About Nordic Swan Ecolabel

Office and hobby supplies

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Nordic Ecolabelling

Content

057 Office and hobby supplies, 26 August 2024

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:

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1 Summary

The product group includes writing instruments, office supplies, paint, glue, tape and erasers for office and hobby, as described in the section "What can be Swan-labelled?".

The criteria set requirements for the materials in the product, the chemicals used in the product, quality of the product, consumer information and packaging.

Changes and updates from generation 4 to 5

The most important changes are described below.

See also overview of changes in section 5.

Product group definition:

The product type office supplies in monomaterials have been added, where the material must be wood, bamboo, wood fibres or plastic (one type of plastic). A ruler is an example of a product within this product type.

Structure of the criteria:

The structure has been changed so that it is clearer and more logical, for example all requirements for packaging are now gathered in one section.

Refill requirements have been adjusted:

If refills are not offered for ballpoint pens, they must meet a longer writing length.

Requirements for the proportion of recycled plastic have been tightened:

The minimum proportion of recycled plastics has been increased from 30% to 50%. New requirement that recycled plastic must not come from facilities that are EFSA and FDA approved.

New requirement that recycled plastic must be tested for harmful substances.

New requirement for raw material for bio-based plastics.

Requirements for wood, bamboo, paper and cardboard have been updated and tightened:

The requirements have been updated to the latest version of the Nordic Ecolabelling forest requirements.

New requirement that reused/recycled parts of wood or bamboo must be untreated.

Requirements for chemicals have been updated and tightened:

Prohibited classifications of chemical products and ingoing substances have been updated and tightened.

Requirements for titanium dioxide (TiO_2) in specific products for children have been updated based on the latest EU commission's SCHEER assessment in 2023 of the safety of using TiO_2 in toys.

Requirements for residual monomer in polymers have been updated regarding classifications.

Requirements for preservatives have been updated regarding classifications. Requirements for isothiazolinones regarding specific concentration limit and CLP have been added.

Requirements for the quality of the products have been updated and tightened:

Requirements for the writing length for rollerball and ballpoint pens are now divided into two levels, depending on whether refills are offered or not.

New requirement for durability/functionality after storage for ballpoint, rollerball, marker, felt and whiteboard pens.

New requirement for lead and coloured pencils to test that the lead does not break during sharpening.

New requirement for felt-tip and whiteboard pens regarding text on product about horizontal storage.

Requirements for packaging have been tightened:

New requirement that oxo-degradable plastics and biodegradable plastics may not be used.

New requirement that the packaging components must be monomaterial and must be able to be recycled. Paper/cardboard must be minimum 70% recycled or the packaging must be FSC- or PEFC-certified. Plastic must be minimum 50% recycled.

New requirement for the packaging to be marked with pictograms for waste sorting.

2 Environmental impact of office and hobby supplies

The relevant environmental impacts found in the life cycle of office and hobby supplies are set out in the qualitative 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).

It has not been possible to find relevant LCA studies for this product group. Instead, a qualitative MECO analysis has been made below based on materials and chemicals included in the product group as well as information on the product group's life cycle phases.

Table: MECO for writing instruments

	Raw material phase	Production phase		Use phase	Waste phase	Transport phase
		Materials	**Product**			
Material	Crude oil: plastic granules, synthetic fibres, ink chemicals, glue, printing inks, oil chalk. Titanium Dioxide: Oil chalk, coloured pencils, etc. Kaolin: coloured chalk Graphite: pencils. Calcium carbonate: coloured chalk. Wax and Paraffins (crude oil/vegetable oils e.g. beeswax) in coloured chalk. Pigments in the form of metals and others. Wood raw material: shaft, paper casings and packaging paper and cardboard. Metals: brass, steel and aluminium. Rubber (both synthetic and natural): Erasers and parts of handles on writing instruments. Grain, straw, corn and other agricultural raw materials: bioplastic granules.	Crude oil and gas for the production of materials. Possibility of recycled raw materials/materials. For example, recycled paper. Reuse of material waste in production.	Crude oil and gas for the production of materials. Possibility of recycled raw materials/materials. For example, recycled paper. Reuse of material waste in production	Lifetime, quality in the use phase, avoidance of drying out. How the design affects whether all the ink/colour is consumed. Possibility of refill and information about this for the user.	Possible material recycling design can have an impact.	Fuel for distribution and material transport.

Energy	Extraction of raw materials such as crude oil, gas, titanium dioxide and metals. Production of agricultural raw materials. Production and drying of wood raw materials.	Production of plastic granules, paper pulp, metal processing and possibly surface treatment of product parts. Polymer manufacturing and production of additives, pigments and process chemicals.	Energy consumption during production.	Nothing.	No major relevance, plastic, wooden and paper parts contribute energy during burning.	Energy consumption when transporting raw materials and products. Product design/weight has an influence on transport load during distribution.
Chemicals	Process chemicals and emissions to air during the extraction of crude oil refining, as well as during metal extraction.	Chemical exposure and release during the production of plastic granules, paper pulp, metal processing and possibly surface treatment of product parts. Chemical exposure and release in the manufacture of graphite, cardboard. glue, ink, pigments.	Process chemicals in product production (glue, ink) and in printing. Possibly, emission when printing. VOC consumption in production. Emissions from production.	Exposure (particularly relevant for children): Allergy and other health risks from skin contact with ink and possibly VOCs. Possibly, ingestion of ink and eye contact (irritation). Oral intake of surface treatment (pigment, binder) from pencil tips by chewing.	Emissions from burning. Heavy metals from metal parts and halogenated substances from pigment. Environmentally hazardous substances from pigments/inks that end up in recycled paper fibers recycled fiber when the written paper is recycled.	Maintenance chemicals such as lubricating oils, cleaning agent. Emission to air of PAH, CO_2, NO_x, SO_x, particulate matter etc.
Others	Sustainable wood and agricultural raw materials. Landuse. Social aspects of raw material extraction.	Social and ethical aspects.	Social and ethical aspects.	Writing and color quality. Communication and information about the product's health performance.		

Table: MECO for hobby paints

	Raw material phase	Production phase		Use phase	Waste phase	Transport phase
		Materials	**Product**			
Material	Paint: Crude oil: VOC, acrylic polymers. Pigments: metals and titanium dioxide. Packaging: Extraction of metals. Grain, straw, corn and other agricultural raw materials: bioplastic granules. Crude oil for fossil plastics	Crude oil and gas for the production of materials. Reuse of material waste in production.	Crude oil and gas for the production of materials. Reuse of material waste in production. Packaging: Possibility of recycled raw materials/materials. For example, recycled paper.	How the packaging affects whether all the paint is consumed. So that there is not too much left in the packaging.	Possible material recycling design can have an impact.	Fuel for distribution and material transport.
Energy	Paint: Extraction of raw materials such as crude oil, gas, titanium dioxide and metals. Packaging: Production of agricultural raw materials. Production and drying of wood raw materials. Extraction of crude oil for plastics.	Polymer manufacturing and production of additives and process chemicals.	Energy consumption during production.	Nothing.	No major relevance. Plastic packaging contribute energy during burning.	Energy consumption when transporting raw materials and products.

Chemicals	Process chemicals and emissions to air during the extraction of crude oil refining, as well as during metal extraction. Packaging: Fertilizer from agricultural and wood raw material production.	Chemical exposure and release during the production of acrylic polymers. Chemical exposure and release in the manufacture of pigments. Packaging: plastic granules, paper pulp.	Process chemicals in product production. Preservatives. VOC consumption in production. Emissions from production.	Exposure (particularly relevant for children): Allergy and other health risks (CRM-substances) from skin contact and possibly and possibly VOC (turpentine, xylene). Possibly, ingestion of paint and eye contact (irritation). Isothiazolinones and others as preservatives.	Emissions from burning and landfill - heavy metals from metal parts and halogenated substances from pigment. Environmentally hazardous substances from pigments that end up in recycled paper fibre recycled fibre when the written paper is recycled.	Maintenance chemicals such as lubricating oils, cleaning agent. Emission to air of PAH, CO_2, NO_x, SO_x, particulate matter etc.
Others	Packaging: Sustainable wood and agricultural raw materials. Landuse.	Social and ethical aspects.	Social and ethical aspects.	Quality and lifetime in the use phase. Communication and information about the product's health performance and storage.		

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 MEKO 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 high RPS, since there is potential to achieve positive environmental gains.

RPS:

Lifecycle stages	Area and assessment of R, P, S (high, medium or low)	Comments
Raw materials		
Plastic Metal Wood and bamboo Cardboard and paper	Plastic R: High P: Medium S: Medium	Plastic is often used in this product group. Plastic production is energy and resource intensive. This can be reduced by using recycled plastic. By setting requirements for the proportion of recycled plastic, the climate impact is reduced compared to virgin plastic. This is also the case with bio-based plastics, here it is also important that requirements are set for the bio-based raw materials to avoid burden shift. In addition to the products, plastic can also be used in the packaging.

	Metal R: High P: Medium S: Medium	Metal is used relatively often in this product group, but can, for example, be replaced by plastic in the casing of a ballpoint pen. Production of metal is more energy-intensive than production of plastic and wood, therefore it makes sense to limit the amount of metal in the products where metal can be replaced by other materials.
	Wood, bamboo, cardboard and paper R: High P: High S: High	High RPS for requirements for certified sustainable or recycled wood raw materials in solid wood and wood fibres. In addition to the products, cardboard can also be used in the packaging.
Production		
Chemicals harmful to the environment and health Energy consumption Emissions	Chemicals R: High P: High S: High	High RPS for requirements for the chemical product (e.g. ink, paint), where substances harmful to the environment and health should be avoided as far as possible.
	Energy consumption R: Medium P: Medium S: Low	Medium to low RPS for requirements for energy consumption during production of the products. The primary energy consumption is probably in the raw material phase, but knowledge of energy consumption in the production phase of the products is low and is also estimated to vary greatly depending on the specific product type. Therefore, no requirements are set for this area.
	Emissions R: Medium P: Low S: Low	Low RPS for requirements for emissions during production of the products. Emissions to water and air are considered to have less relevance for this product group. Therefore, no requirements are set for this area.
Use phase		
Quality and durability	Quality and durability R: High P: High S: Medium	High RPS for requirements for quality and durability of the products. Both a good quality and a good durability will mean that the consumer does not replace the products as often, thereby reducing the environmental impact.
End of life		
Recycling	Materials in the product R: Medium P: Low S: Low	Low RPS for requirements to promote that materials in the products are recycled, as the products are often composed of several material types, which are not easily separated. In addition, it is assessed that the probability that the end users will spend time separating and sorting all the material types and small parts for waste sorting is low. The product group also includes the product type "monomaterial office supplies", where the entire product consists of only one type of material. Here, the RPS is high in order to require that the materials can be recycled, and there are therefore requirements for this.
	Materials in the packaging R: High P: High S: Medium	High RPS for requirements that the packaging can be recycled.

3 Other labels

EcoMark

EcoMark is a Japanese ecolabel that, among other things, has criteria for office supplies and stationery. The criteria have a comprehensive product group

definition, which i.a. includes writing implements, envelopes and notebooks. Here, demands are made for, among other things, proportion of recycled material, refill and chemicals.

Blue angel

Blue angel is the German ecolabel. Here, writing implements and stamps can be labelled under one set of criteria and artist colours under another set of criteria. For writing implements, there are i.e. requirements for the proportion of recycled material, refills, chemicals, quality and packaging. For artist colours, there are i.e. requirements for chemicals, quality and packaging.

Österreichisches Umweltzeichen / The Austrian Ecolabel

Österreichisches Umweltzeichen is the Austrian ecolabel. They have, among other things, criteria for office and school supplies. The criteria have a comprehensive product group definition, which i.e. includes writing implements, hobby paints, scissors, rulers, pencil sharpeners, hole punches. Here, demands are made for, among other things, proportion of recycled or renewable material, chemicals, refill and quality.

NF400 – NF Environment

For writing instruments, there is the French ecolabel NF400. Here, i.e. requirements for writing length and protection against drying out, as well as a ban on specific classifications of both ink and ingredients in the ink.

The A-label (A-mærket) in Denmark

The industry organisation, Fællesrådet for Formnings- & Hobbymaterialer (FFFH) is an association of manufacturers, importers and dealers of hobby materials in Denmark. FFFH has developed a labelling system called the A-label (A-mærket).

The overall purpose of the A-label is to make shaping and hobby materials that are not harmful to the health of children and young people visible. The A-label is the industry's own label and is therefore not a type I environmental label.

4 Justification of the requirements

This chapter presents new and revised requirements, explains the background to them, the chosen requirement levels and any changes compared with version 4. The appendices referred to are those that appear in the criteria document “Nordic Swan Ecolabelling of office and hobby supplies".

4.1 Definition of the product group

The product group includes writing instruments, office supplies, paint, glue, tape and erasers for office and hobby according to the following description:

- **Writing instruments:** Pencils, coloured pencils, refillable pencils, ballpoint pens, reservoir pens, overhead pens, whiteboard pens, highlighters, felt-tip pens, charcoal, ink and crayons.
- **Hobby paint**: Acrylic paint such as school paint and artist's colours, fresco, tempera, gouache, finger paint, watercolours, glass paint, textile paint, printing ink, airbrush paint and porcelain paint. Brushes may be included as an application component if they are sold together with the paint.
- **Office/hobby glue:** Such as universal glue, paper/school glue, glue sticks, glitter glue and other office and hobby glues that fulfil the criteria.
- **Tape (adhesive on a carrier material):** Office tape, packing tape, decorative tape, correction tape, double adhesive tape and photo tape with or without colour and/or print.
- **Erasers:** For office, school or hobby.
- **Other office supplies than described above:** Office supplies in monomaterials of wood, bamboo, wood fibres or plastic (one type of plastic). Examples of products are rulers, card holders, pen holders and others.

Refill systems for these products are also included. Application parts and dispensers that are not part of the product packaging can be included in the license if it does not weigh more than the product itself.

4.2 Definitions

Word	Definition
Products marketed to children	Products where it is signalled either on the product itself, the product packaging or other product information, either in the form of text or design, that the product is for children.
Primary packaging	Primary packaging means the packaging that accompanies the product to the customer or individual packaging that accompanies the product to retail. The container which holds e.g. glue in a glue stick or ink in a pen, as well as the application part for e.g. tape, is not considered to be packaging, but to be a part of the product. The container for paint and liquid glue are considered packaging. However, if the paint or liquid glue are in a pen-like device, designed to apply the paint or glue during use, then it is not considered to be packaging, but to be a part of the product.
Chemical product	A chemical product is a finished product that contains chemical raw materials. A chemical product can be, e.g., ink, paint, graphite, crayons, chalk, glue and other adhesives.
Ingoing substances	All substances in the chemical product regardless of amount, including additives (e.g., preservatives and stabilizers) in the raw materials. Substances known to be released from ingoing substances (e.g., formaldehyde, arylamine, in situ-generated preservatives) are also regarded as ingoing substances.
Impurities	Residuals, pollutants, contaminants etc. from production, incl. production of raw materials, that remain in the chemical product in concentrations less than 100 ppm (0.0100 w%). Impurities in the raw materials exceeding concentrations of 1000 ppm (0.1000 w%) are always regarded as ingoing substances, regardless of the concentration in /chemical product. Examples of impurities are residues of the following: residues or reagents incl. residues of monomers, catalysts, by-products, scavengers, and detergents for production equipment and carry-over from other or previous production lines.
Additives/additives in polymer	Chemical raw materials added to improve polymer performance, functionality and aging properties. Examples of additives are plasticizers, flame retardants,

	antioxidants, light/heat/thermal stabilizers, pigments, antistatic agents and acid removers.
Recycled material	Recycled material is defined in the requirement according to ISO 14021, which applies the following two categories: **"Pre-consumer/commercial"** is defined as material that is recovered from the waste stream during a manufacturing process. Materials that are reworked or reground, or waste that has been produced in a process, and can be recycled within the same manufacturing process that generated it, are not considered to be pre-consumer recovered material. Nordic Ecolabelling considers reworked, reground or scrap material that cannot be recycled directly in the same process, but requires reprocessing (e.g., in the form of sorting, remelting, and granulating) before it can be recycled, to be pre-consumer/commercial material. This is irrespective of whether the processing is done in-house or externally. **"Post-consumer/commercial"** is defined as material generated by households or commercial, industrial, or institutional facilities in their role as end-users of a product that can no longer be used for its intended purpose. This includes materials from the distribution chain.
Monomaterial	One material, e.g. bamboo, pine or one type of plastic, e.g. PP. However, components made from PP are allowed to have up to 5% PE if it comes from the masterbatch. Recycled plastic, which is bought as one type of polymer, e.g. PP, is considered monomaterial.

4.3 Product description, refill and child safety

The products, the material composition, the manufacturing process, suppliers etc. must be described for e.g. to be able to assess which requirements must be met.

Information on refills and child safety must be disclosed.

Background to requirement O1 Product description

It is important that this information is given correctly, as it is decisive for which requirements are relevant for the product. Therefore, the product must be described, and the ingredients, chemical product and manufacturing processes must be disclosed, as well as who are the suppliers of these. In addition, it must be stated whether primary packaging is used or not.

Background to requirement O2 Refill

For both ballpoint pens and refillable pencils, manufacturers often offer a refill option. This extends the life of the writing instrument and minimizes the product's environmental impact compared to the functional unit. In the Nordic countries, however, refills for ballpoint pens are used to a lesser extent than in many other European countries. Therefore, it is possible for ballpoint pens, instead of refills, to have a longer writing length and thus the primary product (ballpoint pen) has a longer lifespan, see more in requirement O27.

The requirement requires a refill option for ballpoint pens, rollerball pens and refillable pencils and not for felt-tip pens. Refilling felt-tip pens is more complicated if the ink is poured on. Refill cartridges for felt-tip pens are rarely used. It has therefore been assessed that it is not realistic that the consumer will use refills for felt-tip pens and instead the focus is on setting resource requirements in the form of requirements for recycled materials in the product.

However, there are manufacturers of whiteboard markers who offer a refill option, but alternatively there are also whiteboard marker manufacturers who have instead focused on using renewable or recycled materials in the product. Both measures have been taken to reduce the consumption of fossil resources.

If the tape is sold incl. dispenser, it is required that there is an option to refill with new tape.

Background to requirement O3 Products for children

The authorities set extra requirements for children's products and the applicant must declare that these are met.

4.4 Materials in office supplies in monomaterials

Products in this category can be e.g., ruler, card holder, pen holder etc.

Office supplies in monomaterials must meet the requirements in this section, as well as other relevant sections and requirements in these criteria, e.g., a plastic product must meet the requirements in sections 4.3, 4.5, 4.9, 4.10 and 4.12.

Background to requirement O4 Permitted materials

The product must only consist of one material, which must either be plastic (one type of plastic), wood, bamboo, cardboard or paper. Meaning that the product must not e.g., consist of metal and must not be composed of several materials, such as wood and plastic, or several types of plastic.

By allowing office supplies in monomaterial, it is possible to label several products in a relatively simple way. As the products must consist of monomaterial, they can also be recycled in a high material quality.

4.5 Plastic and rubber

Requirement O5, O7, O8, O9 and O10 apply to all plastic parts (both virgin and recycled plastic) that comprise of more than 1% by weight in the finished product. Requirement O10 and O11 apply to all rubber, regardless of the weight proportion in the product. Requirement O5 and O10 apply to foils on the products, regardless of the weight proportion in the product. Products parts in rubber and foils are normally in direct contact with the skin during use and therefore there are no lower limit for fulfilling the requirements.

The requirements apply to the product incl. containers, application parts and cases. For example, container which holds glue in a glue stick or the application part for tape, are included.

Background to requirement O5 Plastic types

The requirement is set to ensure that PVC (polyvinyl chloride) and PVDC (polyvinyl dichloride) are not included in the product and to provide an overview of which plastic types are included. PVC can be used as soft or hard PVC. PVDC is a type of PVC with double chlorine atoms.

In addition to the risk of harmful phthalates in the soft PVC, it is especially the waste treatment of PVC that is problematic.

Office supplies in monomaterials can be easily sorted and the material recycled, which is often not the case to the same extent for the other product types covered by these criteria. Therefore, specific requirements are set for office supplies in monomaterials regarding that the materials must not contaminate and disturb the other plastic flows for recycled plastic in the Nordic region.

Oxo-degradable plastic is conventional plastic (e.g. PE) with additives (e.g. metal salts) which start a degradation of the plastic[1]. Oxo-degradable and biodegradable plastics must not be used, as they contaminate and disrupt the other plastic streams for recycled plastic in the Nordics. Biodegradable plastic should not be confused with plastic based on biopolymers, regarding biopolymers see under requirement O8.

Nordic Ecolabelling here defines plastic composites as plastic mixed with/added other substances or materials[2] that are insoluble in the plastic[3] and which disrupt/"contaminate" today's Nordic plastic recycling systems. The purpose of the requirement is to avoid plastic composites, which disrupt the plastic recycling processes used in the Nordics and which reduce the quality of the recycled plastic.

Plastic composites can cause problems in correctly identifying the type of plastic with the NIR technology. However, with low fractions of materials other than plastic the NIR technology can probably sort the plastic types correctly, but the plastic composites will still have a negative effect on the overall quality of the recycled plastic[4,5]. Based on this, the plastic composites are not permitted, even if the fractions of other materials are low.

Calcium carbonate ($CaCO_3$, chalk) is allowed, as it does not significantly reduce the quality of the recycled plastic. But if calcium carbonate is added to the plastic in quantities so that it does not float in water, this plastic waste will sink into the sink- float separation plant, where waste plastic is sorted - and this plastic will therefore not be recirculated[6]. Therefore, calcium carbonate must only be added in quantities so that the density of the plastic does not exceed 0.995 g/cm^3.

Background to requirement O6 Recycled plastic

Considerable environmental potential is expected in the future in terms of reduced resource consumption and CO_2-emissions if plastic waste can be converted into new raw materials for use in products. Nordic Ecolabelling wants to stimulate an increased use of recycled material in production and thereby avoid the use of virgin fossil materials.

Prohibition of the use of regranulates resulting from reprocessing processes that have obtained approval under Commission Regulation (EC) No. 282/2008 on recycled plastic materials and articles intended for contact with food or approval under the Code of Federal Regulations Title 21: Food and Drugs, Part 177 - Indirect food additives: Polymers. These are both approvals for the material to be

[1] EU's plaststrategi: https://ec.europa.eu/denmark/news/eu-strategi-plastic_da
[2] Plastindustrien: Komposit-plast | plast.dk
[3] Store Norske Leksikon: plastkompositter – Store norske leksikon (snl.no)
[4] https://plast.dk/wp-content/uploads/2019/12/Designguide-Genbrug-og-genanvendelse-af-plastemballager-til-de-private-forbrugere-online-version.pdf
[5] Dialog med to nordiske plastrecirkuleringsanlæg, 2020.
[6] The Association of Plastics Recyclers | HDPE Design Guidance (plasticsrecycling.org)

used in contact with food. It is not desirable to use processed, recycled raw materials that are approved for food packaging production. Plastic materials approved for food packaging require the highest traceability and purity of the plastic raw material, and it would therefore be down-cycling to use this plastic for anything other than food contact products.

The requirement states that the raw materials used in the recycled raw material must be traceable. Without traceability, it is difficult to ensure that the material actually is recycled. Traceability can be documented with a certificate from a third-party certifier of the supply chain, such as Global Recycled Standard. The Global Recycled Standard (GRS) is an international, voluntary standard that requires third-party certification of recycled content and traceability in the supply chain. Alternatively, traceability can be documented by the manufacturer of the recycled raw material declaring that 100% recycled raw materials have been used.

Children are more sensitive to substances harmful to health. In recycled plastic, there is less control over the content of substances harmful to health than there is in virgin plastic. In requirement O7, the recycled plastic must be tested for the content of selected harmful substances, however, one still cannot be sure that the recycled plastic is 100% free of harmful substances. Based on this, there is no requirement for products for children to meet requirements for the proportion of recycled plastic. However, if recycled plastic is used in products for children, then requirements in the criteria must be meet.

Background to requirement O7 Recycled plastics: Test for harmful substances

Either the recycled plastic raw material or the final plastic parts of the product that contain recycled material must be tested for the substances listed in the table in the requirement. Testing of the recycled plastic raw material is worst case regarding concentration of harmful substances from the recycled material compared to testing the final product (unless the product consists of a 100% recycled plastic). For products marketed to children the requirement is stricter as every batch of recycled plastic raw material must be tested and fulfil the limits in the table.

It is important to consider the potential exposure to unwanted chemicals from recycled plastics. Recycled plastic may contain residues of harmful additives from previous use. It is not possible to test for all possible harmful substances, but the most relevant and important are selected here[7],[8]. The selected substances that must be tested for do not constitute an exhaustive list of substances that ensure compliance with legislation and safety. The substances to be tested for have been chosen based on knowledge that they can occur in PCR plastic, are harmful to health and that analytical methods are available. But other harmful substances can be found in PCR plastic, and it is always the applicant's responsibility that legislation and safety are met.

[7] Udvikling af plastemballager i en cirkulær økonomi - Rette kvalitet til rette anvendelse. Ministry of Environment of Denmark 2024.
[8] Problematic chemicals in recycled plastic intented for cosmetics packaging. Ministry of Environment of Denmark 2023.

In mechanical recycling processes, many chemical substances remain in the material and can be transferred to the new products[9]. It is possible to carry out a sample test for the most relevant substances over a certain interval, but as the recycled raw material can come from several sources and therefore can vary widely, it is not possible to carry out the testing necessary to identify all the potential "old additives".

Recycled material from PET bottles can also contain small amounts of unwanted substances such as heavy metals that originate from labels, glues, printing inks and waste from transporting and sorting the plastic. However, measurements have shown that the levels are well below the limits set for heavy metals in packaging materials in California's Toxics in Packaging Prevention Act of 2006[10].

To ensure ongoing compliance with the requirement the applicant must have procedure implemented in the company, which shall include when new tests are assessed as necessary.

Metals

The metals is selected because of their restrictions in standard "EN 71-3 Safety of toys – Migration of certain elements" and because some of they seem to be found relatively often in post-consumer recycled plastic (PCR plastic)[11].

The limits are the same as in standard EN 71-3 for category III.

Phthalates

The phtalates Benzylbutylphthalate (BBP), Dibutylphthalate (DBP), Diethylhexylphthalate (DEHP), Diisobutyl phthalate (DIBP), Di-n-octyl phthalate (DNOP), Di-iso-nonyl phthalate (DINP) and Di-iso-decyl phthalate (DIDP) are selected because of their restrictions in Regulation No 1907/2006 and No 2018/2005, Annex XVII, entry 51 and entry 52. It is prohibited within the EU to produce, import or sell toys and childcare items for children aged 0–14, if they contain more than 0.1% by weight of the following phthalates:

- if products contain the phthalates DEHP, DBP, BBP and DIBP.
- if products that may enter the mouth contain the phthalates DINP, DIDP and DNOP.

In Denmark there are additional restrictions for toys and childcare items[12] if they contain more than 0.05% by weight of other phthalates.

Other relevant phthalates are DEP, DMP, DMEP, DIHP, DHNUP, DCHP, DHxP, DIHxP, DIOP, DPrP, DHP, DNP and DPP[13].

Basen on the above the requirement is set to a limit of maximum a total of 500 mg/kg (= 0.05% by weight) of the mentioned phthalates.

[9] Nordisk Ministerråd (2016). Få fordele ved kasserede tekstiler: LCA for forskellige behandlingsveje.
[10] M. Whitt, Survey of heavy metal contamination in recycled polyethylene terephthalate used for food packaging, Journal of Plastic Film & Sheeting 2012.
[11] Indledende sikkerhedsvurdering af genanvendt plast til emballering af kosmetiske produkter. Ministry of Environment of Denmark 2021.
[12] Bekendtgørelse 947 af 20. juni 2020 om forbud mod ftalater i legetøj og småbørnsartikler.
[13] OEKO-TEX Standard 100, Annex 5: OEKO-TEX_STANDARD_100_Standard_EN_DE.pdf

BBP, DBP, DEHP and DIBP were found in post-consumer recycled plastic (PCR plastic) tested by the Ministry of Environment of Denmark[14],[15].

For testing the method described in standard "ISO 8124-6 Safety of toys – Certain phthalate esters" or similar method is to be used.

Polycyclic aromatic hydrocarbons (PAHs)

EU Regulation No 1272/2013 on the restriction of polycyclic aromatic hydrocarbons (PAHs), where for toys and childcare articles must not contain more than 0.5 mg/kg of any of the listed PAHs for rubber or plastic components that come into direct as well as prolonged or short-term repetitive contact with the human skin or the oral cavity, under normal or reasonably foreseeable conditions of use.

The requirement is at the same level as the German GS label Category 1 for products for children or Category 2 for other products. This label is governed by the AfPS (Committee for Product Safety). The German authority published a standard, AfPS GS 2019:01 PAK[16], which sets requirements for a PAH content in three different categories, where exposure and use differ. Category 1 is the sharpest and includes materials intended for use in toys or by children younger than 3 years, as well as materials in contact with the mouth or in prolonged contact with the skin.

Several PAHs were found in post-consumer recycled plastic (PCR plastic) tested by the Ministry of Environment of Denmark[17].

Please see more information about PAHs in requirement O11.

Primary aromatic amines (PAA)

Azodyes may release carcinogenic primary aromatic amines. These are limited in Annex XVII to REACH, Entry 43[18] to 30 mg/kg.

The limits set in the requirement is for products marketed to children the same as in EN 71-9 and for other products the same as in OEKO-TEX Standard 100.

The PAAs in the requirement are those that were found in post-consumer recycled plastic (PCR plastic) tested by the Ministry of Environment of Denmark[19],[20] and those that are restricted in standard EN 71-9 Safety of toys – Organic chemical compounds - Requirements.

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[14] Indledende sikkerhedsvurdering af genanvendt plast til emballering af kosmetiske produkter. Ministry of Environment of Denmark 2021.
[15] Udvikling af plastemballager i en cirkulær økonomi - Rette kvalitet til rette anvendelse. Ministry of Environment of Denmark 2024.
[16] AfPS GS 2019:01 PAK, https://www.baua.de/DE/Aufgaben/Geschaeftsfuehrung-von-Ausschuessen/AfPS/pdf/AfPS-GS-2019-01-PAK-EN.pdf?__blob=publicationFile&v=4
[17] Indledende sikkerhedsvurdering af genanvendt plast til emballering af kosmetiske produkter. Ministry of Environment of Denmark 2021.
[18] Liste over begrænsninger - ECHA (europa.eu)
[19] Indledende sikkerhedsvurdering af genanvendt plast til emballering af kosmetiske produkter. Ministry of Environment of Denmark 2021.
[20] Udvikling af plastemballager i en cirkulær økonomi - Rette kvalitet til rette anvendelse. Ministry of Environment of Denmark 2024.

Bisphenols

The bisphenols A, B, S, AF and F are selected based on recommendation from Guideline from CosPaTox[21]. The limit set for bisphenol A, B and S is the same as in OEKO-TEX Standard 100 and the limits for bisphenol AF and F is set on the same level as bisphenol B and S.

Bisphenols can be found in recycled plastic[22].

Please see more information about bisphenols in requirement O9.

Flame retardants

The limit set for flame retardants is the same as in OEKO-TEX Standard 100, however only for the total amount and not each flame retardants, and in addition only for brominated and chlorinated flame retardants as these are assessed as most relevant and to limit the cost for testing.

Flame retardants can be found in recycled plastic[23].

Benzene

Benzene is classified as H340, H350, H372 and H304. Benzene is limited in Annex XVII to REACH, Entry 5[24] to 5 mg/kg for toys.

Benzene can be found in recycled plastic[25].

Dioxins and furans

Dioxins and furans, collectively known as PCDD/Fs, are toxic substances[26]. Dioxins are highly toxic and can cause reproductive and developmental problems, damage the immune system, interfere with hormones and cause cancer.

The dioxins and furans are selected as these are the ones covered in standard EN 16190. No recommended limits could be found in literature. The limits is set at the same levels as the limits for PAHs for products marketed to children.

[21] Voluntary Industry Guideline - Safety assessment of recycled plastics in packaging materials for cosmetic products and home care products, CosPaTox 2024, CosPaTox-Guideline-April-2024.pdf
[22] Samuel S. Núñez, Núria Ortuño, Sabrina Fernández-Durán, Julia Moltó and Juan A. Conesa , Analysis and removal of bisphenols in recycled plastics using polyethylene glycol, Nature 2024, Analysis and removal of bisphenols in recycled plastics using polyethylene glycol (nature.com)
[23] CosPaTox-Guideline-April-2024.pdf
[24] Liste over begrænsninger - ECHA (europa.eu)
[25] E. U. Thoden van Velzen, M. T. Brouwer, C. Stärker, F. Welle, The effect of recycled content and rPET quality on the properties of PET bottles, Part II: Migration, Packaging Technology and Science 2020.
[26] WHO, Dioxins (who.int). Visit June 2024.

Dioxins and furans can be found in recycled plastic[27],[28],[29].

Polychlorinated Biphenyls (PCB)

Polychlorinated Biphenyls (PCB) are a group of substances that persist in the environment and suspected to be hazardous to health[30],[31].

The PCBs that must be tested for are selected because they are recommended as a minimum to test for by CosPaTox[32]. Test metode are also stated in the guidelines from CosPaTox. No recommended limits could be found in literature. The limits is set at the same levels as the limits for PAHs for products marketed to children.

PCB can be found in recycled plastic[33].

Background to requirement O8 Bio-based plastics: Raw materials to bio-based polymers

In terms of resources and climate, it makes sense to use renewable raw materials rather than virgin fossils. However, it is important that the cultivation of bio-based raw materials is done in a sustainable way. Even renewable raw materials can be linked to environmental and social problems. The establishment of palm oil plantations is one of the main causes of rainforest deforestation, thus threatening the livelihoods of indigenous people, plants and animals. The rainforests are extremely important for biodiversity and are also important for regulating the climate. Soybeans are grown in areas that are often established at the expense of rainforests and forest savannas in South America. Soy production is one of the biggest threats to the rainforest on the American continent, especially in the southern Amazon[34]. Based on this, palm oil, soya oil and soya flour are prohibited as raw materials for bio-based polymers.

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[27] Samuel S. Núñez, Juan A. Conesa, Julia Moltó and Andrés Fullana , Decontamination of recycled LDPE using different washing methods; Resources, Conservation and Recycling 2023, Decontamination of recycled LDPE using different washing methods - ScienceDirect

[28] David Baca, Roberto Monroy, Miguel Castillo, Ali Elkhazraji, Aamir Farooq and Rafiq Ahmad, Dioxins and plastic waste: A scientometric analysis and systematic literature review of the detection methods, Environmental Advances 2023, Dioxins and plastic waste: A scientometric analysis and systematic literature review of the detection methods - ScienceDirect

[29] Clémence Budin, Jindrich Petrlik, Jitka Strakova, Stephan Hamm, Bjorn Beeler, Peter Behnisch, Harrie Besselink, Bart van der Burg and Abraham Brouwer, Detection of high PBDD/Fs levels and dioxin-like activity in toys using a combination of GC-HRMS, rat-based and human-based DR CALUX® reporter gene assays, Chemosphere 2020, Detection of high PBDD/Fs levels and dioxin-like activity in toys using a combination of GC-HRMS, rat-based and human-based DR CALUX® reporter gene assays - ScienceDirect

[30] Helbredsmæssige effekter - PCB-guiden. Visited June 2024.

[31] Dioxins and PCBs | EFSA (europa.eu). Visited June 2024.

[32] Voluntary Industry Guideline - Safety assessment of recycled plastics in packaging materials for cosmetic products and home care products, CosPaTox 2024, CosPaTox-Guideline-April-2024.pdf

[33] John N. Hahladakis, Costas A. Velis, Roland Weber, Eleni Iacovidoua and Phil Purnell, An overview of chemical additives present in plastics: Migration,release, fate and environmental impact during their use, disposal and recycling, Journal of Hazardous Materials, 2017.

[34] http://www.worldwildlife.org/industries/soy, (27.01.2016)

The most ideal is to use waste or residual products from, for example, agriculture, fishing, forestry or processing residual products defined according to (EU) Renewable Energy Directive 2018/2001.

By using waste or residual products as raw materials, you utilize parts that are not used as food products. PFAD (Palm Fatty Acid Distillate) from palm oil is not considered waste or residual product and must therefore not be used. PFAD occurs in the production of palm oil for the food industry, and it is rarely traceability in the processes where PFAD occurs.

There is a requirement for traceability, which shows where the residual product comes from. In EU-directive 2018/2001/EC, "the point of collection" is described as the point where waste or residual product occurs for the first time (e.g. for used cooking oil, the starting point will be the restaurants or production sites that produce the fried food). The traceability in this requirement must start at the point where waste or residual product first occurs.

Sugarcane is a relevant raw material for polymer production. As of today, sugar cane is not as strongly linked to problems with rainforest deforestation as mentioned above for palm and soya oil, but there can also be challenges linked to this production. As bio-based plastic is still relatively new and the number of manufacturers relatively few, it is permitted sugarcane as a raw material, but there is a requirement that it be certified according to a sustainability standard that meets a number of requirements for, among other things, protection of biological diversity. Traceability at mass balance level is required for all certification systems. Book and claim system will not be approved. It is considered that the Bonsucro standard is the best tool on the market for sustainable sugarcane production today, and therefore this certification accepted.

For other raw materials, there is a requirement that the name of the raw material and the supplier must be stated. For primary raw materials, there is also a requirement that the origin of the raw material must be stated. Primary raw materials incl. sugar cane must not be genetically modified. Genetic modification is a highly debated topic, and several countries have banned the cultivation of GMOs. Topics discussed are food safety, land use, lack of knowledge about effects under local agricultural /forest conditions and risk of negative environmental and health impacts. Nordic Ecolabelling lays emphasis on the precautionary principle and takes based on regulations that have a comprehensive approach to GMOs. This means that sustainability, ethics and social benefit must be emphasized together with health and the environment. We are not principled against genetic engineering and GMOs per se but are concerned about the consequences when genetically modified plants, animals and microorganisms are spread in nature. Nordic Ecolabelling believes that GMOs should be assessed on a case-by-case basis. Research results have not clearly shown that today's GMO crops contribute to development towards a sustainable agriculture with less use of pesticides, and there is a lack of research on the long-term effects of genetically modified plants, both environmental and socio-economic consequences. There are possible adverse effects of GMOs along the entire value chain from research and development of the plants, via cultivation, to storage, use and waste management. In several of these phases, there is a lack of scientific studies, and there is a lack of comprehensive assessments.

Background to the requirement O9 Polycarbonate plastic - Migration of Bisphenol A, B and F

The requirement requires low migration and testing of bisphenol A, B and F from polycarbonate. The requirement with a migration limit of 0.1 mg/l for bisphenol A is identical to the limit in standard EN 71-9 for components of graphic instruments sold as toys or used in toys. The methods are described in EN 71-10 and EN 71-11.

Bisphenol A (CAS No. 80-05-7) is a component in the production of polycarbonate plastic and there is a risk that bisphenol may migrate from the plastic. Bisphenol is an endocrine disruptor and is i.e. classified H360.

The bisphenols B and F can probably replace bisphenol A in the production of polycarbonate plastic[35]. Therefore, tests for the migration of bisphenol B and bisphenol F are required according to the standards EN 71-10 and EN 71-11.

Nordic Ecolabelling investigated the possibility of making the same requirements for bisphenol B and bisphenol F as for bisphenol A, and it turned out that the method LC-QTOF-MS (liquid chromatography with determination using quadrupole time-of-flight mass spectrometer) can be used as an alternative to LC-DAD-FLD (liquid chromatography determined by either diode array detector or fluorescence detector) mentioned in standard EN 71-11. As an alternative to testing for bisphenol B and bisphenol F, the polymer manufacturer may declare that no bisphenols other than bisphenol A are used to produce polycarbonate.

Background to requirement O10 Additives in plastic and rubber

The requirement includes substances that are added to the polymer raw material in the masterbatch or compound. Substances originating from the polymer production itself are therefore not covered by this requirement.

The requirement applies to both virgin and recycled plastic.

Foils are often used on coloured pencil and glue sticks but can also be used on other types of products. It happens that children chew on the end of the product and are thus strongly exposed to the foil.

Titanium dioxide (TiO_2) is exempt, see background for this under requirement O19.

For the background for banning the other substances see under O19 and O20.

Background to requirement O11 Rubber

Vulcanizing agents are added to synthetic rubber, which are typically sulfur-containing substances or peroxides. Some rubber coverings are applied with a stabilizing polyester backing. Rubber can also be used as an adhesive, for example on tape.

Several synthetic rubbers contain 1,3 butadiene, (CAS no. 106-99-0), which has the following classification: H340: May cause genetic defects and H350: May cause cancer. Butadiene functions as a monomer in the production of polymers such as synthetic rubber (latex) and elastomers such as styrene-butadiene rubber

[35] https://www.miljodirektoratet.no/globalassets/publikasjoner/m176/m176.pdf

(SBR), polybutadiene rubber (PBR), polychloroprene (Neoprene) and nitrile rubber (NR)[36]. The requirement must ensure that efforts have been made to get the monomer content in the final product as low as possible.

For erasers, and pencils with erasers at the end, there is relevance in relation to the content of PAHs (polycyclic -aromatic- hydrocarbons), as both synthetic and natural rubber can contain PAHs.

Several PAHs are carcinogenic and genotoxic, and PAHs are considered the largest single group of carcinogenic chemical compounds. At the same time, PAHs can occur in the pigment Carbon Black and mineral oils.

There are more than 100 PAH compounds. Several PAHs are classified as carcinogenic with Carc. 1B. PAHs are found in plastic and rubber parts of a wide range of consumer products. They are present as impurities in some of the raw materials used to make such products, notably in softening oils and in carbon black. The substances are not deliberately added to the products in question, and they do not have any specific function as components of the plastic or rubber parts. Emollient oils are mineral oils that are produced from crude oil (PAHs that are still in the oil are called petrogenic). Carbon black is the product of complete combustion or thermal decomposition processes of heavy oils, such as coal (PAHs that are present are, however, mainly pyrogenic PAHs).

The requirement is at the same level as the German GS label Category 1 for products for children or Category 2 for other products. This label is governed by the AfPS (Committee for Product Safety). The German authority published a standard, which sets requirements for a PAH content in three different categories, where exposure and use differ. Category 1 is the sharpest and includes materials intended for use in toys or by children younger than 3 years, as well as materials in contact with the mouth or in prolonged contact with the skin. The requirement appears to be one of the strictest available and is already used by environmental certifications such as Der Blue Angel. The GS mark appears to be well known and is offered by many important accredited testing institutes such as Eurofins, TÜV and RISE/SP. To meet the requirement, the material must achieve the Category 1 level for products for children or Category 2 level for other products from GS marking according to the latest standard AfPS GS 2019:01 PAK.

4.6 Wood, bamboo, paper and cardboard

The following requirements include solid wood and bamboo, veneer and fiber raw materials for paper and cardboard, which are used in the product.

Background to requirement O12 Prohibited and restricted tree species

The requirement only applies to virgin tree species and not tree species defined as recycled material according to ISO 14021.

The list of restricted tree species is based on the wood species that are relevant to the Nordic Ecolabel's criteria, i.e. tree species that have the potential to be included in Nordic Swan Ecolabelled products. Listed tree species are indicated by the scientific name and the most common trade names. The scientific/trade

[36] Dow https://www.dow.com/hydrocarbons/c4/prod/buta.htm besøgt 02.11.2018

name is not always sufficient, as there may be more scientific/trade names for the listed tree species than the list indicates.

Criteria for tree species included in the list are wood originating from:

a) Tree species listed in CITES Appendices I, II and III.

b) IUCN Red List, categorized as Critically Endangered (CR), Endangered (EN) and Vulnerable (VU).

c) Tree list Rainforest Foundation Norway[37] (Rainforest Foundation Norway)

d) Siberian larch (originating in forests outside the EU)

CITES[38] is an international convention for the control of trade (across borders) in wild animals and plants. CITES covers approximately 5,600 animal species and approximately 28,000 plant species, some of which are relevant species of wood (mainly tropical species). The tree species are, depending on how threatened they are, listed in Appendix I, II or III. The species listed in Appendix I are highly endangered and trade in these species is completely prohibited. For the remaining tree species, special permits are required for import and export (Annex II and III). CITES is regulated by EU legislation (Council Regulation (EC) No 338/97) and trees with valid CITES permits are considered legally harvested under the EUTR (EU Timber Regulation). The Swan's ban on the use of tree species listed in CITES (Appendix I, II or III) goes further than EU legislation. CITES regulates trade in endangered species, and there are also challenges with corruption in wildlife trade[39]. Nordic Ecolabelling therefore does not want to approve species in any of the appendices.

The IUCN Red Lists[40] are the world's most comprehensive inventory of the global conservation status of the planet's biological species, including trees. Nordic Ecolabelling is aware that the IUCN's red list system only focuses on the species' extinction risk and is therefore not designed for an overall assessment of whether a tree species can be provided with a sustainable origin. However, the list is continuously updated and is thus an important tool for estimating the conservation status of a certain tree species on a global level. The Swan wants to ban tree species that are threatened with extinction (categories CR, EN and VU).

Regnskogfondet[41] (Rainforest Foundation Norway) is a non-governmental organization in Norway that works to protect the world's remaining rainforests. Currently, the Rainforest Foundation does not see any credible certification systems operating in the tropics, and therefore recommends stopping buying tropical wood. The Rainforest Foundation has developed a list of tropical tree species based on tree species available on the Norwegian market. This list serves as a guide to comply with Norwegian guidelines for the non-use of tropical wood

[37] https://www.regnskog.no/no/hva-du-kan-gjore/unnga-tropisk-tommer/tropiske-treslag (visited January 2020)
[38] https://www.cites.org/ (visited January 2020)
[39] Addressing corruption in CITES documentation processes Willow Outhwaite, Research and Analysis Senior Programme Officer, TRAFFIC, 2020: https://www.traffic.org/site/assets/files/12675/topic-brief-addressing-corruption-in-cites-documentation-processes.pdf
[40] http://www.iucnredlist.org/ (visited January 2020)
[41] https://www.regnskog.no/no/hva-du-kan-gjore/unnga-tropisk-tommer/tropiske-treslag (visited January 2020)

in public construction. We see this as a pragmatic method for handling tropical tree species in the Nordic market.

In addition, Siberian larch (originating from forests outside the EU) is on the tree list. Siberian larch is a sought-after tree species in the construction industry due to its high quality. The tree species is widespread in the northern boreal climate zone of Eurasia, and in particular the species Larix sibirica , Larix gmelinii , Larix cajanderi and Larix sukaczewii is widespread in the large areas of intact forest landscapes (IFL) in Russia. Siberian larch should be seen as an indicator of boreal IFL areas that are important to keep intact.

Exceptions to the tree list:

Nordic Ecolabelling is aware that tree species that come from b), c) or d) may originate from legal and sustainable forestry. Therefore, it is possible to use tree species listed under b), c) or d) if the applicant/manufacturer/supplier can demonstrate compliance with several strict certification and traceability requirements.

Many of the tree species on the list are found in countries that still have large areas of IFL. These are important to protect because of biodiversity and climate. Many of these countries also have a high risk of corruption and national legislation related to the environment, human rights and land ownership is weak and/or not controlled by the authorities. There are different opinions on whether certification is good enough to meet the challenges of forest management in countries with a high risk of corruption and illegal logging. For example, relevant challenges related to this have been published by Danwatch in a number of articles in 2018[42],[43] and by redd-monitor.org in 2019[44]. Greenpeace International has terminated its membership of FSC because the certification body is no longer meeting its goals of protecting forests and human rights[45].

Other environmental organizations such as WWF support certification as an important tool for sustainable forestry in these countries. Due to the uncertainty whether FSC and PEFC certification systems are good enough to protect important areas of biodiversity and ethical aspects such as human rights and land ownership in areas with a high risk of corruption, Nordic Ecolabelling has a precautionary approach and wants additional documentation on the tree species and its origin.

To document the full traceability of the tree species, the applicant/manufacturer/supplier must present a valid FSC/PEFC traceability certificate (Chain of Custody, CoC) covering the specific tree species and show that the tree is controlled as FSC or PEFC 100%, through the FSC transfer method or PEFC physical separation method. This means that the Swan does not accept FSC percentages or credit control systems and PEFC percentage systems. Full traceability of the tree species back to the forest/certified forest unit enables

[42] https://danwatch.dk/undersoegelse/dokumentfalsk-og-millionboeder-danske-byggemarkeder-saelger-trae-forbundet-til-ulovlig-hugst-i-amazonas/
[43] https://danwatch.dk/undersoegelse/baeredygtighedsmaerke-er-ingen-garanti-for-baeredygtigt-trae/
[44] https://redd-monitor.org/2019/08/29/evicted-for-carbon-credits-new-oakland-institute-report-confirms-forced-evictions-for-green-resources-plantations-in-uganda/
[45] https://www.greenpeace.org/international/press-release/15589/greenpeace-international-to-not-renew-fsc-membership/

the applicant/manufacturer/supplier to document that the tree species does not come from a region where it is IUCN Red Listed, categorized as CR, EN or VU. Full traceability also makes it possible to document that the tree species does not come from the Intact Forest Landscape (IFL), defined by Intactforest.org in 2002[46] Intactforest has been monitoring IFL areas since 2000 and has developed an online mapping tool. Which shows the extent of IFL back to 2000. The monitoring results show that the world's IFL is deteriorating at an alarming rate, which is why Nordic Ecolabelling refers to 2000.

Plantation: Nordic Ecolabelling believes that responsibly managed forest plantations can play a role in conserving natural IFL by reducing the pressure to harvest the world's remaining natural forests. To ensure that the plantation has not replaced native ecosystems (forest/grasslands) in the last 25 years, tree species must come from FSC or PEFC certified plantations established before 1994. 1994 is in line with the FSC International Forestry Standard (version 5.2), while PEFC is working on 2010.

For fiber raw materials to paper and carton:

Eucalyptus and acacia, there is used to manufacture of paper pulp and paper, is exempt from the list as these species are grown in plantations to the specific use in paper pulp - and the paper industry. However, fiber raw material from acacia/eucalyptus must be at least 70% FSC/PEFC certified. The remaining proportion of the fiber raw material must be covered by the FSC/PEFC control schemes. The applicant/ manufacturer must annually report paper pulp (name of pulp pulp) used in the production of eco-labelled products. This ensures that the eucalyptus/ acasia pulps contain at least 70% certified raw materials.

The list of restricted tree species is located on http://www.nordic-ecolabel.org/certification/paper-pulp-printing/pulp--paper-producers/forestry-requirements-2020/ .

Background to requirement O13 Traceability and certification

Name of the wood raw material. Nordic Ecolabelling sets requirements to gain information about which tree species are used in Nordic Swan Ecolabelled products. The requirement makes it possible to control the Chain of Custody certificates in the supply chain (check whether the stated tree species is covered by the Chain of Custody certificate) as well as provide information for future forest requirements. If recycled material is used in the Nordic Swan Ecolabelled product, and particularly in the form of recirculated fibre, it is not always possible to specify the name (species name) of all wood raw materials used. In this case, the requirement for documentation of recycled material is to be met.

FSC, PEFC and EUTR. Forest Stewardship Council (FSC) and Programme for the endorsement of Forest Certification schemes (PEFC) cover together 98% of the world total certified sustainable managed forest area[47], and are predominant in the global market for certified sustainable wood. Both schemes cover Forest Management certification of forests and subsequent Chain of Custody (CoC)

[46] http://www.intactforests.org/world.webmap.html, visited January 2020
[47] UN: Forest Products – Annual market review 2011-2012, ch. 10

certification, which documents the traceability of timber and timber products from certified forests. Both systems are considered common among forest owners, forest industries, manufacturers and distributors of wood products, and public authorities as reliable systems for sustainable forestry.

FSC updated traceability standard from 2015[48] and PEFCs traceability standard from 2013[49] fully meets the requirements of EU Timber Regulation (995/2010/EC)[50] prohibiting the marketing and sale of illegal timber in the EU. This applies to imported wood, as well as wood harvested in the EU. Nordic Ecolabelling recognizes both the FSC and PEFC as schemes that provide sufficient guarantees for legal and sustainable forestry.

Traceability Certification. Nordic Ecolabelling requires that the applicant/ manufacturer is Chain of Custody certified by the FSC/PEFCs 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. The company's Chain of Custody certification proves how certified wood is kept separate from not certified wood in the production, administration and warehousing and is checked annually by independent certification bodies. There exist different types of Chain of Custody certifications, which varies according to the minimum content of certified wood and the way this is calculated. Both schemes allow, within specified circumstances and rules, to mix wood from certified forests with recycled material or legal wood from non-certified forests. Therefore, it is not certain that a specific batch of FSC or PEFC certified wood necessarily come from certified forest. In all cases, the remaining share of the wood shall comply with several minimum requirements to ensure that it can be considered as "legal timber". Both the FSC and PEFC schemes allow several methods to verify the traceability: Physical separation method, percentage-based method and volume credit method. Nordic Ecolabelling accepts all FSC and PEFCs methods to verify traceability and the share of certified and controlled wood/sources. The applicant/manufacturer must submit a valid FSC/ PEFC Chain of Custody certificate, covering all wood raw material used in the Nordic Swan Ecolabelled product, as documentation.

Nordic Ecolabelling equates recycled material with virgin wood material from sustainable forestry. Recycled materials not covered by an FSC/PEFCs Chain of Custody certification can also be used in Nordic Swan Ecolabelled products. Suppliers of recycled material are exempted from the requirement regarding FSC/PEFCs Chain of Custody certification. In case of recycled material evidence shall be covered by EN 643 delivery notes.

Certified wood raw materials. Applicants must document that at least 70% of all wood raw material (virgin/recycled material) used in the Nordic Swan Ecolabelled product/production line comes from forestry certified under the FSC or PEFC schemes or is recycled material. The remaining proportion of wood must meet the requirements of FSC controlled wood or PEFC controlled sources or be recycled. The requirement limit, a minimum of 70% of all wood raw material (virgin or recycled), correspond to the FSC and PEFCs requirement limits for use of the respective labels on products, such as "FSC Mix" and "PEFC certified".

[48] https://ic.fsc.org/en/our-impact/timber-legality/ensuring-compliance, visited 2015-12-21
[49] http://www.pefc.org/certification-services/eu-timber-regulation, visited 2015-12-21
[50] http://ec.europa.eu/environment/forests/timber_regulation.htm

FSC and PEFC has together five recognized official existing labels. Further information about the use of labels can be found on FSC[51] and PEFCs[52] websites. The requirement can make it easier for manufacturers of Nordic Swan Ecolabelled products to document the requirement, as they can demand labelled FSC/PEFC products. Recycled material is explicitly highlighted in the requirement as both FSC and PEFCs schemes include certified recycled materials.

Nordic Ecolabelling equates as previously mentioned recycled material with virgin wood material from sustainable forestry. Recycled materials not covered by FSC/PEFC's Chain of Custody certification, can also be used in the Nordic Swna Ecolabelled products. The share (% units) of recycled material must meet the requirement regarding the share of wood raw material certified as FSC or PEFC sustainable forestry.

It is specified that the manufacturer must provide evidence with a balance sheet from the company's accounting system showing correctly account for and allocated inputs and outputs of certified wood raw material, of recycled material and of any material from "controlled" sources, to their manufacturing facility and resulting Nordic Swan Ecolabelled products. This ensures that the FSC/PEFC credits on a production level is accounted/recorded to the Nordic Ecolabelled production, and not to other FSC/PEFC labelled products. I.e. the amount of certified wood raw material that is "sold" into the Nordic Swan Ecolabelled product/production line subsequently is removed from the manufacturer's accounting system, ensuring that the certified wood material is not sold twice. This will also stimulate increased demand for certified products.

The applicant/manufacture must demonstrate that the quantity of certified wood raw material or recycled material is met. The certification % shall be documented through the applicant's/manufactures accounting system and invoice or delivery note (paper or via e-invoicing), which also indicates the company's certification codes from which the wood raw material is purchased from. It must be clear which parts of the packing slip or invoice delivery that is certified (e.g. claim/material category must appear, such as FSC MIX and FSC 100% associated with the product concerned on the invoice or delivery note).

Certification and accreditation. The certification (control and approvement of requirements in the standard, chain of custody and eventual use of label) must be conducted by an independent, competent and accredited third party and follow the relevant international guidelines for the certification: "ISO/IEC 17065:2012 Conformity assessment – Requirements for bodies certifying products, processes and services" or equivalent and accredited by an accreditation body operating in accordance with "ISO 17011:2004 Conformity assessment – General requirements for accreditation bodies accrediting conformity assessment bodies" or equivalent.

The accreditation (i.e. verification and approval of the certification firm is working properly) must be undertaken by a national or international body, systems and procedures are consistent with ISO 17011:2004 Conformity

[51] http://welcome.fsc.org/understanding-the-fsc-labels.27.htm
[52] http://www.pefc.co.uk/chain-of-custody-logo-use/pefc-label

assessment – General requirements for accreditation bodies accrediting conformity assessment bodies or equivalent.

Background to requirement O14 Chemicals in reused/recycled parts

The requirement has been set in order to avoid that reused/recycled wood and bamboo contains undesirable substances. The requirement covers both surface treatment and impregnation with wood preservative.

4.7 Metal

Background to requirement O15 Product parts in metal

RPS is found for a high ratio of renewable raw materials and raw materials with a long supply horizon without this giving any deterioration in the product in relation to the function required. Metal generally has a shorter supply horizon than plastic and renew-able raw materials.

This means that replacing metal with either fossil or renewable plastic gives an environmental gain in relation to the resources consumed if the replacement does not result in considerably diminished quality and a shorter product lifetime. It is assessed that this is possible for the holsters, casings, dispensers, reels or application components for the Nordic Swan Ecolabelled product. For springs in ballpoint pens, ink cartridges and related tips and the tear-off section of a tape dispenser, however, it is assessed that there is a need to use metal to achieve the required function and quality.

Background to requirement O16 Heavy metals

For background see under requirement O20.

4.8 Chemical product

The requirements include the chemical product that is included in the product. The chemical product can be e.g., ink, paint, graphite, coloured pencils, crayons, chalk, glue and other adhesives.

If the formulation for ink is stated in intervals, then any calculations must be done for "worst case" formulation.

Several of the requirements are set for ingoing substances in the chemical product. See definition of ingoing substance and impurities in table in section 4.2.

Background to requirement O17 Overview of chemicals

To get an overview of which chemical raw materials are included in the chemical product, a complete formulation of the chemical product and information and safety data sheets for all ingoing chemical raw materials must be submitted.

Background to requirement O18 Classification of the chemical product

Nordic Ecolabelling sets requirements for environmental and health classification of products to ensure that products that are toxic or harmful to the environment and/or health cannot be Nordic Swan Ecolabelled.

Background to requirement O19 Classification of ingoing substances

Nordic Ecolabelling sets requirements for environmental and health classification of ingoing substances to ensure that products that are toxic or harmful to the environment and/or health cannot be Nordic Swan ecolabelled.

For hobby paint, glue, felt-tip pens in set of 10 colours or more, chalk, coloured chalk and all products marketed to children there are additional requirement for the classifications H304, H334, H317, H302, H312 and H332. The reason for this is that for these products there are a higher exposure of the chemical product during the use phase of the products and/or the products are used or are very likely used by children. For this reason, there is also a more strict documentation requirement for these products where each raw material in the chemical product must be declared.

When polyvinyl very often is required for in glues, it is estimated that there is a need for an exemption for methanol (Acute Tox. 3, H301, H311, H331 - STOT SE 1 H370) in polyvinylactetat.

Exempted from this requirement is up to 10 ppm formaldehyde in hobby paint with gloss.: The exemption is given if formaldehyde comes from the production of the binder. Binders typically contain small amounts of formaldehyde from the polymerization. Formaldehyde (CAS #: 50-00-0) is classified as mutagenic, carcinogenic and allergenic (Muta. 2 (H341), Carc. 1B (H350) and (H317)) and should be avoided as much as possible.

Several dyes contain anhydrous ammonia which include the classifications H331 and H370. Here the pigment dispersion is harmless and there is therefore a need for a specific exemption.

Titandioxid (TiO_2)

On 18. February 2020, the decision taken by the European Commission to classify TiO_2 as a suspected carcinogen (category 2) by inhalation according to the CLP regulation was published. The classification has been met with criticism because the risk that gives rise to the hazard property according to CLP concerns inhalation and powder form and not the chemical substance itself. This classification has been annulled by the European Court of Justice in November 2022, the annulment was appealed, and the case is still pending. The classification continues to apply until the appeal is settled. According to SCCS/1661/23, genotoxicity from titanium dioxide cannot be ruled out in oral products and products that can be inhaled, and no safe limit for TiO_2 can be established in those products.

The classification of titanium dioxide as carcinogenic by inhalation is only applicable to mixtures in the form of powder containing at least 1% titanium dioxide particles, which are in the form of or incorporated in particles with an aerodynamic diameter of ≤ 10 µm. This means that if TiO_2 - or TiO_2 mixtures do not exist in this specific form, the classification does not apply.

Liquid and certain solid mixtures are not classified, which is why Nordic Ecolabelling has made an exception for the use of titanium dioxide in wet and solid/solid products. However, the exception does not apply to chalk, crayons and hobby paint for children, see under O20.

Background to requirement O20 Prohibited ingoing substances

For hobby paint, glue, felt-tip pens in set of 10 colours or more, chalk, coloured chalk and all products marketed to children there are a higher exposure of the chemical product during the use phase of the products and/or the products are used or are very likely used by children. For this reason, there is a more strict documentation requirement for these products where each raw material in the chemical product must be declared.

Alkylphenols (AP), alkylphenol ethoxylates (APEO) and other alkylphenol derivates (APD)

Alkylphenols is a group of mainly non-ionic surfactants that are produced in large volumes and their use leads 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. Other alkylphenols are polyalkylated phenols such as butylated hydroxytoluene (BHT) and butylated hydroxyanisole (BHA) which have antioxidant properties. of the perfume mixture which can affect the stability of the entire product.

Bensalkoniumchlorid

Benzalkonium chlorides (BACs) is part of a group of chemicals with wide applications due to their antimicrobial properties against bacteria, fungi and viruses. There is a risk that frequent and widespread use of BACs in commercial products can generative selective environments for microbes and contribute to resistance to antibiotics. Furthermore, there is a risk to consumer exposure due to their toxicity and allergenic properties.

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[53] substances were identified in need for further regulatory risk management in EU[54].

Boric acid, borates and perborates

Perborates are sometimes used as bleaching agents. Several perborates are classified as toxic to reproduction.

[53] 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

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

DADMAC (dialkyldimethylammonium chloride)

DADMAC (dialkyldimethylammonium chloride) is a group of cationic surfactants with very high ecotoxicity, slow aerobic biodegradability and no anaerobic biodegradability (there is little information on this), which is why DADMAC is not desirable.

EDTA and DTPA

EDTA (ethylenediaminetetraacetic acid and its salts) is not easily degradable and the EU's risk assessment shows that under the conditions in municipal waterworks, EDTA either does not break down at all or only to a small extent.[55] Today, there are more environmentally friendly alternatives that are degradable and can replace EDTA. An example is MGDA (methylglycinediacetic acid). EDTA is used as a complexing agent in many chemical-technical products. DTPA has similar properties to EDTA.

Colours

Azo dyes that can split off carcinogenic aromatic amines (see Appendix 3).

Carbon Black: It has no harmonized classification, but many self-classify with Carc. 2.

Bioaccumulable colors are undesirable, as these can be taken up in both the food chain and in humans, without know consequences.

Titanium dioxide (TiO_2): Regarding TiO_2 generally see under O19. Chalk, colored chalk and hobby paint for children must not contain TiO_2 raw material which contains ultrafine particles (< 0.1 µm). The background for this is the EU commission's SCHEER assessment in 2023 of the safety of using TiO_2 in toys[56], which could not rule out a risk when using TiO_2 if the particles are ultrafine, i.e. below 0.1 µm. If the particles are over 0.1 µm, TiO_2 is permitted in chalk, crayons and hobby paints for children.

Phthalates

Several phthalates have been identified as endocrine disruptors, and some of them are classified as reproductive toxicants. For these reasons, several phthalates are included in the candidate list. Due to their dangerous properties, phthalates pose a threat to the environment and human health, and this group of substances is banned.

Halogenated and/or aromatic solvents

Halogenated solvents are harmful to health, often not easily biodegradable and can have negative effects on the earth's ozone layer. Some halogenated solvents are suspected of causing cancer.

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[55] European Union (2004). Risk Assessment Tetrasodium Ethylenediaminetetraacetate , Final Report. https://echa.europa.eu/documents/10162/415c121b-12cd-40a2-bd56-812c57c303ce (retrieved 11.09.2020).

[56] Opinion on safety of titanium dioxide in toys, Sheer, 9 June 2023 (scheer_o_040.pdf (europa.eu)) .

Quaternary ammonium salts which are not easily degradable

Quaternary ammonium compounds of cationic surfactants with undesirable environmental effects such as not being easily degradable are excluded. There are subgroups (e.g. esterquats) with good environmental properties, which are not excluded. Quaternary ammonium compounds are often very toxic to aquatic organisms and if this is combined with the fact that they are not easily degradable, it results in an environmental hazard classification with H411 or H412. Quaternary ammonium compounds are linked to bacterial resistance to antibiotics[57] and may promote certain types of allergies.

Microplastics

Microplastics are very small fragments of plastic material, less than 5 mm. They can be harmful to health and the environment due to their size, surface properties and resistance to degradation. Currently, there are insufficient scientific knowledge and disagreement about the effects of microplastics, especially under natural conditions.

Nordic Ecolabelling applies the precautionary principle and strives to limit the use of microplastics where possible.

Nanomaterial and nanoparticles

Nanomaterials 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. 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

[57] Buffet-Bataillon S., Tattevin, P., Bonnaure-Mallet, M, Jolivet-Goudeon, A. (2012). Emergence of resistance to antibacterial agents: the role of quaternary ammonium compounds—a critical review. International Journal of Antimicrobial Agents 39: 381– 389. DOI: 10.1016/j.ijantimicag.2012.01.011

potential detrimental effects on health and the environment[58,59,60,61,62,63,64,65,66]. Nordic Ecolabelling takes these concerns seriously and applies the precautionary principle to exclude potentially hazardous nanomaterials from products.

Polymer emulsions are considered not as a nanomaterial.

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 in paints and ink, and many pigments consist partly or entirely of nanoparticles. Thus, nano-sized pigments are exempted. Clear evidence-based conclusions of the safety of nano-pigments cannot be drawn, but "exposures to nano-sized pigments that are integrated into polymer, paint or coating matrices are not thought to be significant, and the risks to consumers from such uses are low", according to a literature study commissioned by ECHA.[67]

Nordic Ecolabelling does not consider titanium dioxide nanoparticles as pigments, and nano-TiO_2 is therefore not exempted.

Synthetic amorphous silica (SAS) is an intentionally manufactured silicon dioxide (SiO2) form that has been used in industrial, consumer and pharmaceutical products for decades[68]. SAS is a nanomaterial, under the European Commission definition[69] and is exempted from the requirement due to a lack of alternative substances.

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[58] UNEP (2017) Frontiers 2017 Emerging Issues of Environmental Concern. United Nations Environment Programme, Nairobi. https://wedocs.unep.org/bitstream/handle/20.500.11822/22255/Frontiers_2017_EN.pdf?sequence=1&isAllowed=y

[59] Parliamentary Assembly of the Council of Europe (2017 (2013)) Nanotechnology: balancing benefits and risks to public health and the environment. http://assembly.coe.int/CommitteeDocs/2013/Asocdocinf03_2013.pdf

[60] Larsen PB, Mørck TAa, Andersen DN, Hougard KS (2020) A critical review of studies on the reproductive and developmental toxicity of nanomaterials. European Chemicals Agency.

[61] 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

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

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

[64] SweNanoSafe. Nationell plattform för nanosäkerhet. https://swenanosafe.se/ (2020-05-06)

[65] BEUC – The European Consumer Organisation. Nanotechnology. www.beuc.eu/safety/nanotechnology (2020-05-06)

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

[67] Hynes J, Novotný T, Nic M, Kocurkova L, Prichystalová R, Brzicová T, Bernatikova S (2018) Literature study on the uses and risks of nanomaterials as pigments in the European Union. European Chemicals Agency.

[68] https://www.asasp.eu/images/Publications/Nano_-_SAS_factsheet_-_201209.pdf

[69] COMMISSION RECOMMENDATION of 18 October 2011 on the definition of nanomaterial (2011/696/EU)

Nitroalkanes

ECHA has assessed nitroalkanes and have concluded that three of them ought to follow up with regulation[70]. Nitroalkanes can e.g. used in wax mixtures, glue and paint.

NTA (nitrilotriacetic acid) and its salts

NTA is classified as Carc cat. 2 (EU, 2008b) and is therefore already prohibited in requirement O4 due to its classification. However, complexing agents that replace NTA (GLDA and MGDA) contain small amounts of NTA as residues from raw material production (as shown in various safety data sheets for the raw materials). To encourage the transition to MGDA and GLDA, they are allowed to contain impurities of NTA in the raw material at concentrations below 0.2% if the concentration of NTA in the product is below 0.1%.

Organic chlorine compounds, hypochlorites and hypochlorous acid

Organic chlorine compounds, hypochlorite and hypochlorous acid are sometimes used as disinfecting and antibacterial substances and as bleaching agents. Organic chlorine compounds can be, or lead to the formation of, toxic and bioaccumulative substances that are difficult to break down. Chlorine-based bleaching agents generally have undesirable health and environmental properties. Hypochlorous acid is not classified, and hypochlorite have the classification Very toxic to aquatic life (H400) and thus, they are not covered by the general requirement concerning environmentally hazardous substances. However, both pose an environmental risk due to the possibility of organic chlorine compounds forming.

Perfume

Perfumes can be toxic to aquatic organisms, not readily degradable, bioaccumulative and sensitizing. They have no function in office and hobby supplies and are therefore not permitted.

Per- and polyfluorinated compounds (PFAS)

Per- and polyfluorinated substances (PFAS) are used in many types of products due to their water and dirt repellent properties. These compounds constitute a group of substances that have highly problematic intrinsic hazardous properties. They are extremely persistent and accumulate in the body[71]. They are spread all over the globe, from the large oceans to the Arctic, and are found in e.g., wild birds and fish and their eggs. Also, shorter chain compounds (2–6 carbon atoms)

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70 https://echa.europa.eu/documents/10162/3448017/GMT_316_Nitroalkanes_report_public_25687_en.pdf/a6ed1da8-bfe9-05e0-7c86-abd63972ae21?t=1664347843043&utm_source=echa-weekly&utm_medium=email&utm_campaign=weekly&utm_content=20221005

71 Borg, D., Tissue Distribution Studies And Risk Assessment Of Perfluoroalkylated And Polyfluoroalkylated Substances (PFASS), Doctoral thesis, Institute Of Environmental Medicine (IMM) Karolinska Institutet, Stockholm, Sweden 2013 http://publications.ki.se/xmlui/bitstream/handle/10616/41507/Thesis_Daniel_Borg.pdf?sequence=1

have been discovered in nature[72]. The substances in this group are suspected to be endocrine disruptors, carcinogenic and to have a negative impact on the human immune system. Perfluorooctanoic acid (PFOA), Ammonium pentadecafluorooctanoate (APFO) and certain fluoro acids are included in the Candidate List due to being reprotoxic, as well as having PBT properties.

Potential or identified endocrine disruptors substances

Endocrine disruptors (EDs) are chemicals that alter the functioning of the endocrine (hormone) system and consequently cause adverse health effects. 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. By excluding both identified and prioritised potential EDs which are under evaluation, Nordic Ecolabelling ensures a restrictive policy on EDs.

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.

Siloxanes D4, D5, D6 and HMDS

Siloxanes are a group of substances with molecular weights from a few hundred to several hundred thousand. Many of them are substances with PBT and/or vPvB properties and are of particular concern because they can accumulate in the environment. Therefore, siloxanes with known problematic properties, specifically D4, D5, D6 and HMDS, are excluded. Other siloxanes or silicones are not included in the list of substances not permitted in the product.

Substances on the REACH Candidate list of SVHC (Substances of Very High Concern)

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

[72] Perkola, Noora, Fate of artificial sweeteners and perfluoroalkyl acids in aquatic environment, Doctoral dissertation Department of Environmental Sciences, Faculty of Biological and Environmental Sciences, University of Helsinki, Finland 12.12.2014, https://helda.helsinki.fi/bitstream/handle/10138/136494/fateofar.pdf?sequence=1

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.

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[73]. 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.

Silver, colloidal silver and nanosilver

Silver is antibacterial agent used in various consumer products, typically in nano form, where it has a greater effect per total amount of silver. Silver is hazardous to health with since it is classified as reprotoxic and under assessment for endocrine disruptive properties. In addition, silver is extremely hazardous to the environment, classified H400 and H410 with an M factor of 10-1000 depending on particle size.

Triclosan

Triclosan is an antibacterial and disinfectant substance used in many different products. There is some concern that the use of antibacterial and disinfectant substances such as triclosan may contribute to increasing the resistance of bacteria to antibiotics. Triclosan is to be considered as bioaccumulative even though a BCF value below 500 has been documented in some sources. Triclosan has been found in various places, e.g. in sewage sludge and wastewater from treatment plants, indicating that the use of triclosan leads to exposure in the environment.

Heavy metals

Heavy metals can be used to e.g. pigments/colour production. For example, it is still normal that their cadmium is used in pigments in hobby paints. Heavy metals have also been found in pigments in hobby products other than hobby paints.

The requirement includes particularly environmentally and health-damaging heavy metals, which are specified in the text. These have several undesirable properties such as CMR, toxic, bioaccumulative, harmful to aquatic life (both acute and long-term effects). Since heavy metals like Pb is a natural trace in for

[73] Europaparlamentets och rådets förordning (EG) nr 1907/2006 av den 18 december 2006 om registrering, godkännande och begränsning av kemikalier (REACH)http://eur-lex.europa.eu/legal-content/sv/TXT/PDF/?uri=CELEX:02006R1907-20160203

example calcium carbonate, there is set an upper limit of 0.5 ppm in the raw material.

Background to requirement O21 Volatile Organic Compounds (VOC)

Several organic solvents are associated with harmful health effects. Organic solvents can be absorbed through the lungs and skin and cause damage to several organs. The injuries can be acute or chronic.

Acute harmful effects after inhalation of vapours are shown, such as headaches, fatigue etc. Organic solvents can also irritate the mucous membranes in the eyes, nose and throat. Organic solvents degrease the skin and can cause eczema. After prolonged exposure, organic solvents can cause chronic damage to the brain and nervous system. Certain organic solvents cause other irreparable health damage, such as cancer and reproductive damage (birth defects).

In addition, certain organic solvents contribute to the greenhouse effect, some to photochemical ozone formation and some to the depletion of the ozone layer.

In some cases, volatile organic solvents can be replaced by water, but this often requires an increased addition of preservative.

The intention of the requirement is therefore to exclude the use of volatile organic solvents where possible and to limit the use and only allow less harmful VOCs where there is a need for VOCs. For ink/colours in overhead pens, whiteboard pens and marker pens, volatile organic solvents are needed so that the ink or colour does not dry out too quickly. Therefore, the requirement contains an exception for selected VOCs, which are among the least problematic.

For information, phenoxyethanol (CAS no. 122-99-6) is not a VOC as defined in the requirement, as the vapor pressure is 0.001 kPa at 20°C[74] (definition of VOC according to EU directive 2010/75/EU: 'Volatile organic compound' means any organic compound, having at 293,15 K a vapour pressure of 0.01 kPa or more, or having a corresponding volatility under the conditions of use).

For hobby paint, glue, felt-tip pens in set of 10 colours or more, chalk, coloured chalk and all products marketed to children there are a higher exposure of the chemical product during the use phase of the products and/or the products are used or are very likely used by children. For this reason, there is a stricter documentation requirement for these products where each raw material in the chemical product must be declared.

Background to requirement O22 Residual monomers in the polymer

Polymers are often associated with problematic impurities that can harm the health of both users of the product they are part of and employees in the manufacturing process. At the same time, polymers are not covered by the same registration requirements in REACH as other chemicals. Therefore, there is a special requirement for this group of raw materials.

[74] Registration Dossier - ECHA (europa.eu) (visited 24-01-2024).

Background to requirement O23 Preservative

Preservatives mean both in-can and film preservatives.

There is an exception for some classifications for preservatives used for preserving the chemical compound, as it is important that the products have a good shelf life.

All isothiazolinones for product type 6 (PT 6) that has a specific concentration limit (SCL) of 15 ppm or 360 ppm will always be limited to 15 ppm or 360 ppmin the final product. The SCL of 15 ppm for isothiazolinones for PT 6 is based on their potential to cause skin sensitization and the SCL ensures that the concentration in the final product is low enough to minimize the risk of sensitization and protect consumers from potential health hazards.

Benzisothiazolinone (BIT, CAS no. 2634-33-5) have in the 21. Revison of CLP been reclassified with a stricter limit (360 ppm). This means products now will be classified H317 with a concentration of BIT equal or above 0,036% (0,05% before).

If a combination of phenoxyethanol and ethylhexylglycerine is used, up to 6000 ppm (0.6000 wt%) of phenoxyethanol and up to 600 ppm (0.0600 wt%) of ethylhexylglycerine are allowed. Ethylhexylglycerine can be used as a preservative aid and can be self-classified as H332. For example, ethylhexylglycerine can be used with fenoxietanol to provide preservation and can thereby replace preservative with allergenic effects such as MI.

There is an exception for Acute tox 4 (H302, H312 and H332), H373 and H317 up to a total of 1000 ppm (0.1000% by weight), i.e. 1000 ppm in total for all substances with these classifications. This gives manufacturers more options for using several types of preservatives, while the quantity is still limited. The classification limit for mixtures with Acute tox 4 or H317 is 1%, the permitted amount in the requirement is thus at least ten times lower than the classification limit. The classification limit for mixtures with H373 is 10%, the permitted amount in the requirement is thus at least 100 times lower than the classification limit.

4.9 Perfume and surface treatment

Background to requirement O24 Perfume, aromas and other fragrance substances

See requirement O20.

Background to requirement O25 Surface treatment of the product

The requirement is set to avoid problematic substances - here especially in relation to health.

Most coloured pencil manufacturers often use some form of surface treatment of the coloured pencil, so that the specific colour is easier to see from the surface of the coloured pencil. It happens that children chew on the end of the pencil/crayon and are thus strongly exposed to possible surface treatment. Surface treatment can also be done on other types of products.

4.10 Quality requirements

Background to requirement O26 Hobby paint

It is difficult to determine what is good quality for hobby paint in general.

One reason for this is that there are many different types of hobby paint with different functions, and which are used on different surfaces. They include finger painting, poster painting and artist painting. At the same time, the overall quality of the paint is determined by several different factors such as light fastness, colour intensity, covering ability and colour strength.

Light fastness and colour intensity:

Higher colour fastness guarantees the intensity and strength of the colour over a longer period. The colour intensity is determined by the choice of pigment, volume of filler and binder type. The binder is an important factor since acrylic and alkyd binders can generally "carry" less pigment than oil and are thus less intense.

Manufacturers cannot alter this fact. If it also taken into consideration that in terms of coverage pigments behaves differently, a quality comparison should only be made within the same type of paint. Some colour will also be intensified by pigments based on heavy metals, which is not desired in Nordic Swan Ecolabelled products.

Virtually all types of artist's colours are marketed in 2 (sometimes 3) qualities. Artist's colours, or A-quality and studio colours, or B-quality. Not all of them bear these names.

They are also referred to as first and second quality, Artist Colours, etc. The most obvious difference between artist's colours and studio colours is often the price: the studio quality is much less expensive that the artist's colours quality. Studio colours are intended to provide qualitatively fine colours at a relatively low cost. It is up to the customer to choose, based on price and the perceived quality. In a studio colours, expensive pigments such as cadmium and cobalt pigments are not used.

They are replaced by less costly pigments with the same nuance[75]. They differ in quality from artist's colours, but in health terms it is preferable to avoid the heavy metal-based pigments.

It can be difficult to set general requirements of the paint's quality in terms of colour fastness and colour quality, as heavy metal-based pigments and price are often opposites. The industry has also developed quality levels that consumers already use.

Homogeneous paint and viscosity:

There is a need, however, to ensure that the paint is of acceptable quality, and not too thin, and can thus be worked on with the hands, a brush or other tool, while ensuring that the paint remains a homogeneous blend in the packaging.

[75] http://www.aartdevos.dk/katalog/maleri/farver/

To determine the products' viscosity, coverage characteristics, flow mechanisms and sedimentation tendency, various rheological characteristics were measured. Rheology measurements were performed with a Bohlin Rheometer,VOR (Millennium software). Standard geometries were used for the measurements, which were performed in accordance with ISO 3219-1 and ISO 3219-2. This measures the product's viscosity.

The preferred viscosity may vary, however, according to the type of paint, so that the manufacturer of paint for hobby/office use must have a quality procedure to test the paint's viscosity for each batch, to ensure that the required viscosity is achieved within a range given by the manufacturer. The range must match the type of paint in question. The application must state which viscosity it is sought to achieve. Viscosity may be stated as number cP, Brookfield RVF, sp. 4, 10 rpm, 20°C.

To ensure that the paint remains homogeneous in the packaging, it is relevant to set a quality requirement with a storage test showing that the paint does not separate but remains homogeneously blended in the packaging. Storage tests take several months (at least 2 months/56 days) to perform. An accelerated test of storage stability is to place the product in a closed container in a heat cabinet at a raised temperature for a shorter period. Rheological measurements are used as the evaluation parameter for storage stability. This means that the rheology is determined before the start of the storage test and again after completion of the test. Storage stability is measured as a function of viscosity[76].

Paint gloss:

The perceived gloss of the paint can be adjusted with a higher pigment content or by using different pigments. The paint's gloss is often described with 5 gloss levels, as described in the table. The gloss can be determined according to ISO 2813 Paints and varnishes - Determination of gloss value at 20°, 60° and 85°. The preferred gloss type may be subjective, depending on what the paint is used for. Therefore, a specific gloss level is not required, but instead that the gloss is determined based on ISO 2813 and stated on the label.

Table: Gloss intervals.

Gloss type	Gloss interval		
	20° Gloss	**60° Gloss**	**85° Gloss**
Gloss	45-90	70-95+	-
Semi-gloss	5-45	25-70	-
Satin	-	15-25	10-40
Matt	-	2-15	5-25
Dead matt	-	1-10	1-10

Background to requirement O27 Ballpoint and rollerball pens with ink or gel

For ballpoint and rollerball pens, there are standardized tests for indicating the writing length of the pen, which is a way of expressing the lifespan of the pen.

[76] Substitution of biocides in anti-fouling paint for ships with enzymes, MST 2004

The requirement must ensure a good lifespan for the specified type of writing instrument and thus ensure that the environmental impact of the writing instrument is reduced compared to similar writing instruments with a shorter lifespan. This means, for example, a more resource-efficient pen.

In the Nordic countries, however, refills for ballpoint pens and rollerball pens are used to a lesser extent than in many other European countries. Nordic Ecolabelling cannot control/steer whether the consumer actually buys and uses refills. Therefore, there are two levels of requirements, one for products with refills and one for products without refills. For products without refills, a longer writing length is required and thus the primary product (the pens) has a longer lifespan. For products with a refill, the refill must also meet the requirement for writing length.

The chosen test standards for writing length are identical to the standards used in the French environmental mark NF Environnement NF400 for writing instruments. The requirement levels are stricter or identical depending on the type of pen than NF400 (according to the latest version in 2024 which is the 2009 version of NF400).

Background to requirement O28 Markers and felt-tip pens (not whiteboard pens)

Drying out:

The lifetime of the product has an influence on the overall environmental impact. Caps are used on felt-tip pens to prevent them from drying out. However, there is a need to ensure that the pen has a certain resistance to drying out and can thus cope with a certain period without a cap, so that the lifespan of the pen is not shortened. There is therefore a requirement that the product must not dry out too quickly when the writing instrument is without a cap.

No standardized tests have been found for resistance to drying out, and therefore requirement levels from the French environmental mark NF Environnement NF400 for writing implements, which are found on different types of writing implements, have been used.

Durability:

The life of the product is also affected by its durability during storage. No standardized tests for this have been found for marker and felt-tip pens. However, according to the standard ISO 12757-1 for ball point pens and the standard ISO 27668-1 for gel ink ball pens, the writing length of ten pens is tested after horizontal storage at 40°C +-2°C, 55 +-5% RH for 90 days. This is the reason why these conditions and length of storage have been chosen before writability is to be tested.

Background to requirement O29 Felt pens (whiteboard pens only)

Wiping:

An important function of a whiteboard pen is that the colour from the pen can be wiped off the whiteboard, therefore testing must be done for this.

For other requirements see under requirement O28.

Background to requirement O30 Pencils and pencil leads

Hardness:

For pencils and pencil leads, the degree of hardness is an important quality parameter. Standardized measurement as well as passing on information about hardness to the user is therefore important.

The hardness of the pencil is defined based on the scale shown in the table in the requirement, which goes from "H" (for hardness) to "B" (for blackness) and "F", which indicates the point midway between HB.

There are no standardized tests for the sole purpose of testing for the hardness of pencils. However, the pencil hardness scale is used to test the hardness of painted surfaces. This is done in the standard ISO 15184 Paints and varnishes – Determination of film hardness by pencil test. This is a standardized test method used to assess the hardness of coatings using a series of pencils of known hardness. These standards can also be used in reverse, where coatings of known hardness are used to judge the hardness of the pencil.

Sharpening:

Tests must be carried out to show that the lead does not break during sharpening, thereby reducing the life of the product.

No standardized tests have been found to ensure that the lead does not break during sharpening, and the test description from the French environmental label NF Environnement NF400 for writing instruments has therefore been used.

It is recommended to use an "unused" pencil sharpener to perform the test. A used pencil sharpener or one of very poor quality can adversely affect the interpretation of the results.

Background to requirement O31 Pastels, crayons and coloured pencils

Quality in relation to properties:

Within the group of chalk, crayons and coloured pencils, there are products of very different types and materials composition. Different application techniques are used. This composition and application to achieve different expressions makes it difficult to set uniform quality requirements of crayons and coloured pencils. However, manufacturers have a clear idea of which properties their products have and it is therefore possible to require that a consumer test be carried out to assess whether these properties are also found for the product.

There are examples of products that are marketed with the following characteristics:

Oil pastels with a "soft and creamy consistency". "Pastels can be diluted with turpentine or oil and applied with a brush" or "water-soluble crayons".

Further information on various characteristics can be seen in the table below.

Tabel: Qualitative characteristics

	Waterproof pencils	Watercolour pencils, Aquarelle pins	Pastels	Charcoal, monochrome pins	Pencils
Pigments	High organic and inorganic pigments in high concentrations			High quality pigments in high concentrations	Graphite, sometimes the addition of soot
Fastness	High light fastness, but depending on colour			Highest lightfastness	
Colour Palette	Opposite coloured pencils for school and preschool wider colour palette. The respective colours can be purchased individually at the highest long-term colour match.			-	-
Lead diameter	Unlike standard coloured pencils usually larger lead diameter (depending on the application between 2 mm and 6 mm)				Depending on the hardness. The diameter soft mines are usually larger than the hard mines.
Requirements for substrates	Low	With certain techniques suitable substrate is a prerequisite.	Rough, porous surface necessary. Whenever possible, use special paper. Colour smear does not adhere to smooth surfaces.		Low
Adhesion to the substrate	High	High	Low (colour application must be fixed)		High, easily correctable

Sharpening:

For coloured pencils, in addition to tests for quality in relation to properties, tests must be carried out to show that the lead does not break during sharpening.

See more under requirement O30.

Background to requirement O32 Office and hobby glue

Office and hobby glue can be found with different functions that can be used for different types of materials. There are glue sticks, fluid glue and melt glue, and therefore different ways of applying these glues (directly or with a spatula or brush). The quality and characteristics of the glue must therefore be viewed in relation to the function for which the glue is marketed.

Good adhesion to the stated material for which the glue can be used, and functional packaging that allows the glue to be easily applied, are parameters that are important to the perceived quality of the glue. There are standardised tests of adhesion for different materials.

Background to requirement O33 Office and hobby tape

Besides the function of sticking together materials such as paper, carton or other material types, the various types of tape also have other characteristics. They can be transparent, flexible, or have a decorative effect. It is also significant to the perceived quality of the tape that the tape leaves the tape reel when the tape is pulled, and that it does not break too easily when the tape is pulled (elongation at break). There are also examples of moveable tape, which means that the tape can be moved, but still retain its adhesion. There are standardised international test standards to describe the most important tape characteristics, such as adhesion strength and tensile strength.

Adhesion strength is expressed in Newton per 10 mm tape and rounded to the nearest 0.1 N/10 mm in accordance with ISO 29862. However, ISO 29862 shows that the result of this test is not directly comparable for different products with different types of carriers. The test does express adhesion, however, and it will therefore be appropriate to require that acceptable adhesion is achieved, and possibly also that better adhesion is achieved for tape with more robust functions, such as packing tape.

Cf. ISO 29864 - Tape - Measurement of breaking strength and elongation at break, to measure the tape's characteristics in relation to tensile strength in the unit of Newton per 10 mm and elongation at break is measured by stating the percentage elongation of the tape from the starting point.

Background to requirement O34 Eraser

Eraser can have varying quality which depends on the ratio between the filling thwarts (often chalk) and rubber. In addition, some erasers contain colours that rub off in use.

Background to requirement O35 Office supplies in monomaterial

Within the group of office supplies in monomaterial, there are products of widely varying types and materials. This makes it difficult to establish uniform quality requirements for this group of products. However, manufacturers have a clear idea of which properties their products have, and it is therefore possible to require that a consumer test be carried out to assess whether these properties are also found for the product.

4.11 Consumer information

Background to requirement O36 Information on refills

The criteria require a refill option for specific products in this product group. The requirement is to achieve a longer lifespan for the products and thus reduce the overall environmental impact in relation to the product's achieving function. To utilise the refill option, it is important that information about this appears in any label or packaging.

Background to requirement O37 Information on felt-tip and marker pens

The requirement is to achieve a longer lifespan for the products and thus reduce the overall environmental impact in relation to the product's achieving function. The lifespan of the product is often reduced if it is not stored horizontally.

For felt-tip pens, which are sold in packs of many different colours (many colours are defined here as 10 or more), pens are typically stored in the primary packaging by consumers. Therefore, for this type of product, there is an option to have the information on the packaging instead of on each individual pen.

4.12 Packaging

The requirements in this section apply to the primary packaging. Primary packaging means the packaging that accompanies the product to the customer or

individual packaging that accompanies the product to retail. The container for paint and liquid glue are considered packaging. See more details under Definitions in section 4.2.

Background to requirement O38 Materials

Biodegradable and oxo -degradable plastics must not be used, as they contaminate the other plastic streams for recycled plastic in the Nordic countries.

Regarding PVC and PVDC please see under requirement O5.

Production of metal packaging requires a lot of energy, and thus has a higher CO_2 emission than plastic or cardboard packaging. Therefore, metal packaging is not permitted.

Background to requirement O39 Design of packaging

Recyclability is an important step in the transition towards a circular economy. Here, the possibility is given that materials can remain in the resource cycle, whereby the use of virgin resources is reduced. Whether a material is recycled depends on many factors, such as sorting possibilities in each country or municipality and how the consumer ultimately sorts the waste. However, Nordic Ecolabelling has the opportunity to promote the possibility of recycling of materials from packaging by setting design requirements that support this process. The requirements are i.e. based on national Extended Producer Responsibility (EPRs) and packaging guidelines.

The material in the packaging must be recyclable in the existing waste systems in the Nordic countries today. Incineration with energy utilization is not considered material recycling. The EU's circular economy action plan focuses on recovery and recycling, especially with regard to packaging material. Collection of waste can either lead to a high level of material recovery, where valuable materials are returned to the economy, or to an inefficient system, where recyclable waste largely ends up in landfills or sent for incineration. The EU has also developed a plastic strategy which, among other things, focuses on making plastic recycling more profitable and working towards global solutions and standards to promote plastic recycling[77].

For cardboard/paper packaging at least 70% by weight must be post-consumer recycled material or the packaging must be FSC- or PEFC-certified. For more background on FSC or PEFC certification see under requirement O12.

Minimum 50% by weight of the plastic in the packaging must be recycled. However, packaging for finger paint is exempt from the requirement of 50% recycled plastic, because of the risk of migration of harmful substances from the recycled plastic to the paint and the extended exposure hazard during use of the finger paint.

[77] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Closing the loop – An EU action plan for the Circular Economy, COM(2015) 614 final, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52015DC0614

In some countries the authorities may have prohibitions/guidelines regarding that packaging from paint and glue must not be sorted for material recycling[78]. In this case the part of the packaging that holds the paint or glue is excepted for the requirements about recyclable materials, monomaterials, separation, carbon black and labels. If additional primary packaging is used than the one that holds the paint or glue, then these packaging are not exempt the requirements.

Each packaging component must consist of monomaterial and it shall be possible to separate each component from each other before waste sorting, so that materials have a higher quaility when recycled. Different materials must not be glued og welded together. Often blister packaging consistion of clear plastic and cardboard that are glued og welded together are used. When these parts are seperated cardboard fibes are left on the plasticparts, which lowers the quality of the pastic when it is recycled.

Carbon black can prevent correct sorting with optical technology, such as NIR technology[79].

Labels in the same type of plastic as the component are preferred. However, labels can consist of a different plastic than the packaging (PE or PP), if documentation can be presented that the label is removed in the wash, so that the packaging material can be recognized correctly in sorting. Small amounts of PE in PP-material and vice versa only have a little negative affect of the quality of the recycled material[80].

Background to requirement O40 Information on handling and sorting for recycling

In order to stimulate the sorting of packaging for recycling, there is a requirement for pictograms regarding how it should be sorted for recycling. The waste phase is affected by many factors, such as sorting options in each country or municipality and how the consumer ultimately sorts waste. However, Nordic Ecolabelling can generally stimulate increased recycling of packaging material by setting requirements that support the possibility of recycling.

For background about recommendation from the authorities that packaging for paints or glues are not to be waste sorted for recycling, see under requirement O39.

4.13 Licence maintenance

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

Background to requirement O41 Customer complaints

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

[78] Example of guidance for sorting of packaging from paints, Copenhagen municipality, visited 27 May 2024: https://affald.kk.dk/affald/maling-alle-slags
[79] Designguide - Genbrug og genanvendelse af plastemballager til de private forbruger, Plast Industrien 2023.
[80] Designguide - Genbrug og genanvendelse af plastemballager til de private forbruger, Plast Industrien 2023.

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 requirement O42 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 traceability is implemented in your company as described.

5 Changes compared to previous generation

Below is an overview of changes from criteria generation 4 to 5.

Comparison of requirements for Office and hobby articles in criteria generation 4 and criteria generation 5.

Requirements generation 5	Requirements generation 4	Same requirements	Change	New requirement	Comment
O1	O1		x		Minor changes.
O2	O4		x		For pens alternative option in O27.
O3	O27	x			
O4	-			x	Now an alternative to refill is longer writing length.
O5	O22		x		Added requirement for office supplies in monomaterials.
O6	O2		x		Proportion of recycled plastic increased from 30% to 50%.
O7	-			x	
O8	-			x	
O9	O21		x		Added requirements for more substances.
O10	-			x	For polycarbonate plastic test of migration of Bisphenol A, B and F.
O11	O23		x		Requirements for more PAHs.
O12	O18		x		Requirements updated to the latest version of the Nordic Ecolabelling forest requirements.

O13	O17		x		Requirements updated to the latest version of the Nordic Ecolabelling forest requirements.
O14	-			x	
O15	O3	x			
O16	O20	x			
O17	O1		x		Now separate requirement for chemical products.
O18	O6		x		The requirement tightened with requirements for more classifications.
O19	O7		x		The requirement tightened with requirements for more classifications.
O20	O8, O10, O11, O12, O15 and O16		x		The requirement tightened with requirements for more substances.
O21	O9	x			
O22	O13		x		The requirement tightened with requirements for more classifications.
O23	O14				Minor change regarding isothiazolinones with a specific concentration limit.
O24	O24	x			
O25	O25		x		The requirement now applies to all products. Requirement for prohibition of CMR classified substances also added.
O26	O28	x			
O27	O31		x		The requirement has been tightened with extended requirements for testing.
O28	O32		x		The requirement has been tightened with extended requirements for testing.
O29	O33		x		The requirement has been tightened with extended requirements for testing.
O30	O34		x		The requirement has been tightened with extended requirements for testing.
O31	O35		x		The requirement has been tightened with extended requirements for testing.
O32	O29	x			
O33	O30	x			

O34	O36	x			
O35	-			x	
O36	O37	x			
O37	-			x	
O38	O22 and O3		x		The requirement has been tightened with a ban on oxo-degradable plastics and biodegradable plastics.
O39	O5		x		The requirement has been tightened in that packaging components must be monomaterial, min. 50% of plastic must be recycled, min. 70% of paper/cardboard must be post-consumer recycled or the packaging must be FSC- or PEFC-certified, recyclable material and labels on plastic packaging in the same polymer type.
O40	-			x	
O41-O42	O39-O45		x		The requirements have been updated according to the latest guidelines in Nordic Ecolabelling.
-	O26		x		The requirement has been deleted.