About Nordic Swan Ecolabelled

Toys

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Nordic Ecolabelling

Content

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This document is a translation of an original in Danish. In case of dispute, the original document should be taken as authoritative.

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

Toys are a product area with many different materials and functions. What particularly unites the product group is the use phase, during which the product is often in close contact with the child or at least in the child's room. For all toys, it is therefore relevant to ensure that children are not exposed to harmful chemicals from toys. The Nordic Swan Ecolabelling of toys is pertinent since public authorities and consumer organisations regularly find prohibited substances that are harmful to health in toys. Nordic Swan Ecolabelled toys are therefore subject to stringent requirements concerning substances that are harmful to health, and to requirements for a third-party control of selected tests from the safety of toys EN 71-standard series that support compliance with the EU Toy Safety Directive.

Toy consumption is relatively high, which makes it relevant to consider the environmental impact in terms of resource consumption, the climate, chemicals and biodiversity. The overarching environmental gain thus lies in ensuring that environmental requirements are set for all the ingoing material types. Nordic Swan Ecolabelled toys are subject to strict environmental requirements regarding the materials, the packaging and, for some types of toys, also requirements relating to spare parts or repair. Toys are often produced outside the EU and may have a long production chain, which increases the risk of non-compliance with the requirements of the EU Toy Safety Directive. In addition to a third-party control of tests that support compliance with the EU Toy Safety Directive, Nordic Swan Ecolabelled toys are subject to a requirement that the licensee shall annually check and evaluate suppliers to ascertain compliance with the requirements for Nordic Swan Ecolabelled toys. Since production often takes place outside the EU, there are also requirements for responsible production in terms of workers' rights.

Third-party control of tests from the safety of toys EN 71-standard series:

In this, generation 3 of the criteria for the Nordic Ecolabelling of toys, the requirements relating to tests from the safety of toys EN 71-standard series that support compliance with the EU Toy Safety Directive have been made more explicit, for example by specifying, for each type of material, which of the EN 71 safety requirements in the EU Toy Safety Directive must be documented.

Tightened chemical requirements

In this, generation 3 of the criteria, the requirements concerning chemicals have been tightened. Requirements concerning chemicals in or on the materials are tailored to those materials. In addition, the chemical requirements have been simplified in that some specific substances from generation 2 are not mentioned in the prohibition requirement. They are still prohibited, for example because they have a classification that is prohibited. Read more in the background to each requirement.

Appendix C of the EU Toy Safety Directive (2009/48/EC) covers the use of substances that are harmful to health in toys for children under the age of 3 or toys intended to be placed in the mouth. Chemical requirements are added to or amended in Appendix C on an ongoing basis[1]. This, generation 3 of the criteria has added requirements for substances listed in Appendix C (substances included in Appendix C as per May 2021). Nordic Swan Ecolabelled toys go further than the EU Toy Safety

[1] http://ec.europa.eu/growth/sectors/toys/safety/legislation_en

Directive, in that the requirements apply to all types of toys, not only toys for children under the age of 3 or toys intended to be placed in the mouth.

The revision has focused on ensuring that, where the criteria require testing for ingoing substances, the test methods are, as far as possible, identical to those set out in the safety of toys EN 71-standard series.

Tightened material requirements:

In this, generation 3 of the criteria, the requirements concerning recycled, reused and bio-based materials have been tightened. Recycled and reused materials support the circular economy, but at the same time it is important that the materials in toys do not contain substances that are harmful to health. The criteria therefore contain requirements for the testing of recycled/reused materials and/or the sources from which they originate. For bio-based materials, there are requirements that the raw materials must be sustainable.

Biodegradable plastics or plastic composites can disrupt the processes at the recycling plants and reduce the quality of the recycled plastic. There is therefore a ban on these types of materials in the criteria.

New packaging requirements:

To limit the environmental impact from packaging materials and the transport of toys, there is a requirement setting out the acceptable ratio between the volume of the packaging and the volume of the toy. There are also requirements relating to recycled materials and to the design of the packaging, to ensure that the packaging materials can be recycled.

New requirement concerning spare parts:

Requirement regarding spare parts for certain types of toys, where this is judged to be most relevant and thus can achieve high environmental gains have been intoduced. Offering spare parts means that the service life of the toy can be extended, thus reducing its environmental impact.

New requirement on supplier controls:

This, generation 3 of the criteria, includes a new requirement for the licensee to conduct annual assessments of the suppliers who assemble the toy into the finished product, make semi-manufactures or apply surface treatments.

The checks cover familiarity with the requirements for Nordic Swan Ecolabelled toys, production procedures in the event of changes of the Nordic Swan Ecolabelled toys and updating of certification schemes.

For a further description of the changes in the revised version, see the background text for the requirements.

2 Basic facts about the criteria

Nordic Swan Ecolabelled toys are subject to stringent requirements concerning substances that are harmful to health, which go further than the EU Toy Safety

Directive. Nordic Swan Ecolabelled toys comply with strict environmental requirements throughout the life cycle of the toy and support a circular economy.

2.1 Products that may be Nordic Swan Ecolabelled

Toys for children under the age of 14 can be Nordic Swan Ecolabelled if the toy comprises one or more of the following materials:

- Plastic, foam, silicone and rubber
- Textiles, hide/skins and leather
- Filler materials
- Metal
- Paper, paperboard and cardboard
- Solid wood and bamboo
- Wood-based panels

In the case of toys for children over the age of 3, other materials may individually make up no more than 1% by weight of the toy, and in total other materials must not exceed 2% by weight. Toys for children under the age of 3 must not contain any materials other than those covered by requirements in these criteria.

A toy is defined as a product that is exclusively or partially designed or intended for use by children under the age of 14 during play. The toy must be covered by the EU Toy Safety Directive (2009/48/EC), however also puzzles with more than 500 pieces are allowed. Typical toys that qualify for a Nordic Swan Ecolabel include rattles, teething toys and activity toys made of various materials for children under the age of 3. Building blocks, dolls, soft toys, puzzles, spades, cars, doll’s houses and train sets may also be Nordic Swan Ecolabelled. Ride-on cars and balance bikes for children are eligible for the Nordic Swan Ecolabel if they are covered by the EU Toy Safety Directive.

Products not covered by the EU Toy Safety Directive cannot be Nordic Swan Ecolabelled in accordance with the toy criteria, except for puzzles with more than 500 pieces.

However, if they fall within other product categories for which ecolabelling criteria are already developed, the products can be Nordic Swan Ecolabelled accordingly. Such criteria might include Office and hobby supplies (writing instruments, erasers and hobby paint) and Textiles. Notepads and drawing, colouring and children’s books can be Nordic Swan Ecolabelled under the criteria for Printing companies and printed matter.

Activity toys (defined as toys for private use where the support structure is stationary while the activity takes place, e.g. slides, roundabouts, swings and climbing frames) are Nordic Swan Ecolabelled under the criteria for Outdoor furniture, playground and park equipment.

If there is any doubt about which criteria an activity toy belongs to, contact Nordic Ecolabelling. Nordic Ecolabelling reserves the right to determine the criteria to be used for any product application. For further information, please contact the Nordic Ecolabelling organisation in the relevant country (see addresses at the beginning of the document).

What cannot carry the Nordic Swan Ecolabel?

Electronic toys (incl. toys that contain batteries), single-use toys (incl. stickers and temporary tattoos), balloons, water balloons, chemistry sets, slime toys, soap bubbles, other toys containing liquids (including encapsulated liquids) and toys attached to/included food are not eligible for the Nordic Swan Ecolabel.

Hobby supplies cannot be Nordic Ecolabelled according to these criteria. Hobby materials are materials used for hobbies, crafting and pictorial art. Examples of such materials include modelling wax, clay, plaster and chemistry sets. See the criteria for the Nordic Swan Ecolabelling of Office and hobby supplies for details on the products that fall within their category.

Appendix 1 provides an overview of the product areas that are not regarded as toys under the EU Toy Safety Directive (2009/48/EC), including babies' soothers, fireworks, sports equipment and bicycles designed for sport or for use on public roads.

2.2 Motivation for Nordic Swan Ecolabelling

The Nordic Swan Ecolabelling of toys is relevant from both an environmental and a health perspective.

Nordic Swan Ecolabelled toys have strict environmental requirements throughout the whole life cycle of the toy and support circular economy by e.g. to set strict requirements for chemicals, that packaging can be recycled and for certain types of toys requirements for spare parts or repair. At the same time, there is a focus on the materials used living up to relevant environmental requirements, such as wood from certified sustainably managed forestry, organic cotton and sustainable raw materials for bio-based plastics.

Nordic Ecolabelling sets tougher requirements concerning chemicals than the EU Toy Safety Directive does. Independent, third-party controls relating to relevant environmental and health requirements, and controls of compliance with the EU Toy Safety Directive is required. Nordic Ecolabelling goes further than the EU Toy Safety Directive by setting requirements that exclude ingoing CMR substances, phthalates, halogenated organic compounds (e.g. PFOA and PFOS), and endocrine disruptors (see 6.2 for definition of ingoing substances and impurities).

2.3 Messages for Nordic Swan Ecolabelled toys

Children are often in close and prolonged contact with their toys and small children also sit and chew on their toys. The criteria therefore have a focus on chemical exposure in the use phase, but also focus on enviromental requirements for the materials used. Below are descriptions of what characterises Nordic Swan Ecolabelled toys and the messages that apply for the product group.

Nordic Ecolabelled toys:

- Meet strict health requirements for chemicals. It means that the toys are free from substances that can cause cancer, damage genes or reproductive capacity. They are also free from heavy metals, perfumes, nanoparticles, phthalates, and bisphenol A, B, F, S and AF.
- Meet strict environmental requirements for materials used in the toy.
- Meet strict requirements on the amount and type of packaging, among other things to the possibility of increase recyclability.

- Produced under proper working conditions where the toy manufacturer must comply with conventions from the International Labour Organisation (ILO) Conventions.

For toys in plastic in addition:

- Consists of plastic that can be recycled.

For toys that contain bioplastics in addition:

- Contain bioplastics, where the vegetable raw materials are residual products or are not genetically modified (GMO).

For toys in textile in addition (only use the USPs if the mentioned textile is included in the toys):

- Are made of organic or recycled cotton.
- Are made of wool, which is organic, recycled or have low content of pesticides.
- Contain a high proportion of recycled synthetic fibers of fossil origin.
- Contain synthetic fibers of bio-based origin, where vegetable raw materials are residual products or are not genetically modified (GMO).

For toys in metal in addition:

- Do not have coatings of cadmium, chromium, nickel, copper, tin, or lead.
- Contain a high proportion of recycled metal or metal made with lower climate footprints.

For toys in wood in addition:

- Contain a high proportion of wood from certified sustainable managed forests.

2.4 The version and validity of the criteria

Nordic Ecolabelling adopted generation 1 of the criteria document for toys on 14 June 2007. Generation 2 was approved on 21 March 2012, and these criteria are now up to version 2.5, effective until 31 March 2022.

2.5 Nordic Swan Ecolabel licences

Today (March 2020) there are two licences for toys, both issued in Denmark. In total, approx. 215 products are Nordic Swan Ecolabelled.

3 The Nordic market

As part of the evaluation of the criteria in 2016, a market analysis was conducted that resulted in an overall description of the Nordic markets for toys, taking into account manufacturers, environmental marketing, public procurement, private sales and other labelling schemes within the product group. At the same time, interviews were carried out with relevant toy manufacturers (or resellers) in the Nordic countries. The aim was to establish how the Nordic toy industry approaches environmental issues and what they think about Nordic Ecolabelling’s criteria. The market analysis showed that there should be a focus on the following two segments within the product group:

Toys for babies and young children

In this context, the parents make the decision about purchasing the product, and there is a link here with other Nordic Ecolabelling criteria that are widespread within the market (e.g. diapers and personal care products).

Institutional toys for nurseries and kindergartens

There is considered to be potential here via public procurement, particularly for toys with educational or creative functions, such as construction toys, puzzles and board games.

There are several examples of people in public procurement who would like to be able to specify the purchase of ecolabelled toys, and public authorities that have a strong focus on reducing children's exposure to harmful chemicals in their everyday lives. The assessment is that the key sales parameters for these products are chemicals and materials. It is therefore important that the criteria are strict on chemicals and cover the areas on which there is a public-sector focus. There is also a need for clear and convincing messages that can be linked to the product group. Similarly, the differences between the EU Toy Safety Directive and the criteria for Nordic Swan Ecolabelled toys should be both significant and clear.

The market analysis also showed that many of the major manufacturers are waiting for demand to pick up in the market, and there is no great tradition of them branding themselves on the basis of health and the environment. There should instead be a focus on developing the market together with "front-runners". These might be smaller manufacturers who have the same focus on health and the environment as Nordic Ecolabelling does.

The approach could include a collaboration on a joint PR initiative in this area. These "front-runners" should therefore be located.

Development potential

In our assessment, Nordic Ecolabelling has considerable development potential in the institutional market under the new procurement legislation, which makes it possible for public procurers to require ecolabelled toys. Potential exists for products sold to nurseries and schools, such as balls, building blocks and other toys for educational institutions. There is an open window of opportunity, and if we are able to establish licences in this area, this should ripple out to toys aimed at consumers.

In Denmark, the City of Copenhagen and the Partnership for Public Green Procurement (POGI) have sent out a joint "love letter" to all the nation's local authorities and regions, urging them to support the initiative to promote ecolabelled toys and office furniture. And many are keen to jump on board. So far, 36 local authorities and 2 regions have chosen to sign up.

4 Other labelling schemes and steering instruments

At EU level, toys are covered by CE marking requirements as set out in the EU Toy Safety Directive (2009/48/EC), which sets safety requirements and specific requirements concerning certain chemicals. There are also EU regulations restricting ingoing substances in particular materials.

4.1 EU Toy Safety Directive

The EU Toy Safety Directive (2009/48/EC) requires an assessment of chemical safety, whereby the manufacturer can choose to conduct its own checks without any demand for third-party verification. The manufacturer decides which test is relevant (and naturally has to be able to justify this) and whether, for example, the CMR ban is applicable to the individual substances. A thorough analysis has been conducted to establish what the EU Toy Safety Directive assurances compare with a Nordic Swan Ecolabelled toy. This demonstrates that Nordic Ecolabelling sets tougher chemical requirements than the EU Toy Safety Directive. See an in-depth description of the different guarantees provided by the EU Toy Safety Directive and Nordic Ecolabelling in Appendix 1.

Appendix C of the EU Toy Directive covers substances used in toys for children under the age of 3 or toys intended to be placed in the mouth. Chemical requirements are added or amended in Appendix C on an ongoing basis[2]. For each requirement in the criteria referring to substances for which there are requirements in Appendix C, there is an explanatory text in the background document.

4.2 EU regulations and specific national regulations

EU Regulation No 1272/2013 on the restriction of polycyclic aromatic hydrocarbons (PAHs)

Toys, including activity toys, and childcare articles, shall not be placed on the market, if any of their 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, contain more than 0.5 mg/kg (0.00005% by weight of this component) of any of the listed PAHs.

EU Regulation No 1907/2006 and No 2018/2005 on the prohibition of phthalates

In addition to the above, there are also rules applicable to the whole of the EU in Regulation No 1907/2006 and No 2018/2005, Annex XVII, entry 51 and entry 52[3,4]. It is prohibited within the EU to produce, import or sell toys and childcare items for children aged 0–14[5], 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.

For the purposes of these requirements, a product, or part thereof, is considered small enough to enter the mouth if any one dimension is less than 5 cm.

Specific Danish regulations for toys

Phthalates:
There is a national regulation concerning phthalates in toys and childcare items for children aged 0–3. Denmark prohibits the import, sale or use of toys and childcare items for children aged 0–3, if the products contain more than 0.05% phthalates by weight.

[2] http://ec.europa.eu/growth/sectors/toys/safety/legislation_en
[3] https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:164:0007:0031:da:PDF
[4] https://eur-lex.europa.eu/legal-content/SV/TXT/PDF/?uri=CELEX:32018R2005&from=EN
[5] EU Ban on phthalates as described by the Danish Environmental Protection Agency https://mst.dk/kemi/kemikalier/regulering-og-regler/faktaark-om-kemikaliereglerne/ftalater/

Pentachlorophenol (PCP):
There is a ban on importing, selling, exporting and using goods that contain 5 ppm or more of pentachlorophenol or salts and esters thereof.

Dimethyl fumarate (DMF):
There is a ban on importing and selling goods that contain more than 0.1 mg DMF/kg, or where DMF is declared.

The Danish regulation (Bekendtgørelse nr. 325 af 28. april 2009) is based on the EU regulations (Commission Decision 2009/251/EC of 17 March 2009)[6]. This regulation applies to all goods, not just toys. The permitted amounts in the Danish regulation are identical to those in the EU regulation.

However, the Danish Environmental Protection Agency states on its website that Denmark has tougher rules than the rest of the EU when it comes to DMF in toys[7].

Specific Swedish regulations for toys

In Sweden, statutory requirements concerning toys are regulated by European legislation and the EU Toy Safety Directive, supplemented by ordinances and regulations such as the Ordinance (2011:703) on Toy Safety, the Act (2011:579) on toy safety, the Swedish Consumer Agency's Regulations on toy safety (KOVFS 2011:5), the Swedish Chemicals Agency's Regulations on flammability and the chemical properties of toys (KIFS 2017:8) and the Swedish National Electrical Safety Board's Regulations on the electrical properties of toys (ELSÄK-FS 2011:1).

Specific Finnish regulations for toys

Toys are covered by the EU Toy Safety Directive (2009/48/EC). In Finland, toys available on the market must meet the requirements contained within the Act on the Safety of Toys (1154/2011). This act implements the requirements of the EU Toy Safety Directive nationally within Finland.

Specific Norwegian regulations for toys

Toys are covered by the "Regulations on restrictions on the use of chemicals and other products that are hazardous to health and the environment"[8] (also known as the "Product Regulations"), including the "Toys Regulations", which is a collection of Norwegian special rules and regulations corresponding to the EU Toy Safety Directive.

EU Public Procurement Directive

It is expected that the EU Public Procurement Directive from 2014, which was finally implemented in the Nordic countries around 2016, might be able to influence the public procurement of toys for childcare institutions and schools.

[6] Danish Environmental Protection Agency, as per March 2020: https://mst.dk/kemi/kemikalier/fokus-paa-saerlige-produkter/legetoej/hvilke-pligter-har-jeg-som-fabrikant/
[7] Danish Environmental Protection Agency: https://mst.dk/kemi/kemikalier/regulering-og-regler/faktaark-om-kemikaliereglerne/dmf/
[8] https://www.miljodirektoratet.no/ansvarsomrader/kjemikalier/regelverk/produktforskriften/

4.3 Other labels

Beyond CE marking, there is no widespread use of other labels to indicate environmental or health standards. There are some examples of FSC or Oeko-Tex being used for wooden and textile toys, respectively.

Blaue Engel – Toys

In 2017, Blaue Engel published version 1 of the ecolabelling criteria Toys DE-UZ 207 for various types of toys[9]. Criteria for textile toys already existed, but the current criteria also cover toys in wood, plastic, leather, paper, natural rubber and metal. The criteria have a strong focus on chemicals.

By the end of 2019, three licences had been issued: two licences for textile soft toys and one licence for building blocks comprising 60% sawdust and 40% recycled plastic.

5 Environmental and health effects associated with toys

Toys are a product area that encompasses many different types of product, and includes many different types of material, with countless material compositions in varying ratios. It is therefore difficult to define a general functional unit that is representative of the product group, and it is thus very difficult to quantify the environmental impact over the life cycle of a product. In this case, it is more meaningful to make a qualitative assessment of the product area and identify the environmental and health impacts associated with toys made of different types of material.

The use phase is what unites the product group from a life cycle perspective. Characteristics of a toy in the use phase are that children are the target group and that the product is often used in close contact with the child. The contact is even closer for very young children, who will put the toy in their mouth. Exposure to harmful chemicals is thus a highly relevant consideration for the product group.

Authorities and consumer organizations in the Nordic countries regularly carry out tests[10,11,12] of toys to check whether the legislation is complied regarding harmful substances, and unfortunately it is not uncommon that toys that do not comply with the law are found.

Nevertheless, a search for toy-related LCAs has been conducted, to establish what factors are of environmental relevance for the type of toy studied. Only a very small number of published studies have been found. The international toy manufacturer Mattel has conducted an LCA for the whole of their toy production. It has not been published, but the company describes having selected specific areas of production for environmental improvements, based on this LCA. The areas relate to the

[9] Blaue Angel Toys DE-UZ 207 https://www.blauer-engel.de/en/products/home-living/spielzeug
[10] Miljøministeriet Danmark, 2019: Skadelige stoffer fundet i legetøj fra udenlandske online-butikker (mst.dk)
[11] Miljøministeriet Danmark, 2019: Testresultater: Skadelig kemi fundet i legetøj (mst.dk)
[12] Miljøministeriet Danmark, 2018: Skumlegetøj afgiver farlige kemikalier (mst.dk)

resource impact from products and packaging, and the chemical impact during production, for example in the form of VOC.

The following section presents an environmental and health assessment of the product group, based on the materials covered in the product group. This has been done in the form of a MECO analysis.

5.1 MECO analysis

The environmental and health impacts that are found to be relevant in a toy's life cycle are presented in the qualitative MECO matrix below.

A MECO analysis of the product group addresses materials, energy, chemicals and other aspects in relation to raw material production, the end product's production phase, use phase and disposal phase.

As described above, toys are a very disparate product group, with huge variations in design and material choice. The design, and thus often the material choice, has a major impact on the finished toy, and there is therefore a need for a certain amount of material freedom in the criteria. There is thus nothing to gain by picking out an individual material type that is best for the environment, as this would significantly restrict the product group. The overall environmental gain lies in ensuring that tough requirements are set for all material types used, and potentially prohibiting or limiting those materials that have an environmental issue, but where there is no great steerability or potential for resolving this issue. The criteria thus cover products made from many different materials. In many of the requirements, the functional unit must therefore be viewed in relation to the material type. The MECO matrix is designed to encompass all the materials included in the current criteria. As such, it is difficult to drill down into the details for each material, and the MECO matrix therefore operates at a very general level.

Product group Toys	**Raw material production**	**Production**	**Use**	**Disposal**
Raw materials	Solid wood/wood fibre/paper/cardboard (renewable) Adhesive (oil or bio-based) Metal (steel/iron/aluminium/brass) Plastic (oil or bio-based) Textile (wool/cotton/synthetic) Leather (renewable) Filler/stuffing materials (oil-based/feathers/down) Packaging: plastic, cardboard and metal	Energy raw materials for drying processes for surface treatment. Resource efficiency (material choice, material use and amount of packaging)	Ability to sort packaging materials for recycling. Reuse of the toy.	Recycling of materials in the toy such as metal, plastic and poss. wood.
Energy/-climate	Energy raw materials for production of metal, plastic, adhesive raw materials in panels and for drying timber.	Energy raw materials for drying processes for surface treatment.		Energy recovery from incineration of toy.
Chemicals	Use of various chemicals to extract raw materials, to manufacture materials and to put together materials that make up the toy.	Emissions of VOC and formaldehyde from surface treatment and adhesive. Wastewater from e.g. textile dyeing, leather tanning processes.	High exposure risk. CMR substances Emissions of e.g. formaldehyde and VOC in surface treatment and filling.	

			Treatment of textiles with flame retardants, dirt repellent coatings and biocides (distribution). Phthalates in plastic and PAH in rubber.	
Other	Sustainable forestry (biodiversity), organic cotton production. Child labour in material production.	Child labour and other social conditions in production.	Quality of play and service life have an impact on the length of the use phase. The better the quality of play and the service life, the lower the overall environmental impact during use.	

Summary of MECO matrix

For many of the stated material types, resource consumption during raw material production, the ability to recover materials from a product and its packaging, and chemical exposure in the use phase are of major significance. For some materials there are also specific relevant environmental parameters associated with raw material extraction and production. The fact that many toys are rapidly replaced if the child loses interest or the product breaks means that quality of play and durability are also important for the overall environmental performance.

Toys are often manufactured outside the EU and the actual production site is therefore not always covered by EU legislation. It is therefore also considered relevant to ensure that the social conditions on the production line are in order.

5.2 RPS = Relevance, Potential and Steerability

The following is an RPS analysis for the product group Nordic Swan Ecolabelled toys. This is based on the relevant environmental impacts described in the MECO matrix and presented in the RPS table below.

Overall prioriti-sation	Area and statement of level (high – medium – low) for R, P and S	Comments
High	**Sustainable forestry – wood raw material** High R, high P, high S	High RPS for requiring certified sustainable or recycled wood raw material in solid wood and wood fibre.
	Renewable raw materials other than wood – sustainable High R, high P, medium S	Toys are associated with a certain consumption of resources and hence there is high relevance in using renewable raw materials if they offer a similar service life and quality of play. The criteria should therefore be open to more renewable/bio-based materials, such as biobased plastics based on maize or sugar cane, particularly if the biofractions are not earmarked for food and are sustainably grown. Here, the RPS is judged to be medium to high for certain renewable raw materials.
	Resource consumption for packaging High R, high P, medium S	There is considered to be a high RPS when it comes to ensuring more sustainable and resource-efficient use of resources for packaging – in the form of either requiring sustainable raw materials and the capacity for recycling, or reducing the amount of packaging. In this context, the steerability lies in using a factor for the ratio between the volume of the air and the product in the packaging. Such a factor is already used by some in the industry.

		It must also be possible to separate the different material types after unpacking.
	Organic cotton Medium–high R, high P, medium S	For toys with a high proportion of cotton textile, the relevance relates to the use of organic cotton. However, organic cotton makes up only a small proportion of total cotton production and, since it is not the toy manufacturers themselves who buy the cotton, the steerability is judged to be medium. The overall RPS is therefore medium to high, depending on how high a proportion is contained in the toy. A triviality limit should be set regarding when the requirement is triggered in order to adapt the relevance.
	Chemicals in toy production, use phase and disposal phase High R, high P, high S	Here, there is judged to be high relevance concerning chemicals that are harmful to health, such as CMR substances, formaldehyde, VOC, phthalates, heavy metals, fragrances, flame retardants and allergenic preservatives in binders used in materials and surface treatments, and other chemical products used in the toy. There is also a high RPS for requirements limiting the use of nanoparticles, for example in surface treatments. The RPS applies both to the production process in which the chemical is used, and to the use and disposal phases. A reduction in problematic chemicals would be relevant for all three phases. In terms of the production phase, there is particularly high relevance for textile production.
	Chemicals – specifically additives in plastic High R, medium P, medium S	Here high relevance has been identified in relation to problematic additives in plastic parts. At the same time, there is potential and medium steerability relating to the mixing of plastic granules and additives (compound). With some plastic products, additives are added to the granules themselves before they are sold on. There is also judged to be steerability here. However, steerability regarding the polymer production is low due to long supply chains. It might be a little higher for known problematic residual monomers that are covered by testing in the EU Toy Safety Directive. There is considered to be a general opportunity to increase steerability by reusing tests from the EU Toy Safety Directive.
	Types of toys High R, high P, high S	A high overall RPS was found for requirements concerning the permitted types of toys. Single-use toys have a greater environmental impact than other toys, since these are disposed of after just being played with once. Toys that are liquid, that contain encapsulated liquid parts or that can be eaten may pose an increased risk of a child being exposed to harmful substances.
	Design of packaging for recycling High R, medium–high P, high S	There is considered to be a medium to high RPS when it comes to ensuring that packaging is designed to be recycled after use. It is possible to increase the recycling of materials by setting requirements concerning permitted types of material and the ability to separate different materials. The potential is judged to be medium to high, since the packaging is considered an important element in the sale of toys, particularly to private consumers and children over the age of 3. Colours and images, for example, can play a major part in the sale of a toy.
Medium	**Ensuring socially responsible production** High R, medium–high P, low–medium S	The relevance is high since production often takes place outside the EU and may be divided among several suppliers. The potential is judged to be medium to high, with low to medium steerability. It is possible to achieve acceptable and necessary steerability by making applicants responsible for ensuring that all their suppliers comply with the ILO Conventions.
	Resources – recycled raw material (plastic) with no problematic chemicals High R, high P, low S	The RPS is low to medium for requirements concerning recycled plastic. The relevance is high for toys, which are almost entirely made of plastic materials. However, there is a risk here, in that the steerability over the problematic substances that are contained in the plastic from previous life cycles is small. However, in the case of chemical recycling for some technologies there may be a higher steerability regarding problematic substances. Since these products are for children, the potential presence of substances that are harmful to health is

		highly relevant. So for this parameter, the overall RPS is low to medium with regard to requiring recycled plastic where plastic raw material is used.
	Energy – material production High R, medium P, low S	High relevance has been identified in relation to energy impact from material production, including raw material extraction. Many of the ingoing materials are highly processed, with correspondingly high energy consumption. The potential for energy reduction in the production of most of the materials is, however, unclear due to the heterogeneous nature of the product group. There is generally judged to be low steerability and consequently the overall RPS is medium.
	Sustainable mining for metals High R, medium P, low S	The relevance is high here in terms of the environmental impact on the area where mining is carried out and the discharge of toxic wastewater/sludge into surrounding aquatic environments. There is also considered to be potential for environmental measures in the mining operation. The product chain is very long, which makes steerability very low. Medium RPS overall. Standardised sustainability certifications are not yet widely used the metal industry, but are in progress.
	Resources – recycled raw material (metal) High R, medium P, low–medium S	Medium RPS overall. Mining operations are associated with major environmental impacts, which makes the relevance high. The traceability of metals back along the supply chain is very low, and there are currently no certification or chain of custody systems in place. For this reason, steerability is medium to low. Recycled metals have less of an environmental impact and there is therefore potential in setting requirements concerning the proportion of recycled metal.
	Design of toys for recycling High R, medium P, high S	There is considered to be high relevance when it comes to ensuring that the design includes the possibility of recycling the materials after use. The potential is also high, but with the caveat that materials which can easily be separated might pose a challenge to the safety of toys for children under the age of 3, as there may be an increased risk of a child placing small parts in their mouth. Potential thus only exists where it does not make the toy less safe for children. Steerability is judged to be high.
Low	**Resource efficiency per functional unit - production** High R, low P, zero–low S	Since toys may comprise different types of material and have very different designs, there is in principle no definable potential to optimise the design to make it more resource-efficient, in terms of limiting the use of resources in relation to the toy's function. Low RPS overall. See instead design for recycling.
	Quality and properties High R, medium–high P, low S	A low overall RPS was found for requiring the toy to be high quality. There are no quality standards for toys and therefore a user test or standardised test would have to be performed on the specific material, e.g. textile. However, standardised testing of materials will not always be relevant for toys, and nor is it uncommon for a toy to consist of several types of material. There is thereby low steerability.
	High quality of play High R, medium P, zero–low S	It is relevant to require a high play value, as this can help to extend the life of the product. Play value is, however, quite subjective and hard to measure – hence the very low steerability. It is usually defined in terms of toys that make a child use their imagination and creativity, make the child inquisitive and stimulate motor functions or creative ideas. Low RPS overall.

Regarding Potential – Substances that are harmful to health: Nordic Swan Ecolabel relative to EU Toy Safety Directive, see Appendix 1.

5.3 Circular economy

To support a circular economy, it is important that products are of good quality, so they can last a long time and the materials can be recycled at end of life. The chemicals used in the materials are important for the possibilities of recycling. In this

context, it is essential that the content of substances that are harmful to health and the environment is as low as possible. Nordic Swan Ecolabelled toys are subject to very strict requirements concerning hazardous chemicals.

In addition, the actual types of material can have an impact on the potential for recycling. Biodegradable plastic, for example, must not be used in Nordic Swan Ecolabelled toys or their packaging, as it “contaminates” the other plastic streams that go into recycled plastic in the Nordic region.

The criteria allow for the use of certain recycled or recovered materials, such as plastic, metal or textiles, in the Nordic Swan Ecolabelled toy. Where recycled or recovered materials are used in a toy, there are requirements concerning where these must originate from and/or material testing requirements to ensure that the risk of undesirable substances is low. For packaging, there are i.a. requirements regarding that the main materials shall be recyclable, and that plastic may not be dyed - only if it consists of a minimum of 50% recycled plastic and paper/cardboard packaging shall have a high proportion of recycled material and/or be FSC-/PEFC-certified material.

The ability to separate the toy into different types of material so that the materials can be recycled was given due consideration in the revision, but the decision was taken not to set requirements for this. See more about the background to this in section 7 Areas without requirements.

Toys are a product area with many different materials, designs and concepts of play. There is also a major difference in what they are put through when they are in use. Toys can thus have extremely diverse durability. It is thus difficult to set general requirements for the durability of toys that go beyond the safety requirements for physical and mechanical properties in the EU Toy Safety Directive. There are no standards for the durability or quality of toys. However, the criteria set certain requirements to promote the durability of Nordic Swan Ecolabelled toys. Single-use toys, whereby the main function can only be used once, are not eligible for the Nordic Swan Ecolabel. Furthermore, certain types of toys are subject to a requirement concerning the availability of spare parts.

5.4 UN’s Sustainable Development Goals

Goal 12 “Ensure sustainable consumption and production patterns”

Nordic Swan Ecolabelled toys actively contribute to fulfilment of UN Sustainable Development Goal 12, to “Ensure sustainable consumption and production patterns”.

Nordic Swan Ecolabelled toys have a reduced environmental impact and make efficient use of natural resources, in part because they are subject to requirements concerning materials in the toy. For example, there are requirements for sustainable wood raw material and traceability, requirements for sustainable raw materials for bio-based plastic, requirements regarding the use of recycled metal and a ban on types of plastic that disrupt the recycling processes. There are also requirements that apply to the packaging for Nordic Swan Ecolabelled toys. These include requirements limiting the amount of packaging, requirements that the materials must be recyclable in existing waste recycling systems, that cardboard consist of recycled material and/or FSC-/PEFC-certified material and that plastic may not be dyed - only if it consists of a minimum of 50% recycled plastic.

Nordic Swan Ecolabelled toys are subject to a requirement concerning spare parts for selected products to promote the durability of the toys and thus reduce their environmental impact.

The Nordic Swan Ecolabel encourages reuse and recycling without the spread of harmful chemicals. A long list of chemicals that are harmful to health and the environment are prohibited in the production of the toys. This ensures a responsible approach to chemicals during production and in the toy, with positive effects on people's health and the environment.

Goal 3 relating to hazardous chemicals and air, water and soil pollution and contamination

A long list of chemicals that are harmful to health and the environment are prohibited in the production of the toys. This ensures a responsible approach to chemicals during production and in the toy. The result is a reduction in harmful effects from chemicals that have a impact on people's health and the environment. The stringent chemical requirements include a ban on chemicals that are classified as harmful to the environment, carcinogenic, mutagenic and reprotoxic, and requirements concerning emissions to the aquatic environment from metal coatings.

Goal 8 on decent work for all is also relevant to this product group

The global toy industry faces major social and ethical challenges. There is therefore a requirement that working conditions in the toy production must comply with relevant workers' rights as set out in the ILO Core Conventions, e.g. no child labour and no forced labour.

6 Justification of the requirements

This chapter presents proposals for new and revised requirements, as well as explaining the background to the requirements, the requirement levels and any changes since generation 2. The appendices referred to are the appendices in the criteria document "Nordic Ecolabelling for Toys".

6.1 Product group definition

What can carry the Nordic Ecolabel?

Toys for children under the age of 14 can be Nordic Swan Ecolabelled if the toy comprises one or more of the following materials:

- Plastic, foam, silicone and rubber
- Textiles, hide/skins and leather
- Filler materials
- Metal
- Paper, paperboard and cardboard
- Solid wood and bamboo
- Wood-based panels

In the case of toys for children over the age of 3, other materials (not listed above) may individually make up no more than 1% by weight of the toy and in total other

materials must not exceed 2% by weight. Toys for children under the age of 3 must not contain any materials other than those covered by requirements in these criteria.

A toy is defined as a product that is exclusively or partially designed or intended for use by children under the age of 14 during play. The toy must be covered by the EU Toy Safety Directive (2009/48/EC), however also puzzles with more than 500 pieces are allowed. Typical toys that qualify for a Nordic Swan Ecolabel include rattles, teething toys and activity toys made of various materials for children under the age of 3, plus building blocks, dolls, soft toys, puzzles, spades, cars, doll's houses and train sets. Ride-on cars and balance bikes for children are eligible for the Nordic Swan Ecolabel if they are covered by the EU Toy Safety Directive.

Products not covered by the EU Toy Safety Directive cannot be Nordic Swan Ecolabelled in accordance with the toy criteria, except for puzzles with more than 500 pieces. However, if they fall within other product categories for which ecolabelling criteria are already developed, the products can be Nordic Swan Ecolabelled accordingly. Such criteria might include Office and hobby supplies (writing instruments, erasers and hobby paint) and Textiles. Notepads and drawing, colouring and children's books can be Nordic Swan Ecolabelled under the criteria for Printing companies and printed matter. Activity toys (defined as toys for private use where the support structure is stationary while the activity takes place, e.g. slides, roundabouts, swings and climbing frames) are Nordic Swan Ecolabelled under the criteria for Outdoor furniture, playground and park equipment. If there is any doubt about which criteria an activity toy belongs to, contact Nordic Ecolabelling. Nordic Ecolabelling reserves the right to determine the criteria to be used for any product application. For further information, please contact the Nordic Ecolabelling organisation in the relevant country (see addresses at the beginning of the document).

What cannot carry the Nordic Swan Ecolabel?

Electronic toys (incl. toys that contain batteries), single-use toys (incl. stickers and temporary tattoos), balloons, water balloons, chemistry sets, slime toys, soap bubbles, other toys containing liquids (including encapsulated liquids) and toys attached to/included food are not eligible for the Nordic Swan Ecolabel.

Hobby supplies cannot be Nordic Ecolabelled according to these criteria. Hobby materials are materials used for hobbies, crafting and pictorial art. Examples of such materials include modelling wax, fingerpaints, clay, plaster and chemistry sets. See the criteria for the Nordic Swan Ecolabelling of Office and hobby supplies for details on the products that fall within their category.

Appendix 1 in the criteria provides an overview of the product areas that are not regarded as toys under the EU Toy Safety Directive (2009/48/EC), including babies' soothers, fireworks, sports equipment and bicycles designed for sport or for use on public roads.

6.2 Definitions

Terms	Definition
Ingoing substances and impurities	The requirements in the criteria document and accompanying appendices apply to all ingoing substances in the chemical product. Impurities are not regarded as ingoing substances and are exempt from the requirements. Ingoing substances and impurities are defined below, unless stated otherwise in the requirements Ingoing substances: all substances in the chemical product, including additives (e.g. preservatives and stabilisers) 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 raw material/ingredient and/or in the chemical product in concentrations less than 100 ppm (0,0100 w-%, 100 mg/kg). Impurities in the raw materials exceeding concentrations of 1,0 % are always regarded as ingoing substances, regardless of the concentration in the 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.
Material elements	In these criteria, material elements may be “metal elements”, “plastic elements”, “wooden elements” and so on, plus “product elements” that might comprise multiple materials as described in the relevant section. Material element is the designation of a unique material element in the final toys. Different material elements have various different supply chains or are produced differently, but may be of the same material type. For example, textiles that are only distinguished by dyeing or printing by the same supplier are considered to be different textile elements. For example, polyester from supplier 1 is one textile element, and polyester from supplier 2 will thus be another textile element. Two different types of polyester from the same supplier will also be separate textile elements. See also the definition of “Material type”.
Material type	In these criteria, the material type may be “cotton”, “wood”, “steel”, etc. but could also be “metal”, for example. “Material type” differs from “material element” in that suppliers, supply chains and production processes are not relevant for “material type”. Here, only the type of material is relevant. Material types could e.g. be “plastic” or “metal”, but could also be more specific materials within these categories, such as “bio-based plastic”, “steel” and so on. The criteria may therefore contain requirements for both material elements and material types, often with regard to when various requirements apply. See also the definition of “Material elements”.
Material element/type with which the child is in contact	“Material element/type with which the child is in contact” means an element that the child might come into contact with during normal or expected use of the toy. Example of elements with which a child cannot come into contact: encapsulated elements or elements that are covered, so that it is impossible for the child to come into contact with them. All other elements that the child is able to touch are defined as elements with which the child is in contact.
Recycled material	Recycled material is defined in the requirement according to ISO 14021, which uses the following two categories: “**Pre-consumer/commercial**” is defined as material that is reclaimed 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. For plastic 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**” recycled material is defined by ISO 14021 as follows: “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.
Nanomaterials	The European Commission’s definition from 18 October 2011 (2011/696/EU): Nanomaterials: A natural, incidental or purposely manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for at least 50% of the particles in the number size distribution, one or more external dimensions are in the size range of 1–100 nm.

6.3 Triviality and requirement limits

The Toy product group comprises products with many different material compositions. The criteria therefore set requirements for many different materials, but normally there will only be a selection of these materials in a single product. It is therefore important to note which requirements are triggered for the individual product.

For requirement limits for materials, and for the toy, see the table below and the intro text in the relevant material section and/or requirement.

A material type that is not subject to requirements in these criteria may account for no more than 1% by weight of the toy. In total, the toy may contain a maximum of 2% by weight of material types for which there are no requirements. Toys for children under the age of 3 must not contain any material type other than those covered by requirements in these criteria.

Table; Overview of triggers for requirements in the criteria

Material or requirement type	**Focus area**	**Req. no.**	**Requirement triggered by:** **- wt% of material type*** in the toy **- wt% of material element*** in the toy **- Children in contact with element//type*** * See definition in section 6.2
Description of toy	Description of toy	O1	Applies to all toys
EU Toy Safety Directive	EU Toy Safety Directive	O2	
Fragrances/aroma compounds	Fragrances/aroma compounds	O3	
Antibacterial substances	Antibacterial substances	O4	
Nanomaterials	Nanomaterials	O5	
Adhesives used in toy	Adhesives used in toy	O6-O9	
Plastic, foam, silicone and rubber	Information on polymer type and surface treatment	O10	Irrespective of amount
	Polymer types and plastic composites - Ban	O11	
	Tests Safety of toys EN 71	O12	
	Labels/stickers	O13	
	Surface treatment	O14-O16	
	Recycled plastic – Source	O17	Child in contact with it, or over 5 wt% of material type in the toy
	Polycarbonate plastic - Migration of Bisphenol A	O18	
	Substances added to polymer	O19-O20	
	Pigments	O21	
	Residual monomers in plastics, foams and elastomers	O22	
	Silicones – D4, D5 and D6	O23	
	PAHs	O24	
	Foam – Emissions	O25	
	Foam – Emission of formamide	O26	
	Foam EVA, PUR and polystyrene – Blowing agents and isocyanate compounds	O27	
	Elastomers – Nitrosamines and nitrosatable substances	O28	
	Elastomers – 1,3-butadiene	O29	
	Bio-based polymers – Raw material	O30	Over 10 wt% of material type in the toy
Textiles, hide/skins and leather	Tests Safety of toys EN 71	O31	Irrespective of amount
	Ecolabelled textiles, hide/skins and leather	O32	
	Oeko-Tex certified textiles and leather	O33	

	Hides/skins and leather – Origin	O34	
	Textile – Formaldehyde	O35	
	Hides/skins and leather – Formaldehyde	O36	
	Hides/skins and leather – Chromium, cadmium and lead	O37	
	Reused textiles, hide/skins and leather – Sources	O38	
	Halogenated flame retardants	O39	Over 5 wt% of material element in the toy
	Chemical products – Chemical overview	O40	
	Chemical products – Classification	O41	
	Bleaching agents	O42	Over 30 wt% of material element in the toy
	Cotton fibre	O43	Over 30 wt% of material type in the toy
	Synthetic fibre – Fossil origin	O44	
	Synthetic fibre – Bio-based origin	O45	
	Wool and other keratin fibres	O46-O47	
Filler materials	All types	Section 6.8	Irrespective of amount, but see also description in section 6.8
	Feathers and down	O48-O49	Irrespective of amount
	Other renewable raw materials – Microbial cleanliness	O50	
	Chemical additives and treatments	O51	
Metal	Copper, tin, lead and cadmium – Ban	O52	Irrespective of amount
	Tests Safety of toys EN 71	O53	
	Surface treatment	O54-O56	
	Metal coating	O57	
	Metal coating – Facility	O58	Over 5 wt% of material type in the toy
	Metal coating – Facility	O59	Over 10 wt% of material type in the toy
	Production of steel	O60	Over 30 wt% of material type in the toy
	Production of aluminium	O61	
Paper, paperboard and cardboard	Tests Safety of toys EN 71	O62	Irrespective of amount
	Printing and surface treatment	O63-O65	
	Fibre raw materials	O66	Over 10 wt% of material type in the toy
Solid wood and bamboo	Tests Safety of toys EN 71	O68	Irrespective of amount
	Tree species	O69	
	Reused/recycled elements	O70	
	Surface treatment	O71-O73	
	Traceability and certification	O74	Over 10 wt% of material type in the toy
Wood-based panels	Tests Safety of toys EN 71	O75	Irrespective of amount
	Surface treatment	O76	
	Tree species	O77	
	Chemical products – Panel production	O78-O80	Over 5 wt% of material element in the toy
	Formaldehyde-emission	O81	
	Traceability and certification	O82	Over 10 wt% of material type in the toy

Spare parts	Spare parts	O83	Applies to: - Toys designed to carry a child's weight and that have moving parts - Toys sold to institutions, comprising individual parts that are necessary for the function or the original play concept
Packaging	Volume	O84	Applies to all toys
	Plastic types – Ban	O85	
	Metal	O86	
	Recyclability and recycled materials	O87	
	Design for recycling	O88	
	Information on sorting for recycling	O89	
Transport and storage	Transport and storage	O90	Applies to all toys
Social and ethical requirements	Social and ethical requirements	O91	Applies to all toys
Licence maintenance	Annual controls and assessments of suppliers	O92	Applies to all toys
	Customer complaints	O93	
	Traceability	O94	

6.4 Description of the toy product

The toy products, material composition, manufacturing process, suppliers, etc. must be described to aid the assessment of which requirements need to be met.

Background to the requirement O1 Description of toy

The wording of the requirement has been changed in this generation of the criteria, and single-use toys have been excluded from the product group.

Toys must be covered by the EU Toy Safety Directive (2009/48/EC)), however also puzzles with more than 500 pieces are allowed.

Nordic Ecolabelling does not wish to promote the use of toys that can only be used once and are then discarded. The total environmental impact of toys depends, in part, on how long they remain in use. Toys whose main function can only be used once are therefore not eligible for the Nordic Swan Ecolabel.

The criteria for the Nordic Swan Ecolabelling of Toys should instead encourage products that fit into a circular economy. Here, the focus is on a long use phase and materials that we wish to recycle.

To gain an overview of the toys to be ecolabelled and of the production chain, the applicant is required to provide information concerning the product, including trade name, production site, overview of production processes and suppliers, and where the products are to be sold.

It is also required that the product shall be described and the material composition be stated. This is important to be able to assess which requirements in the criteria are triggered and must thereby be documented for the individual toy product.

6.5 General requirements – applicable to all toys

Requirements in this section must be met by all types of toys, irrespective of their materials or amounts thereof.

6.5.1 EU Toy Safety Directive

Background to the requirement O2 EU Toy Safety Directive

The wording of the requirement text has been amended, but otherwise the requirement remains unchanged in this generation of the criteria.

Appendix C of the EU Toy Safety Directive (2009/48/EC) covers chemicals used in toys for children under the age of 3 or toys intended to be placed in the mouth. Chemical requirements are added to or amended in Appendix C on an ongoing basis[13], and these requirements are then added to the EU Toy Safety Directive by means of separate directives/regulations.

In addition to this requirement, these criteria also ask for relevant test reports in line with the safety requirements in the EN 71 standards under subsequent requirements for the different materials.

6.5.2 Perfume, antibacterial substances and nanomateriale

Background to the requirement O3 Perfume/fragrances

The requirement is identical to the previous generation of the criteria.

Perfume and other fragrances from sources such as essential oils may contain a number of allergens or carcinogenic substances. To avoid unnecessary health effects from this type of substance the use of perfume and other fragrances is prohibited.

Background to the requirement O4 Antibacterial substances

The requirement is new in this generation of the criteria.

Antibacterial or disinfectant properties are not desirable in ecolabelled products. Nordic Ecolabelling has therefore introduced a requirement prohibiting the addition of chemical products and nanomaterials with antibacterial or disinfectant properties to the finished toy. These substances are increasingly being added to consumer products – everything from textiles to toys and kitchen equipment. There has been a particular concern that emissions of nanosilver into wastewater and other dispersal could eliminate desirable bacteria and cause resistance in bacteria. Another example of antibacterial substances that must not be used are organotin compounds and chlorophenols, which are used, for example, during the transport and storage of textiles.

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

[13] http://ec.europa.eu/growth/sectors/toys/safety/legislation_en

Furthermore, there is a requirement prohibiting claims about any antibacterial effect in conjunction with the marketing of the toy, even if the effect is naturally inherent in the material (e.g. bamboo). The requirement has been set because Nordic Ecolabelling does not wish to encourage a trend towards toys with antibacterial properties, since this can lead to bacterial resistance and in any case is unnecessary for toys, since general cleaning of toys is sufficient. Annex II section V of the EU Toy Safety Directive (2009/48/EC) states that toys must be designed and manufactured in such a way as to meet hygiene and cleanliness requirements in order to avoid risk of infection, sickness or contamination. In addition, a toy intended for use by children under 36 months must be designed and manufactured in such a way that it can be cleaned. Hygiene measures beyond those required by the EU Toy Safety Directive are not necessary, and Nordic Ecolabelling does not wish to contribute to any trend for antibacterial effects in toys, hence the introduction of a ban on claims in this respect.

Background to the requirement O5 Nanomateriale

The requirement is adjusted in this generation of the criteria.

Due to their small size and large surface area nanoparticles are usually more reactive and may have other properties compared to larger particles of the same material.

There is concern among public authorities, scientists, environmental organisations and others about the lack of knowledge regarding the potential detrimental effects on health and the environment.[14],[15],[16],[17],[18],[19],[20],[21],[22] Surface coatings and other modifications can also alter their properties.

Nordic Ecolabelling takes the concerns about nanomaterials seriously and applies the precautionary principle to exclude nanomaterials/-particles in the products.

[14] 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

[15] Parliamentary Assembly of the Council of Europe (2017 (2013)) Nanotechnology: balancing benefits and risks to public health and the environment. http://semantic-pace.net/tools/pdf.aspx?doc=aHR0cDovL2Fzc2VtYmx5LmNvZS5pbnQvbncveG1sL1hSZWYvWDJILURXLWV4dHIuYXNwP2ZpbGVpZD0xOTczMCZsYW5nPUVO&xsl=aHR0cDovL3NlbWFudGljcGFjZS5uZXQvWHNsdC9QZGYvWFJlZi1XRC1BVC1YTUwyUERGLnhzbA==&xsltparams=ZmlsZWlkPTE5NzMw

[16] 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.

[17] 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

[18] 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

[19] 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

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

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

[22] 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

The European Commission recommendation for a definition of nanomaterials of 18 October 2011 (2011/696/EU)[23] is used.

Most nanomaterials on the market today have either been in use for decades, or are more recently enginereed nanoforms of previously existing materials.[24] For example, nanoparticles of carbon black and amorphous silica (SiO2) have been used for the last century. Titanium dioxide, TiO2, has long been used as a colourant in the bulk form, but is now manufactured as nanomaterial for other purposes.[25] Other types of engineered nanomaterials are expected to come onto the market in the future.[26]

Polymer dispersions can technically be considered nanomaterials: The EU Commission's follow-up report to the other "Regulatory Review on Nanomaterials" from 2012[27] states that solid nanomaterials dispersed in a liquid phase (colloid) should be considered nanomaterials according to the EU Commission recommendation. Polymer dispersions are not exempt from the requirement as they are not considered relevant for toys.

The requirement has the following exceptions:

Pigments

Pigments are finely ground, insoluble particles that are used to give products a specific colour. There are no substitutes that can fulfill pigments' function as colourants in paints, ink, textile dye, materbatch etc. and many pigments consist partly or entirely of nanoparticles. Thus, nano-sized pigments are exempted. Although clear evidence-based conclusions of the safety of nano-pigments cannot be drawn,[28] the release by weathering of facades is very limited, and the nanoparticles are most likely mainly embedded in the paint matrix rather than released as single nanoparticles[29],[30].

Pigments impart colour by selective absorption and scattering of light. Paint pigments consist of particles of individual crystals up to aggregates of multiple crystals[31]. It is generally more efficient to use pigments with smaller particles than larger ones to obtain the same colour.

[23] https://eur-lex.europa.eu/legal-content/SV/TXT/PDF/?uri=CELEX:32011H0696&from=EN
[24] EU observatory for nanomaterials and European Chemicals Agency (2019) What are next generation nanomaterials and why are regulators interested in them? Information note. https://euon.echa.europa.eu/documents/23168237/24095696/190919_background_note_next_gen_materials_en.pdf/b9178324-5a69-2e4b-1f2b-aac2c2845f45
[25] European commission, COMMISSION STAFF WORKING PAPER, Types and uses of nanomaterials, including safety aspects, Accompanying the [..] second regulatory review of nanomaterials, SWD(2012) 288 final
[26] EU observatory for nanomaterials and European Chemicals Agency (2019) What are next generation nanomaterials and why are regulators interested in them? Information note. https://euon.echa.europa.eu/documents/23168237/24095696/190919_background_note_next_gen_materials_en.pdf/b9178324-5a69-2e4b-1f2b-aac2c2845f45
[27] Communication from the commission to the european parliament, the council and the european economic and social committee, Second Regulatory Review on Nanomaterials, COM(2012) 572 final
[28] 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.
[29] Mackevica A, Hansen, SF (2016) Release of nanomaterials from solid nanocomposites and consumer exposure assessment – a forward-looking review. Nanotoxicology, 10(6), 641–653. https://doi.org/10.3109/17435390.2015.1132346
[30] Nowack B, Hincapié I, Sarret G, Larue C, Legros S (2013) Environmental fate of nanoparticles from façade coatings. NanoHouse Dissemination report Nº 2013-03. https:// DOI: 10.13140/2.1.2206.3040
[31] Coatings Handbook; Thomas Brock, Michael Groteklaes, Peter Mischke; 2000

Inorganic pigments used in the paint industry that may occur in nano-size include carbon black and iron oxides[32]. The carbon black used in paint is very finely ground and has a particle size of around 10–30 nm[33]. Iron oxide pigment may entirely comprise particles of nano size, or only a fraction of the particles may be nano. Inorganic nano pigments are also added to products for a wide range of purposes other than colouring. Nano-titanium dioxide is for example used to impart self-cleaning effect in paints.

Naturally occurring inorganic fillers

Traditional fillers are permitted.

Naturally occurring fillers from for example chalk, marble, dolomite and lime are exempted from registration according to appendix V, point 7 in REACH, see below, as long as these fillers only are physically processed (milled, sieved and so on) and not chemically modified.

They are also exempted from registration in the Danish Environmental Protection Agency's draft to the Order on a register of mixtures and articles that contain nanomaterials and the requirement for producers and importers to report to the register[34].

In REACH Regulation (1907/2006/EF[35]) it is in article 2, point 2, point 7b:

"The following shall be exempted from Titles II, V and VI:
(Title II covers the registration of substances, Title V covers downstream user and Title VI covers evaluation)
(b) substances covered by Annex V, as registration is deemed inappropriate or unnecessary for these substances and their exemption from these Titles does not prejudice the objectives of this Regulation;"

Annex V Exemptions from the obligation to register in accordance with article 2(7)(b):
"The following substances which occur in nature, if they are not chemically modified. Minerals, ores, ore concentrates, cement clinker, natural gas, liquefied petroleum gas, natural gas condensate, process gases and components thereof, crude oil, coal, coke."

An exemption has been added for inorganic fillers as long as they are covered by appendix V, point 7 in REACH.

Synthetic amorphous silica

Synthetic amorphous silica (SAS) is an intentionally manufactured silicon dioxide (SiO2) form that has been used in industrial, consumer and pharmaceutical products for decades[36]. SAS is a nanomaterial, under the European Commission definition[37] and is exempted from the requirement due to a lack of alternative substances.

[32] Industrial Organic Pigments; W. Herbst, K. Hunger; Third edition 2004; pp. 120–124
[33] Coatings Handbook; Thomas Brock, Michael Groteklaes, Peter Mischke; 2000; p. 128
[34] Link to Miljøstyrelsens consultation: http://hoeringsportalen.dk/Hearing/Details/16910 (visited 20/1-14)
[35] Link to REACH-directive: http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_396/l_39620061230en00010849.pdf
[36] https://www.asasp.eu/images/Publications/Nano_-_SAS_factsheet_-_201209.pdf
[37] COMMISSION RECOMMENDATION of 18 October 2011 on the definition of nanomaterial (2011/696/EU)

Aluminium oxide

Aluminium oxide is usually used in powder coating in order to get good fluidisation properties. There Studies have investigated the risks associated with nanoparticles in paint, laquers and sealants, e.g. the NANOKEM- and NanoHouse projects. The conclusion in both projects was that wear and tear of painting does not lead to release of free nanoparticles, but only particles fixed in a matrix of paint.

6.5.3 Adhesives used in toy

The requirements in this section refer to adhesives used to glue the elements of the toy together. The requirements also include adhesives for printed matter, boxes and the like, which are used during the use of the toy (see section 6.10 for description).

Adhesives used in the production of materials in the toy, such as wood-based panels, must instead meet the chemical requirements for the relevant material, as set out in these criteria.

Background to the requirement O6 Classification of adhesives

The requirement has been changed in this generation of the criteria.

The requirement is included to ensure that the toy contains no adhesives classified as harmful to health or the environment. Adhesives may be used to glue many different material types in toys. Since the previous generation of the criteria, the hazard statement “Acute toxicity” has been expanded to now also prohibit classifications H302, H312 and H332, the hazard statement “Specific target organ toxicity” has been expanded to include H371 and H373, and “Toxic for reproduction” now includes H362. “Hazardous to the ozone layer” EUH 059 has been replaced by H420. “Harmful to aquatic life” H412 and H413 have been removed.

Background to the requirement O7 CMR substances in adhesives

In comparison with the earlier generation of the criteria, the requirement has been expanded to also prohibit substances classified as Lact. H362. The requirement has also been tightened such that the CMR substances must not actively be added in any amount, see definition of ingoing substances in section 6.2.

The requirement has been included to ensure that no carcinogenic, mutagenic and reprotoxic substances (CMR substances) are added to the adhesive. This is relevant with regard to the child’s exposure to the adhesive and employees’ exposure during production of the toy.

Titanium dioxide (TiO_2)

On February 18, 2020, the European Commission published the decision that TiO_2 will be classified as a suspected carcinogen (Category 2) upon inhalation under the CLP Regulation. The classification has been met with criticism because the risk that gives rise to the hazardous property according to CLP concerns inhalation and powder form and not the substance itself. The classification of titanium dioxide as carcinogenic by inhalation is only applicable to mixtures in the form of powders containing at least 1% of titanium dioxide particles which are in the form of or incorporated into particles having an aerodynamic diameter of ≤ 10 µm. This means that if TiO_2 or TiO_2 mixtures are not 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 products.

In August 2025, the EU Court of Justice upheld the annulment of the harmonised Carc. 2 (H351i) classification of TiO_2. Since TiO_2 is no longer CMR classified, the exemption from the requirement is removed, but TiO_2 can still be used in toys.

Isocyanates

PUR or polyurethane adhesive may be used as a single or two-component adhesive and is a variant of hot-melt adhesive that cures permanently through a chemical reaction that involves isocyanates. There is currently no replacement for isocyanates in PUR adhesive, which is why the exemption has been retained. A similar exception can be found in the Nordic Swan Ecolabelled Printing companies and printed matter generation 6.

For further background regarding isocyanates, see under requirement O27.

The requirement in relation to the EU Toy Safety Directive – Appendix C

Appendix C of the EU Toy Safety Directive (2009/48/EC) covers chemicals used in toys for children under the age of 3 or toys intended to be put in the mouth. Chemical requirements are added to or amended in Appendix C on an ongoing basis[38], and these requirements are then added to the EU Toy Safety Directive by means of separate directives/regulations. This requirement O7 covers the following substances for which there are requirements in Appendix C as of May 2021:

- Directive (EU) 2015/2115 concerning Formamide:
  Formamide is classified as H360. See also requirement O26.
- Directive (EU) 2017/774 concerning Phenol:
  Phenol classifications include H341. See also requirement O22.
- Directive (EU) 2017/898 concerning Bisphenol A:
  Bisphenol A classifications include H360. See also requirements O8 and O22.
- Directive (EU) 2019/1929 concerning Formaldehyde:
  Formaldehyde classifications include H350 and H341. See also requirements O9, O22, O25, O35, O36 and O81.

Background to the requirement O8 Prohibited substances in adhesives

The requirement has been changed in this generation of the criteria:

- The ban on endocrine disruptors has been further tightened. Previously, the requirement was limited to substances that are considered to be potentially endocrine disruptors in category 1 or 2 on the EU's priority list, but is now substances on the EU member state initiative "Endocrine Disruptor Lists", List I, II and III.
- The specific ban on PFOA (perfluorooctanoic acid and salts/esters thereof) and PFOS (perfluorooctane sulphonate and compounds thereof) has been removed. PFOA and PFOS remain prohibited but are covered by the ban on halogenated organic compounds.
- The specific ban on the biocides chlorophenols (their salts and esters) and dimethyl fumarate has been removed. Chlorophenols are a fungicide used to combat fungal growth on wood. Chlorophenols (their salts and esters) are still prohibited but are covered by the ban on halogenated organic compounds.
  Dimethyl fumarate (DMF) is a mould and fungus killing agent that can be used to protect furniture or shoes, for example on long journeys.
  DMF can cause serious allergic reactions and is currently regulated in the EU through a ban on imports and sales of goods that contain over 0.1 mg/kg or

[38] http://ec.europa.eu/growth/sectors/toys/safety/legislation_en

where DMF has been declared[39]. Chlorophenols and DMF are also prohibited in the section on transport of toys and semi-manufactures.

- The specific ban on aziridine and polyaziridines has been removed. However, these remain prohibited. Aziridine and polyaziridines are, for example, classified as H350 (carcinogenic) and H340 (mutagenic), and thus are covered by the ban on CMR substances (carcinogenic, mutagenic and reprotoxic).
- Bisphenol A, bisphenol B, bisphenol F, bisphenol S, bisphenol AF, butyl hydroxytoluene (BHT) and butyl hydroxyanisole (BHA) have been added to the list of prohibited substances.
- The ban on phthalates has been further tightened. The requirement was previously limited to phthalates in Annex XVII of the REACH Regulation. The purpose of the tightening is to restrict other phthalates with the same general phthalate structure (ortho-phthalates), which may have similar properties to the previously restricted phthalates, but whose endocrine disrupting properties have not yet been assessed.
- The heavy metals antimony and arsenic have been added to the requirement concerning pigments and additives.
- The requirement limits for volatile aromatic hydrocarbons (VAH) and volatile organic compounds (VOC) have been tightened. The requirement concerning volatile organic compounds (VOC) in adhesives remains unchanged in this generation of the criteria.

Substance lists:

SVHC substances on the EU Candidate List
The requirement has been expanded to include a ban on the use of Substances of Very High Concern (SVHC) on the Candidate List in the chemical composition. Article 57 of REACH defines the criteria used for assessing substances as Substances of Very High Concern (SVHC). The link to the list is here: http://echa.europa.eu/sv/candidate-list-table.

PBT substances and vPvB substances
PBT substances are Persistent, Bioaccumulative and Toxic. vPvB substances are very Persistent and very Bioaccumulative. These substances are prohibited because they have persistently harmful effects on the environment.

Endocrine disrupting substances
Potential endocrine disruptors are compounds that can negatively affect the hormonal balance in humans and animals. Hormones control a number of vital processes in the body and are particularly important for development and growth in humans, animals and plants. Changes in the hormone balance can have adverse effects, especially when it comes to hormones that affect sexual development and reproduction. Although effects in wildlife populations have been confirmed, there are evidence that also points to effects in humans. At present, endocrine disrupting properties are not a hazard classification according to the CLP Regulation.

In addition, harmonized scientific criteria for the identification of endocrine disruptors across different parts of EU legislation are lacking. Few endocrine disruptors have been identified in the legislation so far, compared to the number of potential substances with such properties. Under these circumstances, Nordic Ecolabelling excludes identified and potential endocrine disruptors listed on the "Endocrine Disruptor Lists" at www.edlists.org, which is based on the EU member state initiative.

[39] https://www.retsinformation.dk/Forms/R0710.aspx?id=124428#Not1

A substance listed in List I, II or III is excluded. Licensees are responsible for keeping track of updates of the lists, so that their ecolabelled products meet the requirement through the validity of the license. Nordic Ecolabelling acknowledges the challenges associated with new substances that are introduced in Lists II or III. We will evaluate the circumstances and possibly decide on a transition period from case to case.

Exception for 3-iodo-2-propynyl butylcarbamate (IPBC): Exempted due to its essential biocidal function as a preservative and film protector. Its use is regulated through specific concentration limits, ensuring controlled application and minimised exposure. The exemption prevents burden shifts by allowing effective preservation within strict limits, reducing the risk of product degradation, microbial growth, and the need for more hazardous or less efficient alternatives.

Halogenated organic compounds
Halogenated organic compounds (compounds of chlorine, bromine, fluorine or iodine) include many substances harmful to health and the environment, that are very toxic to aquatic life, carcinogenic or harmful to health in other ways. Halogenated organic compounds have low degradability in the environment, which increases the risk of harmful effects from the substances. Halogenated organic compounds include among others chloroparaffins, halogenated flame retardants, per- and polyfluorinated compounds (PFC) and chlorinated organophosphates.

Chloroparaffins are a group of substances used as plasticisers and flame retardants in plastic and rubber. Chloroparaffins are not firmly bound to the plastic, which means that they might slowly be released from the product, for example due to touch and evaporation.

Chlorinated organophosphates are a group of compounds used as flame retardants and as plasticizers. Nowadays, there is an increased concern for organophosphate-based flame retardants (OPFR) due to high production and use in connection with the phasing and the strict regulation of the use of brominated flame retardants. Chlorinated organophosphates are added additively, which means that it is not chemically bound and thus the likelihood is that they are released to the environment. Chlorinated organophosphates such as TCEP (CAS: 115-96-8), TCPP (CAS: 13674-84-5) and TDCP (CAS: 13674-87-8) decompose slowly in nature and are suspected to be carcinogenic and thus banned.

Isothiazolinones
Isothiazolinones are used as preservatives in liquid products such as adhesives and paints. The most commonly used isothiazolinones include 1,2-benzisothiazol-3(2H)-one (BIT), 5-chloro-2-methyl-isothiazolin-3(2H)-one (CMI) and 2-methylisothiazolin-3(2H)-one (MI). These preservatives are classified as allergenic and environmentally harmful.

Bisphenol A, B, F, S and AF
Bisphenol A (BPA) is on the Candidate List for Substances of Very High Concern (SVHC) and is classified as reprotoxic H360. Bisphenol A is used, for example, in the following relevant areas and products: Various plastic and epoxy mixes, paints, varnishes, adhesives (binder, hardener) and polyol for the production of polyurethane. Bisphenol A may be released into the environment from the production process, and the substance has certain endocrine effects in both fish and snails.

The main source of terrestrial exposure is the spreading of sludge from wastewater treatment plants. Since bisphenol A has certain endocrine disrupting effects in animal trials, the use of this substance is prohibited in these criteria. Studies show that

bisphenol S (BPS) and bisphenol F (BPF) are just as hormonally active as bisphenol A (BPA) and have endocrine disrupting effects[40]. Bisphenol AF (BPAF) is listed on the "Endocrine Disruptor Lists" at www.edlists.org in List III. Bisphenol B (BPB) is expected to meet the criteria for substances classified as carcinogenic 1A and 1B, mutagenic or toxic to reproduction.

Bisphenol B is being investigated by ECHA for these endocrine disrupting properties and is likely to be identified as SVHC and included in the EU candidate list in the near future.

Alkylphenols, alkylphenol ethoxylates and other alkylphenol derivatives

Alkylphenol ethoxylates (APEO) and alkylphenol derivatives, i.e. substances that release alkylphenols on degradation.

APEOs are sometimes found in binders, dispersants, thickeners and so on. APEOs have a number of problematic properties relating to health and the environment.

APEOs are not readily biodegradable, they have a tendency to bioaccumulate, and they are found in high concentrations in wastewater sludge. The degradation products of APEO, alkylphenol and APEO with one or two ethoxy groups are very toxic to aquatic life. Some alkylphenols are suspected of being endocrine disruptors. Alkylphenols and Bisphenol A are among the more potent chemicals with oestrogen effects that may occur in wastewater.

Butyl hydroxytoluene (BHT) and butyl hydroxyanisole (BHA)

BHT and BHA are antioxidants and are used in many different products to protect materials such as plastics, polymers, paints, adhesives and coatings.

BHT and BHA do not have an official harmonized classification and are not on the EU list of suspected endocrine disruptors. However, BHT is suspected to be endocrine disruptor even though it is not on the EU list. BHT and BHA are often self-classified as environmentally hazardous with H410 and H400, a few even as CMR[41]. BHT is on the EU CoRAP (Community rolling action plan) list because of potential hormone disruptive effects and widespread use[42], which means that "a Member State has evaluated or will evaluate it over the coming years". BHT is on the list. BHT is also on ChemSec's SIN list due to endocrine disrupting effects[43].

Phthalates

Phthalates are mainly used as softeners for PVC, but can also be used as stabilisers, film formers, emulsifiers, lubricants, binders and many other functions, which means that they end up occurring in numerous products such as adhesives, personal care products (e.g. denaturing products for perfume spirit), toys, packaging and much more.

Some phthalates are on the EU's Priority List of substances that require further investigation for endocrine disrupting effects – and some have already been shown to have endocrine disrupting effects[44].

[40] Bisphenol S and bisphenol F: A Systematic Review and Comparison of the Hormonal Activity of Bisphenol A Substitutes. Rochester, J.P and Bolden, A.L, Environmental Health Perspectives, 5. March 2015.
[41] https://www.echa.europa.eu/fi/web/guest/brief-profile/-/briefprofile/100.004.439.
[42] https://echa.europa.eu/sv/information-on-chemicals/evaluation/community-rolling-action-plan/corap-table/-/dislist/details/0b0236e180b8839d.
[43] http://sinlist.chemsec.org/chemical/128-37-0
[44] https://www2.mst.dk/Udgiv/publications/2013/06/978-87-93026-22-3.pdf

Heavy metals
Heavy metals are harmful to health and have a negative impact on the environment. This makes it relevant to ensure that raw materials used in the product group do not contain the heavy metals lead, cadmium, chromium (VI), mercury, antimony and arsenic, and their compounds.

Lead is a toxic heavy metal that is accumulated in nature and in human beings. This means that even small quantities of lead can be harmful to health.

Cadmium and cadmium compounds are acutely and chronically toxic for human beings and animals. Most cadmium compounds are also carcinogenic.

Chromium (III) and chromium (VI) are used for e.g. chrome plating, paints and pigments. Chromium (VI) has harmful effects, as it is carcinogenic and allergenic.

Mercury occurs as inorganic and organic chemical compounds and is one of the most dangerous environmental toxins. Mercury is a threat to the environment and to human health. The organic mercury compounds are particularly toxic. Mercury compounds are extremely toxic to aquatic life and to mammals.

Antimony can be self-classified as harmful to health (H373) and environmentally harmful (H412), as well as being suspected of causing cancer (H351) and being reproductive toxicity (H360). Arsenic is toxic and environmentally harmful (H301, H331, H400 and H410).

Volatile aromatic hydrocarbons (VAH)
Volatile aromatic hydrocarbons (VAH) have harmful effects on health and the environment and may cause damage to DNA. Volatile organic compounds in which one or several benzene rings are included are called volatile aromatic hydrocarbons (VAH), and are very stable. The expression “aromatic hydrocarbons” describes, among other things, benzene, toluene, mixed xylenes, orthoxylene, paraxylene and metaxylene (commonly known as BTX). Benzene is used to make styrene, cumene and cyclohexane. Most toluene is used to make benzene, phenol and toluene diisocyanate.

Volatile organic compounds (VOC)
The requirement concerning volatile organic compounds (VOC) in adhesive is unchanged in this generation of the criteria. The requirement limit is in addition identical to the Nordic Swan Ecolabel criteria for Furniture and fitments generation 5.

The requirement in relation to the EU Toy Safety Directive – Appendix C
Appendix C of the EU Toy Safety Directive (2009/48/EC) covers chemicals used in toys for children under the age of 3 or toys intended to be placed in the mouth. Chemical requirements are added to or amended in Appendix C on an ongoing basis[45], and these requirements are then added to the EU Toy Safety Directive by means of separate directives/regulations. This requirement O8 covers the following substances for which there are requirements in Appendix C as of May 2021:

- Directive 2014/79/EU concerning TCEP, TCPP and TDCP:
  The flame retardants TCEP (tris(2-chloroethyl)phosphate), TDCP (tris(2-chloro-1-(chloromethyl)ethyl)phosphate) and TCPP (tris(2-chloro-1-methyl)phosphate) are limited in the directive to 5 mg/kg each in toys[46]. TCEP is classified as Carcinogenic Category 2 and Reprotoxic Category 1B. TDCP is classified as

[45] http://ec.europa.eu/growth/sectors/toys/safety/legislation_en
[46] https://eur-lex.europa.eu/legal-content/DA/TXT/PDF/?uri=CELEX:32014L0079&from=EN

Carcinogenic Category 2. TCPP is not classified, but there are concerns that it may be carcinogenic. TCEP, TDCP and TCPP are halogenated flame retardants[47].
This requirement prohibits TCEP, TCPP and TDCP under the ban on halogenated organic compounds.

- Directive (EU) 2015/2116 concerning BIT:
  1,2-benzisothiazol-3(2H)-one (BIT) is used as a preservative in water-based toys. The directive limits BIT to 5 mg/kg in water-based toy materials. Water-based toys are not permitted in these criteria. There is also a requirement in these criteria that limits the amount of isothiazolinones in chemical products used in the manufacture of the Nordic Swan Ecolabelled toy. Isothiazolinones can be found in chemical products such as adhesives, varnishes and paints.
- Directive (EU) 2015/2117 concerning CMI/ MI, CMI and MI:
  5-chloro-2-methyl-isothiazolin-3(2H)-one (CMI) and 2-methylisothiazolin-3(2H)-one (MI) in a ratio of 3:1 (CAS no. 55965-84-9) (3) and the separate components CMI (CAS no. 26172-55-4) and MI (CAS no. 2682-20-4) are used as preservatives in water-based toys. The directive limits CMI/MI to 1 mg/kg, CMI to 0.75 mg/kg and MI to 0.25 mg/kg, all in water-based toy materials. Water-based toys are not permitted in these criteria. There are also requirements in these criteria prohibiting halogenated organic compounds and limiting the amount of CMI/MI and isothiazolinones in chemical products used in the manufacture of the Nordic Swan Ecolabelled toy. Isothiazolinones can be found in chemical products such as adhesives, varnishes and paints.
- Directive (EU) 2017/898 concerning Bisphenol A:
  Bisphenol A is directly prohibited in this requirement, and is also on the EU's Candidate List. See also requirement O22.

Background to the requirement O9 Formaldehyde in adhesives

The requirement has been changed in this generation of the criteria.

The requirement has been set to ensure the lowest possible exposure to formaldehyde, since it is classified as carcinogenic and allergenic. Compared with the previous generation of the criteria, the requirement limit has been tightened from 2000 ppm to 10 ppm in the finished adhesive. This makes the requirement limit identical to the limit in the criteria for Nordic Swan Ecolabelled Chemical building products and the criteria for Nordic Swan Ecolabelled Indoor paints and varnishes.

The requirement in relation to the EU Toy Safety Directive – Appendix C

Appendix C of the EU Toy Safety Directive (2009/48/EC) covers chemicals used in toys for children under the age of 3 or toys intended to be placed in the mouth. Chemical requirements are added to or amended in Appendix C on an ongoing basis[48], and these requirements are then added to the EU Toy Safety Directive by means of separate directives/regulations. Requirement O9 covers substances for which there are requirements in Appendix C as of May 2021:

- Directive (EU) 2019/1929 concerning Formaldehyde:
  Formaldehyde classifications include H350 and H341. See also requirements O7, O22, O25, O35, O36 and O81.

[47] https://eur-lex.europa.eu/legal-content/DA/TXT/PDF/?uri=CELEX:32014L0079&from=EN

[48] http://ec.europa.eu/growth/sectors/toys/safety/legislation_en

6.6 Plastic, foam, silicone and rubber

The requirements in this section concern material elements/types made of plastic, foam, silicone and rubber (natural and synthetic latex). Fossil, bio-based and recycled materials are covered.

Polymer materials used as textiles and filler materials are not subject to the requirements in this section, but must instead meet those in sections 6.7 and 6.8.

6.6.1 Requirements that apply irrespective of amount in product

The requirements in this section concern all material elements made of plastic, foam, silicone and rubber (natural and synthetic latex). See the definition of material element in section 6.2.

Background to the requirement O10 Information on polymer type and surface treatment

The requirement has been changed in this generation of the criteria.

The requirement has been set to gain an overview of the polymer types used in the toy, and whether these have been given a surface treatment. It is important to be able to judge which requirements in the criteria are triggered and thus need to be documented for the toy in question.

Background to the requirement O11 Polymer types and plastic composites – Ban

The requirement has been changed in this generation of the criteria.

The requirement is designed to ensure that PVC (polyvinyl chloride) and PVDC (polyvinyl dichloride) are not included in the product, and to give an overview of the types of plastic included and whether they have been given a surface treatment. PVC can be used as soft or hard PVC. PVDC is a type of PVC with double chlorine atoms. In addition to the health risk of phthalates in soft PVC, the waste treatment of PVC is particularly problematic.

Oxo-degradable plastic is conventional plastic (e.g. PE) containing additives (e.g. metal salts) that cause the plastic to begin degrading[49]. Oxo-degradable and biodegradable plastics must not be used, since they “contaminate and disturb” the other recycled plastic streams in the Nordic region. Biodegradable plastic should not be confused with plastic based on biopolymers, which are dealt with in requirement O30.

Nordic Ecolabelling here defines plastic composites as plastic mixed with/added to other substances or materials[50], which are insoluble in the plastic[51] and which disrupt/"contaminate" today's Nordic plastic recycling systems. The purpose of the requirement is to avoid plastic composites which interfere with the plastic recycling processes used in the Nordic countries and which reduce the quality of the recycled plastic.

Plastic composites can cause problems with identifying the type of plastic correctly when the NIR technology is used. With low fractions of other materials than plastic, the NIR technology can probably sort the plastic types correctly, but the plastic composites will continue to have a negative effect on the overall quality of the

[49] EU Plastics Strategy: https://ec.europa.eu/denmark/news/eu-strategi-plastic_da
[50] Plastindustrien: Komposit-plast | plast.dk
[51] Store Norske Leksikon: plastkompositter – Store norske leksikon (snl.no)

recycled plastic[52,53]. With this in mind, plastic composites are not permitted, even if the fractions of other materials are as low as 0.5%.

Calcium carbonate ($CaCO_3$, chalk) is allowed as it does not significantly reduce the quality of the recycled plastic. However, if the plastic is added calcium carbonate in quantities so that it does not float in water, then this plastic waste will sink in the sink-float separation plant, where waste plastic is sorted, and this plastic will therefore not be recycled[54]. Therefore, calcium carbonate should only be added in quantities so that the density of the plastic does not exceed 0.995 g/cm^3. TPE (Thermoplastic Elastomer) is exempted from the density requirement, so that calcium carbonate can be added in quantities making the density of the plastic exceeds 0.995 g/cm3. Correspondence with manufacturers has shown that amounts of calcium carbonate in TPE so that the density becomes higher may be necessary to achieve specifications for the TPE that are important for the toy, such as smoothness and avoiding stickiness. The exception only applies if the TPE amounts to max. 20% by weight of the toy.

Background to the requirement O12 Tests Safety of toys EN 71

The requirement has been made more specific in this generation of the criteria.

The purpose of the requirement is to ensure that tests in accordance with EN 71-3 and EN 71-9 have actually been performed, and that children are not exposed to the effects of harmful substances in toys. Test reports in accordance with EN 71-3 and EN 71-9 are to be submitted as documentation, showing which tests have been completed, the results and so on. In addition, the test laboratory must confirm compliance with requirements in EN 71-3 and EN 71-9 for the types of toys for which the application is being made. A simple statement of compliance with EN 71-3 and EN 71-9 is not sufficient documentation, as the aim of the requirement is to ensure that tests have been completed and comply with requirements in EN 71-3 and EN 71-9. The declaration of compliance with the requirements in EN 71-3 and EN 71-9 is used to help with the processing of the application.

EN 71-3: Toys – Safety requirements – Part 3: Migration of certain elements. This standard specifies requirements concerning the migration of certain metals and selenium. Migration of metals and selenium is to be tested in accordance with the methods described in EN 71-3.

EN 71-9: Toys – Safety requirements – Part 9: Organic chemical substances – Requirement. This standard specifies requirements for polymers with regard to the migration of certain monomers, certain VOCs and plasticisers, and inhalation of certain VOCs.

EN 71-9 applies to the following types of toys, where they contain polymers:
- Toys for children under the age of 3 that are intended to be placed in the mouth
- Toys or accessible parts of a toy with a mass of 150 g or less for children under the age of 3 that are intended for play with the hands
- Mouthpiece components in mouth-activated toys
- Inflatable toys with a surface area in excess of 0.5 m^2 when inflated
- Toys to wear over the mouth or nose
- Toys that children can crawl/get into

[52] https://plast.dk/wp-content/uploads/2019/12/Designguide-Genbrug-og-genanvendelse-af-plastemballager-til-de-private-forbrugere-online-version.pdf
[53] Dialog med to nordiske plastrecirkuleringsanlæg, 2020.
[54] The Association of Plastics Recyclers | HDPE Design Guidance (plasticsrecycling.org)

- Components of graphic instruments sold as toys or used in toys
- Toys or parts of a toy that imitate food
- Toys that imitate jewellery

EN 71-9 refers to EN 71-10 concerning sample preparation and extraction and EN 71-11 concerning analysis methods.

Materials composed of the monomers acrylamide (CAS No. 79-06-1), Bisphenol A (CAS No. 80-05-7), formaldehyde (CAS No. 50-00-0) and phenol (CAS No. 108-952) shall be tested in accordance with standard EN 71-9 and meet the requirement. For styrene, see specific requirement O22 on migration of residual monomers in plastics, foams and elastomers.

Background to the requirement O13 Labels/stickers

The requirement is new in this generation of the criteria.

Labels/stickers in polyethylene (PE) are permitted on toys in polypropylene (PP), as this does not significantly reduce the quality of PP when it is recycled[55].

For more background to this requirement, see requirement O88.

Background to the requirement O14 Surface treatment – Chemical products, Classification

The requirement is new in this generation of the criteria.

Surface treatment of plastic can negatively affect the possibilities for recycling, therefore only surface treatment in the form of prints and paints used for decoration is allowed.

For more background to this requirement, see requirement O6.

Background to the requirement O15 Surface treatment – CMR substances

For the background to this requirement, see requirement O7.

The requirement in relation to the EU Toy Safety Directive – Appendix C

This requirement covers several of the substances for which there are requirements in Appendix C – read more under requirement O7.

Background to the requirement O16 Surface treatment – Prohibited substances

The requirement has been changed in this generation of the criteria.

Isothiazolinones in plastic and surface treatment

The rubber industry (latex emulsions) and the plastics industry (polymer solutions) use isothiazolinones during the manufacture of plastics. Isothiazolinones CMI (5-chloro-2-methyl-isothiazolin-3(2H)-one)/MI (2-methylisothiazolin-3(2H)-one) (3:1), MI

[55] Designguide - Genbrug og genanvendelse af plastemballager til de private forbrugere, Forum for cirkulær plastemballage, 2019, Designguide-Genbrug-og-genanvendelse-af-plastemballager-til-de-private-forbrugere-online-version.pdf

(2-methylisothiazolin-3(2H)-one) and OIT (n-octylisothiazolinone) have a certain capacity to penetrate through rubber and plastic[56].

Several chemicals can be used as alternatives to OBPA (oxybisphenooxyarsine) in plastics. The main options are isothiazolinones including n-octylisothiazolinone (OIT), dichlorooctylisothiazolinone (DCOIT) and others, such as butylbenzisothiazolinone (BBIT)[57].

Volatile organic compounds (VOC)

The requirement concerning volatile organic compounds (VOC) has been amended in this generation of the criteria. The requirement limit has been changed from 130 g VOC/l to 80 g VOC/l. The level of 80 g VOC/l is identical with the requirement concerning single-component specialist surface treatments and two-component specialist surface treatments in the criteria for Nordic Swan Ecolabelled Indoor paints and varnishes (generation 3) and the EU Ecolabel for Indoor and outdoor paints and varnishes (version 2014).

For more background on this requirement, see requirement O8.

The requirement in relation to the EU Toy Safety Directive – Appendix C

This requirement covers several of the substances for which there are requirements in Appendix C – read more under requirement O8.

6.6.2 Requirements that apply to plastic elements/types that children come into contact with or that constitute over 5% by weight of the toy

The requirements in this section cover all plastic elements with which the child may come into contact during normal or expected use of the toy, or where the type of plastic makes up more than 5% by weight of the toy. For a definition of the terms material element and type, see section 6.2.

Background to the requirement O17 Recycled plastic –Source

The requirement is new in this generation of the criteria.

Nordic Ecolabelling wishes to promote the use of recycled materials. A particular emphasis is placed on substances that are harmful to health when it comes to toys in general. For this reason, recycled plastic is only permitted from sources with traceability to ensure that it does not contain substances that are harmful to health.

Background to the requirement O18 Polycarbonate plastic - Migration of Bisphenol A

The requirement has changed in this generation of the criteria. In the previous generation, polycarbonate plastic was not allowed in toys that imitate food or that are part of play with food. The requirement has now been changed to require low migration and testing of bisphenol A, B and F from polycarbonate for all toys. The requirement with a migration limit of 0.04 mg/l for bisphenol A is identical to Appendix C of the EU Toy Directive as of May 2021. This requirement goes beyond the EU Toy

[56] O. Aerts, Contact allergy caused by methylisothiazolinone and related isothiazolinones, Faculty of Medicine and Health Sciences, University Antwerp 2017
[57] Rethinking biocides for plastics in Compounding World 2013
http://www.nanobiomatters.com/wordpress/wp-content/uploads/2013/07/CWJuly2013.pdf

Directive, as the requirement applies to all types of toys that contain polycarbonate plastic, as well as having requirements for bisphenols other than A.

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.a. classified H360.

Appendix C of the EU Toy Directive No. 2009/48/EC covers chemicals used in toys for children under 3 years of age or toys intended for putting in the mouth. In Appendix C, requirements for chemicals are added or adjusted on an ongoing basis[58], these requirements are added to the EU Toy Directive by separate directives/regulations.

Directive (EU) 2017/898 regarding Bisphenol A:

The EU Toy Directive 2009/48/EC and Directive (EU) 2017/898 have the following limits for bisphenol A in toys for children under three years of age or toys intended for putting in the mouth: 0.04 mg/l (migration value) in accordance with the methods laid down in EN 71-10 and EN 71-11.

The bisphenols B and F can probably replace bisphenol A in the production of polycarbonate plastic[59]. 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 for the production of polycarbonate. See more about bisphenols under requirement O8.

Background to the requirement O19 CMR substances added to the polymer

This generation of the criteria now makes it clear that the requirement covers ingoing substances in additives that are added to the polymer raw material in the master batch or compound. Substances that arise from the actual polymer production are thus not covered by this requirement. Recycled plastic raw materials are counted as polymer raw materials, where additives that are added to a new master batch or compound are covered by requirements. Substances such as residual monomers are instead covered by requirement O22.

Plastic approved for contact with food

Due consideration has been given to whether the fact that plastic elements are approved or intended for contact with food in line with Regulation (EC) No 1935/2004 and Regulation (EC) No 10/2011 can be used as documentation and render such elements exempt from requirements O19 to O22. The EU regulations for plastic food contact materials set limits on the level of substance migration to food, taking into account assumptions about bodyweight, container surface area and food composition. Since the EU rules set migration limits in relation to the amount in the

[58] http://ec.europa.eu/growth/sectors/toys/safety/legislation_en
[59] https://www.miljodirektoratet.no/globalassets/publikasjoner/m176/m176.pdf

food based on the above assumptions, it has been judged that food contact approval does not allow for exemptions from requirements O19 to O22.

Regulation (EC) No 1935/2004 requires that materials do not transfer their constituents to food in quantities which could endanger human health.

Regulation (EC) No 10/2011 sets rules on establishing a plastic material's compliance with the applicable provisions and specifications, and on limits for the use of the specified substances. The latter includes migration limits that specify a maximum for the number of substances that are permitted to migrate to food.

The specific migration limit is a permitted maximum amount of a substance in a food. The aim of this limit is to ensure that the material in contact with the food does not pose a health risk.

Migration limits are set based on a conventional assumption that a person with a bodyweight of 60 kg consumes 1 kg of food each day, of which around 200 g is fat, and that the food in question is packaged in a cubic container with a surface area of 6 dm^2 that releases the substance in question. However, various deviations from the conventional assumption may occur, such as[60]:

- For very small and very large containers, the actual surface area in relation to the volume of the packaged food differs greatly from the conventional assumption. For smaller packaging, where the surface is relatively larger in relation to the volume of the content, the migration to the food will be greater.
- Infants and young children consume larger amounts of food per kg of bodyweight than adults, and do not yet consume a varied diet that would limit the intake of substances that migrate from materials in contact with food.

In addition to complying with the EU Toy Safety Directive (2009/48/EC), toy cups, plates, cutlery and similar items conform to the rules for materials in contact with food.

More background to the requirement:

See requirement O7.

The requirement in relation to the EU Toy Safety Directive – Appendix C

Requirement O19 covers several of the substances for which there are requirements in Appendix C as of May 2021 – read more under requirement O7.

Background to the requirement O20 Prohibited substances added to the polymer

The requirement has been changed in this generation of the criteria.

This generation of the criteria now makes it clear that the requirement covers ingoing substances in additives that are added to the polymer raw material in the master batch or compound. Substances that arise from the actual polymer production are thus not covered by this requirement. Recycled plastic raw materials are counted as polymer raw materials, where additives that are added to a new master batch or

[60] Regulation (EC) No 10/2011: https://eur-lex.europa.eu/legal-content/DA/TXT/PDF/?uri=CELEX:32011R0010&from=EN

compound are covered by requirements. Substances such as residual monomers are instead covered by requirement O22.

For the background to this requirement, see requirements O8 and O16.

The requirement in relation to the EU Toy Safety Directive – Appendix C

Requirement O20 covers several of the substances for which there are requirements in Appendix C as of May 2021 – read more under requirement O8.

Background to the requirement O21 Pigments in plastic, foam, silicone and rubber

Pigments used for the colouring of plastic, foam, silicone and rubber must be approved in line with the guidelines for the US Food and Drug Administration (FDA) or the German Federal Institute for Risk Assessment (BfR). These approvals set limits on the migration of undesirable substances to food. It is therefore relevant to set the same requirements concerning pigments in polymer materials in Nordic Swan Ecolabelled toys, since toys are often placed in the mouth or sucked on, particularly by young children. The EU Toy Safety Directive has no specific requirements concerning pigments in polymer materials.

Background to the requirement O22 Residual monomers in plastics, foams and elastomers

The requirement is new. The requirement concerns residual monomers in plastics, foams and elastomers. The requirement applies to contaminants originating from the polymer production itself. Ingredients in additives which are actively added to the polymer raw material in masterbatch or compound are instead covered by requirements O19 and O20.

BfR (German Federal Institute for Risk Assessment) published a report[61] in 2018 that lists which monomers with a harmonized CMR classification can be found in toys. Examples of residual monomers are listed in Table 1 below.

Table 1: Limit values in the EU's Directive on Toys and/or EN 71-9 to EN 71-11 for content/migration of the most common residual monomers found in toys

CAS nr.	Monomer	Material/Polymer (examples)	CLP-classification	According to 2009/48/EC, EN 71-9, EN 71-10 and/or EN 71-11:	
				Content limit (mg/kg)	Migration limit (mg/L)
79-06-1	Acrylamide	PAM	H340, H350, H361	1 000	0,02
107-13-1	Acrylonitrile	ABS, SBR, NBR	H350	1 000	-
80-05-7	Bisphenol A	PC	H360	3 000	0,04
106-99-0	Butadiene	ABS, SAN, NBR	H340, H350	1 000	-
75-21-8	Ethylen oxide	PEG, PUR	H340, H350	1 000	-
50-00-0	Formaldehyde	MF, PF	H350, H317	1 000 (500[a])	1,5
108-95-2	Phenol	PF	H341	10 000 (10[a])	15
75-56-9	Propylen oxide	PPG, PUR	H340, H350	1 000	-
100-42-5	Styren	ABS, PS, SBS	H361	30 000	0,75
108-05-4	Vinyl acetate	EVA	H351	10 000	-
75-01-4	Vinyl chloride	PVC	H350	1 000	-

[a] *Limit value as preservative.*

[61] Lenzner et al., 2018. CMR substances in consumer products: from food contact materials to toys. Lenzner A, Vieth B, Luch A, BfR. Archives of Toxicology (2018), 92, p. 1663-1671.

According to the Directive on Toys, no substances classified as CMR category 1A, 1B or 2 may be used in toys, in toy components or in micro-structurally distinct parts of toys. On the other hand, CMR substances are permitted in concentrations below the classification limits specified in the CLP Regulation for the individual substances. This means that a polymer containing the residual monomer styrene can be used as long as the monomer concentration does not exceed 30,000 ppm.

Table 1 also indicates the limit value for the migration of certain monomers from toys in accordance with what is stated in standard EN 71-9 today. Nordic Ecolabelling wishes to set requirements that go beyond those included in the directive, therefore a new separate requirement is created that limits the migration of acrylonitrile and butadiene, and introduces a sharper limit value for migration of styrene.

The monomers ethylene oxide and propylene oxide were down-prioritized by the EU Expert Group on Toy Safety according to ANEC's (European Association for the Coordination of Consumer Representation in Standardization) publication[62] from 2018. The reason for this decision may be that the materials consisting of these monomers are not used as often in toys in comparison with ABS / PS and PVC.

PVC must not be used in Nordic Ecolabelled toys (See requirementO11). Vinyl acetate monomers are most commonly used to form the plastic EVA (Ethylene Vinyl Acetate). The material can take the form of a foam or look like a rigid plastic. This requirement does not set any specific restriction for the hard-plastic EVA that is rarely found in toys. However, EVA foam is significantly more used in toys. Requirement O25 deals specifically with this material and requirements are set for, among other things, the amount of VOC.

Requirement O12 demands according to EN 71-9 migration tests of the monomers acrylamide (CAS No. 79-06-1), Bisphenol A (CAS No. 80-05-7), formaldehyde (CAS No. 50-00 -0) and, phenol (CAS No. 108-952).

According to a study published in 2018 by the Danish Environmental Protection Agency entitled "Mapping and study of migration of monomers in toy materials"[63], ABS / PS together with PVC and certain TPE are the most used materials in toys sold in Denmark regardless of the age group the product is intended for. This study was written in response to ANEC's restriction proposal for 5 monomers that can be found in toys for children under 3 years of age and toys which are intended to be placed in the mouth.

The purpose of the study is to assess whether new restrictions on the monomers, acrylamide, acrylonitrile, butadiene, styrene and vinyl chloride are possible and relevant. ANECs, for example, proposed introducing a limit value for the migration of styrene of 0.077 mg / L instead of what is stated in the Toys Directive (0.75 mg / L).

As part of this project, chemical analyzes were carried out to measure the content and migration of the 4 monomers acrylonitrile, butadiene, styrene and vinyl chloride in both new toys and recycled materials. The results for acrylonitrile, butadiene, styrene in ABS and PS are shown in Table 2 below:

[62] https://anec.eu/images/ANEC-CHILD-2018-G-065.pdf
[63] https://www2.mst.dk/Udgiv/publikationer/2019/02/978-87-7038-035-5.pdf

Table 2: Content/migration of residual monomers in ABS and PS

Monomers	Content measured in new toys (ppm)	Migration measured in new toys mg/L	Content measured in recycled materials (ppm)	Migration measured in recycled materials (mg/L)
Acrylonitrile	8 - 64	< 0,01	10	< 0,01
Butadiene	0,23 – 1,55	< 0,01	2,1	< 0,01
Styrene (ABS)	595 - 1350	< 0,02	330	< 0,02
Styrene (PS)	230 - 490	< 0,02	270	< 0,02

According to the measurements, there is currently no PS / ABS on the market that can handle a styrene content of less than 100 ppm. The trade association TIE (Toy Industries of Europe) points out that ABS is mainly used in toys due to its good mechanical and physical properties. ABS meets the toy directive's safety requirements for toys for children under 3 years of age. ABS is widely used in toys that children can take in their mouths, for example in musical instruments.

To make it possible for toy manufacturers to Nordic Ecolabel their products made of ABS, Nordic Ecolabelling sets a limit on the migration of the 3 monomers acrylonitrile, butadiene and styrene instead of content requirements. This new requirement is specific to toys and is considered to be more relevant.

Plastic, foam and elastomers that contain these 3 monomers must meet the limit values for migration that the Danish Environmental Protection Agency judged to be relevant and possible to achieve.

That is 0.01 mg / L for acrylonitrile and butadiene which actually corresponds to the detection limits for measurement methods in the standards DS/EN 13130-22 (2005) - "Determination of ethylene oxide and propylene oxide in plastics" and DS/EN 13130-4 (2004) - "Determination of 1,3-butadiene in plastics" (the standards were used in the study by the Swedish Environmental Protection Agency). For styrene, the sharper limit value 0.077 mg/L as proposed by ANEC applies instead of what is stated in standard EN 71-9. Method EN 71-10 and EN 71-11 shall be used for assessing if migration of styrene is max 0,077 mg/l into an aqueous solution. However, laboratories have informed Nordic Ecolabelling that the limit of detection (LOD) of the method may not allow so low determination. A laboratory suggested that the method for migration for food contact materials (FCM) EN 13130 (which have a LOD of 0,02 mg/l) can be used as an alternative, where using water or water with 10 % ethanol and 3 x 60 min repeated immersions of totally 180 min.

Background to the requirement O23 D4, D5 and D6 in silicone

The requirement is new in this generation of the criteria.

Silicone is used in everyday speech and refer to the group of substances known as polysiloxanes (polyorganosiloxanes), with general formula (– SiR2 – O –)n. They are prepared either by polymerization of cyclic siloxanes or polycondensation of linear siloxanes. There are small residues of cyclic siloxanes in polysiloxanes, such as D4, D5 and D6 depending on the type of reaction and process conditions in the polymerization[64].

The cyclic siloxanes D4 (CAS no. 556-67-2), D5 (CAS no. 541-02-6) and D6 (CAS no. 540-97-6) are included in the EU's Candidate List, as they are persistent,

[64] R. G. Jones, W. Ando, and J. Chojnowski, 'Silicon – Containing Polymers', Kluwer Academic Publishers, Dordrecht, 2000

bioaccumulative and toxic (PBT/vPvB substances). However, a specific requirement has been included for these siloxanes to make it clear that documentation is required to confirm that the content is below the stated limit value in any silicone used. This is considered relevant because much of the toy production takes place in countries that are not covered by REACH.

Residual levels of D4, D5 or D6 in the silicone mix must not exceed 0.0800 wt% (800 ppm) of each. Nordic Ecolabelling sets a limit value of 800 ppm based on the knowledge of what the industry can achieve today. The value will be re-evaluated during the next revision of the criteria

Background to the requirement O24 Polycyclic aromatic hydrocarbons (PAH) in plastic, foam, silicone and rubber

The requirement is new in this generation of the criteria.

Tests must be carried out on the finished (dyed, coated, etc.) plastic, foam, rubber and silicone materials used in the toy.

There are more than 100 PAHs compounds. Several of the PAHs are carcinogenic and classed as Carc. 1B. PAHs can be found in plastic and rubber parts in a wide range of consumer products. They are present as impurities in some of the raw materials used to produce such products, namely in plasticising oils and in carbon black. The substances are not intentionally added to the products in question, and they have no specific function as constituent ingredients of the plastic or rubber parts. Extender oils are mineral oils that are produced from crude oil (PAHs that remain in the oil are called petrogens). Carbon black is the product of incomplete combustion or thermal decomposition processes of heavy oils, such as coal tar (PAHs that remain, however, are mainly pyrogenes PAHs).

Consumer magazine Tænk conducted tests in 2010 and found PAHs in 14 of the 20 toy pieces tested. PAHs usually originate from two types of additives, which are plasticising and process oils (extender oils) and carbon black, used in rubber and plastic. Carbon black is used i.a. as a pigment. Since PAHs were found in different types of plastic and rubber, this requirement is considered relevant.

PAH testing is not required by the EU Toy Safety Directive. Instead, there is a REACH restriction (Regulation (EU) No 1272/2013) that applies to products including toys and covers eight PAHs: “Therefore the placing on the market of toys and childcare articles, containing any of the PAHs in concentrations greater than 0.5 mg/kg in their accessible plastic or rubber parts, should be prohibited.” However, the restriction in REACH does not require a third-party control showing compliance with the requirement. Nordic Ecolabelling sets a limit value of 0.2 mg / kg on the content of the 8 PAHs and creates a sharper requirement than the REACH requirement.

The requirement is at the same requirement level as the German GS marking. This label is controlled by the AfPS (Committee for Product Safety). The German authority published a new standard that requires PAH content in three different categories based on the exposure and use. Category 1 is 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 seems to be one of the sharpest that exists and is already used by environmental certifications such as Der Blauer Engel. The GS label seems to be well known and many important accredited test institutes such as Eurofins, TÜV or RISE / SP can perform the associated tests.

To meet the requirement, the material must achieve the Category 1 level from GS marking according to the latest standard AfPS GS 2019: 01 PAK. The standard replaces the older AfPS GS 2014: 01 PAK. Compliance is documented with a test report that shows that the requirement is met and the test method must be identical to what is described in the standard AfPS GS 2019: 01 PAK from GS marking. A GS-Mark certificate Category 1 according to the latest standard can be used instead as documentation for the requirement.

Oeko-Tex 100 class I baby has the same limit value of 0.5 mg / kg for the 8 PAHs listed in Annex XVII of REACH. Oeko-Tex class I baby cannot live up to a requirement limit of 0.2 mg / kg and therefore a certificate cannot be used as documentation for the requirement. In addition, Oeko-Tex 100 class I baby sets a requirement limit of a sum of 5 mg / kg for 24 PAHs instead of 2 mg / kg for 15 PAHs listed in the standard from the GS label.

Background to the requirement O25 Foam (e.g. ethylene vinyl acetate (EVA), polyurethane (PUR) and expanded polystyrene) – Emissions

The requirement is new in this generation of the criteria.

Foam materials can include hazardous chemicals, either as residue from polymer production, or additives in the material. For example, polyurethane foam and polystyrene may contain and emit volatile organic compounds which may be harmful to health[65].

As a child will be in close contact with these materials and will be exposed to any emissions, requirements are set for the most important substances. Several certification schemes have the same emission requirements for these materials as here in this requirement, hence the inclusion of an option to use a range of certification schemes as documentation. There may, however, be small differences between the certification schemes and the requirement, such as CertiPUR having a threshold value for aromatic hydrocarbons of 0.5 mg/m^3 rather than 0.3/m^3. It is, however, still considered appropriate to document the requirement with a CertiPUR certificate.

Ethylene vinyl acetate foam (EVA) may be used in foam toys and toy furniture. EVA, or PEVA as it is also called, is a copolymer of ethylene and vinyl acetate, the result of which is a rubber-like material with a wide range of applications.

Polyurethane (PUR) is used in toys such as building blocks.

The requirement in relation to the EU Toy Safety Directive – Appendix C

Appendix C of the EU Toy Safety Directive (2009/48/EC) covers chemicals used in toys for children under the age of 3 or toys intended to be placed in the mouth. Chemical requirements are added to or amended in Appendix C on an ongoing basis[66], and these requirements are then added to the EU Toy Safety Directive by means of separate directives/regulations. Requirement O25 covers substances for which there are requirements in Appendix C as of May 2021:

- Directive (EU) 2019/1929 concerning Formaldehyde:

[65] Survey, emissions and health assessment of chemical substances in baby products, Danish Environmental Protection Agency, 2008
[66] http://ec.europa.eu/growth/sectors/toys/safety/legislation_en

Formaldehyde classifications include H350 and H341. See also requirements O7, O9, O22, O35, O36 and O81.

Background to the requirement O26 Foam (e.g. ethylene vinyl acetate (EVA), polyurethane (PUR) and expanded polystyrene) – Emissions of formamide

The requirement is new in this generation of the criteria.

Appendix C of the EU Toy Safety Directive (2009/48/EC) covers chemicals used in toys for children under the age of 3 or toys intended to be placed in the mouth. Chemical requirements are added to or amended in Appendix C on an ongoing basis[67], and these requirements are then added to the EU Toy Safety Directive by means of separate directives.

Directive (EU) 2015/2115 concerning Formamide:

Formamide (CAS no. 75-127) is classified as Repr. 1B, H360D and is used in the plastics and polymers industry as a solvent, a plasticiser or combined with a foaming agent to manufacture foam. In 2010, several EU members states found formamide in a number of foam puzzle mats, generating concern about children's health if breathing the substance in. There are no known uses of formamide in materials intended to come into contact with food[68]. In addition, N, N-dimethylformamide (DMF), which is a derivative of formamide, was found in high concentrations in the foam toys in a study carried out by the Danish Environmental Protection Agency.

The EU Toy Safety Directive (2009/48/EC) and Directive (EU) 2015/2115 have the following limits for formamide in toys for children under the age of 3 or toys that are intended to be placed in the mouth: 20 µg/m^3 (emission limit) after a maximum of 28 days from commencement of the emission testing of foam toy materials containing more than 200 mg/kg (cut-off limit based on content). Test methods for emissions in line with standards ISO 16000-6 and ISO 16000-9.

This requirement goes further than the EU Toy Safety Directive, in that the requirement applies to all types of toys that contain foam. In addition, the emissions test must be conducted even if the foam contains less than 200 mg formamide per kg foam.

See also requirement O7.

Background to the requirement O27 Ethylene vinyl acetate (EVA), Polyurethane (PUR) or polystyrene foam – Blowing agents and isocyanate compounds

The requirement has been expanded in this generation of the criteria to also include foams made of EVA and polystyrene. Isocyanate compounds have also been added to the requirement.

Blowing agents
Halogenated organic compounds may not be used as blowing agents or auxiliaries for these. Historically, CFC (ChloroFluoroCarbons), HCFC (HydroChloroFluoroCarbons) and HFC (HydroFluoroCarbons) have been used in the production of PU foam, and it is generally known that these substances are harmful to the environment, especially as greenhouse gases and as ozone depleting substances. The requirement prohibits the use of halogenated organic compounds that are used as blowing agents or auxiliaries for these. Many manufacturers of PU

[67] https://mfvm.dk/nyheder/nyhed/nyhed/populaert-legetoej-fyldt-med-farlig-kemi/
[68] Directive (EU) 2015/2115: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32015L2115

foam have replaced CFC and HCFC with carbon dioxide, but ensuring that they are not used is still considered relevant.
Blowing agents are only relevant for PU foam, as the production of latex foam does not require blowing agents. Expanded polystyrene uses water or pentane as a blowing agent.

Isocyanates
For a healthier working environment, isocyanate compounds may only be used in a closed process with the prescribed protective equipment in accordance with the official requirements. Diisocyanates are the second most important raw material in PU production. Toluene diisocyanate (TDI, CAS no. 26471-62-5) and methylene diphenyl diisocyanate (MDI, CAS no. 32055-14-4) are the two technical options currently found in the market. TDI, MDI or a mix of the two chemicals may be used, although the use of pure TDI appears to be the most customary choice among manufacturers today.

TDI and MDI carry a large number of hazard statements, such as H351: Suspected of causing cancer, H317: May cause an allergic skin reaction and H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled. TDI also has H330: Fatal if inhaled and H412: Harmful to aquatic life with long lasting effects[69].

MDI appears to be less problematic, especially with regard to inhalation of the substance, and for the environment. Manufacturers believe, however, that their production systems take this into account, since personnel's exposure to TDI is controlled, and TDI is used in a significant share of the market in Europe. Foam made from MDI also has higher density (+ 30%), which requires more of the raw material, making the foam more expensive.

CertiPUR prohibits the use of CFC, HCFC and dichloromethane (methylene chloride), but does not set requirements concerning isocyanates.

Background to the requirement O28 Elastomers (e.g. rubber, silicone and thermoplastic elastomer (TPE)) – Nitrosamines and nitrosatable substances

The requirement has been changed in this generation of the criteria. The previous generation accepted the test method EN 12868 –Method for determining the release of N-nitrosamines and N-nitrosatable substances from elastomer or rubber teats and soothers. In this generation of the criteria, applicants must use the same test method that is described in the EU Toy Safety Directive and EN 71-12. The requirement limits remain unchanged from the previous generation of the criteria. EN 71-12 specifies requirements concerning the migration of N-nitrosamines and N-nitrosatable substances.

EN 71-12 applies to the following types or part of toys, where they contain elastomers:
- Toys for children under the age of 3
- Toys that are intended or likely to be placed in the mouth

[69] Updated Working Document for THE REVISION OF THE EU ECOLABEL CRITERIA FOR BED MATTRESSES, version 4 2013

EN 71-12 set the following requirements:

Product type	N-nitrosamines (mg/kg)	N-nitrosatable substances
a) Toys for children under the age of 3 that are intended or likely to be placed in the mouth	0.01	0.1
b) Toys for children under the age of 3 that are not covered by a)	0.05	1
c) Toys for children over the age of 3 that are intended to be placed in the mouth	0.05	1

The EU Toy Safety Directive sets the following requirements:

The use of N-nitrosamines and nitrosable substances in toys intended for use by children under 36 months or in other toys intended to be put in the mouth is prohibited if the migration of the substances corresponds to or exceeds 0.05 mg/kg for N-nitrosamines and 1 mg/kg for nitrosatable substances.

The purpose of the requirement in these criteria is to ensure that children are not exposed to the effects of harmful substances in toys. The requirement goes further than the EU Toy Safety Directive and EN 71-12 in that testing is to be carried out for all types and parts of toys that contain elastomers. In addition, the toys must meet the strictest limit in EN 71-12, i.e. 0.01 mg/kg for N-nitrosamines and 0.1 mg/kg for N-nitrosatable substances, whatever the type of toy.

Elastomers are macromolecular materials which quickly regain their original form after significant deformation caused by stretching or pulling. Elastomers such as latex (rubber), thermoplastic elastomer (TPE) and silicone contain a number of substances which could be released from the material. Substances that are harmful to health, such as nitrosamines, may be formed during the vulcanisation process when manufacturing these materials. Most of these substances can be carcinogenic. Nordic Ecolabelling judges that this requirement concerning elastomers such as rubber and silicone is relevant for toys, since children often make skin contact with the toy and there is also a risk that the child will put the material in their mouth.

Test reports in accordance EN 71-12 are to be submitted as documentation, showing which tests have been completed, the results and so on. In addition, the test laboratory must confirm compliance with requirements in EN 71-12. A simple statement of compliance with EN 71-12 is not sufficient documentation, as the requirement applies to more toy types than are covered by EN-71-12 and to the strictest limit for migration in EN 71-12. The declaration of compliance with the requirements in EN 71-12 is used to help with the processing of the application.

Background to the requirement O29 Elastomers (e.g. rubber, silicone and thermoplastic elastomer (TPE)) – 1,3-butadiene

The requirement is new in this generation of the criteria.

Several synthetic rubbers contain 1,3 butadiene (CAS no. 106-99-0), which has the following classifications: 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 (SBR), polybutadiene rubber (PBR), polychloroprene (Neoprene) and nitrile rubber (NR)[70].

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

The requirement aims to ensure that work is conducted to achieve the lowest possible monomer content in the final product.

6.6.3 Requirements that apply to plastic types constituting over 10% by weight of the toy

The requirements in this section concern all types of plastic, foam, silicone and rubber (natural and synthetic latex), where the type of plastic constitutes over 10 wt% of the toy. For a definition of material type, see section 6.2.

Background to the requirement O30 Raw materials for bio-based polymers

The requirement is new in this generation of the criteria.

In terms of resources and climate, it makes sense to promote the use of renewable raw materials over virgin fossil materials. It is, however, important that the bio-based raw materials are grown sustainably. Even renewable raw materials may be associated with environmental and social problems.

The establishment of palm oil plantations is one of the main causes of rainforest destruction, which threatens the living conditions of indigenous people, plants and animals.

Rainforests are particularly important for biodiversity and is also important for regulating the climate. Soya beans are grown on land that is often established in the place of rainforest and forest savannah in South America.

Soya production is one of the greatest threats to rainforest on the American continent, particularly in the southern Amazon[71]. It is on this basis that the use of palm oil, soya oil and soya flour as raw materials for bio-based polymers is prohibited.

The most ideal is to use waste or residual products from i.e., agriculture, fishing, forestry or processing residual product defined in accordance with (EU) Renewable Energy Directive 2018/2001. By using waste or residual products as raw materials, you use parts that are not used as food. PFAD (Palm Fatty Acid Distillate) from palm oil is not considered a waste or residual product and may therefore not be used. PFAD occurs in the production of palm oil for the food industry, and there is rarely traceability in the processes in which PFAD occurs.

There are requirements for traceability, which shows where the waste or residual products 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 (i.e., for used cooking oil, the starting point will be the restaurants or production sites that produce the fried food). The traceability of this requirement must start at the point where waste or residual product occurs for the first time.

Sugar cane is a relevant raw material for polymer production. Sugar cane is currently not as strongly associated with problems with deforestation of rainforest as mentioned above for palm and soybean oil, but there may also be challenges associated with this production. As bio-based plastic is still relatively new and the number of producers is relatively small, sugar cane is permitted as a raw material, but it is required that it be certified according to a sustainability standard that meets a number of requirements for i.e., protection of biological diversity. For all certification systems, there is a requirement for traceability at the mass balance level. Book and

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

claim system will not be approved. It is considered that the Bonsucro standard is the best tool on the market for sustainable sugar cane production today, and therefore this certification is accepted.

For other primary raw materials, there is a requirement that the name of the raw material, supplier and origin of the raw material must be stated. Primary raw materials incl. sugar cane must not be genetically modified. Genetic modification is a 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 the risk of negative environmental and health impacts. Nordic Ecolabelling emphasizes the precautionary principle and regulations that have a holistic approach to GMOs. This means that sustainability, ethics and societal benefits must be emphasized together with health and the environment. We are not in principle against genetic engineering and GMOs per se, but are concerned about the consequences when genetically modified plants, animals and microorganisms spread in nature.

Nordic Ecolabelling believes that GMOs should be assessed on a case-by-case basis. Research results have not clearly shown that current GMO crops contribute to the development towards 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 consequences 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 overall assessments.

6.7 Textiles, hide/skins and leather

The requirements in this section concern all components of textiles, hides/skins or leather, hereafter called “textile elements” or “textile types”.

6.7.1 Requirements that apply irrespective of amount in product

The requirements in this section concern all parts of textiles, hides/skins or leather, hereafter called “textile elements”. For a definition of the term material element, see section 6.2.

Background to the requirement O31 Tests Safety of toys EN 71

The requirement has been made more specific in this generation of the criteria.

The purpose of the requirement is to ensure that tests in accordance EN 71-3 and EN 71-9 have actually been performed and that children are not exposed to the effects of harmful substances in toys. Test reports in accordance EN 71-3 and EN 71-9 are to be submitted as documentation, showing which tests have been completed, the results and so on. In addition, the test laboratory must confirm compliance with the requirements in these two standards for the types of toys for which the application is being made. A simple statement of compliance with EN 71-3 and EN 71-9 is not sufficient documentation, as the aim of the requirement is to ensure that tests have been completed and comply with the requirements in EN 71-3 and EN 71-9. The declaration of compliance with the requirements in these two standards is used merely to help with the processing of the case.

EN 71-3: Toys - Safety requirements - Part 3: Migration of certain elements. This standard specifies requirements for the migration of certain metals as well as

selenium. Migration of metals and selenium must be tested according to the methods described in EN 71-3.

EN 71-9: Toys – Safety requirements – Part 9: Organic chemical substances – Requirement.

Textiles in EN 71-9 include woven or knitted textiles and non-woven fibre materials (e.g. felt).

For textiles and leather, EN 71-9 sets requirements concerning selected substances in the following substance groups:
- Flame retardants
- Dyes
- Primary aromatic amines
- VOC migration (polymers for coating)
- VOC inhalation
- Preservatives
- Plasticisers (polymers for coating)

EN 71-9 applies to the following types of toys, where they contain textile or leather:
- Toys or accessible parts of a toy with a mass of 150 g or less for children under the age of 3 that are intended for play with the hands
- Toys to wear over the mouth or nose
- Toys that children can crawl/get into

Background to the requirement O32 Ecolabelled textiles, hide/skins and leather

The requirement has been amended in this generation of the criteria. GOTS certification has also been included in the requirement.

Both the Nordic Swan Ecolabel and the EU Ecolabel's criteria for textiles cover the whole life cycle and set requirements in areas where ecolabelling can make a difference. Textiles, and for the Nordic Swan Ecolabel also hide/skins and leather, that is certified according to these criteria therefore meet ambitious requirements concerning the environment, health and quality, and so do not need other documentation for the mentioned requirements.

GOTS and Bra Miljöval sets equivalent requirements concerning environmental and health impacts over the whole of the textile's life cycle and therefore can also be used as documentation for the mentioned requirements.

Background to the requirement O33 Oeko-Tex certified textiles and leather

The requirement is new in this generation of the criteria.

The requirement is included to ensure that even very small textile elements meet the basic chemical requirements, without creating an excessive burden of documentation.

Oeko-Tex Standard 100 requires testing for substances that are harmful to health. There are several classes of certification, with Class I Baby setting the strictest requirements concerning content of the tested substances. The certification ensures that textile elements meet basic chemical requirements.

Background to the requirement O34 Hides/skins and leather – Origin

The requirement is new in this generation of the criteria.

The requirement has been set to ensure the use of raw hides that are a by-product of meat/milk/wool production or originates from free-living non-endangered species in the Nordic countries. This reduces the environmental impact of livestock farming and ethically it also makes good sense that the leather and hides/skins produced make use of raw hides that are by-products of meat/milk/wool production. The requirement now also permits fish leather, as long as it does not come from the *IUCN* Red List of Threatened Species (https://www.iucnredlist.org). Fish leather must meet the same requirements as other types of hide/skin and leather.

Background to the requirement O35 Textile – Formaldehyde

The requirement has been tightened from 20 ppm to 16 ppm.

Formaldehyde is classified as hazardous to health, due to being carcinogenic and irritating to the eyes, throat and skin. Formaldehyde residues in textiles can often originate from finishing with anti-crease agents. A certificate for Oeko-Tex 100 class I Baby (> 16 mg/kg) and for GOTS (> 16 mg/kg) may be used as documentation, even though Oeko-Tex uses the test standard Japanese Law 112. Oeko-Tex, GOTS and the EU-Ecolabel accept higher formaldehyde emissions for certain types of textile. The EU-Ecolabel has a requirement level of max. 16 ppm for products aimed at children under 3 years old and products in direct contact with the skin. Oeko-Tex 100 class I Baby also has requirement level of 16 ppm.

The requirement in relation to the EU Toy Safety Directive – Appendix C

Appendix C of the EU Toy Safety Directive (2009/48/EC) covers chemicals used in toys for children under the age of 3 or toys intended to be placed in the mouth. Chemical requirements are added to or amended in Appendix C on an ongoing basis[72], and these requirements are then added to the EU Toy Safety Directive by means of separate directives/regulations. Requirement O35 covers substances for which there are requirements in Appendix C as of May 2021:

- Directive (EU) 2019/1929 concerning Formaldehyde:
  Formaldehyde classifications include H350 and H341. See also requirements O7, O9, O22, O25, O36 and O81.

Background to the requirement O36 Hides/skins and leather – Formaldehyde

The requirement is new in this generation of the criteria and has been set to limit exposure to formaldehyde, which is classified as carcinogenic.

The content of formaldehyde in the finished hide and leather must not exceed 20 ppm. The requirement levels are identical with the formaldehyde requirements for the EU Ecolabel for Footwear and the Japanese label Japan Eco Leather.

In Leather Standard by Oeko-Tex, the formaldehyde level must be no more than 10 ppm for baby products, i.e. Leather Standard by Oeko-Tex Class I Baby.

The requirement in relation to the EU Toy Safety Directive – Appendix C

Appendix C of the EU Toy Safety Directive (2009/48/EC) covers chemicals used in toys for children under the age of 3 or toys intended to be placed in the mouth. Chemical requirements are added to or amended in Appendix C on an ongoing basis[73], and these requirements are then added to the EU Toy Safety Directive by

[72] http://ec.europa.eu/growth/sectors/toys/safety/legislation_en
[73] http://ec.europa.eu/growth/sectors/toys/safety/legislation_en

means of separate directives/regulations. Requirement O36 covers substances for which there are requirements in Appendix C as of May 2021:

- Directive (EU) 2019/1929 concerning Formaldehyde:
- Formaldehyde classifications include H350 and H341. See also requirements O7, O9, O22, O25, O35 and O81.

Background to the requirement O37 Hides/skins and leather – Chromium, cadmium and lead

The requirement has been tightened to also include chromium (total) plus cadmium and lead.

The requirement for chrome is harmonized with requirements from Blue Engel and EU-Ecolabel.

Requirements for no presence of chromium (VI) also existed in the previous generation 2. In the EU, there is a REACH restriction[74] that leather parts that come into contact with the skin must not contain chromium (VI) at 3 mg/kg (3 ppm) or more. The standard EN ISO 17075 recommends a detection limit of 3 ppm.

Hexavalent chromium (Cr (VI)) is not used in the tanning industry and has no effect in the tanning process[75]. However, chromium (III) salts can - under certain conditions - be converted to Cr (VI) compounds[76]. Leather products can release Cr (VI) compounds, which is a problem as hexavalent chromium compounds are contact allergens. Cr (VI) is considered one of the most well known allergens.

The requirement does not exclude chrome tanning (chrome III) but requires a minimum content of extractable total chromium in the finished leather. 80-90% of skin and leather production globally use chromium (III) salts in their tanning processes and there are qualities that cannot be achieved with alternative tanning agents. This describes the EU's Best Available Techniques (BAT) reference document for skins and leather and explains that this is the reason for the limited substitution of chrome tanning with alternative benefits. At the same time, it is today possible to minimize the extractable content of chromium in the finished product as well as in the wastewater discharged to the aquatic environment.

Regardless of which tanning process is used, it is relevant to ensure that the content of chromium and especially chromium (VI) in the finished leather is documented and low. The requirement must thus be documented regardless of the tanning process.

The remaining leather production that does not use chromium III salts most often uses a vegetable, aldehydes or other mineral tanning process. Each process has different important environmental and health aspects.

EU Best Available Techniques (BAT) reference document for hides and skins does not specify a specific tanning process as BAT[77]. The choice of tanning technology depends mainly on the properties needed in the finished material, on the costs,

[74] Entry 47, Chromium VI compounds https://echa.europa.eu/documents/10162/1f775bd4-b1b0-4847-937f-d6a37e2c0c98
[75] Best Available Techniques (BAT) Reference Document for the Tanning of Hides and Skins, JOINT RESEARCH CENTRE 2013, Available at: https://publications.jrc.ec.europa.eu/repository/bitstream/JRC83005/tan_published_def.pdf
[76] Kortlægning og sundhedsmæssig vurdering (kun allergi) af krom i lædersko
[77] Best Available Techniques (BAT) Reference Document for the Tanning of Hides and Skins, JOINT RESEARCH CENTRE 2013, Available at: https://publications.jrc.ec.europa.eu/repository/bitstream/JRC83005/tan_published_def.pdf

available production facilities and the type of raw material being treated. Due to its properties, vegetable tanned leather is often used for shoe soles and other hard leather products. According to the EU's Best Available Techniques document for leather, vegetable tanned leather does not have the same properties as chrome tanned leather, such as the same flexibility[78].

Heavy metals such as cadmium and lead can also be found in hides/skins and leather. Lead occurs most often due to contaminants in the chromate during chromium tanning. The requirement is set to ensure that there is no cadmium and lead in the finished hides/skins or leather.

A Leather Standard by Oeko-Tex Classe I Baby certificate cannot be used as documentation, since the allowed amounts of the metals are higher than in this requirement.

Background to the requirement O38 Reused textiles, hide/skins and leather – Sources

The requirement is new in this generation of the criteria. This requirement applies only to reused textiles, hides/skins and leather. Recycled fibre has its own requirements.

Nordic Ecolabelling wishes to promote the recycling of textiles, hides/skins and leather. However, to prevent the spread of substances that are harmful to health and the environment, the reused textile, hide/skin and leather elements used must meet the requirements.

Reused textile elements may contain residues of additives from previously used dyes, pesticides from cultivation, biocides used during transport, and so on[79]. Even though the textile may have been washed several times, there can still be undesirable chemicals in the recycled textile elements. This is why there is a requirement concerning the source of the reused textile elements.

Newly produced elements of the product and details such as buttons and zippers must meet the relevant requirements in the criteria.

If the reused material or the finished product is subject to additional processing with chemical products (e.g. dyes, printing, finishing, etc.), the requirements for the relevant chemicals in section 6.7.2 must be fulfilled and documented. Reused textiles, hides/skins or leather that are not further processed using chemicals do not need to meet the requirements concerning chemicals used in textile, hide/skin and leather production.

6.7.2 Textile elements constituting more than 5% by weight of the toy

The following requirements apply to textile elements that constitute more than 5 wt% of the toy.

For a definition of the terms material element and type, see section 6.2.

[78] https://publications.jrc.ec.europa.eu/repository/bitstream/JRC83005/tan_published_def.pdf
[79] IKEA and H&M analyze the content of recycled fabrics, article 29 Oct 2019 on Treehugger.com https://www.treehugger.com/sustainable-fashion/ikea-and-hm-analyze-content-recycled-fabrics.html?utm_source=TreeHugger+Newsletters&utm_campaign=9cd1c025b2-EMAIL_CAMPAIGN_11_16_2018_COPY_01&utm_medium=email&utm_term=0_32de41485d-9cd1c025b2-243762625

Background to the requirement O39 Flame retardants

The requirement is new in this generation of the criteria.

The requirement has been set to ensure that all textiles found in Nordic Swan Ecolabelled toys are free from flame retardants such as chloroparaffins or brominated flame retardants.

Safety standard EN 71-9 contains requirements for toys with textile elements that are intended for children under the age of 3.

One of the requirements is to test for TCEP and tri-o-cresyl phosphate (CAS no. 78-30-8), with set “action limits”, i.e. points at which the substances should not be used or found during testing of the toy.

Brominated flame retardants are widely used, particularly in Europe[80]. Several certification schemes have a focus on flame retardants, but the decisions on which to exclude can vary.

For this reason, a ban on the whole group of flame retardants has been introduced as a separate requirement here.

For more background see requirement O8.

Background to the requirement O40 Chemicals overview

To gain an overview of which chemicals are used in the various processes after fibre production, the criteria require the submission of a list of all the chemicals used.

The requirement applies to all chemicals used in the manufacture of the textile after fibre production, including chemicals used for washing, bleaching, dyeing, printing and finishing processes such as coating, lamination or bonding.

Chemicals used for carding, spinning, weaving and knitting are not covered by the requirement. Chemicals used in waste water treatment plants or for the maintenance of production equipment are also exempted from the requirement.

The requirement is independent of whether the textile producer or its subsupplier use the chemicals.

Examples of chemicals that are subject to requirements include softeners, bleaching agents, pigments and dyes, stabilisers, dispersants and other auxiliary chemicals.

Background to the requirement O41 Classification of chemical products

The requirement has been tightened since the previous generation of the criteria, such that it now includes more chemical products used in the textile production, where the requirement previously only covered dyes, pigments and auxiliary chemicals. The requirement has also been expanded to exclude the classification Reprotoxic Lact. H362.

Another addition is the exemption of the allergy classifications H334 and H317 for dyes that are not disperse dyes. Since disperse dyes are not covalently bonded to the textile fibre, their colour fastness will often be lower.

[80] Survey, emissions and health assessment of chemical substances in baby products, Danish Environmental Protection Agency, 2008.

There is therefore judged to be a greater risk of exposure to disperse dyes. As a consequence, stricter requirements are set for disperse dyes classified as allergenic[81].

The requirement applies to all chemicals used in the manufacture of the textile after fibre production, including chemicals used for washing, bleaching, dyeing, printing and finishing processes such as coating, lamination or glueing. Chemicals used for carding, spinning, weaving, knitting, waste water treatment or maintenance of production equipment are exempted from the requirements.

For more background on this requirement, see requirement O6.

6.7.3 Requirements that apply to textile elements constituting more than 30% by weight of the toy

The requirements in this section apply to all textile elements that constitute more than 30% by weight of the toy. See the definition of material element in section 6.2.

Background to the requirement O42 Bleaching agents

The requirement is new in this generation of the criteria and and excludes chlorine treatment of the fibre.

Chlorinated bleaching agents are environmentally hazardous and are therefore not permitted. The use of chlorinated bleaching agents has been reduced in the industry and alternatives are available, such as hydrogen peroxide (H2O2)[82].

6.7.4 Fibre requirements – apply to textile types constituting more than 30% by weight of the toy

The requirements in this section apply to all textile types* that constitute more than 30% by weight of the toy.

The requirements concerning fibre cover the most common fibre types used in toys, with the intention of promoting the variants of each individual fibre type with the best environmental profile.

Filler materials must meet the requirements associated with the relevant fibre in this section. If chemical products are used, the requirements in section 6.7.2 are to be fulfilled and documented.

Recycled fibre** is not subject to any requirements concerning chemicals used in the actual recycling processes. If the recycled material, fabric or finished product is subject to additional processing with chemical products, the requirements in section 6.7.2 must be fulfilled and documented.

** See the definition of material type in section 6.2.*
*** See the definition in section 6.2.*

[81] JRC Technical Reports, Revision of the European Ecolabel and Green Public Procurement (GPP) Criteria for Textile Products, Nov 2013, page 304: http://ec.europa.eu/environment/ecolabel/documents/140124%20Ecolabel%20Textiles_Technical%20report%20final.pdf
[82] EU Ecolabels bakgrunnsdokument, 2007

Background to the requirement O43 Cotton fibres

The requirement has been changed in this generation of criteria by allowing recycled fibers as well.

The growing and harvesting of cotton is associated with serious environmental and health problems.

This is due largely to the use of chemicals such as pesticides and fertilisers in the cultivation, but other factors such as water use (irrigation or rainwater), monoculture and land use contribute to the overall environmental impact[83]. There are several ways to reduce the environmental and health impact of cotton production.

The environmental impact can also be reduced through organic cultivation, which does not use synthetic pesticides and fertilisers, and also does not permit genetically modified cotton. One of the environmental problems that organic production does not resolve is the issue of irrigation. Much of today's organic cultivation takes place in areas where rainwater is the main water source, something that reduces the problems associated with water consumption[84]. Although organic production does not necessarily deliver reduced water consumption, the quality of run-off water is significantly better for both people and the natural environment. It is difficult to say whether there is any difference in yield when comparing conventional and organic cotton production. One of the reasons for this is that there are already major yield variances within the individual systems.

It is also possible for Nordic Swan Ecolabel toys to contain recycled cotton fibre. This is cotton fibre that is recovered from used clothing and textiles from consumers or industrial waste (post- or pre-consumer textile waste). Industrial textile waste may be surplus material from the production of yarns, textiles and textile products, for example selvedge from weaving and fabric remnants from factory cutting rooms. The textiles are stripped and pulled into fibres, which are then carded and spun into new yarn. Recycled cotton may also be blended with virgin fibres to improve yarn strength[85].

Background to the requirement O44 Synthetic fibre – Fossil origin

The requirement is new in this generation of the criteria.

Nordic Ecolabelling wishes to support a circular economy by encouraging the use of recycled materials over virgin raw material – in this case crude oil.

Substantial environmental potential is expected in the future with regard to reduce resource consumption and CO_2 emissions[86], if the textile industry is able to covert textile waste into new raw materials. However, today fibre-to-fibre recycling remains limited[87], and recycled polymers from other synthetic materials such as plastics are

[83] Revision of the European Ecolabel and Green Public Procurement (GPP) Criteria for Textile Products – Technical report and criteria proposal, Working document, European Commission, Joint Research Centre Institute for Prospective Technological Studies (IPTS) 2013.
[84] "The sustainability of cotton – consequences for man and the environment", Kooistra K., Termorshuizen A and Pyburn R., Wageningen University & Research, report no. 223, April 2006.
[85] Wikipedia – Cotton recycling, https://en.wikipedia.org/wiki/Cotton_recycling (visited 26.08.2019).
[86] Sandin, G, Environmental impact of textile reuse and recycling – A review, Journal of Cleaner Production Volume 184, 20 May 2018, Pages 353-365.
[87] PULSE OF THE FASHION INDUSTRY, Global Fashion Agenda & The Boston Consulting Group 2017.

often used today. The requirement therefore accepts both fibre-to-fibre recycling and polymer-to-fibre recycling.

Nordic Ecolabelling wishes to stimulate increased use of recycled materials in textile production, thus avoiding the use of virgin fossil materials. It is currently reasonably possible to use recycled material for fibre types such as polyester and polyamide, but the same options are not as widely available for other fibre types as yet (August 2019).

The review “Environmental impact of textile reuse and recycling - A review”[88] describes that there is strong support for claims that textile reuse and recycling in general reduce environmental impact compared to incineration and landfilling, and that reuse is more beneficial than recycling. Benefits mainly arise because of the assumed avoidance of production of new products. The is also scenarios under which recycling may not be beneficial, for example in cases where the avoided production processes are relatively clean.

The requirement therefore seeks to encourage fibre types, that are able to make use of recycled feedstock. Advancements are being made in this area all the time and the possibility of using recycled feedstock may therefore change over time.

The requirement states that the feedstock used in the recycled raw material must be traceable. Without traceability, it is difficult to ensure that the material really is recycled. Traceability can be documented with a certificate from a third-party certifier of the supply chain, such as the Global Recycled Standard, for example. The Global Recycled Standard (GRS) is an international, voluntary standard that sets requirements for third-party certification of recycled content and chain of custody in the supply chain. This standard restricts the use of undesirable chemicals in the manufacture of new products, but the standard does not cover chemicals that may enter via the recycled materials, and thus gives no guarantee about what may be present in the finished GRS product[89]. Alternatively, traceability may be documented by the producer of the recycled raw material declaring that 100% recycled feedstock has been used.

Recycled polyester

The main source of recycled feedstock for polyester fibre is currently rPET from used water bottles. PET may be recycled both mechanically and chemically[90]. An LCA conducted for the Nordic Council of Ministers[91] describes the environmental effects of chemical recycling of PET. The analysis shows that chemical recycling is better than incineration of PET, in terms of the following impact categories: climate change, water consumption and total energy consumption, but is worse than incineration when it comes to eutrophication and photochemical ozone creation potential. Several other studies confirm this result.

A point is also made about uncertainty linked to data sets originating from the Teijin factory in Japan – one of the only commercial plants in operation today, where waste

[88] Sandin, G, Environmental impact of textile reuse and recycling – A review, Journal of Cleaner Production Volume 184, 20 May 2018, Pages 353–365
[89] Global Recycled Standard http://textileexchange.org/wp-content/uploads/2017/06/Global-Recycled-Standard-v4.0.pdf
[90] Ragaert, K. Mechanical and Chemical Recycling of Solid Plastic Waste, 2017 Waste Management publication
[91] Nordic Council of Ministers (2016). Gaining benefits from discarded textiles: LCA of different treatment pathways

polyester products are chemically processed into new polyester filament fibres under the brand name ECO CIRCLE™ FIBERS. Teijin also produces rPET from PET bottles for polyester staple fibre and textiles under the brand name EcoPET[92].

Recycled polyamid

Polyamide (PA, nylon) can be recycled via the mechanical or chemical processing of nylon waste, as happens, for example, in the carpet industry. A comparative LCA study of virgin nylon and recycled nylon for carpet manufacturing, conducted for Shaw Carpets (2010) and reviewed by LBP-GaBi University of Stuttgart, highlights significant environmental benefits from the use of recycled nylon. There are, however, still only a limited number of recycled nylon suppliers.

Econyl is one of the leading suppliers, with its nylon 6 for textile production, which uses a chemical process with 100% pre- and post-consumer recycled content[93]. The split is around 50% pre- and 50% post-consumer[94]. There are several examples of textile brands that use Econyl in their polyamide products. An EPD for Econyl declares that ECONYL® polymer is free from substances that are harmful to health and the environment due to being carcinogenic, mutagenic or reprotoxic, allergenic, PBT or vPvB[95].

Recycled polyuretane

Sheico Group, a Taiwanese sportswear manufacturer that also produces spandex, is able to produce 100% spandex with Global Recycled Standard (GRS) certification. Their Sheiflex spandex yarn is made from 100% recycled industrial waste spandex from its own and competitors' production lines. Sheico has managed to recycle spandex following the development of new technology.

To ensure that the polymer from the waste yarn is dissolved homogeneously, so the recycled spandex can offer the same stability and quality as virgin spandex, an analysis of the recycled fibre is required in order to adjust the purity and viscosity before spinning[96].

Background to the requirement O45 Synthetic fibre – Bio-based origin

The requirement is new in this generation of the criteria.

For background see requirement O30.

Background to the requirement O46 Wool and other keratin fibres

The requirement is new in this generation of the criteria. Wool was not previously included in the criteria. The requirement only accepts wool fibre from sheep and other keratin fibres from camels, alpaca and goats. Angora wool from rabbits is not accepted, for example.

[92] Nordic Council of Ministers (2016). Gaining benefits from discarded textiles: LCA of different treatment pathways
[93] http://www.econyl.com/textile-yarn/
[94] https://www.bipiz.org/en/advanced-search/aquafil-econyl-or-how-to-produce-nylon-6-from-100-regenerated-materials.html
[95] ENVIRONMENTAL PRODUCT DECLARATION for ECONYL® POLYMER, Aquafil 2013 and updated 2017.
[96] Spandex gets recycled certification, https://www.ecotextile.com/2017110723070/labels-legislation-news/spandex-gets-recycled-certification.html (accessed on 26/02/2019)

Wastewater from washing wool (scouring) often contains large quantities of pesticides that are used to treat sheep. Pesticide residues can have a significant environmental impact if discharged into the aquatic environment.

At the same time, pesticides such as organochlorine compounds, which are known to be toxic, non-readily degradable and bioaccumulative, may also harm the environment while active in the wool. Despite a ban, this type of pesticide is still used[97]. Wool scouring firms and exporters of wool have the greatest scope to control the use of pesticides for ectoparasites by issuing absolute requirements to the wool producers (farmers). This requirement can therefore be documented by at least 75% of the wool farmers declaring that they do not use the above-mentioned pesticides. Organic wool automatically meets the requirement.

According to the International Wool Textile Organization (IWTO), in 2015 less than 1% of global sheep farming was organic[98]. Since wool at the same time accounted for only 1% of the total fibre production (figures from 2017), the total amount of organic wool is not that extensive[99]. The judgement has therefore been made that only accepting organic wool would be too tough a requirement.

Test method IWTO DTM-59: 2009; Method for the Determination of Chemical Residues on Greasy Wool[100]. This method tests for the presence of four groups of pesticide residues: organochlorine compounds, organophosphates, synthetic pyrethroids and insect growth regulators.

Background to the requirement O47 Wool - Ban on mulesing

The requirement is new in this generation of the criteria. Wool was not previously included in the criteria.

Mulesing remains a problem associated with merino wool. Merino sheep are specially bred to have wrinkled skin, so that they produce more wool. This causes urine and faeces to collect around the hind quarters, which attracts flies, who then lay eggs in the folds of skin. Surgical mulesing involves removing wool and skin on the rear end of the sheep to avoid parasites from egg-laying flies. This method is primarily used in Australia. The requirement prohibits this type of treatment and must be documented with a declaration from the wool producer stating that mulesing is not performed.

Australia, the majority of the country's wool producers still use surgical mulesing [101]. There is, however, a move to find alternatives and Australia's newest non-surgical alternative to the surgical method will be available to sheep farmers in 2019. The process involves the use of liquid nitrogen on the rear of the sheep[102]. Existing alternatives to surgical mulesing include selective breeding of sheep with low sensitivity to fly strike, adjusting the time of shearing the sheep and the time of lambing. Work is also under way on various forms of blowfly control. The combination

[97] Ravidnran, J. et al., Organochlorine pesticides, their toxic effects on living organisms and their fate in the environment, Interdiscip Toxicol. 2016 Dec; 9(3-4): 90-100
[98] International Wool Textile Organization (IWTO), "Wool Production." Accessed 07.09.2017: http://www.iwto.org/wool-production
[99] Preferred Fiber & Materials Market Report 2018, Textile Exchange
[100] https://www.iwto.org/sites/default/files/images/iwto_news/image/INDEX-Red%20Book%202015.pdf accessed 13.05.2019
[101] New Zealand Bans Mulesing, article Sept. 2018 at https://www.peta.org.au/news/new-zealand-bans-mulesing/
[102] Non-surgical mulesing alternative for Australasia, article Sept. 2018 at https://www.ecotextile.com/20180911123719/materials-production-news/non-surgical-mulesing-alternative-for-australasia.html

of these measures is considered to be sufficiently effective, compared to surgical mulesing[103].

6.8 Filler materials

The requirements in this section relate to filler materials made of down, feathers and other renewable raw materials. Such other renewable raw materials may be seeds, kernels, rice, etc.

Filler materials made of textile fibre must comply with the requirements in section 6.7. E.g. polyester must, among other things, meet requirement O35 concerning formaldehyde.

Filler materials made of plastic, foam, rubber (latex) or silicone must comply with the requirements in section 6.6.

Filler materials made of wood or bamboo (e.g. wood pellets) must comply with the requirements in section 6.11. Requirements O50 and O51 in this section must also be fulfilled.

6.8.1 Requirements that apply irrespective of amount in product

The requirements in this section concern all types of filler material. See the definition of material type in section 6.2.

Background to the requirement O48 Feathers and down - ethical requirements

The requirement is new in this generation of the criteria.

Geese are the main target of feather and down plucking from live birds, but the method may also be applied to other duck species. Plucking feathers from live geese for down production is prohibited within the EU, although down and feathers may be "harvested" during the moulting period.

The European Food Safety Authority (EFSA) has investigated the issue and concluded that it is possible to pluck down and feathers from live geese without causing pain, as long as it takes place during the moulting period[104].

The problem is that this is not taken into consideration in commercial operations and there are cases where the law is not complied with in all EU member states. The recommendation from EFSA is that goose down and feathers should only be plucked during the moulting period, and that control systems should be created for this. No such control system is in place yet, however, and Nordic Ecolabelling has therefore set a requirement prohibiting the use of down and feathers plucked from live birds. Forced feeding is also not permitted.

Textile Exchange has published a certifiable standard for down and feathers – the Responsible Down Standard (RDS). RDS ensures an independent third-party assessment of the key aspects of breeding and handling the animals and ensures traceability all the way back along the supplier chain. The purpose of the standard is to improve the welfare of the birds, and also to provide greater reassurance to retailers and consumers with regard to the purchase of sustainable materials. The aim of the Responsible Down Standard is to ensure that down and feathers do not come from birds that have suffered unnecessary harm. The standard can be applied

[103] Mulesing & Welfare at http://blogs.ubc.ca/mulesing/take-home-message/
[104] EFSA Scientific Opinion on the practice of harvesting (collecting) feathers from live geese for down production, 25 Nov 2010.

to both mixed and 100% certified products. However, the end-product can only be labelled as RDS-certified if the down or feathers in the product are 100% certified.

The certification ensures, for example, that forced feeding is prohibited and that down and feathers are not plucked from live birds. It also ensures that the birds are not kept in cages and have space to express their natural behaviours. This includes the requirement that there must be nesting areas for female birds[105]. There is a long list of certified down and feather suppliers, which can be found here: http://responsibledown.org/for-business/find-certified-companies/all-companies-certified-to-the-responsible-down-standard/. These feathers and down are used in various products on the market, such as clothing, duvets and other textile products with fillings.

Background to the requirement O49 Feathers and down - Microbial cleanliness

The requirement is new in this generation of the criteria.

The standard EN 12935 “Feather and down – Hygiene and cleanliness requirements” sets requirements for the microbial cleanliness of feathers and down as a filling material. It gives the oxygen index number as an indicator of the material’s cleanliness.

The standard states that an oxygen index number of less than 20 for the filling material is considered hygienically acceptable and so no further analysis of microbial activity in the material is necessary.

The Nordic Swan Ecolabel criteria require an oxygen index number of max. 10, representing high microbial cleanliness. EN 12935 refers to EN 1162 “Feathers and down. Test methods – Determination of the oxygen index number” and EN 1163 Feather and down – Test methods – Determination of the oil and fat content.

Background to the requirement O50 Other renewable raw materials – Microbial cleanliness

The requirement is new in this generation of the criteria.

The requirement has been included to ensure that filler materials made from renewable raw materials do not contain levels of bacteria and mould that are harmful to health.

The standard Ph. Eur. 5.1.4. “Microbiological Quality of Non-sterile Pharmaceutical Preparations and Substances for Pharmaceutical Use”[106] is a European standard developed to test non-sterile pharmaceutical products such as natural medicines. This standard refers to the methods Ph. Eur. 2.6.12. “Microbiological Examination of Non-sterile Products: Microbial Enumeration Tests” and 2.6.13. “Microbiological Examination of Non-sterile Products: Test for Specified Micro-organisms” to test for levels of TAMC (total aerobic microbial count) and TYMC (total combined yeasts/moulds count). Standard Ph. Eur. 5.1.4. sets acceptable levels for TAMC at 10^3 and TYMC at 10^2. These are the same levels that the Danish Environmental Protection Agency recommends for cosmetic rinse-off products[107].

[105] http://responsibledown.org/wp-content/uploads/2015/07/TE-Responsible-Down-Standard-2.0-opt.pdf accessed 07.06.2016
[106] Ph. Eur. 5.1.4: https://www.medicinalgenomics.com/wp-content/uploads/2013/04/CFU_Tolerance_European.pdf
[107] Danish Environmental Protection Agency, Vejledning til sikkerhedsvurdering af kosmetiske produkter: https://www2.mst.dk/Udgiv/publikationer/2000/87-7944-335-4/pdf/87-7944-335-4.pdf

Background to the requirement O51 Chemical additives and treatments

The requirement is new in this generation of the criteria and has been set to ensure that filler materials contained no hazardous substances. Feathers and down are washed to achieve cleanliness. To ensure that no hazardous substances are used for washing, impregnation or other chemical treatments of feathers and down, any chemicals used must meet the requirements in section 6.7.2.

Chemical treatments or additives are unnecessary for other renewable raw materials (e.g. seeds, kernels, rice, etc.) and so are prohibited in the requirement.

6.9 Metal

The requirements in this section concern material elements and types made of metal. See the definition of the terms material element and metal type in section 6.2.

6.9.1 Requirements that apply irrespective of amount in product

The requirements in this section concern all product elements made of metal. See the definition of material element in section 6.2.

Background to the requirement O52 Copper, tin, lead and cadmium

The requirement is new in this generation of the criteria.

Copper, tin, lead and cadmium can create problems for the recycling of steel[108] and are therefore prohibited.

Migration of certain heavy metals that are found in small amounts in metals is covered by requirement O53 concerning testing in accordance with EN 71-3 in the EU Toy Safety Directive.

Background to the requirement O53 Tests Safety of toys EN 71

The requirement has been made more specific in this generation of the criteria.

EN 71-3: Toys – Safety requirements – Part 3: Migration of certain elements. This standard specifies requirements concerning the migration of certain metals and selenium.

Migration of metals and selenium is to be tested in accordance with the methods described in EN 71-3.

The purpose of the requirement is to ensure that children are not exposed to the effects of harmful substances in toys.

Heavy metals have an impact on the environment and several heavy metals are toxic, while some are carcinogenic (see further details below). This makes it relevant to ensure that metal elements used in the product group are free from the heavy metals chromium, nickel, lead, cadmium and mercury.

As the product group contains many product types that may consist of many small material elements, a lot of documentation would have to be obtained to cover all metal elements. The requirement is therefore limited to toy types/elements covered

[108] EU-27 Steel Scrap Specification, May 2007: https://www.euric-aisbl.eu/facts-figures/standards-specifications

by EN-71-3 and metal elements with which the child may come into contact during normal use.

Test reports in accordance EN 71-3 are to be submitted as documentation, showing which tests have been completed, the results and so on. In addition, the test laboratory must confirm compliance with the requirements in EN 71-3. A simple statement of compliance with EN 71-3 is not sufficient documentation, as the requirement applies to more toy types/elements than are covered by EN-71-3. The declaration of compliance with the requirements in EN 71-3 is used merely to help with the processing of the case.

Background to the requirement O54 Surface treatment – Chemical products, Classification

The requirement has been tightened since the previous generation of the criteria, with the addition of the classifications H400, H410, H411, H420, H362, H371, H373, H317, H300, H301, H311, H331, H302, H312 and H332.

Nordic Ecolabelling strives to ensure that the health and environmental impacts of the products are as low as possible. Hence the inclusion of requirements that prohibit specific classifications relating to the chemical products used in production.

Surface treatment with paint and varnish is vital to the service life and design of most industrially produced items. To achieve specific optical and durability characteristics, surface treatments combine a number of chemical raw materials: pigments, fillers, binders, solvents and additives of various kinds.

Some of these substances have adverse environmental and toxicological characteristics. This applies, for example, to solvents (VOCs or volatile organic compounds), which are found in all water-based paint to a greater or lesser degree.

Various types of surface coating may be relevant for the product group. Overall, water-based paints such as aqueous acrylic, aqueous epoxy and aqueous polyurethane could be used, but spray paint is more and more common. The advantage of spray paint is that it avoids the need for solvents, but in this case more energy is used for the process instead.

There is often a preparatory treatment before the actual surface treatment. The pre-treatment usually has a degreasing function, to ensure better adhesion between the surface (metal) and the following surface coating. Some pre-treatments also have a good barrier effect that combats corrosion[109]. Pre-treatments are not covered by this requirement.

Background to the requirement O55 Surface treatment – Ingoing substances, Classification

The requirement has been tightened since the previous generation of the criteria, with the addition of the classification H362.

For the background to this requirement, see requirement O7.

The requirement in relation to the EU Toy Safety Directive – Appendix C

[109] Kortlægning af substitutionsmuligheder samt sundheds- og miljømæssig vurdering af malingsystemer til industriel overfladebehandling af metal og træ, Danish Environmental Protection Agency, 2011

Requirement O55 covers several of the substances for which there are requirements in Appendix C as of May 2021 – read more under requirement O7.

Background to the requirement O56 Surface treatment – Prohibited substances

The requirement has been changed in this generation of the criteria.

Volatile organic compounds (VOC)

The requirement concerning volatile organic compounds (VOC) has been amended in this generation of the criteria. The requirement limit has been changed from 130 g VOC/l to 80 g VOC/l. The level of 80 g VOC/l is identical with the requirement concerning single-component specialist surface treatments and two-component specialist surface treatments in the criteria for Nordic Swan Ecolabelled Indoor paints and varnishes (generation 3) and the EU Ecolabel for Indoor and outdoor paints and varnishes (version 2014).

For the background to this requirement, see requirement O8.

The requirement in relation to the EU Toy Safety Directive – Appendix C
Requirement O56 covers several of the substances for which there are requirements in Appendix C as of May 2021 – read more under requirement O8.

Background to the requirement O57 Coating with metals (metallisation)

The requirement has been tightened since the previous generation of the criteria, in that it only permits an exemption for zinc coating and not nickel coating. There are also new requirements concerning facilities that carry out galvanising, see separate requirement O58 and O59.

Metals in the Nordic Swan Ecolabelled product must not be coated with cadmium, chromium, nickel, copper, tin, lead, zinc or their compounds. In exceptional cases, zinc coatings can be accepted on exposed and small metal parts (screws, bolts, mechanisms, etc.) if this is necessary due to extensive physical wear or for safety reasons. The justification for permitting zinc coating is that the product's function depends on critical parts being as durable as possible. For facilities that carry out galvanising, see also requirement O58 and O59.

Zinc is an essential metal, since living organisms require zinc. In excessive quantities zinc can be toxic for organisms in the environment and can cause stomach cramps and vomiting, and anaemia after prolonged ingestion. It can also affect rats' ability to reproduce, but it is not known whether it also has this effect on human beings.

However, coating with these metals has adverse effects on human health and the environment. The chemicals that are used have a number of classifications, e.g. Chromium VI is classified as H317, H400, H410 and H350. Chromium III does not have these effects[110]. Nickel plating salts e.g. NiCl2, are classified as H350, H341 and H360D. The substances in the finished coating are converted into pure metal layers that are not classified. However, nickel is known to cause allergies as small amounts of nickel are released from the coating upon contact with skin[111].

[110] http://www.syf.se/Filer/Guide_ytbeh_v0.pdf
[111] Shane Donatello, Hans Moons and Oliver Wolf, Revision of EU Ecolabel criteria for furniture products, final technical report, 2017

6.9.2 Requirements that apply to metal types constituting over 5% by weight of the toy

The requirements in this section apply to metal types that constitute more than 5 wt% of the toy. See the definition of material type in section 6.2.

Background to the requirement O58 Metal coating Coating with metals (metallisation) – Facility that carries out surface treatment with zinc (5 wt%)

The requirement has been tightened compared with the previous generation of the criteria.

The requirement concerning facilities that carry out galvanisation has been tightened, in part to include the stipulation that the process must be wastewater-free. A wastewater-free process means that there are no discharges to any recipient watercourse or municipal water treatment plant. Waste must thus be collected and sent to an approved waste management operator as hazardous waste. A wastewater-free facility requires higher energy consumption, since the process water must be distilled/evaporated, but it is common to install heat exchangers to make full use of this energy. All more modern or updated facilities are wastewater-free. Wastewater-free facilities will be declared BAT (Best Available Technology) according to the Swedish industry body in its new batch report, due in 2020. There are no major differences across the Nordic region that would make it difficult to implement, according to the industry body.

For more background, see requirement O57.

6.9.3 Requirements that apply to metal types constituting over 10% by weight of the toy

The requirements in this section apply to metal types that constitute more than 10 wt% of the toy. See the definition of material type in section 6.2.

Background to the requirement O59 Metal coating Coating with metals (metallisation) – Facility that carries out surface treatment with zinc (10 wt%)

The requirement has been tightened compared with the previous generation of the criteria.

For background, see requirement O58.

6.9.4 Requirements that apply to metal types constituting more than 30% by weight of the toy

The requirements in this section apply to metal types that constitute more than 30 wt% of the toy. See the definition of material type in section 6.2.

Small elements such as screws, bolts, fittings, buttons and suchlike are excluded from the calculation of the wt% of the toy.

Background to the requirement O60 Production of steel

The requirement is new in this generation of the criteria.The requirement has been changed by now requiring either a high proportion of recycled or fulfilling requirements for virgin steel production and primary aluminium production. The limit for when the requirement is to be met has been lowered from 50% by weight of metal in the product in the previous generation and from the limit in the consultation document where it was 30% by weight of metal. Now the limits for when the requirements are to be met are 30% by weight for steel and 10% by weight for

aluminium in the product. This is because aluminium weighs significantly less than steel.

Using recycled metal significantly reduces the environmental impact and provides a significant climate benefit. Among other things, this is highlighted in the taxonomy work in the EU[112]. Nordic Ecolabelling is aware that the availability of recycled metal and traceability can be a challenge. But in a world with an increasing focus on circular economy, Nordic Ecolabelling believes that there will be an increased focus on this in the future. Traceability in the production chain is also a value in itself, and is important for several aspects i.e., it provides opportunities to select suppliers based on i.e., environmental work, working conditions and quality. Demand for traceability will hopefully contribute to the industry also placing increased focus on this. For Al, Hydro has launched its own traceability certification with a minimum of 75% recycled Al, Hydro Circal[113]. Currently, there is a smaller plant in Luxembourg that can supply this, but from 2020, the Azuqueca plant in Spain will be able to supply Hydro Circal with a production capacity of 25,000 tonnes[114]. The industry average for EU-produced Al is approx. 50% recycled, while for Al outside the EU it is approx. 40%. The big environmental benefit comes from the use of post-consumer recycled aluminium.

The two steel production processes are Basic Oxygen Furnace (BOF) for which the input is iron ore, and Electric Arc Furnace (EAF) for which the input is mainly scrap steel. The current requirement of 20% recycled metal has no significant impact since all steelworks, including the BOF plants, meet this today. It is therefore necessary to raise the requirement to promote the use of recycled steel and traceability. In practice, this means that steel that should contain more than 20% recycled steel must be produced at plants that use EAF technology. There are steel producers using the EAF process across the whole of Europe[115]. According to the World Steel Association[116] the EU produces 58% of steel using BOF and 41% using EAF technology. Globally, approx. 70% is produced using BOF and 30% using EAF technology. In practice, this means that steel that should contain more than 20% recycled steel must be produced at plants that use EAF technology. There are steel producers using the EAF process across the whole of Europe[117]. According to the World Steel Association[118] the EU produces 58% of steel using BOF and 41% using EAF technology. Globally, approx. 70% is produced using BOF and 30% using EAF technology.

In this version of the criteria, Nordic Ecolabelling has for the first time introduced requirements for virgin steel production and primary aluminium production. Requirements for metal can therefore be met either by including a high proportion of recycled, or that several requirements for primary metal production are met. The requirement model is based on a mandatory requirement to the steel / aluminium producer to have an energy and greenhouse gas calculation with defined reduction targets.. Certification with Responsible Steel or ASI is something that Nordic

[112] Taxonomy report, technical annex, EU technical expert group on sustainable finance, March 2020.
[113] https://www.hydro.com/en/products-and-services/low-carbon-aluminium/hydro-circal-75r/ (available 2019-10-17)
[114] https://www.hydro.com/en/media/news/2018/hydro-to-increase-production-of-post-consumer-recycled-aluminium/

Ecolabelling see as positive initiatives for a more sustainable metal production. These are independent certification systems with a focus on both economic, social and environmental aspects. For aluminium, the requirement can also be fulfilled by documenting direct emissions of greenhouse gases and energy efficiency in the electrolysis process, where the limits are based on values stated in the EU taxonomy report. Direct emissions are to be calculated according to the methodology used for EU-ETS benchmarks. Please note that these values may change based on the final outcome of the EU taxonomy work. For steel, the requirement can also be met if the steel comes from a manufacturer who has adopted new technologies that significantly reduce the climate impact from production. The technologies are similar to those stated in the EU's technical annex to the taxonomy report[119].

Background to the requirement O61 Production of aluminium

See under requirement O60.

6.10 Paper, paperboard and cardboard

The requirements in this section concern material elements and types made of paper, paperboard or cardboard.

Sales packaging and user instructions for the toy are not covered by the requirements in this section, but printed matter, boxes and so on that are employed during the use of the toy (e.g. the box for a jigsaw puzzle) are covered by this section. If the box for a board game or for other types of toy is used in the game, the box is subject to the requirements in this section.

6.10.1 Requirements that apply irrespective of amount in product

The requirements in this section concern all product elements made of paper, paperboard or cardboard. For the definition of material element see section 6.2.

Nordic Swan Ecolabelled printed matter (generation 6) are exempted from requirements O63, O64 and O65.

Background to the requirement O62 Tests Safety of toys EN 71

The requirement has been made more specific in this generation of the criteria.

The purpose of the requirement is to ensure that tests in accordance EN 71-3 have actually been performed and that children are not exposed to the effects of harmful substances in toys. Test reports in accordance EN 71-3 are to be submitted as documentation, showing which tests have been completed, the results and so on. In addition, the test laboratory must confirm compliance with the requirements in EN 71-3 for the types of toys for which the application is being made.

A simple statement of compliance with EN 71-3 is not sufficient documentation, as the aim of the requirement is to ensure that tests have been completed and comply with the requirements in EN 71-3. The declaration of compliance with the requirements in EN 71-3 is used merely to help with the processing of the application.

[119] EU technical expert group on sustainable finance, Taxonomy Report: Technical Annex, March 2020: https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy-annexes_en.pdf

EN 71-3: Toys – Safety requirements – Part 3: Migration of certain elements. This standard specifies requirements concerning the migration of certain metals and selenium.

Heavy metals have an impact on the environment and several heavy metals are toxic, while some are carcinogenic (see further details below). This makes it relevant to ensure that metal elements used in the product group are free from the heavy metals chromium, nickel, lead, cadmium and mercury.

Background to the requirement O63 Printing and surface treatment – Chemical products, Classification

The requirement has been amended in this generation of the criteria and harmonised with generation 6 of the criteria for Nordic Swan Ecolabelled Printing companies and printed matter.

The criteria for Nordic Swan Ecolabelled Printing companies and printed matter include both requirements for the printing companie and requirements for the printed matter itself. Nordic Swan Ecolabelled printed matter must meet all the chemical requirements in the criteria for Printing companies and printed matter, but for the printing companie exceptions are allowed up to 5% for each chemical category (inks, adhesives, varnishes, etc.). Therefore, only Nordic Swan Ecolabelled printed matter is permitted and not just that the printing companie is Nordic Swan Ecolabelled.

For more background on this requirement, see requirement O6.

Background to the requirement O64 Printing and surface treatment – Ingoing substances, Classification

The requirement concerning the classification of ingoing chemical substances has been changed in this revision of the criteria to harmonise with the requirements set out in generation 6 of the criteria document for Printing companies and printed matter, and to reflect Nordic Ecolabelling’s stance on restrictions for CMR substances.

The following classifications have been added and made subject to requirements:

Carc 2. H351, Mut.2 H341, Repr.2 H361, Lact. H362.

For more background on this requirement, see requirement O7.

The requirement in relation to the EU Toy Safety Directive – Appendix C
Requirement O64 covers several of the substances for which there are requirements in Appendix C as of May 2021 – read more under requirement O7.

Background to the requirement O65 Printing and surface treatment – Other prohibited substances

The requirement has been changed in this generation of the criteria, and the list of prohibited substances/substance groups has been changed and updated to harmonise with generation 6 of the criteria document for Printing companies and printed matter.

However, the requirement is not identical to the Nordic Ecolabel criteria for Printing and printed matter generation 6. For toys, there is a particularly high focus on children's exposure to substances that are harmful to health, as they are more

exposed. Therefore, there are fewer exceptions to the requirement than are found in the criteria for Printing and Printing Matters. In addition, bans have been added on:

- substances on the EU member state initiative "Endocrine Disruptor Lists", List I, II and III.
- butyl hydroxyanisole (BHA)
- phthalates
- volatile aromatic hydrocarbons (VAH)
- volatile aromatic compounds (VOC) at more than 3 wt%
- pigments and additives based on lead, tin, cadmium, chromium (VI), mercury, antimony, arsenic and their compounds
- bisphenol A, B, F, S and AF

For background regarding these requirements, see requirement O8.

Halogenated solvents, which may be used for printing inks, surface treatments and adhesives, are volatile organic compounds (VOC) that are undesirable, because they are typically harmful to health, often not readily degradable in an aquatic environment and can have negative effects on the planet’s ozone layer. In addition, certain halogenated solvents are classified as carcinogenic.

Hypochlorite bleaches are oxidisers. There are two types of hypochlorite bleach used in the pulp and paper industries, examples of which are calcium hypochlorite and sodium hypochlorite. These may also be designated as reactive chlorine compounds and defined as substances that can form persistent organic chlorinated compounds that may be carcinogenic. Some of the compounds formed have been identified, such as chloroform and carbon tetrachloride, while several other by-products have not been identifiable.

EDTA is a complexing agent that is suspected of being able to mobilise heavy metals in certain environments, since it can be a complexing agent for these.

For more background on this requirement, see requirement O8.

The requirement in relation to the EU Toy Safety Directive – Appendix C

This requirement covers several of the substances for which there are requirements in Appendix C as of May 2021 – read more under requirement O8.

6.10.2 Requirements that apply to paper, paperboard and cardboard types constituting more than 10% by weight of the toy

The requirements in this section apply to paper, paperboard and cardboard types constituting more than 10 wt% of the toy. See the definition of material type in section 6.2.

Nordic Swan Ecolabelled printed matter (generation 6) are exempted from requirements O66 and O67.

Background to the requirement O66 Fibre raw materials – Prohibited tree species

The requirement is new in this generation of the criteria.

For background on this requirement, see requirement O69.

Background to the requirement O67 Fibre raw material – Traceability and certification

The requirement has been changed in this generation of the criteria. It is now required that all fibre raw material must be covered by Chain of Custody certification, certified, covered by the FSC/PEFC compliance schemes or be recycled material.

For background on this requirement, see requirement O74 Traceability and certification.

6.11 Solid wood and bamboo

The requirements in this section concern material elements and types made of solid wood and bamboo.

6.11.1 Requirements that apply irrespective of amount in product

The requirements in this section concern all product elements made of solid wood or bamboo. See the definition of material elements in section 6.2.

Nordic Swan Ecolabelled durable wood with a valid licence is exempted from requirements O69.

Nordic Swan Ecolabelled indoor paints and varnishes are exempted from requirements O71, O72 and partial O73.

Background to the requirement O68 Tests Safety of toys EN 71

The requirement has been made more specific in this generation of the criteria.

The purpose of the requirement is to ensure that tests in accordance EN 71-3 have actually been performed and that children are not exposed to the effects of harmful substances in toys. Test reports in accordance EN 71-3 are to be submitted as documentation, showing which tests have been completed, the results and so on. In addition, the test laboratory must confirm compliance with the requirements in EN 71-3 for the types of toys for which the application is being made. A simple statement of compliance with EN 71-3 is not sufficient documentation, as the aim of the requirement is to ensure that tests have been completed and comply with the requirements in EN 71-3. The declaration of compliance with the requirements in EN 71-3 is used merely to help with the processing of the case.

EN 71-3: Toys – Safety requirements – Part 3: Migration of certain elements. This standard specifies requirements concerning the migration of certain metals and selenium.

Heavy metals have an impact on the environment and several heavy metals are toxic, while some are carcinogenic (see further details below). This makes it relevant to ensure that material elements used in the product group are free from the heavy metals chromium, nickel, lead, cadmium and mercury.

Background to the requirement O69 Prohibited tree species

The requirement has been changed in this generation of the criteria.

Several tree species are restricted or not permitted for use. The list of restricted tree species is based on tree species that are relevant to Nordic Ecolabelling's criteria, i.e., tree species that have the potential to be included in Nordic Ecolabelled products. Listed tree species are indicated by the scientific name and the most common trade names. The scientific name/trade name is not always adequate, as

there may be more than one scientific name/trade names for the listed tree species than the list indicates.

Criteria for tree species found on the list are:

a) Tree species listed on CITES Appendices I, II and III.
b) IUCN red list, categorized as critically endangered (CR), endangered (EN) and vulnerable (VU).
c) Regnskogsfondet1 (Rainforest Foundation Norway) tree list
d) Siberian larch (originated in forests outside the EU)

Species on the CITES list are prohibited for use in Nordic Ecolabelled furniture and fittings. CITES is an international convention for the control of trade (across borders) of wild fauna and flora. The tree species on CITES are, dependent on how threatened they are, listed in Appendix I, II or III. Species listed in Appendix I, are highly endangered and trade with these species is totally banned. For the remaining tree species, special permits for import and export are required (Appendices II and III). CITES is regulated by EU legislation (Council Regulation (EC) No 338/97) and trees with valid CITES permits are considered to be legally harvested under EUTR (EU Timber Regulation).

Nordic Swan Ecolabel's ban on the use of tree species listed in CITES (Appendix I, II or III) goes beyond the EU legislation. CITES regulates trade in endangered species, and there are also challenges with corruption in the trade in wild animals and plants. Therefore, Nordic Ecolabelling does not want to approve species on any of the appendices.

IUCN Red Lists are the world's most comprehensive inventory of the global conservation status of the planet's biological species, including trees. IUCN Red List has established clear criteria to assess the risk of extinction according to the origin of the tree species. These criteria cover all countries and all species in the world. Nordic Ecolabelling is aware that the IUCN's red list system only focuses on the extinction risk of species, and therefore is not designed for an overall assessment of whether a tree species can be provided with sustainable origin. However, the list is continually being updated and thereby is an important tool to estimate a specific tree species' conservation status on a global scale. Nordic Swan Ecolabel wishes to prohibit tree species listed as endangered (categories CR, EN and VU).

Regnskogfondet (Rainforest Foundation Norway) is an NGO in Norway that works to protect the world's remaining rainforests. Currently, Regnskogsfondet does not see any credible certification schemes working in the tropics, and therefore recommends full stop of buying tropical timber. Regnskogsfondet has developed a list of tropical tree species based on tree species found on the Norwegian market. This list works as a guide to comply with Norwegian guidelines regarding non-use of tropical wood in public construction.

We consider this a pragmatic approach for handling tropical tree species on the Nordic market.

In addition, Siberian larch (originated in forests outside the EU) is on the tree list. Siberian larch is a coveted tree species in the construction industry due to its high quality. The tree species is widespread in the Eurasian northern boreal climate zone, and particularly the species Larix sibirica, Larix gmelinii, Larix cajanderi and Larix sukaczewii are widespread in the large areas of intact forest landscapes (IFL) in

Russia. Siberian larch is to be seen as an indicator species for boreal IFL-areas which are important to keep intact.

Exemption from the tree list

Nordic Swan Ecolabelling is aware that tree species originating from b), c) or d) can originate from legal and sustainable forestry.

Therefore, it is possible to use tree species listed on b), c) or d) if the applicant/manufacturer/supplier can demonstrate compliance with a number of strict requirements regarding certification and traceability.

Many of the tree species on the list are grown in countries which still have large areas of IFLs. These are important to protect due to biodiversity and climate. Many of these countries also have a high risk of corruption and the national legislation related to environment, human rights and ownership to land are weak and/or not controlled by the authorities. There are different views on whether certification is good enough to meet the challenges of forest management in land with a high risk of corruption and illegal logging.

For instance, relevant challenges related to this have been published by Danwatch in a number of articles in 2018[120],[121] and by redd-monitor.org in 2019[122]. Greenpeace International has ended its memberships in FSC on the grounds that the certification body is no longer meeting its aims of protecting forests and human rights[123]. Other environmental organisations like WWF support certification as an important tool for sustainable forestry in these countries. However, due to the uncertainty whether FSC and PEFC certification systems are good enough in protecting important areas of biodiversity and ethical aspects like human rights and land ownership in areas with a high risk of corruption, Nordic Ecolabelling have a precautionary approach and wants further documentation about the tree species and its origin.

To document full traceability of the tree species, the applicant/manufacturer/supplier must present a valid FSC/PEFC Chain of Custody certificate that covers the specific tree species and demonstrate that the tree is controlled as FSC or PEFC 100%, through the FSC transfer method or PEFC physical separation method.

This means that Nordic Swan Ecolabelling does not accept the FSC percentage or credit control system as well as PEFC percentage system. Full traceability of the tree species back to the forest/certified forest unit, enables the applicant/manufacturer/supplier to document that the tree species does not come from an area/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 Intact Forest Landscape (IFL), defined by Intactforest.org in 2002[124]. Intactforest has been monitoring IFL-areas since 2000 and has developed an online up to date mapping tool that shows the extent of IFL back to 2002. The monitoring results

[120] https://danwatch.dk/undersoegelse/dokumentfalsk-og-millionboeder-danske-byggemarkeder-saelger-trae-forbundet-til-ulovlig-hugst-i-amazonas/
[121] https://danwatch.dk/undersoegelse/baeredygtighedsmaerke-er-ingen-garanti-for-baeredygtigt-trae/
[122] https://redd-monitor.org/2019/08/29/evicted-for-carbon-credits-new-oakland-institute-report-confirms-forced-evictions-for-green-resources-plantations-in-uganda/
[123] https://www.greenpeace.org/international/press-release/15589/greenpeace-international-to-not-renew-fsc-membership/
[124] http://www.intactforests.org/world.webmap.html, visited January 2020

shows that the world's IFL are being degraded in an alarming speed, and that is the reason for Nordic Swan Ecolabelling refering back to 2002.

Plantation: Nordic Swan Ecolabelling believe, that responsibly run forest plantations can play a role in preserving natural IFLs by reducing the pressure to harvest the world's remaining natural forests.

In order to secure that plantation has not replaced native ecosystems (forest/grasslands) within the last 25 years, tree species has to come from FSC or PEFC certified plantations that were established before 1994. 1994 is in line with FSCs international forest management standard (version 5.2), whereas PEFC is working with 2010.

Background to the requirement O70 Chemicals in reused/recycled elements

The requirement is new in this generation of the criteria.

The requirement has been set in order to maintain a certain amount of control over the type of recycled material used and better control in the drive to ensure that any materials used are free from undesirable substances. Setting a requirement that the wood must be untreated limits the scope to use such wood, but since it is difficult to know what kinds of chemicals have been used, Nordic Ecolabelling wishes to be restrictive. The requirement covers both surface treatment and impregnation with wood preservative.

Background to the requirement O71 Surface treatment – Chemical products, Classification

The requirement has been tightened since the previous generation of the criteria, with the addition of the classifications H300, H302, H312, H332, H362, H371, H373 and H317. EUH 059 has been replaced by H420. H412 and H413 have been removed.

Surface coating with paint and varnish is vital to the service life and design of most industrially produced items. To achieve specific optical and durability characteristics surface treatments combine a number of chemical raw materials: pigments, fillers, binders, solvents and additives of various kinds. Some of these substances have adverse environmental and toxicological characteristics.

For more background on this requirement, see requirement O8.

Background to the requirement O72 Surface treatment – Ingoing substances, Classification

The requirement has been tightened since the previous generation of the criteria, with the addition of the classification H362.

For the background to this requirement, see requirement O7.

The requirement in relation to the EU Toy Safety Directive – Appendix C

Requirement O72 covers several of the substances for which there are requirements in Appendix C as of May 2021 – read more under requirement O7.

Background to the requirement O73 Surface treatment – Prohibited substances

The requirement has been changed in this generation of the criteria.

The requirement concerning volatile organic compounds (VOC) has been amended in this generation of the criteria. The requirement limit has been changed from 130 g VOC/l to 80 g VOC/l. The level of 80 g VOC/l is identical with the requirement concerning single-component specialist surface treatments and two-component specialist surface treatments in the criteria for Nordic Swan Ecolabelled Indoor paints and varnishes (generation 3) and the EU Ecolabel for Indoor and outdoor paints and varnishes (version 2014).

For more background on this requirement, see requirement O8.

The requirement in relation to the EU Toy Safety Directive – Appendix C

Requirement O73 covers several of the substances for which there are requirements in Appendix C as of May 2021 – read more under requirement O8.

6.11.2 Requirements that apply to solid wood and bamboo constituting more than 10% by weight of the toy

The requirements in this section apply to solid wood and bamboo that constitutes more than 10 wt% of the toy. See the definition of material type in section 6.2.

Nordic Swan Ecolabelled durable wood with a valid licence is exempted from requirements O74.

Background to the requirement O74 Traceability and certification

The requirement has been changed in this generation of the criteria.

Nordic Ecolabelling's forestry requirement focuses on sustainable forestry and the traceability of the wood raw materials. The requirement also includes willow, bamboo and cork. These materials may be used in toys, although they are not very common. There is, for example, FSC certified bamboo.

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

Nordic Ecolabelling requires a declaration of the species of wood contained in the Nordic Swan Ecolabelled product. This makes it possible to check the validity of Chain of Custody certificates in the supply chain. The requirement for CoC certification improves the traceability of materials in the supply chain within the guidelines and control systems of the FSC and PEFC. The company's CoC certification proves how certified wood is kept separate from other wood during production, administration and storage and is inspected annually by independent certification bodies. Under this requirement, CoC certification must be held by either the applicant/manufacturer or the supplier of wood raw materials. Nordic Ecolabelling considers it is too strict to require the applicant/toy manufacturer to hold CoC certification.

If the applicant/toy manufacturer has CoC certification and is able to label the finished product with the FSC/PEFC logo, there is a requirement for certified wood raw materials to be allocated from the CoC account for the Nordic Swan Ecolabelled product. This ensures that FSC/PEFC credits are used for the Nordic Swan Ecolabelled production and that the credits are removed from the CoC account and

are not sold twice. This will stimulate increased demand for certified wood raw materials because more certified wood raw materials must be purchased if the manufacturer wants to label other products, and not just the Nordic Ecolabelled products, with the FSC/PEFC logo. It also means that a Nordic Swan Ecolabelled product can have both the Nordic Swan Ecolabel logo and the FSC/PEFC logo. However, there is no requirement for the applicant/toy manufacturer to have CoC certification. If CoC certification is held by the supplier, the applicant/toy manufacturer must have documentary evidence of purchase of certified raw material in the form of a percentage claim on the invoice, i.e. it must be stated on the invoice that a minimum of 70% certified wood raw material has been purchased. Please note that Nordic Ecolabelling approves both the percentage system and the credit system for bookkeeping and sales of certified material.

The requirement has increased the minimum percentage to 70% for all wood species. Previously, this requirement only applied to pine, fir, birch and tropical wood. Tropical wood is now largely covered by the requirement concerning protected tree species. Public sector tenders often require a certification percentage of 70%.

The remaining percentage of wood raw materials must be FSC Controlled Wood or wood from PEFC Controlled Sources. The minimum requirement set by FSC and PEFC for the use of their logos on products is also 70%.

6.12 Wood-based panels

The requirements in this section cover wood-based panels such as chipboard, fibreboard (incl. MDF and HDF), OSB (Oriented Strand Board), laminates (plywood and LVL) and solid wood panels (equivalent to non-load bearing glulam panels or hobby panels). The requirements also cover equivalent bamboo products.

6.12.1 Requirements that apply irrespective of amount in product

The requirements in this section concern all product elements* made of wood-based panels.

Nordic Swan Ecolabelled construction panels with a valid licence automatically fulfil requirement O77.

** See the definition of material element in section 6.2.*

Background to the requirement O75 Tests Safety of toys EN 71

The requirement has been made more specific in this generation of the criteria.

For background on this requirement, see requirement O68.

Background to the requirement O76 Surface treatment

The requirement has been tightened and amended compared with the previous generation of the criteria.

For the background to this requirement, see requirements O71, O72 and O73.

The requirement in relation to the EU Toy Safety Directive – Appendix C

Requirement O76 covers several of the substances for which there are requirements in Appendix C as of May 2021 – read more under requirements O6, O7 and O8.

Background to the requirement O77 Prohibited tree species

The requirement is new in this generation of the criteria.

For background on this requirement, see requirement O69.

6.12.2 Requirements that apply to wood-based panel constituting over 5% by weight of the toy

The requirements in this section apply to wood-based panel that constitute more than 5 wt% of the toy. See the definition of material type in section 6.2.

Nordic Swan Ecolabelled construction panels with a valid licence automatically fulfil all requirements in section 6.12.2.

Background to the requirement O78 Chemical products – Classification

The requirement has been changed in this generation of the criteria.

Classification H362 has been added. Classifications H412, H413 and H334 have been removed.

For more background on this requirement, see requirement O6.

Background to the requirement O79 Ingoing substances, Classification

The requirement has been tightened in this generation of the criteria, with the addition of a ban on H362.

For more background on this requirement, see requirement O7.

The requirement in relation to the EU Toy Safety Directive – Appendix C

Requirement O79 covers several of the substances for which there are requirements in Appendix C as of May 2021 – read more under requirement O7.

Background to the requirement O80 Prohibited substances

The requirement has been changed in this generation of the criteria.

For more background on this requirement, see requirement O8.

The requirement in relation to the EU Toy Safety Directive – Appendix C

Requirement O80 covers several of the substances for which there are requirements in Appendix C as of May 2021 – read more under requirement O8.

Background to the requirement O81 Formaldehyde-emission

The requirement has been changed in this generation of the criteria. In the previous generation of the criteria, the requirement related to chemical products and adhesives used in the production of the panels.

The current requirement concerns formaldehyde emissions from the panels. The requirement has been harmonised with generation 5 of the criteria for Nordic Swan Ecolabelled Furniture.

In the manufacture of wood-based panels, adhesive systems containing formaldehyde are often used. The development shows reduced emissions of formaldehyde from the finished panel. Formaldehyde is a toxic, sensitizing and

carcinogenic substance that Nordic Ecolabelling wants to limit as far as possible both from a work environment point of view in manufacturing, but also to reduce emissions in the use phase.

Formaldehyde emissions from wood-based panels are communicated in the EU with a classification system, defined in the harmonized standard EN 13986. The current lowest emission class is E1 where the limit values are a maximum of 0.124 mg/m3 according to test method EN 717-1. Work is underway on a new common statutory lower limit value in the EU. Nordic Ecolabelling monitors this work and will review all criteria with requirements for formaldehyde emissions when the limit value has been decided.

On 1 January 2020, Germany introduced a new legal requirement which means that the reference method for measuring formaldehyde emission has been changed from the previous EN 717-1 to EN 16516. If the method EN 16516 is used, the limit value is the same as that for E1, 0.124 mg / m3. If, on the other hand, EN 717-1 is used as a method, the panel must meet a limit value of half E1 (0.062 mg / m3). The method EN 16516 was not included in the requirement in the consultation proposal, but as the new legal requirement in Germany will probably mean that this method will become standard for external testing in Europe, it has been added. Tests according to EN 16516 give a higher result than EN 717-1, but there is no exact correlation between the methods yet.

Nordic Ecolabelling has chosen to only refer to methods EN 717-1 and EN 16516 with the same limit values as the legal requirement in Germany.

Other test methods can be approved if an independent third party (e.g. a test institute) has made a correlation. The change gives a stricter level for wood-based panels that are tested in accordance with EN 717-1, and it will be the largest tightening for MDF / HDF that previously had its own slightly higher limit value. It is unclear whether the requirement will be stricter for panels that are tested in accordance with EN 16516. Nordic Ecolabelling wishes to have the same limit values as the German legal requirement.

The requirement in relation to the EU Toy Safety Directive – Appendix C
Appendix C of the EU Toy Safety Directive (2009/48/EC) covers chemicals used in toys for children under the age of 3 or toys intended to be placed in the mouth. Chemical requirements are added to or amended in Appendix C on an ongoing basis[125], and these requirements are then added to the EU Toy Safety Directive by means of separate directives/regulations. Requirement O81 covers substances for which there are requirements in Appendix C as of May 2021:

- Directive (EU) 2019/1929 concerning Formaldehyde
- Formaldehyde classifications include H350 and H341. See also requirements O7, O9, O22, O25, O35 and O36.

6.12.3 Requirements that apply to wood-based panels constituting more than 10% by weight of the toy

The requirements in this section apply to wood-based panels that constitute more than 10 wt% of the toy. See the definition of material type in section 6.2.

[125] http://ec.europa.eu/growth/sectors/toys/safety/legislation_en

Nordic Swan Ecolabelled construction panels with a valid licence automatically fulfil requirement O82.

Background to the requirement O82 Traceability and certification of wood raw material in wood-based panels

The requirement has been changed in this generation of the criteria.

For the background to this requirement, see requirement O74.

6.13 Spare parts

Some types of toys can have their service life extended by offering spare parts. This in turn reduces the consumption of resources and new production and thus also the environmental impact.

Background to the requirement O83 Spare parts and repair

The requirement is new in this generation of the criteria.

A long or extended service life for a toy reduces the consumption of resources and thereby also the environmental impact. The ability to purchase spare parts is a way to extend the service life of the toy. It is therefore important to set requirements that enable the products to have a long service life.

The requirement covers toys sold to institutions (e.g. schools and nurseries), when the toy consists of individual parts (e.g. play pieces, components or similar) that are necessary for the function or the original play concept. With toys that have individual pieces to play with, there is a greater risk that those pieces might eventually be lost, perhaps leaving a toy that does not work and so is discarded. For toys with individual play pieces, the requirement is limited to toys for institutions, where many children use the toy and the toy is used in a large area, making it reasonable to expect that pieces will be lost more often than would be the case with toys used at home. The requirement applies to toys for public or private institutions.

There are also requirements relating to toys designed to carry a child’s weight and that have moving parts (e.g. toy bikes and toy kick scooters). This applies to toys sold to institutions or private consumers. Toys with an imposed load and complex parts are more vulnerable to wear. It is also usual to expect that toys such as bikes and kick scooters have a long service life, which can be further extended by having spare parts available. Some parts may require special tools to replace or may pose a safety hazard if not installed properly. In these cases, the manufacturer must offer repair instead of spare part(s).

Spare parts are to be offered for a minimum of four years after the purchase date. Toys may sit on store shelves for long time. The toy manufacturers/resellers are typically unable to control how long their toys remain in a store. The requirement therefore states that the purchase date is interpreted as occurring two years after the production date. This way, the toy manufacturers/resellers have a specific date for the minimum length of time they must provide spare parts for a specific toy and the consumers can be reasonably sure that spare parts will be available for the toy for at least four years after the purchase date.

The German Ecolabel Blauer Engel has criteria for toys, the latest version of which as of February 2020 is Toys DE-UZ 207 (Edition January 2017 Version 2). These criteria require that spare parts are available for a minimum of four years after the toy’s purchase date. The requirement appears to primarily apply to toys comprising

individual parts (e.g. play pieces, components or similar) that are necessary for the function or the original play concept.

6.14 Packaging, storage and transport

The requirements of this section apply to the primary packaging and labels on the primary packaging. Primary packaging is defined here as packaging that follows the product all the way to the consumer. Shipping packaging used in online stores is not considered primary packaging.

Background to the requirement O84 Packaging – Volume

The requirement is new in this generation of the criteria.

With toys in particular, it is common for the packaging to have a large volume in relation to the toy itself. This practice places an unnecessary strain on the environment by increasing the amount of packaging materials, as well as energy consumption and emissions from transport, since fewer products can be transported for that volume unit.

In order to limit the volume of the packaging, a maximum of 2 cm is allowed from each of the outer edges of each of the three dimensions of the toy to the outer edge of the packaging.

For toys that consist of several separate parts or toy sets that are loose in the packaging, this must be calculated when all parts are packed together/assembled, e.g. by shaking parts together in the corner of a box and measuring the outer edges of toys.

For toys that consist of several parts, it is important that the consumer can see which parts it consists of. In these cases, the toy parts will most often be scattered in the packaging, which increases the packaging volume. In order to continue to limit the packaging volume, a maximum of 2 cm is allowed between each toy part, if these are attached to/in the packaging. If the toy parts are loose in the packaging, the distance to the outside of the packaging must be calculated as described above. However, it is allowed that parts are so loosely packed together/assembled that it is possible to see all toy parts after the packaging has been shaken/moved at least four times.

By this is meant a relatively strong shaking/movement of the packaging, which one must expect a consumer generally is willing to do at least four times to assess the toy products that the packaging contains.

In some cases, exceptions are allowed from the requirement of 2 cm to the outer edge of the toy. This applies to toys that require extra protection against damage or volume optimization of packages regarding dimensions of transport pallets. In both these cases, any damage to the toy during transport counteracts the intention with the requirement by a greater resource consumption to produce new toys, in addition, optimal packaging for transport will also save resource consumption during transport. If the exception is due to volume optimization for transport pallets, then a calculation must be submitted which shows that a package optimization is achieved.

Nets and bags are exempt from the requirement, as they already have a low amount of packaging material, compared to e.g. boxes.

Background to the requirement O85 Packaging – Ban on certain plastic types

The requirement has been tightened in this generation of the criteria to include PVDC (polyvinylidene chloride), oxo-degradable plastic and biodegradable plastic.

PVC (polyvinyl chloride) may also contain plasticisers in the form of phthalates that may be reprotoxic or harmful to the environment. In addition to the risk of phthalates in soft PVC, the waste treatment of PVC is particularly problematic[126]. As it is possible to use other types of plastic as packaging, the use of PVC and PVDC is prohibited.

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

Background to the requirement O86 Packaging – Metal

The requirement is new in this generation of the criteria.

Production of metal packaging requires a lot of energy and thus has a higher CO_2 emission than plastic or cardboard packaging. Therefore, the use of metal packaging should be limited. However, metal packaging is permitted in cases where it is intended as a permanent part of the toy, i.e. for example, can protect the toy after purchase or keep toys in several parts together, so that the service life of the toy can be extended.

Background to the requirement O87 Packaging – Recyclability and recycled material

The requirement is new in this generation of the criteria.

Recyclability is an important step in the transition to a circular economy. This provides an opportunity for materials to stay in the resource eco cycle, thereby reducing the use of virgin resources.

The extent to which a material is recycled depends on many factors, such as the sorting options in each country or local authority, and how the consumer ultimately sorts the waste. However, Nordic Ecolabelling has an opportunity to promote the recycling of packaging by setting design requirements that support this process.

The main material in the packaging must be recyclable in the existing waste systems in the Nordic countries today (2021), i.e. that the materials cardboard, paper, plastic and metal can be used. Incineration with energy recovery does not count as material recycling. The EU's action plan for a circular economy focuses on recovery and reuse, particularly with regard to packaging materials. Waste collection can either lead to a high level of material recycling, where valuable materials are returned to the economy, or to an inefficient system where recyclable waste largely ends up in landfill or is sent for incineration. The EU has drawn up a plastics strategy, which includes focusing on making the recycling of plastic more financially viable and working towards global solutions and standards that promote plastics recycling[127].

[126] Notat: Ole Hjelmar, DHI – Institut for Vand og Miljø har i 2002 Notat om massestrømme ved forbrænding af PVC
[127] 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

For cardboard/paperboard/paper packaging, there is also the option of using FSC or PEFC certified fibre raw material. The design of toy packaging is often important and in some cases it may be necessary to use virgin fibre raw material or at least a proportion of virgin fibre raw material. The use of FSC or PEFC certified fibre raw material is therefore permitted. For more background on FSC and PEFC certification, see requirement O74.

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

Colour affects the recyclability of the packaging. Non-coloured or clear plastic packaging is preferred, because it has a wider range of recycling options than strongly coloured plastic. Colourless plastic has the highest recycling value. Dark colours result in darker recycled granules, which is not the preferred choice, and carbon black creates problems in most automated sorting systems, as the NIR (near infra-red reflectance) detector cannot identify dark colours produced using carbon black. Only colourless plastic is accepted, unless it makes use of recycled plastic. Colouring is permitted only if at least 50% by weight of the plastic is recycled plastic.

Background to the requirement O88 Packaging – Design for recycling

The requirement is new in this generation of the criteria.

The best way to ensure high quality recycling is to design the whole packaging in one material, so that individual parts of the packaging do not need to be separated out in the recycling process. Alternatively, the packaging can be designed to include multiple material types, as long as the materials can be easily separated.

Labels made of the same type of plastic as the packaging are preferable, since the recycled plastic will thus be less contaminated and the quality will be better. However, it is possible to use labels of other materials, but in order to reduce the loss of quality of the recycled plastic and problems with sorting the plastic, requirements are set for these labels. If labels consist of other materials (e.g. paper) and make up more than 60% of the surface, it can cause problems in identifying the type of plastic and thus sorting the plastic correctly (e.g. by NIR technology), Therefore, it is required that the labels may not exceed 60% of the packaging surface. The labels and adhesive residues reduce the quality of the recycled plastic and therefore there is a requirement that these must be washable with water below 60°C from the packaging[128]. Paper labels must be without fibre loss because residue paper fibres cause quality issues in the recycled plastic.

Background to the requirement O89 Information on sorting for recycling

The requirement has been reworded since the previous generation of the criteria.

To stimulate the sorting of packaging for recycling, a new requirement has been added concerning the provision of guidance on the packaging about how it should be sorted for recycling. The waste phase is affected by many factors, such as the sorting options in each country or local authority, and how the consumer ultimately sorts the

plan for the Circular Economy, COM(2015) 614 final, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52015DC0614

waste. However, Nordic Ecolabelling can generally encourage greater recycling of packaging by setting requirements that support recycling options.

Background to the requirement O90 Transport and storage – Chlorophenols, DMF, PCB and organotin compounds

The requirement is new in this generation of the criteria.

The requirement that chlorophenols, dimethyl fumarate, PCB and organotin compounds must not be used during transport or storage includes the toy both before and after any finishing. These chemicals are sometimes used to prevent the textiles from being attacked by moths and other insects during storage and transport. They are all chemicals that are harmful to health and the environment and are therefore not permitted.

Chlorophenols and salts and esters of chlorophenol are seldom used, but are considered to remain relevant, as certain suppliers may still use these biocides during transport and storage. Their use is not permitted in the EU, but they could still be applied to raw materials originating from outside the EU.

Dimethyl fumarate (DMF) is a mould and fungus killing agent that can be used to protect furniture or shoes etc. during long transport. DMF can cause serious allergic reactions and is currently regulated in the EU through a ban on imports and sales of goods that contain over 0.1 mg/kg or where DMF has been declared[129].

The most thoroughly investigated organotin compound is tributyltin (TBT), which accumulates in the food chain and has endocrine disrupting effects on marine organisms.

6.15 Social and ethical requirements

Background to the requirement O91 Fundamental principles and rights at work

The requirement has been changed in this generation of the criteria, with the addition of more ILO Conventions and adjustment of the documentation requirements. The requirement has been harmonised with generation 5 of the criteria for Nordic Swan Ecolabelled Textiles, hides/skins and leather.

The requirement refers to the UN's Universal Declaration of Human Rights[130], which deals with respect for and the upholding of human rights, and the International Labour Organisation's (ILO) Conventions on relevant rights at work and OECD Due Diligence Guidance for Responsible Business Conduct. These are recognised and widely used frames of reference for businesses in their work on human rights and workers' rights, and they underpin most of the systems and guidelines that address human rights, such as the OECD, ISO 26000, SA8000, the UN Global Compact, the UN Guiding Principles and the Ethical Trading Initiative.

A new report from April 2019, compiled by Human Rights Watch[131], shows that low purchase prices and shorter lead times for textiles, combined with unfair sanctions and poor terms of payment, increase the risk of occupational accidents in textile factories. The severe financial pressure that many textile brands are putting their suppliers under gives those suppliers powerful incentives to cut costs in ways that worsen working conditions. Many brands demand that their suppliers uphold key

[129] https://www.retsinformation.dk/Forms/R0710.aspx?id=124428#Not1
[130] https://www.un.org/en/universal-declaration-human-rights/index.html
[131] "Paying for a Bus Ticket and Expecting to Fly" How Apparel Brand Purchasing Practices Drive Labor Abuses, 2019 https://www.hrw.org/sites/default/files/report_pdf/wrd0419.pdf

workers' rights, while at the same time pressuring and encouraging them to do the opposite. It is therefore considered relevant to expand the current requirement to include at least four new areas that are subject to ILO Conventions: "No violent treatment", "Workplace health and safety" (ILO Convention No. 155 and ILO Recommendation No. 164), Fair pay (ILO Convention No. 131) and Working hours (ILO Conventions Nos.1 and 14).

An SA8000 certificate with, for example, a BSCI audit report[132] covers the ILO Conventions contained in the requirement[133]. A BSCI audit report may therefore be used as documentation for the requirement.

6.16 Licence maintenance

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

Background to the requirement O92 Annual controls and assessments of suppliers

The requirement is new in this generation of the criteria.

The requirement has been set to ensure conformity between the licence and the actual production of the toy at all times.

Background to the requirement O93 Customer complaints

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

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

Background to the requirement O94 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.

[132] BSCI Code of Conduct, https://www.bsci-intl.org/sites/default/files/amfori%20BSCI%20COC%20UK_0.pdf?_ga=2.176261411.72067964.1557828371-2066962727.1556691248 besøgt den 14/5 2019
[133] ICTI Ethical Toy Program, https://www.ethicaltoyprogram.org/en/ visited on 8 Jan 2020

7 Areas without requirements

A requirement concerning the guarantee period was considered in the revision of the criteria, but the decision was made not to require a guarantee period beyond the period required by law. Toys come in a wide variety of designs and material compositions, and the way a toy is handled varies hugely from child to child. It is therefore difficult to set an extended guarantee period for toys in general, which is why no such requirement has been included in this generation of the criteria.

Requirements concerning easy separation of the toy into different types of material so such materials could be recycled was given due consideration in the revision, but the decision was taken not to set requirements for this. Toys must satisfy the safety requirements in EN 71-1 concerning mechanical and physical properties. Particularly in the case of toys that comprise different material types and, for example, are intended for children under the age of 3, it can be difficult to design products that meet both the safety requirements and the requirements concerning separation of materials. The judgement was made that, as things stand, a requirement concerning easy separation of the toy into material types would exclude too many types of toys, and for this reason it has not been included in this generation of the criteria.

Criteria version history

Nordic Ecolabelling adopted version 3.0 of the criteria for Toys on June 18th, 2021. The criteria are valid until June 30th, 2026.

On 2 November 2021 Nordic Ecolabelling decided to adjust requirement O39 regarding flame retardants, requirement O13 and O88 regarding requirements for labels / stickers in paper and requirement O88 regarding label washability from plastic packaging. The new version is called 3.1.

On 9 August 2022 Nordic Ecolabelling decided to adjust requirement O22 where alternative test method EN 13130 for testing styrene was introduced. The new version is called 3.2.

On 15 November 2022 Nordic Ecolabelling decided to adjust requirement O60 and O61 for production of steel and aluminum regarding traceability. Now the requirements can be verified using mass balance or by major suppliers. The new version is called 3.3.

On 28 February 2023 Nordic Ecolabelling decided to adjust requirement O64 and make an exemption for butyl hydroxytoluene (BHT) under certain conditions. On 14 March 2023 Nordic Ecolabelling decided to adjust requirement O58 by allowing max 0.5 mg/l zinc in waste water as an alternative to closed-loop wastewater system. When more than 10 wt% of metal that are surface treated with zinc in the toy, then only closed-loop wastewater system is allowed (requirement O59). On 21 March 2023 Nordic Ecolabelling decided to adjust requirement O13 and allow labels/stickers in polyethylene (PE) on toys (/parts) in polypropylene (PP). The new version is called 3.4.

On 18 April 2023 Nordic Ecolabelling decided to adjust requirement O29 by clarifying that the requirement does not apply to natural latex. The new version is called 3.5.

On 6 June 2023 Nordic Ecolabelling decided to adjust requirement O79 and make an exemption for formaldehyde under the condition that requirement O81 is fulfilled. The new version is called 3.6.

On 12 September 2023 Nordic Ecolabelling decided to adjust requirement O11 and make an exemption for density requirement for TPE (Thermoplastic Elastomer), which constitutes max. 20% by weight of the toy. The new version is called 3.7.

On 14 November 2023 Nordic Ecolabelling decided to prolong the criteria to the 31 December 2026. The new version is called 3.8.

On 28 May 2024 Nordic Ecolabelling decided to include puzzles with more than 500 pieces in the product group definition. The new version is called 3.9.

On 11 March 2025 Nordic Ecolabelling decided to adjust requirement O87 for paper and cardboard-based packaging so that minimum of 70% of the fibre raw material shall originate from forestry certified under the FSC or PEFC schemes or be recycled. The new version is called 3.10.

On 30 September 2025 Nordic Ecolabelling decided to adjust requirement O8, O16, O20, O56, O73 and O80 so that IPBC is exempted under the point for "Potential or identified endocrine disruptors" up to 0.20 wt%. The new version is called 3.11.

New criteria

In the next generation of the criteria, it is possible that the following areas i.a. will be revised or included:

- Sources for recycled plastic, as well as chemically recycled plastic
- Quality requirements for the toys
- Spare parts
- Packaging volume
- Requirements for chemicals

Appendix 1 Potential – Substances that are harmful to health: Nordic Swan Ecolabel relative to EU Toy Safety Directive

The purpose of the EU Toy Safety Directive (2009/48/EC) is to ensure that toys are safe for children to use. The directive includes requirements on the safe design of toys in terms of their physical and mechanical properties. Annex II, part III of the EU Toy Safety Directive deals with chemical properties and has requirements concerning substances that are harmful to health. Below is a description of how Nordic Ecolabelling deals with each of these groups of hazardous substances in reference to Nordic Swan Ecolabelled toys. With regard to substances that are harmful to health, Nordic Swan Ecolabelled toys are subject to stricter requirements than those set out in the EU Toy Safety Directive, in order to exclude as many such substances as possible from all types of toys. Public authorities and consumer organisations regularly find prohibited substances that are harmful to health in toys. Nordic Swan Ecolabelled toys are therefore subject to stringent requirements concerning substances that are harmful to health and to a requirement for a third-party control of selected tests from the EU Toy Safety Directive.

See a further description of the EU Toy Safety Directive in section 4 of the background document.

CMR substances:

Annex II, part III of the EU Toy Safety Directive prohibits the use of substances that are classified as carcinogenic, mutagenic or toxic for reproduction (CMR substances) in toys, in components of toys or in micro-structurally distinct parts of toys.

These criteria have an additional requirement stating that ingoing substances (see definition in section 6.2) in the chemical products used in Nordic Swan Ecolabelled toys must not contain CMR substances. As such, the requirement concerning CMR substances in Nordic Swan Ecolabelled toys applies to much smaller amounts than are required by the EU Toy Safety Directive.

N-nitrosamines and nitrosatable substances:

Annex II, part III of the EU Toy Safety Directive prohibits the use N-nitrosamines and nitrosatable substances in toys intended for use by children under 36 months or in other toys intended to be placed in the mouth if the migration of the substances is equal to or higher than 0.05 mg/kg for N-nitrosamines and 1 mg/kg for nitrosatable substances. However, in these criteria the migration limit for toys for children under the age of 3 that are intended or likely to be placed in the mouth is 0.01 mg/kg for N-nitrosamines and 0.1 mg/kg for nitrosatable substances.

Generation 3 of the criteria for the Nordic Swan Ecolabelling of Toys also goes further by requiring that tests are carried out for all types and parts of a toy that contain elastomers and with which children may come into contact, or that constitute more than 5% by weight of the toy. In addition, the toys must meet the strictest limit, i.e. 0.01 mg/kg for N-nitrosamines and 0.1 mg/kg for N-nitrosatable substances, whatever the type of toy.

Fragrances:

In Annex II, part III of the EU Toy Safety Directive, toys must not contain a list of allergenic fragrances.

Generation 3 of the criteria for the Nordic Swan Ecolabelling of Toys goes further by requiring that fragrances must not be added to the toy or to the ingoing materials in the toy.

Metals:

Annex II, part III of the EU Toy Safety Directive requires that limits for the migration of certain metals from toys or components of toys shall not be exceeded. These limit values do not apply to toys or components of toys which, due to their accessibility, function, volume or mass, clearly exclude any hazard due to sucking, licking, swallowing or prolonged contact with skin.

Generation 3 of the criteria for the Nordic Swan Ecolabelling of Toys requires that ingoing substances (see definition in section 6.2) in the chemical products used in Nordic Swan Ecolabelled toys must not contain CMR substances. Several of the listed metals are, for example, classified as CMR, e.g. cadmium (H341, H350 and H361); nickel (H351); lead (H360 and H362) and chromium (VI) (H350).

In addition, there are the following requirements:

That pigments and additives based on lead, tin, cadmium, chromium (VI), mercury, antimony, arsenic and their compounds must not be used.

Chemical products used in textiles must not contain heavy metals, although metal impurities in dyes and pigments up to the amounts are permitted: antimony (50 ppm), arsenic (50 ppm), cadmium (20 ppm), chromium (100 ppm), lead (100 ppm), mercury (4 ppm), zinc (1500 ppm), copper (250 ppm), nickel (200 ppm), tin (250 ppm), barium (100 ppm), cobalt (500 ppm), iron (2500 ppm), manganese (1000 ppm), selenium (20 ppm) and silver (100 ppm).

Metal elements must not be coated with cadmium, chromium, nickel, copper, tin, lead, zinc and their compounds. However, zinc surface treatment of small metal elements (e.g. screws, bolts, fittings) or other metal elements is accepted, if this is necessary due to extensive physical wear or on safety-related grounds.

Appendix C of the EU Toy Safety Directive (2009/48/EC).

Appendix C of the EU Toy Safety Directive (2009/48/EC) covers specific limit values for chemicals used in toys for children under the age of 36 or in other toys intended to be placed in the mouth. Chemical requirements are added to or amended in Appendix C on an ongoing basis[134]. In May 2021, Appendix C contained requirements for the following substances:

- The flame retardants TCEP (tris(2-chloroethyl)phosphate), TDCP (tris(2-chloro-1-(chloromethyl)ethyl)phosphate) and TCPP (tris(2-chloro-1-methyl)phosphate)
- Formamide
- 1,2-benzisothiazol-3(2H)-one (BIT)
- 5-chloro-2-methyl-isothiazolin-3(2H)-one (CMI) and 2-methylisothiazolin-3(2H)-one (MI) in a ratio of 3:1 and the separate components CMI and MI

[134] http://ec.europa.eu/growth/sectors/toys/safety/legislation_en

- Phenol
- Bisphenol A
- Formaldehyde

Generation 3 of the criteria for the Nordic Swan Ecolabelling of Toys goes further by setting requirements for the above substances in all Nordic Swan Ecolabelled toys. This means that the requirements for Nordic Swan Ecolabelled toys do not just cover toys for children under the age of 36 months or other toys intended to be placed in the mouth, but apply to all Nordic Swan Ecolabelled toys. Generation 3 of the criteria for the Nordic Swan Ecolabelling of Toys deals with the substances above as follows:

- **TCEP, TDCP and TCPP:** These are prohibited in Nordic Swan Ecolabelled toys under the requirements prohibiting halogenated organic compounds in chemical products.
- **Formamide:** The requirement concerning emissions of formamide from foam materials in Nordic Swan Ecolabelled toys is identical to the EU Toy Safety Directive, but applies to all foam materials with which children may come into contact, or that constitute more than 5% by weight of the toy. In addition, formamide is classified as H360 and is thus prohibited under the CMR requirement concerning constituent substances in chemical products.
- **BIT, CMI/MI (3:1), CMI and MI:** These preservatives are restricted in water-based toy materials under the EU Toy Safety Directive as amended. Water-based toys are not permitted in these Nordic Swan Ecolabelling criteria. There is also a requirement that limits the amount of isothiazolinones in chemical products used in the manufacture of Nordic Swan Ecolabelled toys.
- **Phenol, bisphenol A and formaldehyde:** Phenol classifications include H341. Bisphenol A classifications include H360. Formaldehyde classifications include H350 and H341. Nordic Swan Ecolabelled toys are subject to a requirement concerning residual monomers from the polymer production that are CMR classified, amongst other things. The requirement applies to materials with which the child may come into contact or that constitute over 5% by weight of the toy. In addition, bisphenol A is prohibited as an ingoing substance in chemical products. There are further requirements concerning emissions of formaldehyde from foam, textiles, hides/skins and leather. Wood-based panels are also subject to requirements concerning the content of formaldehyde or emissions of formaldehyde. There is also a requirement concerning formaldehyde content in adhesives.