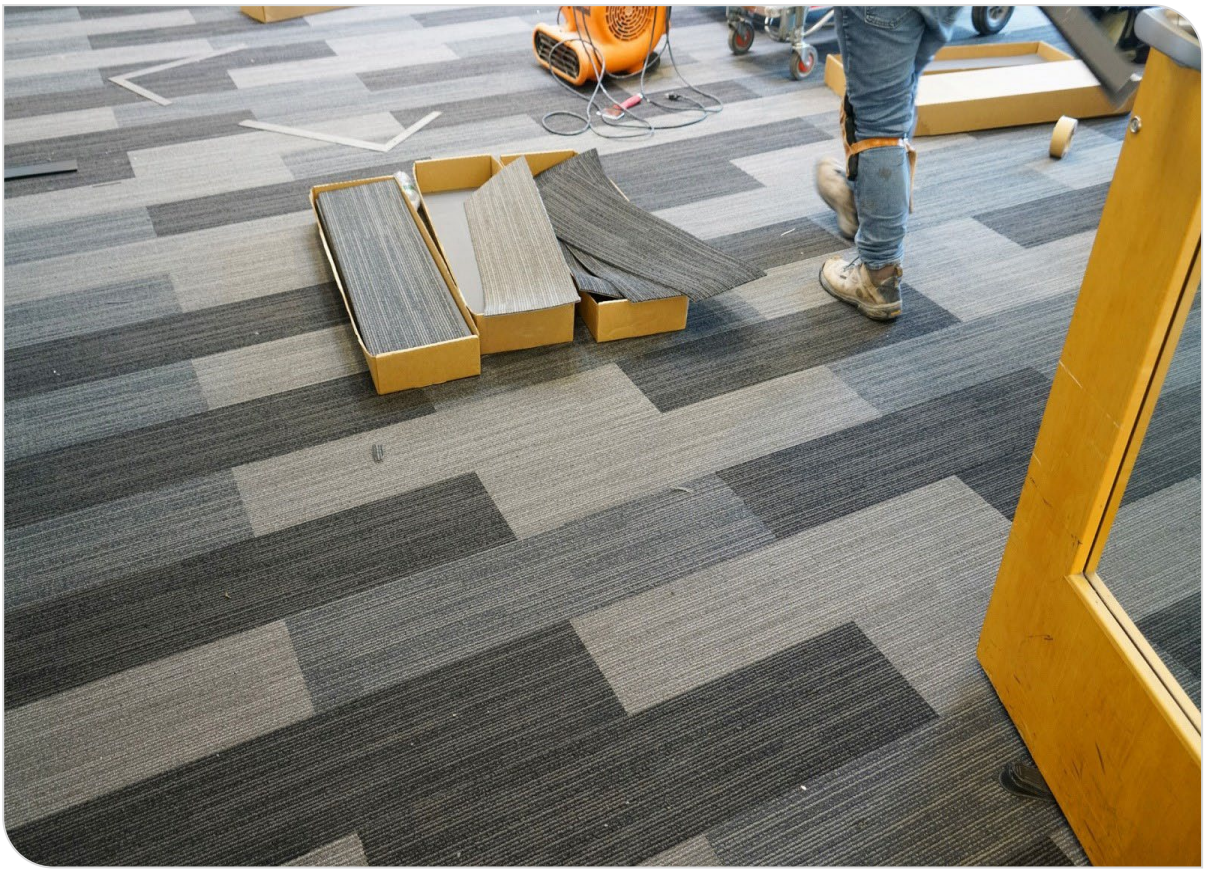
About Nordic Ecolabelling for

Textile floor coverings and rugs/mats



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Nordic Ecolabelling

Contents

Contact information

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

Denmark

Ecolabelling Denmark

www.svanemaerket.dk

Iceland

Ecolabelling Iceland

www.svanurinn.is

Finland

Ecolabelling Finland

www.joutsenmerkki.fi

Norway

Ecolabelling Norway

www.svanemerket.no

Sweden

Ecolabelling Sweden

www.svanen.se

1 Summary

The Nordic Ecolabelling criteria for textile floor coverings and rugs and mats have been revised to generation 2. Nordic Swan Ecolabelled textile floor coverings and rugs/mats must comply with strict requirements to reduce the environmental and climate impact throughout the whole life cycle. Nordic Swan Ecolabelled textile floor coverings and rugs/mats have a reduced environmental impact due to the high amount of renewable and/or recycled raw material, strict requirements for the fibre and polymer materials and chemicals used, low emissions to indoor air, high durability and long service life and by contribution to circular economy through design for separation and/or material recycling through take-back systems and/or especially high amount of renewable and/or recycled raw material.

Less use of virgin material to produce carpets is the most important environmental aspect to reduce the climate impact in the carpet life cycle. Strict requirements concerning minimum content of renewable and/or recycled material have therefore been established.

As the use of raw materials and chemicals has a large environmental impact, the criteria have strict requirements for fibres, polymers and chemicals used to produce carpets. The criteria have requirements for the following carpet materials: cotton and wool textile fibres, recycled polymers, biobased plastic polymers and typical backing materials like rubber and foam.

The majority of the energy and water consumption from carpet production does not come from the production of the carpets themselves, it comes from the production of the raw materials by suppliers where the steerability for Nordic Ecolabelling is low. Requirements for energy and water consumption have therefore been removed in this generation. The strict material requirements reduce the consumption of virgin materials which, indirectly reduces the energy and water consumption.

Emissions to indoor air is an important health aspect from carpets since they often cover a large share of the indoor area. Nordic Ecolabelling has set strict limits to emissions of VOC and formaldehyde.

Long service life will reduce the environmental impact from carpets significantly. To offer a long service life, Nordic Swan Ecolabelled carpets must document durability according to specific use classes for commercial or domestic use.

The criteria have also been updated to improve the circular economy and increase the material recycling of carpets. New requirements related to design for separation and take-back systems for textile floor coverings have been included in this generation.

For an overview of the changes in this revised generation 2, see the table in section 4.1.

1.1 Changes compared to previous generation

Table A. Overview of changes to criteria for gen. 2 compared with previous gen. 1.

Proposed requirement generation 2	Requirement generation 1	Same require-ment	Change	New require-ment	Comments
O1	O1		x		Information on material consumption is included.
O2	O2	x			Only minor changes in the text
O3	O3		x		The % recycled/renewable is adjusted
O4	O4	x			
O5	O7	x			
O6	O8	x			
O7	O9	x			
O8	O11, O12, O13		x		The requirement now includes all polymers and only sets requirements for recycled material
O9	O15		x		Updated with more substances
O10				x	Requirement for biobased plastic polymers is included.
O11	O18		x		The limit for content of PAHs and nitrosamines is revised
O12	O17	x			Only minor changes in the text
O13	O20	x			Only minor changes in the text
O14	O21		x		The list of prohibited classifications is extended and old exceptions removed and a new added
O15	O22		x		The list of prohibited classifications is extended, and the exception is removed
O16	O23		x		Updated list according to Nordic Ecolabelling's latest knowledge.
O17	O26	x			
O18	O27		x		Updated definition of nanomaterials
O19	O28		x		Now includes pigments, only metal complex dyes and pigments based on copper (max. 5%) may be used.
O20				x	New circular economy requirement
O21				x	New circular economy requirement
O22				x	New circular economy requirement
O23	O33, O34		x		Two requirements are merged, and the same requirement is for all types of carpets. Limit on carcinogenic VOC is introduced.
O24	O36		x		Use classes are revised and rugs/mats are now included
O25	O42		x		Includes information on installation and end-of-life
O26-O28				x	New social and ethical requirements
O29	O43	x			

Proposed requirement generation 2	Requirement generation 1	Same require-ment	Change	New require-ment	Comments
O30	O44	x			

2 Justification of the product group definition

Product types that are covered are carpets for indoor use intended to be placed on the floor, i.e. textile floor coverings and floor rugs/mats. Both products fastened to the floor by adhesives, hooks etc. and loose laid products are included and both carpets that cover a floor from wall-to-wall and those covering only parts of a floor.

The upper side (which faces upward from the floor) of the product must consist of at least 80% by weight of textile fibres. The background for this limitation is the challenge of making good environmental requirements for rubber/latex materials to minimize the environmental impact from the use of these materials.

Carpets made of materials not covered by these criteria must be assessed by Nordic Ecolabelling before they may be considered for labelling. Nordic Ecolabelling will determine which new materials may be included in the product group.

3 Justification of the requirements

This chapter explains the background for all requirements.

3.1 Description of the product and the production

Background to O1 Description of the product and O2 Description of the production

To know which environmental requirements are applicable to a specific carpet, Nordic Ecolabelling needs a description, and the composition of the carpet/overview of materials and chemicals used to produce the carpet, in addition to an overview of the manufacturing processes and suppliers/production chain.

Carpet material extraction, especially energy consumption for fiber extraction and production, represents more than 60%[45] of the total climate impact from textile floor coverings. To reduce the environmental impact of carpets, it is important to reduce the total consumption of raw materials. To learn more about the material consumption in kg/m2 for different carpet types and for different materials, Nordic Ecolabelling requests this information and has introduced this new requirement.

3.2 Material requirements

Background to general material requirements

A textile floor covering carpet typically consists of approximately 20-40% by weight of carpet fibre/yarn[3]. And as much as 60-70% might be backing materials, including an intermediate layer (primary backing) and fillers. Today, several carpet producers are making carpets from recycled materials, examples are recirculated polyamide made from fishing nets and recirculated polyester made from used bottles. To support a reduction in the use of virgin materials, Nordic Ecolabelling do not allow for the use of virgin plastic polymers unless they constitute ≤10% by weight of the carpet.

For backing materials, typical materials on the market are bitumen, PVC, rubber/latex, foam like EVA and PUR, polyester (PET), polyamide (nylon), but also natural materials like jute and wool are used as backing materials[3]. Bitumen and PVC are not allowed to be used in Nordic Swan Ecolabel carpets due to their environmental impact. Recycled polyester/PET and polyamide are used today in carpet backings[1,2]. For rubber/latex and foam like EVA and PUR, recycled material does not have the needed quality today to be used in carpets, and therefore Nordic Ecolabelling allow for the use of virgin rubber/latex and foam materials above 10% by weight of the carpet (which is limit for the use of virgin plastic polymers).

Background to O3 Renewable and/or recycled raw materials

Consumption of virgin materials has a huge environmental impact in the life cycle of a carpet, references are made to chapter 6. The purpose of the requirement is to reduce the total environmental impact of the carpet from a life cycle perspective by reducing the consumption of virgin materials and/or non-renewable materials. To fulfil the requirement, a carpet manufacturer must focus on a high portion of renewable materials or recycled materials or a combination of these.

The requirement can be fulfilled in three ways: high content of renewable material, high content of recycled material or a combination of renewable and recycled material.

If a product consists of recycled renewable raw materials, these raw materials cannot be counted as both renewable and recycled but must be counted as one or the other. Recycled raw materials are weighted as slightly better than renewable raw materials from an

environmental point of view, and this is reflected in the relative limit levels of the requirement. The percentage levels have been based on knowledge of product compositions[3]. The percentage levels are considered strict but achievable for the best carpets related to environmental impact.

The requirement also gives the opportunity to discount the fillers in the product from the raw material calculation. However, the prerequisite is that the filler is found in large amounts in nature and, therefore, can be considered sufficiently abundant. This is the case for the fillers

[1] https://www.egecarpets.com/carpets/carpet-backings/ecotrust, visited January 2025
[2] https://professionals.tarkett.com/en_EU/node/recycling-carpet-tile-materials-closing-loop-10207, visited January 2025
[3] Interviews/meetings with carpet producers, spring 2025

normally used, such as kaolin, calcium carbonate, calcium magnesium carbonate, calcium sulphate, silicates and aluminium trihydrate. Pigments are not counted as a filler but as an additive.

Background to O4 Chlorinated plastics

Nordic Ecolabelling acknowledges that much has been done by industry to reduce the environmental and health impact of PVC manufacturing and PVC products within the last 10 years. However, Nordic Ecolabelling consider that the use of PVC as a material in carpets is problematic for the following reasons:

- Although the recyclability of PVC and PVC products is undeniable, and PVC recycling systems are under development, it is still a challenge for the industry to collect, sort and process the material so that it does not contaminate new products with harmful legacy chemicals.
- Although emissions of polyaromatic hydrocarbons (PAH), benzo-a -pyrene, dioxins and furans from incineration plants have been significantly reduced, and technologies for the management of air pollution control residues have been developed, not all the Nordic countries allow incineration of PVC. Denmark has a waste legislation that states that all PVC products must be sorted for material recycling. Because such systems exist to a little extent for carpets[4], used PVC carpets ends up in landfill resulting in potential leaching of additives to the environment[5].
- Although the use of the most problematic phthalates is now restricted in the EU, other additives hazardous to the environment and health (e.g., plasticizers and stabilizers) can still be used in PVC as well as in other plastics[6]. The recent ECHA's work on an investigation report on the use of PVC and its additives, is in line with Nordic Ecolabelling's specific concerns with PVC and additives[7,8].
- The environmental problems caused by PVC-production, e.g. where the mercury cell method is used to produce chlorine gas from salt (NaCl). Despite major reductions in emissions, mercury is still normally emitted to water and air. However, the mercury cell method has been phased out most places and are not used in Europe anymore. On the other hand, the acetylene route of PVC production (which also uses mercury) is growing. In China, 83% of PVC production uses the acetylene route. In Asia as a whole 63% of PVC production uses the acetylene route.
- Although mercury cells are not used in Europe anymore, the replacing membrane technology requires the use of harmful substances (PFAS) to produce the chlorine gas needed in PVC and other chemicals/plastics production[9,10]. How much PFAS are released to the environment throughout the service life of the membrane and how the membrane is disposed afterwards as waste, are issues in need of more investigation.

[4] "Consultation Response Report for 113 Textile Floor Coverings and Rugs/Mats gen.2", Nordic Ecolabelling, 2025.
[5] https://op.europa.eu/en/publication-detail/-/publication/e9e7684a-906b-11ec-b4e4-01aa75ed71a1
[6] https://echa.europa.eu/sv/mapping-exercise-plastic-additives-initiative
[7] https://echa.europa.eu/documents/10162/17233/mandate_pvc_and_additives_rev_en.pdf/a860fd87-4231-5ed4-157b-f6cda1ee5832?t=1655721970555
[8] https://echa.europa.eu/documents/10162/7d64f1d7-b29f-94ec-4477-9bcebf737a82
[9] https://eippcb.jrc.ec.europa.eu/reference/production-chlor-alkali-0
[10] https://www.eurochlor.org/publication/fluoropolymers/

Background to O5 Cotton and other natural seed fibres of cellulose

Cultivation of cotton is linked to serious health and environmental problems caused by using pesticides, fertilisers, irrigation water and monocultures[11],[12],[13]. Pesticides for cotton cultivation accounted for 5.7% of global pesticide sales and 16.1% of insecticide sales in 2014[14]. The environmental impacts of cotton production vary between countries and production systems. Production ranges from highly mechanised in Australia, Brazil and the US to smallholder farms or a mixture of scales in for example India, China, and African countries.

Integrated pest management (IPM) and organic cultivation:

Integrated pest management (IPM)[15] and agro-ecological[16] practises can reduce pesticide use. IPM means that growers must consider all available pest control techniques, for example biological control, crop rotation and resistant varieties, and pesticides must be the last choice. Training of farmers and farm workers and use of protective equipment are also important.

In organic farming IPM is required along with other practises that promote soil health and biodiversity, and synthetic pesticides and fertilisers are prohibited[17].

IPM is required by law in some countries, for example in all the EU. Voluntary private certification schemes and national programs promoting IPM also exist. The sustainability standards Fairtrade, CmiA and BCI encourage IPM and prohibit certain hazardous pesticides, including those on the Stockholm Convention and Rotterdam Convention lists and those classified by WHO as 1a and 1b.

The share of the total area of cotton harvested globally in 2019 was for BCI 12.6 %, CmiA 4.2%, organic 1.1% and Fairtrade 0.1%[18]. Because the supply of organic cotton is low and it is more expensive, many textile producers prefer conventional cotton to be more competitive.

Recycled cotton fibre:

This is cotton fibre that is recovered from used clothing and textiles from consumers or industrial waste (post- or pre-consumer textile waste). Industrial textile waste may be surplus

[11] Pesticide Action Network UK (2018) Is cotton conquering its chemical addiction? A review of pesticide uses in global cotton production. https://issuu.com/pan-uk/docs/cottons_chemical_addiction_-_update?e=28041656/62705601

[12] European Commission, Joint Research Centre (2013) Revision of the European Ecolabel and Green Public Procurement (GPP) Criteria for Textile Products – Technical report and criteria proposal, Working document, Institute for Prospective Technological Studies (IPTS).

[13] Kooistra K, Termorshuizen A, Pyburn R (2006) The sustainability of cotton – consequences for man and the environment. Wageningen University & Research, report no. 223.

[14] Pesticide Action Network UK (2018) Is cotton conquering its chemical addiction? A review of pesticide use in global cotton production. https://issuu.com/pan-uk/docs/cottons_chemical_addiction_-_update?e=28041656/62705601

[15] https://www.fao.org/pest-and-pesticide-management/ipm/principles-and-practices/en/

[16] https://www.fao.org/agroecology/overview/en/

[17] Nordic Swan Ecolabel: Organic farming (accessed 02.09.2022) https://www.nordic-ecolabel.org/nordic-swan-ecolabel/environmental-aspects/sustainable-raw-materials-and-biodiversity/organic-farming/

[18] International Trade Centre (ITC), International Institute for Sustainable Development (IISD), Research Institute of Organic Agriculture (FiBL), State Secretariat for Economic Affairs (SECO) (2021) State of Sustainable Markets 2021. https://standardsmap.org/en/trends

material from the production of yarns, textiles, and textile products, for example selvedge from weaving and fabric remnants from factory cutting rooms. The textiles are stripped and pulled into fibres, which are then carded and spun into new yarn. Recycled cotton may also be blended with virgin fibres to improve yarn strength[19].

Background to O6 Wool and other keratin fibres

The requirement only accepts wool fibre from sheep and other keratin fibres from camels, alpaca, and goats.

Wastewater from washing wool (scouring) often contains large quantities of pesticides that are used to treat sheep. Pesticide residues can have a significant environmental impact if discharged into the aquatic environment. At the same time, pesticides such as organochlorine compounds, which are known to be toxic, non-readily degradable and bio accumulative, may also harm the environment while active in the wool. Despite a ban, this type of pesticide is still used[20]. Wool scouring firms and exporters of wool have the greatest scope to control the use of pesticides for ectoparasites by issuing absolute requirements to the wool producers (farmers). This requirement can therefore be documented by at least 75% of the wool farmers declaring that they do not use the above-mentioned pesticides. Organic wool automatically meets the requirement. According to the International Wool Textile Organization (IWTO), in 2015 less than 1% of global sheep farming was organic[21]. Since wool at the same time accounted for only 1% of the total fibre production (figures from 2017), the total amount of organic wool is not that extensive. The judgement has therefore been made that only accepting organic wool would be too tough a requirement.

Test method IWTO DTM-59: 2009; Method for the Determination of Chemical Residues on Greasy Wool[22]. This method tests for the presence of four groups of pesticide residues: organochlorine compounds, organophosphates, synthetic pyrethroids and insect growth regulators.

Background to O7 COD effluents from wool sourcing plants

The requirement has been harmonised with requirements set by both the EU Ecolabel and GOTS.

The requirement is split into differentiated requirement levels for fine and coarse wool. Dirt, grease, and suint that are washed out before the wool can be further processed can pollute wastewater discharged into the environment. COD indicates the amount of oxygen consumed through complete oxidation of the organic material under aerobic conditions. The higher the COD emissions, the more oxygen consumption the discharge will cause and the greater the risk of oxygen deficiency in the aquatic environment. This potential environmental impact can be significantly reduced by removing dirt, grease, and suint from

[19] Wikipedia - Cotton recycling, https://en.wikipedia.org/wiki/Cotton recycling (accessed 26.08.2019).

[20] Ravindran, J. et al., Organochlorine pesticides, their toxic effects on living organisms and their fate in the environment, Interdiscip Toxicol. 2016 Dec; 9(3-4): 90-100.

[21] International Wool Textile Organization (IWTO), “Wool Production.” Accessed 07.09.2017: http://www.iwto.org/wool-production

[22] https://www.iwto.org/sites/default/files/images/iwto_news/image/INDEX-Red%20Book%202015.pdf accessed 13.05.2019.

the wool, with the resource-efficient bonus of maximising their value as by-products. Removing dirt and grease from the wool also helps to minimise energy consumption and the need for detergents in the wool scouring plant[23].

Background to O8 Recycled plastic, rubber and foam

Nordic Ecolabelling wishes to support a circular economy by encouraging the use of recycled materials over virgin raw material – in this case crude oil. Substantial environmental potential is expected in the future with regard to reduce resource consumption and greenhouse gas emissions. However, availability and access to recycled polymers of good quality and purity is still challenging.

The requirement states that the feedstock used in the recycled raw material must be traceable. Without traceability, it is difficult to ensure that the material really is recycled. Traceability can be documented with a certificate from a third-party certifier of the supply chain, such as the Global Recycled Standard, for example. The Global Recycled Standard (GRS) is an international, voluntary standard that sets requirements for third-party certification of recycled content and chain of custody in the supply chain. This standard restricts the use of undesirable chemicals in the manufacture of new products, but the standard does not cover chemicals that may enter via the recycled materials and thus gives no guarantee about what may be present in the finished GRS product[24]. It is up to Nordic Ecolabelling to assess whether additional certification systems for recycled content can be accepted. Alternatively, traceability may be documented by the producer of the recycled raw material declaring that 100% recycled feedstock has been used.

Background to O9 Prohibited sustances in recycled plastic, rubber and foam

The requirement applies to chemicals contained in the recycled plastic raw material and not chemicals that are added through regranulation. There are separate requirements for these added chemicals, see the chapter for chemical requirements.

The impurity limit level of 100 ppm must be met for each component exept for the halogenated flame retardants, the phthalates, the PAHs and the PFAS where it is the sum of these component that must meet the limit level.

The requirement must be documented with a test report using X-ray fluorescence (XRF), GC-MS or equivalent methods, or traceability to the source that substantiates that the specified substances are not included. The aim of the requirement is to capture the “worst substances”. There are different practices in the industry for testing substances in recycled plastics. Some manufacturers rely on questionnaires/declarations from their subcontractors and follow them up with chemical analyses if it is considered likely that the plastic contains substances of concern. Some manufacturers of recycled plastic have XRF (X-ray fluorescence spectrometer) equipment for testing the plastic to see whether it can meet the given requirement.

Although this will entail extra documentation work, it shows that it is possible to set such a requirement. Using recycled plastic is good as it helps reduce resource use and stimulates a

[23] Revision of the EU Green Public Procurement (GPP) Criteria for Textile Products and Services, Technical report with final criteria, JRC 2017.

[24] Recycled Claim Standard (RCS) + Global Recycled Standard (GRS) - Textile Exchange

circular economy. At the same time, there is no wish to recycle chemicals that are harmful to health and the environment.

Phthalates and 8 specific polycyclic aromatic hydrocarbons (PAH) have been added to the requirement in this generation. All 8 PAHs are listed in annex XVII in REACH due to risks to human health. PAHs have been found in plastic packaging made of recycled plastic (PE and PP)[25]. Nordic Ecolabelling will not extend the list of forbidden PAHs in recycled plastic, rubber and foam to the same PAHs as for virgin rubber and latex material, due to the lower steerability for production of recycled material compared to virgin material. To extend the PAH-list for recycled material will be evaluated for the next generation.

Nordic Ecolabelling prohibits PFAS in chemicals used in carpets for instance in additives in polymer materials or in stain and water repellent/surface treatment of carpets. Studies show that these chemical requirements are relevant as PFAS are found in both carpets and in carpet surface treatment[35]. Based on feedback in the consultation, Nordic Ecolabelling has included a PFAS-restriction also for recycled plastic, rubber and foam materials. PFAS-impurities above 100 ppm are not permitted.

Based on the report “PFAS i nye og eksisterende byggematerialer ved renovering”[26] , Nordic Ecolabelling has concluded to require a TOF (Total Organic Fluorine) -test for screening of PFAS in recycled plastic/rubber/foam to be used in carpets as this test is a broad-spectrum detection and captures both known and unknown PFAS. The TOF-test is also cost-effective (less expensive than target analysis for large-scale screening of PFASs). The disadvantages with the TOF-test are:

- Only gives an indication of PFAS, as organic non-PFAS compounds are also included.
- Cannot distinguish between different PFAS compounds.
- High detection limit of 10 mg/kg (100 ppm) compared to several investigation results that have detected PFAS in the range of µg/kg.

The TOF-test must be done with the method Combustion Ion Chromatography (CIC) which is according to recommendations in the report.

The chosen impurity limit level of 100 ppm is based on:

- the test results of TOF in flexible recycled polypropylene og polyetylen used in plastic films, ref.table E493 in annex E[27].
- measurement of PFAS in a recycled nylon (polyamid)/polyurethane carpet[28,29,30].
- the fact that circular economy requirements are important in these criteria, and that Nordic Ecolabelling wants to stimulate the use of recirculated material. The ECHA-report "Universal PFAS restriction proposal" indicates that it will be difficult for the industry to produce recycled plastic with the proposed limit values for many years (10-20 years).

[25] https://www2.mst.dk/Udgiv/publications/2023/04/978-87-7038-507-7.pdf
[26] ”PFAS i nye og eksisterende byggematerialer ved renovering-Teknisk rapport–analyse af byggematerialer”, Teknologisk institutt, September 2025
[27] Per- und polyfluorierte Alkylsubstanzen (PFAS) - ECHA, visited August 2025
[28] “TESTING FOR TOXICS How chemicals in European carpets are harming health and hindering circular economy”, Recycling Netwerk et.al, 2018
[29] https://econyl.aquafil.com/, visited September 2025
[30] https://eu.patagonia.com/dk/en/shop/collections/recycled-clothing-gear/pfc-free/econyl, visited September 2025

Background to O10 Renewable/biobased plastic materials

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[31]. 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 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 discourages 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: GMO.

Background to O11 Rubber, synthetic latex and natural latex

A number of synthetic latex materials are made of substances that are hazardous to the environment and human health, for example substances that are suspected to cause cancer. One substance that acts as a monomer in the production of latex is 1,3-butadiene (CAS No. 106-99-0) which has H340 and H350 classifications. There is therefore a requirement for content of butadiene to be tested to ensure that the monomer content in the final latex is low.

There are more than 100 PAHs compounds. Several of the PAHs are carcinogenic and classed as Carc.1B. PAHs can be found in plastic and rubber parts in a wide range of consumer products. They are present as impurities in some of the raw materials used to produce such products, namely in plasticising and process oils and in carbon black, which is

[31] https://www.worldwildlife.org/stories/deforestation-fronts, visited May 2024

used as a dye, amongst other things. The substances are not intentionally added to the products in question, and they have no specific function as constituent ingredients of the plastic or rubber parts. Plasticising and process oils are mineral oils that are produced from crude oil. Carbon black is the product of incomplete combustion or thermal decomposition processes of heavy oils.

Nitrosamines and nitrosamine-soluble substances are suspected to be carcinogenic. Nitrosamines are by-products formed in the production of rubber.

The requirement has been changed and harmonized with the level of requirements in the criteria for floor coverings.

Background to O12 Foam

There are several different types of backing material for carpets, but plastic/rubber foam is typically used as backing material[3]. Since there are environmental impact associated with the wastewater COD effluents from the production of foam like polyurethane and latex, Nordic Ecolabelling sets requirements concerning these effluents. Nordic Ecolabelling requires effluents of oxygen demanding substances in the wastewater from the foam production to be low.

3.3 Chemical requirements

Background to O13 Overview of chemicals

To get an overview of the chemicals used and their basic safety and environmental properties, a list of all the chemicals used in the various processes in the production and their corresponding safety data sheets, must be submitted.

As it might be challenging to get the required documentation for all the chemical requirements back in the carpet supply chain, Nordic Ecolabelling accept an Oeko-tex standard 100 certificate as alternative documentation to our own Appendix 5. The Oeko-tex standard 100 is a label for textile products and their raw materials which are tested for harmful substances[32]. The label has 4 product classes based on skin contact/exposure. The more intensive the skin contact is, the stricter the requirements and laboratory tests are. Nordic Ecolabelling require an Oeko-tex standard 100 certificate according to class I which is for products in contact with baby skin and therefore is the class with the strictest chemical requirements. Normally, carpets and their raw materials will be certified according to Oeko-tex class III which is for products with no direct contact with skin.

Background to O14 Classificaion of chemical products

Nordic Ecolabelling strives to ensure that the health and environmental impact of the products are as low as possible. The requirements therefore make it clear that products classified as very toxic, toxic, harmful to health, sensitizing, causes damage to organs, carcinogenic, mutagenic, toxic for reproduction, endocrine disruptors, persistent,

[32] OEKO-TEX® STANDARD 100, visited February 2025

bioaccumulative or mobile and toxic, hazardous to the aquatic environment and hazardous to the ozone layer cannot be used.

Background to O15 Classification of ingoing substances

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

Excluding carcinogenic, mutagenic, reproduction toxic (CMR), sensitizing substances and endocrine disruptors is an important parameter from a health perspective. For products that can be partly ingested, this also applies to substances that are fatal if swallowed. The list includes classifications that are standard to include in all product groups if we do not get information that they are irrelevant, as we apply the precautionary principle. In that way we include unknown or new problematic ingoing substances or impurities that might be present in cosmetic products.

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

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

Background to O16 Prohibited substances

Certain problematic substances and substance groups are difficult to exclude through general chemical requirements. To address this, Nordic Ecolabelling has compiled a list of substances that must not be present as chemical products and their ingoing substances used in the materials of the carpet, for treatment of the carpet or material for the assembly of the carpet.

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

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

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

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

Aziridine (CAS No. 151-56-4) and polyaziridines

Aziridine and polyazirdines have a broad range of applications, included in textile chemicals, adhesives, binders, lubricants, cosmetics and more. Furthermore, they are alkylating agents and is of specific concern due to their potential to link to DNA, therefore both toxic and carcinogenic.

Azo dyes that may release aromatic amines with carcinogenic properties

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

Bisphenols and bisphenol derivatives

Several bisphenols with the general bisphenol structure and 'bisphenol derivatives' which have constituents with structural properties common to bisphenols are now prohibited. Based on the potential for widespread use and available information on potential endocrine disruptors, reproductive toxicity and PBT/vPvB properties, 34 substances were identified in need for further regulatory risk management in EU[33].

Bitumen (CAS no.8052-42-4)

Bitumen (CAS no.8052-42-4) is a petroleum-based product that provides stability and moisture resistance, making it suitable for carpet backing. It is often used in commercial settings where durability is crucial**Virhe. Kirjanmerkkiä ei ole määritetty.**. There are several environmental concerns related to the production and use of bitumen. Among others bitumen can release volatile organic compounds (VOCs) and PAHs and other harmful chemicals, which may affect indoor air quality, and carpets with bitumen backing are challenging to recycle, leading to decreased material recycling and increased possible contamination of soil and water from landfill waste.

D4 (octamethylcyclotetrasiloxane, CAS No. 556-67-2), D5 (decamethylcyclopentasiloxane, CAS No. 541-02-6), D6 (dodecamethylcyclohexasiloxane, CAS No. 540-97-6)

Cyclosiloxanes are substances used as an intermediate or basic raw material in the production of silicone rubbers, gels and resins. D4, D5 and D6 are substances with PBT and/or vPvB properties and gives rise to specific concern based on their potential to accumulate in the environment.

Halogenated organic compounds

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

Organotin compounds

Organotin compounds mainly originated from antifouling paints, but more commonly used as catalysts in industrial production, stabilizers, biocides and surface disinfectants. 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.

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

PBT and vPvB substances in accordance with REACH Annex XIII

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

Pigments, dyes and additives containing lead, tin, cadmium, chromium VI and mercury, and their compounds

Heavy metals such as cadmium, lead and mercury may be found as impurities in certain dyes, pigments and additives used for carpets. These metals can accumulate in the body over time and are highly toxic with irreversible effects, including damage to the nervous system (lead and mercury) or kidneys (cadmium). Cadmium is also known to cause cancer. Cadmium is classified as carcinogenic, mutagenic, reprotoxic, toxic and toxic for aquatic organisms. Chromium is allergenic, carcinogenic, and toxic for aquatic organisms. The use of cadmium, mercury and lead has become more limited, but controlling for them remains relevant[34].

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

A number of phthalates are identified as endocrine disruptors and some of them are classified as reprotoxic. For these reasons several phthalates are included in the Candidate list.

Based on their hazardous properties phthalates pose a threat to the environment and human health and there is a ban on this group of substances.

Potential or identified endocrine disruptors according to any of the EU member state initiative "Endocrine Disruptor Lists" List I; II; and III

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

Per- and polyfluoroalkyl substances (PFAS)

Per- and polyfluoroalkyl substances (PFAS) are used in many types of products among others carpets[35,36] due to their water and dirt repellent properties. These compounds constitute a group of substances that have highly problematic intrinsic hazardous properties. They are extremely persistent and accumulate in the body. They are spread all over the globe, from the large oceans to the Arctic, and are found in e.g. wild birds and fish and their eggs. Also, shorter chain compounds (2–6 carbon

[34] Investigation of chemical substances in consumer products, Danish Environmental Protection Agency 2011.
[35] “PFAS i byggevarer”, Teknologisk Institut, WSP Danmark A/S, Henning Larsen Architects, Søren Jensen Rådgivende Ingeniørfirma A/S og Rådet for Grøn Omstilling, September.2025
[36] “Universal PFAS restriction proposal”, ECHA, updated 24.06.25

atoms) have been discovered in nature. The substances in this group are suspected to be endocrine disruptors, carcinogenic and to have a negative impact on the human immune system.

Substances on the REACH Candidate list of SVHC

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

Background to O17 Antibacterial substances and biocides

Biocidal products and antibacterial products are not desirable in Nordic Swan Ecolabel products, and the requirement excludes both chemical and physical treatments. Frequent use of antibacterial substances in ordinary consumer products may contribute to increased resistance in bacteria and the eradication of necessary bacteria, and Nordic Ecolabelling does not wish to contribute to this. These substances are increasingly being added to consumer products – everything from textiles to kitchen equipment. One of the substances often being added is nano silver. Nano silver is harmful for the aquatic environment[37]. Particular attention is being paid to nanometals such as nano silver and nano copper since they occur in many products.

These nanomaterials are added to achieve an antibacterial effect. There has been particular concern that emissions of nano silver into wastewater and other dispersal could eliminate desirable bacteria and cause resistance in bacteria. Another example of antibacterial substances that must not be used are organotin compounds and chlorophenols, which are used, for example, during the transport and storage of textiles.

Preservatives used in chemical raw materials (“in can” preservatives), for example in adhesives or surface treatments, are not subject to this prohibition. Here, the purpose of the biocide is to preserve the chemical product during storage. Naturally occurring antibacterial effects in materials (for example bamboo) are also not subject to the prohibition.

Background to O18 Nanomaterials

Nanomaterials[38] are a diverse group of materials under the size of 100 nm. 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.

[37] Silverläckan, En rapport om silver i sportkläder 2018, Svenskt Vatten

[38] https://www.nordic-swan-ecolabel.org/nordic-ecolabelling/environmental-aspects/chemicals-nano-and-microplastics/nanomaterials/

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.

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[39],[40],[41]. Nordic Ecolabelling takes these concerns seriously and applies the precautionary principle to exclude potentially hazardous nanomaterials from products.

Background to O19 Metal complex dyes and pigments

Metal complex dyes are problematic because they contain undesirable heavy metals. The requirement prohibits the use of metal complex dyes and pigments containing, for example, chromium, cobalt, and nickel. It also restricts the scope to use copper, which occurs widely in metal complex dyes. Copper should be avoided in the aquatic environment, but it is not harmful to health unless ingested. Because of its high fixation ratio and colour fastness, copper in metal complex dyes is acceptable in small quantities (max. 5 weight% in the dye).

In general terms, metal complex dyes have a high fixation ratio (85-98%) and good fade resistance. The good fade resistance may help to give the carpet a long life[42].

3.4 Circular economy requirements

Background to O20 Design for separation

Carpets are composed of various materials, making it challenging to promote end-of-life treatments beyond landfill disposal and energy recovery. However, separating the main materials enables recycling. The main materials in question are usually textile fibres and backing. This also allows for the reuse of valuable resources, where the materials can again be used in the production of either new carpets or other products. One key component in this process is to design the carpet in a way that facilitates the separation of these materials. It is also important to consider which materials or combinations of materials are suitable for recycling.

Additionally, it is crucial to document proof of concept by demonstrating that the carpet can be separated and that the resulting materials are of sufficient quality for recycling. If proof of concept cannot be documented, there is a risk that the separation of the main materials will not result in adequate material quality. The focus in this requirement is the **possibility** for material separation of the carpet, but it is not a requirement for having a fully operational recycling process like in O21.

[39] UNEP (2017) Frontiers 2017 Emerging Issues of Environmental Concern. United Nations Environment Programme, Nairobi. https://wedocs.unep.org/bitstream/handle/20.500.11822/22255/Frontiers_2017_EN.pdf

[40] Parliamentary Assembly of the Council of Europe (2013) Nanotechnology: balancing benefits and risks to public health and the environment. http://assembly.coe.int/CommitteeDocs/2013/Asocdocinf03_2013.pdf

[41] SCCS (Scientific Committee on Consumer Safety) (2019) Guidance on the Safety Assessment of Nanomaterials in Cosmetics. SCCS/1611/19. https://ec.europa.eu/health/sites/health/files/scientific_committees/consumer_safety/docs/sccs_o_233.pdf

[42] "Brancheorientering for tekstilfarvning og –tryk", Orientering fra Miljøstyrelsen, Nr. 7 2010

The textile floor cover industry in the Nordic countries has for a long-time developed methods to facilitate reuse and strengthen their work within sustainability[43,44]. This is why the textile floor covering producers must document two of three circular economy requirements. Take-back systems for textile floor coverings of tiles and/or planks are in use today at some producers, and this is therefore a mandatory requirement for this type of carpets.

Background to O21 Take-back system

From an environmental perspective there is much to be gained by reusing products, such as carpets. Reusing carpets, with minimal modification, reduces the use of resources to a minimum. If possible, this is preferable over the more energy-intensive processes related to recycling. Even though reuse is the best environmental solution, it is often not possible because of the quality of the carpet or because the take-back systems for reuse are not fully functional. Material recycling is, therefore, a reasonable option for keeping materials in circulation for longer.

The initial step for improving carpet recycling is to separate the various primary materials, which is introduced as a new requirement in these criteria; references are made to requirement O21. Separating materials differs from having a fully functional system where materials are recycled and reused on an industrial scale. Therefore, this new requirement for a take-back system has been introduced. Manufacturers who seek the use of post-consumer recycled materials of good quality and purity will also benefit from arranging a take-back system, as they have full control of the recycled output material.

Typically, the different materials undergo appropriate recycling schemes, either at the factory or at a specialist site[3,43,44]. The recycling process must be conducted in such a way that the quality of the recycled raw material is sufficient to replace virgin raw materials. By relying more heavily on recycled raw materials, the manufacturer can avoid the use of virgin raw materials and reduce the climate impact of the production of carpets considerably[45]. Recycled materials are, in this context, considered post-consumer recycled materials and not pre-consumer waste from production. Nordic Ecolabelling does not aim to dictate which materials must be replaced with recycled content, other than that it must be post-consumer, but prefers to allow manufacturers to find the best solutions for their processes and products. The manufacturer can therefore choose if the recycled content should be used in, e.g. the backing or the textile fibres. This requirement promotes keeping materials in circulation for longer and reduces the amount of materials going to landfills and/or energy recovery processes, irrespective of the type of material. There may be some types of materials in the carpet that are not suitable for recycling, such as adhesives. Therefore, the requirement states that only materials that are suitable for recycling must be recycled. Identifying which materials are suitable for recycling may be part of the inspection and control of the carpet.

[43] https://prosjekt.tarkett.no/nb_NO/node/global-oppvarming-15202

[44] https://www.egecarpets.dk/baeredygtighed/vores-baeredygtige-ambitioner

[45] “MECO textile floor coverings and carpets 2024”, A.Ø. Burgos and M.K. Eriksen, Nordic Ecolabelling, August 2024

Background to O22 Increased use of renewable and/or recycled raw materials

The purpose of the requirement is to reduce the total environmental impact of the carpet from a life cycle perspective by reducing the consumption of virgin materials. To fulfil the requirement, a carpet manufacturer must focus on a high portion of renewable materials or recycled materials. References are made to the background of requirement O3.

This requirement differs from O3 by not being mandatory but being one of three available requirements within the chapter of circular economy requirements. Here the carpet industry is rewarded for a higher percentage of either renewable raw material or recycled content than the obligatory requirement.

3.5 Emissions to indoor air and quality requirements

Background to O23 Emissions to indoor air from the product

In the previous generation, there were two requirements related to emissions, whereas the applicant could document depending on whether the carpet was textile floor coverings or rugs and mats. In this generation, there is only one requirement related to emissions, which applies to all types of products. The requirement aims to ensure that the products have a minimum of emissions known to be harmful to the indoor environment, as well as to be aligned with the EU Taxonomy Annex 2.

All limit values have been tightened for TVOC (Total Volatile Organic Compounds), SVOC (Semi Volatile Organic Compounds) and formaldehyde. The tightening of limits and implementation of carcinogenic VOC is based on the EU Taxonomy, BREEAM-NOR v.6.1.1, M1 and the GUT label. Limit values of TVOC, SVOC, carcinogenic VOC and formaldehyde are equal to or below the limit values required for carpets by BREEAM-NOR v.6.1.1 Mønstergyldig nivå, which is their strictest emission level. Formaldehyde limits are above the GUT label, being the only scheme with a limit value at 4 µg/m³, while TVOC and SVOC are according to the GUT label. This means that all Nordic Ecolabelled carpets fulfil the emission requirements from the latest standard BREEAM-NOR v.6.1.1[46]. Nordic Ecolabelled carpets also fulfil all emission requirements exept formaldehyde from the GUT[47] label, which is even stricter than BREEAM-NOR v.6.1.1. The limit values are also at the same level or stricter than the AgBB[48] certification scheme. The carcinogenic VOC limit value is based on the sum of carcinogenic in category 1A and 1B, as defined in Annex VI of CLP Regulation (EC) 1272/2008.

The requirements for emission testing of carcinogenic substances (test according to EN 16516) are aligned with the EU Taxonomy. In the EU Taxonomy the emissions of formaldehyde must be performed according to Annex XVII in REACH (the conditions listed are aligned with EN 717-1), while for the carpet industry, EN 16516 is most commonly used. While referring to different standards, the limit value of 10 ug/m3 in this requirement is stricter than the EU Taxonomy (60 ug/m3). As the building industry in both Sweden and Denmark accepts EN 16516 for Taxonomy alignment with regard to formaldehyde it is

[46] https://byggalliansen.no/wp-content/uploads/2025/01/BREEAM-NOR-6.1.1-English.pdf
[47] https://gut-prodis.eu/en/emission-test/
[48] https://www.umweltbundesamt.de/en/topics/health/commissions-working-groups/committee-for-health-related-evaluation-of-building#committee-for-health-related-evaluation-of-building-products-agbb-, visited August 2025

interpreted that the level defined in this requirement is in alignment with the EU Taxonomy. M1 certification scheme also performed tests according to EN 16516 and states that they support the objectives of the EU Taxonomy[49]. Nordic Ecolabelling therefore, sees it sufficient to require tests according to the industry standard.

In this revision, it has not been deemed relevant to introduce requirements related to odour testing, as in the certification scheme in the GUT label and M1. As of today, odour tests are not directly comparable according to Eurofins[50]. However, standard ISO 16000-28 deals with odour testing. It may thus be relevant in the next revision to consider expanding the requirement with an odour limit value if odour tests have become more comparable.

Background to O24 Durability and classification of carpets

Increasing the service life of carpets reduces the environmental impact of carpet production, especially the climate impact will be reduced by a reduced need of virgin materials and then reduction of raw material extraction. The main parameters that affect the service life of a carpet are the wear resistance of the top layer, the intensity of usage and maintenance.

The use class is an easy way to communicate qualities of durability to a customer, and it is standardized throughout the industry. The classification is performed through the standard EN 1307 and its related standards. A classification for either commercial or domestic use can then be determined based on the tested performance. Durability should be adapted to the environment in which the product is intended to be used, therefore there are two different use classes presented for commercial use and domestic use for Nordic Ecolabelled textile floor coverings. It has also been identified that rugs and mats often don't obtain the same use classes as textile floor coverings, especially related to commercial use. The requirement therefore introduces a separate use class level for commercial use of rugs/mats, while keeping the same use class for all carpet types for domestic use.

Background to O25 Customer information

To enable a long service life for carpets, which is an important environmental aspect, the customers must obtain information about the products, correct installation and recommended maintenance. This also includes informing the customer of potential take-back systems to promote recycling as an end-of-life treatment.

This requirement also includes that the manufacturer must inform the customer of how the carpet may be cleaned. This is especially important for rugs and mats for domestic use, as these criteria don't have a separate requirement for cleaning.

[49] https://ymparisto.rakennustieto.fi/en/emission-classification-of-building-materials#M1-luokiteltu-tuote-tukee
[50] Correspondence with Eurofins, November 2013.

3.6 Social and ethical requirements

Background to O26 Human rights due diligence

The human rights due diligence should be aligned to expectations set out in the UN Guiding Principles on Business and Human Rights[51], and with the Organisation for Economic Co-operation and Development's Guidelines for Multinational Enterprises[52], clarified in plain-language explanations in the OECD Due Diligence Guidance for Responsible Business Conduct[53] to help promote a common understanding on due diligence compliant with that of the UNGPs. See also the OECD's sector-specific guidance[54].

The Guiding Principles were unanimously adopted by the UN Human Rights Council in June 2011. In line with the Guiding Principles, companies have a responsibility to undertake due diligence in their value chains to ensure respect for human rights. The human rights benchmarks are expressed in the International Bill of Human Rights and International Labour Organization Declaration on Fundamental Principles and Rights at Work (which sets out the ILO core conventions). Companies are asked to employ ongoing risk-based due diligence to identify, prevent, and mitigate actual and potential adverse impacts on human rights based on its own activities, and those which may be directly linked to its operations, products, or services by its business relations. The scope of due diligence depends on the nature of the human rights risk and the company's connection to it (see Principle 13).

The licensee should, in good faith, take informed steps to implement due diligence by applying a risk-based approach; the Guiding Principles expect companies to prioritize attention to the likely risk of severe harm (salient risks), to make it manageable. The licensees must be open and responsive to issues that may arise in their supply chains.

The EU Commission's proposal for a Corporate Sustainability Due Diligence Directive (CS3D)[55] references the Guiding Principles and OECD guidance. The CS3D takes a comprehensive approach and ties social aspects in the supply chain with delivering on the EU's Green Deal[56]. The Directive aims to ensure coherence for companies and avoid fragmentation of due diligence requirements in the single market resulting from EU member states "acting on their own"[57].

[51] United Nations Guiding Principles on Business and Human Rights ("UNGPs"), 2011, see https://www.ohchr.org/sites/default/files/documents/publications/guidingprinciplesbusinesshr_en.pdf
[52] Organisation for Economic Co-operation and Development (OECD)'s 2011 Guidelines for Multinational Enterprises, see https://www.oecd.org/corporate/mne/, revised in 2023.
[53] Organisation for Economic Co-operation and Development (OECD)'s 2018 Due Diligence Guidance for Responsible Business Conduct ("OECD Due Diligence Guidance"), see https://www.oecd.org/investment/due-diligence-guidance-for-responsible-business-conduct.htm
[54] Organisation for Economic Co-operation and Development (OECD)'s Due Diligence Guidance for Responsible Supply Chains in the Garment & Footwear Sector, see https://www.oecd.org/industry/inv/mne/responsible-supply-chains-textile-garment-sector.htm
[55] See https://eur-lex.europa.eu/resource.html?uri=cellar:bc4dcea4-9584-11ec-b4e4-01aa75ed71a1.0001.02/DOC_1&format=PDF
[56] Communication from the Commission to the European Parliament the European Council, the Council, the European Economic and Social Committee and the Committee of the Region "The European Green Deal" (COM/2019/640 final).
[57] CS3D, see Explanatory Memorandum p. 3.

See also requirement O2, which asks for verified value chain mapping in production (carpet production sites and dyeing plants) and to connect the product with the actual raw material used.

Background to O27 Preventive safety measures

As of early 2023, the International Accord for Health and Safety in the Textile and Garment Industry is available in Bangladesh and Pakistan[58]. The International Accord began as the Accord on Fire and Building Safety in Bangladesh in 2013.

The Rana Plaza textiles factories building collapse in Bangladesh in 2012, showed the need in this sourcing country for buyers to check they are buying from structurally safe buildings. Structural safety assessments can be extremely expensive and are not generally included in social audits of labour standards, so the Bangladesh Accord on building safety was created as a collaboration to share assessment costs between many buyers and suppliers. In addition, it's leadership by trade unions with buyers allows workers to raise safety issues which can arise when new heavy machinery is added to floors or other safety factors change. A considerable proportion (over 3000) of all textile export factories in Bangladesh are assessed through this programme, and it is free to check on the Accord website that sites are deemed safe by the programme. The Accord is now extended to Pakistan.

Background to O28 Assessment of safety and labour conditions

See Appendix 7 and Appendix 9 in the criteria.

3.7 Licence maintenance

Background to O29 Customer complaints

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

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

Background to O30 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.

[58] See https://internationalaccord.org/

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

4 Environmental impact of textile floor coverings and rugs/mats

The relevant environmental impacts found in the life cycle of Textile floor coverings and rugs/mats are set out in a MECO analysis[45] and summarized in a MECO table, ref. Appendix 11. A MECO describes the key areas that have impact on the environment and health throughout the life cycle of the product – including consumption of materials/resources (M), energy (E), chemicals (C) and other impact areas (O).

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

Table B below, presents the summary of the RPS analysis. The aspects where the assessment concludes with high or medium RPS are those covered by requirements in the criteria. The MECO and the RPS analyses are based on Life Cycle Assessments (LCAs), Environmental Product Declarations (EPDs), the background document for the previous version of the criteria and other documentation describing environmental impact from carpets[59,60]. The LCAs and EPDs are made for textile floor coverings, but it is assumed that the environmental impacts for these types of carpets, are applicable for rugs and mats also.

RPS analysis

Table B. Summary of the RPS analysis

Life cycle stages	Area and assessment of R, P, S (high, medium or low)	Comments
Raw materials		
	Material consumption R: High P: Medium S: High	RPS = high The consumption of raw materials has a high environmental impact due to depletion of fossil resources, consumption of energy and water, land use etc.

[59] "Kortlægning og risikovurdering af kemiske stoffer i gulvtæpper til børn", Helene Bendstrup Klinke et.al., Miljøstyrelsen, 2016

[60] The Textile Industry's Climate Reckoning: A Path to Circularity and Low-Carbon Energy | Ethos, 11.03.2025

		To reduce the environmental impact from the use/consumption of materials, Nordic Ecolabelling sets strict requirements to the minimum required content of renewable and/or recycled raw materials to reduce the consumption of virgin materials in carpets and has also textile fiber/polymer requirements supporting use of renewable and recycled fibers/polymers. LCAs and EPDs show that there might be slightly differences in the material consumption due to type of carpets (wall-to-wall/tiles), type of production (woven/tufted) and type of material (synthetic/wool). The potential to set requirements to lower the amount of material used (kg/m^2), is reduced by the fact that the amount of material used, might be related to quality/lifetime of a carpet, type/function and the amount of glue/chemicals needed for installation. But to get information about the material used per area for different carpet types, Nordic Ecolabelling has introduced an information requirement for material consumption (kg/m2) in this generation.
	Energy consumption R: High P: Medium/high S: Low	RPS = medium/low The consumption of energy to extract and produce raw materials and in the carpet production phase has a high environmental impact and might represent more than 60% of the total climate impact for a carpet. LCAs and EPDs show that the consumption is between 83-510 MJ/m2, and that there are slightly differences in the energy consumption due to type of production (woven/tufted) and type of material (syntetic/wool). The majority of the energy consumption is for the material extraction and not for the carpet production itself, and therefore the steerability is low. Based on low steerability, Nordic Ecolabelling has removed the energy requirements in this generation and has instead imposed strict material requirements to reduce the production of virgin carpet material which again will reduce the energy consumption from raw material production.
	Water consumption R: Medium P: Medium S: Low	RPS = medium/low The consumption of water to extract materials and to produce carpets also has considerably environmental impact. LCAs and EPDs show that there might be slightly differences in the water consumption due to the type of carpets (wall-to-wall/tiles) and type of material (synthetic/wool). The majority of the water consumption is for the material extraction and not for the carpet production and the steerability is low. Based on low steerability, Nordic Ecolabelling has removed the water reduction requirements in this generation and has instead imposed strict material requirements to reduce the production of virgin carpet material which again will reduce the water consumption from carpet production.
	Use of chemicals R: High P: High S: Medium	RPS = high/medium Many health and/or environmental hazardous chemicals are used for raw material production for carpets. The use of these chemicals might cause possible health impact in the use phase and challenges for recycling of carpet material by end-of-life. The steerability may vary back in the supply chain according to production method. Nordic Ecolabelling sets strict requirements to all chemical products used in the production of raw materials to reduce the environmental and health impact from carpets in the whole life cycle. As it might be

		challenging to get the required documentation for all the chemical requirements back in the carpet supply chain, Nordic Ecolabelling accept an Oeko-tex standard 100 certificate class I as alternative documentation to our own chemical appendix. Also refer the other life cycle stages for more description of impact from the use of chemicals.
	Emissions to air R: Medium P: Low S: Low	RPS = low/medium Production of carpets made of virgin plastic fibres might lead to release of problematic compounds such as NOx and VOC into the air. From production of nylon (polyamide 6 and 66), the greenhouse gas N2O is released. Nordic Ecolabelling only allow for the use of virgin plastic fibers if the material constitute less than 10 weight% of the carpet.
	Discharge of wastewater R: Medium P: Medium S: Medium	RPS = medium Production of carpets might lead to discharge of wastewater with high content of organic matter like lanolin from wool washing or organic matter from foam production. The high content of organic matter gives high COD (chemical oxygen demand) which might cause challenges for wastewater treatment plants and/or the aquatic environment. Nordic Ecolabelling sets limits for the COD in the wastewater from wool scouring plants and from foam production plants.
	Animal welfare R: Medium P: Medium S: Medium	RPS = medium Use of mulesing might be used in relation to wool production. Nordic Ecolabelling requires that mulesing is not allowed to protect animal welfare. The wool supplier must declare that mulesing has not been used in the production of conventional wool.
Production/distribution		
	Use of chemicals R: High P: High S: High	RPS = high Use of chemicals for dyeing, gluing, as flame retardant and anti-dirt impregnation causing possible health impact in the use phase and challenges for recycling of carpet material by end-of-life. Nordic Ecolabelling sets strict requirements to all chemical products including dyes used to produce carpets to reduce the environmental and health impact from carpets in the whole life cycle, see the other life cycle stages for more description.
	Working conditions R: Medium P: Medium S: Low	RPS = medium/low Several carpet producers have their productions sites in Europe, but carpets might be produced in areas where working conditions might be unsatisfactory and not according to International Labour Organization (ILO) minimum requirements. Nordic Ecolabelling sets social and ethical requirements for carpets producers for production in areas with not low risk for violation of human rights to ensure satisfactory working conditions.

Use phase		
	Electricity consumption for cleaning R: Low P: Low S: Low	RPS = low Electricity is used for cleaning of carpets, typically 1-11 MJ/m2. The environmental impact of this energy use is low compared to the energy used for the extraction of materials and production of carpets, and the steerability of setting requirements for electricity used for cleaning of carpets, is low.
	Emissions of chemicals to indoor air and chemical content in indoor dust and dirt R: High P: High S: High	RPS = high Chemicals causing health impact are used to produce carpets. Chemicals are used as ingredients and dyes both for the upper textile side and for the backing material and for gluing, impregnation and lamination of carpets. Residual chemicals like lubricants and oils from machinery used during production can also remain in the carpets. The use of these chemicals might cause emissions of VOCs to indoor air and content of among others PFAS and phthalater in indoor air and indoor dust/dirt. Nordic Ecolabelling sets strict requirements to all chemical products including dyes used to produce carpets to reduce exposure to health hazards from chemicals in the use phase. Nordic Ecolabelling also sets requirements for and have limits for VOC- and formaldehyde emissions from the products. Use of adhesives for installation of wall-to-wall carpets, where 10 times as much glue is necessary for carpets on roll compared to tiles, will also result in chemicals in the indoor environment. But the steerability to impose requirements is low. It is difficult to set requirements other than a requirement for installation information that must include a recommended adhesive, and if there are suitable Nordic Swan Ecolabelled adhesives, these are to be recommended.
	Use of detergents for cleaning R: Medium P: Medium S: Low	RPS = low The use of detergents for cleaning is causing discharge of detergent chemicals to water. The steerability of imposing requirements for detergents to be used for cleaning of carpets, is low. It is difficult to set requirements other than a requirement for the maintenance information for the carpets. This information must include recommendation for cleaning frequency, cleaning method and cleaning products, and if there are suitable Nordic Swan Ecolabelled cleaning products, these are to be recommended.
	Poor quality and short lifetime R: High P: High S: High	RPS = high In general, more durable products reduce environmental impacts because of the less frequent need for replacement, and possibilities to repair the carpets will extend the carpet lifetime. LCAs document that there are better possibilities for repairing for carpet tiles than carpet on roll. The systems established today are mainly for repairing and reuse of textile floor tiles covering whole floors and not for repairing/replacement of single tiles or rugs/mats. Nordic Ecolabelling sets requirements for durability testing according to specified use classes for commercial and domestic use and has

		also for this criteria generation, introduced a requirement for carpet manufacturers of carpet tiles to offer a take-back program for repairing and reuse of carpets tiles and/or material recycling.
End-of-life		
	Incineration/landfill instead of recycling and/or reuse R: High P: Medium S: Medium	RPS = medium/high From a climate/environmental perspective, recycling of carpet material/fibres and/or reuse of carpets by end-of-life is preferable over the traditional and most used end-of-life option, incineration/landfill (In Europe, only 1-3% of carpets are recycled). As extraction of new carpet material has a huge environmental impact, it is important to increase the reuse of the carpets and the recycling of carpet textile fibers and backing materials into new fibers or downcycled to filler material. This can be done through take-back programs offered by the carpet manufacturers. The manufacturer should offer to take back carpets by end-of-life to refurbish/repair (if needed) and then offer reuse of the carpets or if not possible to refurbish/repair the carpets, then recycle the carpet material. Nordic Ecolabelling has in this generation of the criteria introduced a new requirement for carpet take-back program offered by the manufacturer for carpets tiles/planks. Nordic Ecolabelling has also in this generation of the criteria introduced a new circular requirement for design for separation for carpets tiles/planks and on roll.
	Recycling of problematic chemicals R: High P: Medium S: Medium	RPS = medium/high The use of health and environmental hazardous chemicals might cause challenges for recycling of carpet material by end-of-life as there is a risk of recycling problematic chemicals, such as flame retardants, into new products. Nordic Ecolabelling sets strict requirements to all chemical products, including flame retardants, used to produce carpets to reduce the risk for recycling of health and environmental hazardous chemicals into new carpets by recycling of carpet material.

Appendix 1 MECO scheme

Functional Unit: 1m² flooring	Raw material	Production	Use	End-of-life
Material	Extraction of material resources: • *Synthetic fibers*: Nylon (polyamid 6 and 6.6), polypropyelene fibers, polyester fibers • *Natural fibers*: Wool, cotton • *Backing material*: Latex, limestone, bitumen, aluminium hydroxide, polymer dispersion, non wowen (PET/PP), glass fibers Polyester and nylon fibers can be 100% recycled, as well as polyester backing material	Design choices related to type of materials as well as weight of the pile and the backing, respectively. The total weight can range from 0,9-4,5 kg/m², where carpet tiles often have a heavier backing than wall-to-wall carpets, and wool carpets often have a heavier pile than synthetic carpets.		• Possibility of the fibers or backing materials to be recycled into new fibers or fertilizer (wool), or downcycled to filler material. • Type of material that the recycled elements of the carpet is recycled into (replace virgin fibers in carpets or possible downcycling)
Energy	Consumption of energy to extract materials and produce the carpet: - *All fibers* between 83-510 MJ/m² - *Synthetic fibers* between 83–338 MJ/m² - *70-80% wool fiber* Presentation last saved: Just now		• Use of electricity for cleaning (1-11 MJ/m²).	• Substitution of energy from incineration, relevant for plastic materials (nylon, polyester, polypropylene) with high energy content. • Energy consumption during recycling
		Production method. Tufted carpets has slightly higher energy consumption than woven carpets.		
Chemicals and emissions	• Polyester and nylon fibers can be 100% recycled, posing a risk of reintroducing problematic chemicals from a previous life cycle. • Antimony trioxide in the manufacture of polyester • Release of nitrogen dioxide (N2O) from polyamide 6 and polyamide 66 production. • Chemicals, such as organo phosphats, used in wool production to avoid parasites. • Discharge/high COD from wool washing due to wool's high content of lanolin and from backing material production with foam.	• Use of chemicals for dyeing, gluing, as flame retardant* and anti-dirt impregnation causing possible health impact in the use phase and challenges for recycling of carpet material by end-of-life.	• Health effects due to emissions of chemicals to the indoor air and due to exposure to chemical content in indoor dust and dirt • Use of detergents for cleaning causing discharge of detergent chemicals • Use of adhesives for installation of wall-to-wall carpets, where 10 times as much glue is necessary for carpets on roll compared to tiles.	• Risk of recycling problematic chemicals, such as flame retardants, into new products.
Others	• Water consumption for extraction and production. Water consumption is often higher for the extraction and production of wool carpets.		• Cleaning behavior: Times a carpet are cleaned, and method used to clean the carpet (vacuum, rising, etc.). • Quality and lifetime • Possibilities for repair (better possibilities for carpet tiles than carpet on roll)	
	• Animal welfare in relation to wool production/mulesing • Depletion of fossil resources (synthetic fibers) • Land use changes and biodiversity loss related to bioplastic (PLA or bio-Nylon) • Risk of overgrazing by e.g., hillsides and the resulting risk of erosion, from wool production. On the other side, in many countries there are challenges with overgrowth of the landscape, and grazing animals will reduce this problem.	• Working conditions		

MECO references

- Summary of EPDs. Links are provided on the following slide
- EPiC (2019) – Nylon and wool carpet
- Sim and Prabhu (2018) – Energy and CO2-footprint of wool and nylon carpets
- Rajagopalan et al. (2012) – LCA of green product labeling systems for residential construction
- Minne and Srittenden (2015) - Impact of maintenance on life cycle impact and cost assessment for residential flooring options
- MST (2006) - Bilag 6: Gulvtæppe af nylon og polypropylen: https://www2.mst.dk/udgiv/publikationer/2006/87-7614-956-0/html/kap13.htm
- Arapaha (2024) – Arapaha, the impact of our products. Company LCA: https://arapaha.com/lca/
- Background document for 113 Criteria for textile floor coverings and carpets, Nordic Ecolabelling, 22.03.2023, version 1.0
- ”Kortlægning og risikovurdering af kemiske stoffer i gulvtæpper til børn”, Helene Bendstrup Klinke et.al., Miljøstyrelsen, 2016
- “Identifying Greener Carpet”, U.S. Environmental Protection Agency, Identifying Greener Carpet | US EPA, visited August 2024
- “Flame retardants”, GUT homepage, Flame retardants in the manufacture of carpets (gut-prodis.eu), visited August 2024

Links to EPD studies

- https://www.egecarpets.com/Files/Files/Ecom/Specs/Dokumenter/0747_MOD350/3700.pdf
- https://www.egecarpets.com/Files/Files/Ecom/Specs/Dokumenter/0691_MOD350/3700.pdf
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