About Nordic Ecolabelled

Baby products with textiles



Generation 1

Background document
19 December 2018

Nordic Ecolabelling

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Appendix 1 Environmental assessment of the product group

104 Baby products with textiles, version 1, 19. December 2018

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

Addresses

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

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1 Summary

The first generation of criteria for Baby products with textiles was developed in 2016. The product group comprises baby products which include textiles and where the child has skin contact or other close contact with the textile on using the product.

Environmental and health assessment of the product group

The central overall environmental and health impacts on the product group originate mainly from the textiles' chemical load, both in terms of textile production and the use phase. There is also the environmental impact of the production of materials such as textile fibres and filler materials, which includes energy consumption, land use, water consumption and chemical load.

There is great variation in the textile ratio by weight among the products in the product group. For a pram or stroller, the ratio by weight for textile can be down to around 10 wt%, while for a baby carrier, textile and filler together account for 90 wt%, where the rest comprises buckles. The common feature, however, is the child's close contact with the textile, which makes health requirements of the textile during the use phase highly relevant for all product types. In the other phases of the life cycle, the relevance of the textile may vary between product types.

To achieve the intended steerability of chemicals in the textile during production and in the use phase, the textile ratio in the product alone is assessed, so that e.g. the weight of the frame in a pram or stroller does not reduce the textile's significance.

For requirements of other materials, such as plastic and metal, there is focus on whether there is contact with the child, and much of the material is incorporated in the product.

Development of the criteria

The development of the criteria focused on developing criteria in which the exposure to chemicals in the use phase from textile, filler and other materials is a key aspect, while at the same time these are attractive criteria for the industry, with good signals concerning both the environment and health.

The industry is characterised by how the production of the individual materials often takes place outside the Nordic region and usually by subsuppliers in Asia. This presents a challenge to steerability in terms of obtaining documentation. This also makes the steerability of subsuppliers very important, in order to ensure compliance with environmental, health and safety requirements, and thereby increase the relevance for ecolabelling.

Due to products with many materials and often long product chains, which impedes the collection of documentation, the focus of the criteria is on leveraging how the textile is subject to different environmental and health certifications, such as the Nordic Swan Ecolabel, the EU Ecolabel and the Global Organic Textile Standard (GOTS), as well as Oeko-Tex 100. It has therefore been sought to leverage the synergy between these labels by harmonising requirements, where appropriate. This is stated under the individual requirements.

Market interest

The market analysis performed in the preliminary study showed a generally positive attitude in the industry towards the development of the Nordic Ecolabelling criteria within the area. Several Nordic producers have followed the development of the criteria as reference enterprises, hereby giving input to the criteria development process.

The analysis in the preliminary study also shows that almost 6 out of 10 Danish and more than 4 out of 10 Swedish parents of young children would be more interested in buying a pram or stroller that was Nordic Ecolabelled. For parents of young children, substances that are hazardous to health are a more important parameter than the environment[1].

2 Basic facts about the criteria

The preliminary study for the product group took place in the spring of 2015 as an internal Nordic Ecolabelling project. In June 2015, the Nordic Ecolabelling Board approved the development of criteria for the product group.

Products that can be labelled

The product group comprises baby products, where the surface in contact with the child is of textile and where the child has skin contact or other close contact with the textile on using the product. The following products with textiles are included:

- Prams/strollers and pushchairs
- Changing mats/cushions/pillows
- Carry cots/pram upholstery
- Carry/sleeping bags/play rugs/mats (not covered by the EU's Toy directive)
- Baby carriers, baby slings and pram harnesses
- Nursing pillows/cot bumpers/baby nests/head protection in prams
- Baby chairs with textile in the form of recliners, sedan chairs, bouncy chairs
- Baby jumping swings
- Car seats
- Infant travel beds

An applicant will also be able to contact Nordic Ecolabelling for an expansion of this list of items if the product type matches the overall product delineation.

[1] From a YouGov consumer survey in 2015 for NordicEcolabelling. 428 parents of young children were interviewed.

Products that for more than 5 wt% include materials that are not subject to the criteria's requirements may not be Nordic Ecolabelled.

Delineation in relation to other product groups.

Delineation in relation to the product group for Nordic Swan Ecolabelling of Textiles, hides/skins and leather: Products that are marketed as being for babies, which are not clothing, towels or bed linen, and where the child is in contact with the textile during the use phase, must apply in accordance with the criteria for baby products with textiles. Pillows and duvets are therefore included in the Swan labeling of Textiles, skins and leather. Pillows can also swan labeled in accordance with the criteria for furnitures, if the padding material is part of an overall Furniture license together with such beds or mattresses, and the padding material is of the same type.

Cot bumpers and changing cushions that are part of a furniture item can already be Nordic Ecolabelled as part of the furniture, but not as a separate product. These products are usually sold separately, however, so here there is in principle no overlap.

The exception is products which are subject to the Toy Directive, and are therefore clearly included in the criteria for toys.

In cases of doubt concerning whether the product is included in this or another product group, Nordic Ecolabelling designates which product group the application should be made under.

Motivation for Nordic Ecolabelling

The products in this product group share in common that the child is in close contact with both textile and filler material. The environmental and health assessment of the product group thereby shows that the chemicals exposure in the use phase from textile, filler and other materials is central to this particular product group.

There are the following messages for the product group:

- Meets stringent environmental and health requirements of chemicals in textiles. Fx the textile must not contain halogenated flame retardants, fluorinated substances and nano.
- Meets strict environmental and health requirements of filler materials, metal, rubber and plastic
- Requirement of min. 50% organic or 100% cotton that conforms to standards for limited use of pesticides (IPM cotton).
- Requirement of safety and quality testing of the product

Criteria version and validity

Generation 1 of the criteria was submitted for consultation in the autumn of 2016.

3 The Nordic market

In the preliminary study, a Nordic market analysis was performed for the product group. Below is a summary of the analysis.

The market analysis performed in the preliminary study showed that there is a great interest in Nordic Ecolabelling in the industry. Labelling is probably best for companies that produce larger runs of fewer products, such as prams and strollers, car seats and baby carriers, and these companies have also shown a great interest. Some of the companies interviewed were very positive and have a longstanding demand for an ecolabel that can be applied on an overall basis. A problem faced by these large companies is that they often have a global market and prefer to work with an internationally known label.

Many of the companies selling nursing pillows, changing pads and cot bumpers are small and have a wide range of products that are made at many different factories, which can make it difficult for them to meet our criteria. Several of them also sell products that could be labelled according to our criteria for toys or textiles. Some of the Danish companies also mention Asia as a problem and that it can be difficult to have control of subsuppliers. Some of the companies are also concerned that labelling might be too expensive or require a lot of administration.

Market figures

Annually, around 300,000 babies are born in the Nordic region. According to Norway's National Institute for Consumer Research, an average family spends almost NOK 30,000 on baby equipment, which includes everything from cot to pram or stroller and car seat, during the child's first year. We assume that the figure is around the same in all Nordic countries.

Environment and health as market parameters

Consumers often take it for granted that products for children are safe and do not contain hazardous chemicals. The consumer survey undertaken by YouGov of Danish and Swedish consumers shows clearly that the environment is not given priority when child products with textiles are purchased. On the other hand, more and more consumers are worried about the content of the products, and Danish consumers are rather more concerned than consumers in Sweden.

Recently, more and more tests of baby products have shown that they contain hazardous substances, which increases the level of awareness among consumers. Several of the companies we interviewed experience increasing interest and awareness from consumers when it comes to chemicals and hazardous substances in products for children.

Currently there is no comprehensive labelling scheme for child products with textiles, which indicates that Nordic Ecolabelling should be able to fulfil a need in the market. Many producers label their products/textiles with Oeko-Tex and GOTS, but since these are relatively unknown among consumers, the Nordic Ecolabel has a great advantage, as it is very well-known in the Nordic region. But despite this good familiarity, the companies we interviewed believe that a lot of information will be required for consumers to be able to understand what a Nordic Ecolabelled pram, for example, entails.

The primary sales arguments for these products concern safety, function, design and price. For several manufacturers, the concept of safety also includes that the product is not detrimental to the child's health due to its content of hazardous substances.

Indirectly, the environment is referred to via information about products' quality and durability/lifetime, but "ecofriendly" alone is not considered to be a strong argument for selling child products with textiles.

The largest Nordic brands and potential licence holders

Prams and strollers

- Emmaljunga (Sweden) – may have up to 70% of the Scandinavian market
- Kronan (Sweden)
- Crescent Barnvagnar (Sweden)
- Stokke (Norway)
- Orasel Oy (Finland)
- Fjellpulken (Norway) – strollers for skiers
- Basson Baby (Denmark)
- Odder prams (Denmark)
- Babytrold: Trille prams (Denmark)
- Brio (sold in 2013 to German Britax)

Baby carriers

- Baby Björn (Sweden)
- Baby Compact (Sweden)
- Stokke (Norway)
- ErgoBaby (Sweden)
- Car seats
- Axkids (Sweden)
- Oy Klippan (Finland)
- BeeSafe (Norway, HTS Hans Torgersen & Sønn)
- Basson Baby (Denmark)

Nursing cushions, carry cots and changing pads

- Rätt start (Sweden)
- Babycare
- Lapsekas (Finland)
- BabyDan (Denmark)
- Cam Cam (Denmark)
- Sebra (Denmark)
- Stroller bags
- Voksi sleeping bags (Norway, HTS Hans Torgersen & Sønn AS)
- Emmaljunga (Sweden)
- Kronan (Sweden)
- Easygrow of Norway

Consumers

Today's parents of young children seek information and "do their homework" when they buy products for their children. They are anxious to protect their children's health and become more aware as consumers.

Yet many still take it for granted that baby products are safe and free of hazardous substances. Yet the issue of chemicals in baby products is growing strongly.

In conjunction with the market analysis, Nordic Ecolabelling commissioned YouGov to perform a consumer survey (April 2015) of Danish and Swedish parents of young children (representing Nordic parents of young children). The survey clearly shows that the environment is not given priority when it comes to purchasing baby products with textiles.

On the other hand, the survey shows that parents are concerned about what the products contain. No less than 40% of Danes respond that one of the three most important parameters on buying a pram or stroller is that it does not contain hazardous substances. Almost six out of ten Danish parents of young children would be more interested if the pram they were to purchase carried the Nordic Ecolabel. An interesting difference is that Danish parents are considerably more concerned than Swedish parents.

59% of Danish parents would be more interested in purchasing a pram or stroller if it carried the Nordic Ecolabel. The equivalent figure for Swedish parents is 44%.

62% of Danish parents are concerned that toys may contain substances that are hazardous to the environment and health, compared to 42% of Swedish parents.

Stakeholders

The baby product sector is influenced by environmental and consumer organisations which often perform various consumer tests which receive a lot of attention. Nordic Ecolabelling often enjoys good cooperation with several of these organisations.

The Swedish Chemicals Agency undertakes regular surveys of the constituent substances in products for children, which often have a great impact on the industry. The Swedish Society for Nature Conservation is a strong driver of stricter legislation concerning the chemicals in children's daily lives. Their reports always receive a lot of attention. Several of the companies interviewed believe that legislation concerning children's products with textiles will be tightened in real terms in the coming years, and will approach the strict requirements to which toys are subject.

In Denmark, THINK Chemicals performs ongoing tests of child products, and in addition, chemicals are a major focus area for environmental ministries, and the Danish Environmental Protection Agency runs campaigns to minimise chemicals in children's daily lives.

In Finland, there is no centralised discussion of chemicals, and sector organisations and environmental organisations do not take any great interest in this product group. Yet the chemicals issue has received more interest in recent years, often with focus on products and child products that are used close to the skin.

The most important opinion-setters in Finland are individual bloggers, Kuluttajat (the consumer association) and minor TV programmes which focus on consumer affairs.

In 2014, the aim of the Finnish Safety and Chemicals Agency (Tukes) was to raise the chemicals safety of families with children and to arrange inspection of products intended for children.

In Norway, ecolabelling enjoys good cooperation with the Norwegian Environment Agency, which is responsible for product inspection of, for example, chemicals that are prohibited from imported products. They also operate active information activities concerning hazardous substances in products, including via the consumer portal: www.erdetfarlig.no. Nordic Ecolabelled products are named as a good choice. Nordic Ecolabelling also has sound cooperation with environmental organisations such as Bellona, Naturvernforbundet (Friends of the Earth Norway) and Fremtiden i våre hender (The Future in Our Hands - FIOH).

4 Other labelling schemes and instruments

4.1 Other product labelling

CE marking

Prams, strollers and pushchairs are not subject to CE marking, but there is a voluntary safety standard for the products, EN 1888:2012 Child care articles - Wheeled Child Conveyances - Safety requirements and test methods. This is often used in the sector. Besides design-related safety measures, the standard also concerns requirement levels for migration of heavy metals from surface coatings or other material surfaces. Reference is also made to EN 1103 in the requirement that the textile may not be flammable if it is exposed to a flame.

EN 1888:2012 is thus not a label in itself, but is used in the industry as a type of safety stamp. In the same way, there are safety standards for several of the other products in the product group.

P-labelling

SP Technical Research Institute of Sweden offers P-labelling of products for children, including prams and strollers. This labelling is mainly based on EN 1888:2012 Child care articles - Wheeled Child Conveyances - Safety requirements and test methods[2] and is thus a quality and safety label.

Dansk Varefakta

Dansk Varefakta is mainly used for food products, but this label can also be used for e.g. prams and strollers. Dansk Varefakta's regulations can be more stringent than the European standards, first of all for safety-related reasons[3].

For prams and strollers, testing will probably be in accordance with EN 1888:2012 Child care articles - Wheeled Child Conveyances - Safety requirements and test methods. This is not evident from Varefakta's website, however.

Dansk Varefakta has developed its own rules for the various product areas – called regulations. These regulations are not publicly available without a code.

[2] http://www.sp.se/sv/index/services/perambulator/sidor/default.aspx Section: Prams and other products for children visited on 30 March 2015.
[3] http://varefakta.dk/om-varefakta/praesentation/ visited on 30 March 2015

4.2 Other labelling of textiles

GOTS

Global Organic Textile Standard (GOTS) is a global textile standard created by a working group established in 2002 consisting of the certification bodies The Soil Association (UK), IVN- International Association Natural Textile Industry (Germany), US Organic Trade Association and Japanese Organic Cotton Association (JOCA).[4] Today, version 3 of the standard is used by 14 different major certification bodies[5]. GOTS also follows the ISO 14024 standard for environmental labels, but is not a member of GEN (Global Ecolabelling Network). GOTS concerns the entire production process from cultivation, carding, spinning, weaving, dyeing, sewing, finishing and packing of textile products. GOTS not only certifies cotton, but all types of natural vegetable and/or animal fibres used in textile production. The GOTS standard refers to how organic raw materials must be certified in accordance with the EU's regulation 834/2007 and/or the United States Department of Agriculture - National Organic Program (USDA NOP). GOTS has two types of labelling schemes. The organic brand for GOTS is only used for textile products which have minimum 95% organic fibres. In the GOTS secondary standard, in which at least 70% must be organic fibres, version 3 states that 30% of the fibres used may be of conventional origin, but of this 30%, only 10% may be regenerated or synthetic fibre, and the GOTS organic label therefore cannot be used for these products. As from 2014, the polyester used must be post-consumer recirculated. GOTS also prohibits the use of genetically-modified raw materials. GOTS is a relatively common labelling scheme for organic textiles. In 2008, 1,000 factories were certified, and today the number is up to around 2,800. Knowledge of the label among consumers in the Nordic market is limited, and much lower than knowledge of the Nordic Ecolabel. In a survey by YouGov commissioned by Ecolabelling Denmark, 76% responded that they did not know the GOTS label[6]. Equivalent figures for the Nordic Ecolabel were 16%, and 43% for the EU Ecolabel.

Oeko-Tex 100

Oeko-Tex is a private third-party textile certification label.[7] Behind this scheme are 17 testing institutes which cooperate via the international Oeko-Tex Association. This label is used in three versions: 100, 1000 and 100 plus. Oeko-Tex 100 is the clearly most prevalent and solely covers testing that the final textile product does not contain hazardous chemicals. There are thresholds for how much of each substance the final product may contain.

The threshold values are divided into various classes according to whether the product is for babies, for example. Oeko-Tex 100 is thus a health label which focuses on safety for consumers, and the requirements are drawn up so that the closer to the skin the products are intended to be, the more stringent the requirements.

[6] Survey by YouGov commissioned by Ecolabelling Denmark, YEAR?
[7] http://www.oeko-tex.com/

Oeko-Tex 1000 is the labelling of environmentally-adapted production sites throughout the chain, and goes somewhat further than merely testing chemicals.[8] To achieve certification under Oeko-Tex 1000, minimum 30% of total production is required to already hold certification in accordance with Oeko-Tex 100. Oeko-Tex 100 plus is certification which is awarded if it can be documented that all stages of the production chain fulfil Oeko-Tex 100.

4.2.1 Relevant raw materials labels for textiles

Clean organic labels

In some cases, textiles can be labelled with national organic labels such as the Norwegian Debio's organic label[9]. The Swedish KRAV organic scheme does not permit KRAV labelling of textiles, but reference can be made to KRAV approval of the raw material[10]. In Denmark, textiles cannot be labelled with the Danish Ø label.

Other raw materials labels for cotton

In recent years more standards have appeared for sustainable cotton that do not include organic cotton cultivation. Here, there is focus on various parameters such as the use of pesticides, water consumption and working conditions. Some of the most common certifications are, such as Better Cotton Initiative (BCI) and Cotton Made In Africa (CMIA).

4.3 Relevant standards within the product group

Most products in the product group are subject to a test standard for testing of safety and quality. For cot bumpers, the prEN 16780 standard is subject to development, which is expected to be completed in 2017.

Only few products are not included in any of these standards. For example, these are nursing cushions and changing mats that are not part of a changing unit. Instead, there are quality requirements of the textile in the products.

- EN 1888: - Child care articles - Wheeled Child Conveyances - Safety requirements and test methods
- EN 1466 + A1: - Child care articles - Carry Cots and Stands - Safety requirements and test methods
- EN 13210: - Child care articles - Children's safety harnesses and other similar products - Safety requirements and test methods
- Car seats: The European Test Standard for Child Restraints ECE R 44[11]
- EN 13209-1: - Child care articles - Safety requirements and test methods - Part 1: Child carriers
- EN 13209-2: - Child care articles - Safety requirements and test methods - Part 2: Baby carriers

[8] http://www.oeko-tex.com/oekotex100_public/content5.asp?area=hauptmenue&site=oekotexstandard1000&cls=02 (available 1 Sept. 2011)
[9] http://www.oikos.no/newsread/news.asp?docid=11576&wce=aktuelt (tilgjengelig 20.12.2011)
[10] http://www.krav.se/Om-KRAV/Helenas-svar/Dates/2011/10/Skillnader-mellan-KRAV-och-EU-ekologisk-odling/2011-10-30-101748/ (tilgjengelig 20.12.2011)
[11] http://incarsafetycentre.co.uk/safety-centre/regulations/ visited on 15/4 2015 under "Regulations"

- EN 716 Furniture- Children's cots and folding cots for domestic use - Part 1: Safety requirements
- EN 14036: - Child care articles - Baby bouncers - Safety requirements and test methods
- DSF/prEN 16780: Textile Child care articles - Safety requirements and test methods for children's cot bumpers
- EN 71-3 + A1: Toys - Safety requirements - Part 3: Migration of certain elements
- This European standard specifies requirements and testing methods for migration of aluminium, antimony, arsenic, barium, boron, cadmium, chromium (III), chromium (VI), cobalt, copper, lead, manganese, mercury, nickel, selenium, strontium, tin, organic tin and zinc from toy materials and parts of toys.
- Compliance with the EN 71-3 standard is used by some pram manufacturers as chemicals requirements towards their subsuppliers.

5 About the development of the criteria

5.1 Aim of developing the criteria

Primary aim

The overall aim of this project is to develop new criteria for Baby products with textiles, to ensure positive environmental benefits via environmental labelling. The criteria must also be attractive and useful for the industry, and therefore developed in dialogue with reference companies. The criteria's development must focus on the areas which emerged in the preliminary study.

The criteria must be ready for adoption by the Nordic Ecolabelling Board in March 2017.

Sub-objectives

The criteria development has the following sub-objectives, cf. the conclusion from the preliminary study:

- Draw up requirements of textiles and the surface treatment of textiles, on the basis of the Nordic Ecolabelling criteria for Textiles, but applying minimum thresholds to the activation of requirements.
- Focus on the opportunity to use various textile labels such as the Nordic Ecolabel, the EU Ecolabel and GOTS, but also Oeko-Tex for textile elements included in smaller ratios.
- Draw up requirements for organic cotton and possibly also conventional cotton.
- Draw up requirements for the following areas of materials: hides/skins, leather, wood and wood-based panels, metal, plastic and rubber, including requirements of their surface treatment.
- Draw up requirements of filler materials with the opportunity to use other labels which ensure low chemicals exposure in the use phase.
- Draw up requirements of chemical substances used in production. Examples are glue and lubricants.

- Draw up quality and safety requirements on using standards for the individual product types.
- Criteria development in close dialogue with reference enterprises to obtain ongoing feedback concerning the applicability of the requirements.
- Draw up market messages (bullet points) in collaboration with the market group within Nordic Ecolabelling. The Nordic market group is also drawing up a joint Nordic marketing plan, which results in national market activities.

About this criteria development

The overall criteria development is undertaken as an internal project within Nordic Ecolabelling with product officer (PA) Heidi Bugge as project manager, and Lena Stenseng as project adviser (PR).

The following have also participated in the project:

- Elisabeth Magnus as textile expert from Norway
- Kristian Kruse as product specialist from Norway
- Leif Lång as product specialist from Sweden
- Heidi Vaarala as product specialist from Finland
- Lena Stenseng as product specialist from Denmark

As part of the criteria development, Nordic producers were contacted and invited to be part of a reference group to monitor the project and, for example, be presented with draft consultations during the consultation period.

The project group visited several of the companies in the reference group and the product specialists have been in dialogue with their national reference enterprises, as well as industry associations and relevant subsuppliers.

A national consultation meeting is held, as well as possible national dialogue meetings during the consultation period.

6 Environmental impact of the product group

The product group has been subject to environmental assessment, taking account for how the composition of materials can vary considerably among the various product types.

The overall conclusion is that the chemicals burden from the textiles is key, in terms of both textile production and the use phase. There is also the environmental impact from the production of materials such as textile fibres and filler materials, which includes energy consumption, land use, water consumption and chemical load.

Depending on the product type, several materials will be of relevance to the environment and health. These are apparent from the RPS (Relevance, Potential and Steerability) analysis in section 6.2.

6.1 MECO analysis

In the preliminary study, a MECO analysis was performed for the product group. MECO stands for Materials, Energy, Chemicals and Other. The MECO analysis will describe the relevant environmental impacts and will therefore contribute mainly to "Relevance" in the subsequent RPS analysis.

Since the product group includes product types with great variation in the composition of materials, two qualitative MECO analyses were performed. One for a pram and one for a nursing cushion. These two items signify the extremes of the product group in terms of composition of materials. The full MECO analyses are only found in the Preliminary Study. The main conclusions concerning the environmental and health relevance found for the product group can be found in Appendix 1.

Materials variation in the product group.

The product group concerns Baby products with textiles. There is, however, great variation in the textile ratio by weight among the products in the product group. For a pram or stroller, the ratio by weight for textiles can be down to around 10-15 wt%, while for a baby carrier, textile and filler together will account for around 90 wt%, where the rest comprises buckles. The common feature, however, is the child's close contact with the textile, which makes the presence of textiles during the use phase highly relevant for all product types. In the other phases of the life cycle, the relevance of textiles will vary considerably. Textile comprises many different types of raw materials, with varying environmental impacts. In order to examine this, separate sections for textile fibres are inserted in Appendix 1.

There will be equivalent variation for the other materials, where metal, for example, is generally only relevant for baby rocker chairs, prams and strollers, and pushchairs.

Besides variations in the composition of materials, especially prams and strollers and pushchairs will be distinguished as products for outdoor use, and will therefore be required to be water-resistant or waterproof and windproof, and thereby subject to more stringent durability requirements. Most of the products are covered by EN standards, with specific safety and function requirements.

6.2 RPS analysis

Table 1 below presents an overall RPS assessment for the overall product group. The requirement areas for which high RPS is found should apply to all materials (possibly with a very low minimum threshold). The requirement areas for which medium RPS is found will only apply if the materials are included in the product with a high weight ratio.

Textile is the recurring material in the product group and the RPS analysis therefore has special focus on textile.

As the textile element has especially high RPS in relation to the chemicals exposure in the use phase it is important not to assess the individual textile's relevance according to the ratio in the final product, which might be a pram or stroller, for example. In a pram or stroller, the metal frame alone will constitute a weight ratio of towards 60-70% of the product.

This does not mean, however, that the textile element is less relevant for this reason, since exposure in relation to chemicals in the textile in the use phase is very important. To achieve the intended steerability of chemicals in the textile during the use phase, only the textile ratio in the product should be assessed, so that the weight of the frame, for example, does not reduce the textile's significance.

Table 1 Overall RPS analysis for the product group

Overall prioritisation	Area and statement of level (high – medium – low) for R, P and S	Comments
High	**Chemicals/Emissions – use phase** High R, high P, medium to high S	Here, an overall high RPS has been found, to ensure low chemicals exposure from textiles and filler in the use phase. This is ensured by a combination of requirements of constituent substances and the use of other certifications such as the Nordic Ecolabel, the EU Ecolabel and GOTS, as well as Oeko-Tex where this is relevant, or for minor textile elements. And high RPS for formaldehyde requirements of wood panels in prams and strollers.
	Chemicals - production of final textile High R, high P, medium S	There is assessed to be overall high RPS for chemical requirements of constituent chemicals in textile production in the following processes: dyeing and finishing of textile products. Further back in the process, steerability is assessed to be too low, since it would be a protracted process to have to obtain this information. Dyeing and finishing are assessed to be the processes with the highest R and P, and therefore most important to focus on. Steerability will depend on the closeness of cooperation with the textile producer. Here it will also be possible to use Nordic and EU Ecolabelled textiles, which do not, however, currently appear to have licences for polyester and polyamide.
	Sustainable raw materials (cotton and wool) High R, medium to high P, medium S	There is overall medium to high RPS for requirements concerning organic or Integrated Pest Management (IPM) cotton. The potential is limited by how much organic cotton is available in the market. Therefore there is highest RPS for permitting a combination of organic and IPM cotton. However, the certification of eco and IPM cotton does give a certain degree of steerability. Here, there is also high RPS for environmental and animal welfare requirements of wool production when there is a high ratio of wool in the textile in the final product.
	Sustainable raw materials (synthetic textile fibre) High R, medium to high P, medium S	Here, overall medium to high RPS has been found for environmental requirements of the production of synthetic textile fibres, which account for a high ratio of the textile in the final product.
	Chemical requirements of metal, rubber and plastic High R, medium P, medium to high S	Overall high RPS is found for setting requirements of problematic constituent substances and surface finishings, either as requirements of constituent substances, or alternatively, as testing of the final product if it is assessed that there is no steerability to obtain this data for a lot of smaller plastic and metal parts. In this respect there is especially high relevance for materials with which the child may be in contact.
	Quality and characteristics – High R, medium to high P, medium to high S	High RPS for quality and safety requirements for e.g. pushchairs and prams and strollers in the form of the required compliance with EN 1888, and equivalent safety standards for baby carriers, travel cots, carry cots, etc.
Medium	**Other – working conditions** Medium R, high P, medium S	Here, medium RPS is found for working environment requirements concerning compliance with the ILO conventions concerning e.g. child labour and forced labour. It is assessed that realistic steerability can be achieved by requiring a procedure to ensure this.

	Resources – waste phase High R, medium P, medium S	Medium to high RPS for the requirement of design for recycling (especially with focus on metal, but possibly also plastic elements). This must be related, however, to a high safety requirement that there are no material parts that can work loose and end up in the child's mouth, as well as the possible requirement that for pushchairs/prams and strollers, spare parts such as new wheels are offered. Steerability is only medium, since it is not possible to ensure that the materials are actually dismantled when the product is disposed of.
	Resources – recirculated metal raw materials Medium R, medium P, low to medium S	Medium RPS is found for requirements of recirculated metal raw materials. Here there is medium relevance for the product group, but steerability to ensure a real high content of recirculated metal raw materials is assessed to be reasonably low – especially for steel. It is thereby assessed that a requirement has very little effect in the market.
Low	**Energy – production of product** Medium R, low to medium P, low S	Here there is assessed to be overall low RPS. There is assessed to be medium energy relevance, but since the product group does not contain any good usable functional units for an energy requirement, it is not possible to see potential, nor is there any steerability for a requirement.
	Resources – recirculated plastic raw materials Medium R, low to medium P, low to medium S	Here, low to medium RPS is found for requirements of a specific share of recirculated plastic raw materials in the product. No potential has been identified since there do not seem to be any producers that use recirculated plastic. There will also be a need to ensure that recirculated plastic does not contain problematic chemicals from "old" additives.

Chemicals exposure in the use phase is central

Common to the product area is that the chemical impact from the textile in the use phase has an overall high RPS. Great variation has also been found in the materials composition between the various product types. A pram or stroller has a high ratio by weight of metal from the frame, while a baby carrier mainly consists of textile and filler. This gives a variation in how high RPS is found for the raw material phase of the textile, but also from other raw materials such as metal. For products with a high ratio of cotton, the requirement of organic cotton will be relevant, while there will be lower RPS for the requirement of the textile in the raw material phase for a pram or stroller with textile of polyester or polyamide.

It is therefore important to focus on how the chemicals in the textile are the central aspect for the product group, where there is high RPS in terms of exposure in the use phase for all product types.

To ensure focus on exposure to chemicals in the use phase, it is important that the individual textile's relevance is not assessed in terms of the ratio in the final product. In a pram or stroller, for example, the metal frame alone will constitute a weight ratio of towards 60-70% of the product. This does not mean, however, that the textile element is less relevant for this reason, since exposure in relation to chemicals in the textile in the use phase is very important.

To achieve the intended steerability of chemicals in the textile during the use phase, only the textile ratio in the product should be assessed, so that the weight of the frame, for example, does not reduce the textile's significance.

Chemical requirements of textiles

The product group has strong focus on the textile in the product with high RPS for chemicals in the use phase. There is also both relevance and potential for chemicals in actual textile production.

However, here, as for the Textiles product group, there are long supply chains, which challenged and complicate the steerability. For this product group, the RPS analysis differs from Textiles, however, in relation to another materials composition, and a central focus on problematic chemicals in the final textile. Here the same high RPS is not seen for requirements of the actual textile production for the entire product group and for all textiles used in the baby product. This will depend on the significance of the individual textile.

It is therefore assessed that the use of Oeko-Tex certification for minor textile elements and any filler materials might reduce the complexity for this product group - Baby products with textiles. Oeko-Tex is widely used in textiles used in this product area. For textiles and fillers of great importance to the product, requirements might be made of the chemicals used for dyeing and either chemical finishing of the textile.

Other material requirements

Besides textiles, materials such as plastic and metal are included. Here it is important, however, that there is focus on setting reasonable minimum thresholds for the constituent elements, since otherwise the documentation will be too extensive, and to focus on the important aspects.

It has been investigated whether it is realistic to be able to set requirements for a certain ratio of recirculated plastic for this product area. The producers contacted do not use recirculated plastic, however. For products such as prams and strollers and baby carriers, plastic elements are used in functions which require great strength and thereby high quality. Plastic elements in e.g. buckles for a baby carrier are significant to the product's safety in use, and here the producers will therefore put quality before the environment on choosing plastic raw materials. It is also assessed that there is insufficient RPS for requirements of recirculated steel or aluminium.

In addition, medium RPS is found for requirements of the separation of materials on waste handling of the scrapped products. This is e.g. due to how steerability is only medium, since it is not possible to ensure that the materials are actually dismantled when the product is disposed of.

7 Grounds for the requirements

This chapter presents proposed requirements and explains the background to the requirements and the selected requirement levels. The appendices referred to are the appendices in the criteria document "Nordic Swan Ecolabelling of Baby Products with Textiles 1.0".

7.1 Product group definition

The product group comprises baby products, where the surface in contact with the child is of textile and where the child has skin contact or other close contact with the textile on using the product. The following products with textiles are included:

- Prams, strollers and pushchairs
- Changing mats/cushions/pillows

- Carry cots/pram upholstery
- Driving/carrying/sleeping bags/play rugs/mats (which are not toy/CE-marked)
- Baby carriers/slings and pram harnesses
- Nursing pillows/cot bumpers/baby nests/head protection in prams
- Baby chairs with textile in the form of recliners, sedan chairs, bouncy chairs
- Baby jumping swings
- Car seats
- Infant travel beds

An applicant will also be able to contact Nordic Ecolabelling for an expansion of this list of items if the product type matches the overall product delineation.

Products that for more than 5 wt% include materials that are not subject to the criteria may not be Nordic Ecolabelled.

Delineation in relation to other Nordic Swan Ecolabelled product groups

- Products subject to the EU's Toy Directive are not included in this product group.
- Products such as high chairs and cots (not travel cots) that are subject to the Nordic Ecolabel's criteria for furniture are not included in this product group.
  Cradles will be subject to the Nordic Ecolabelling criteria for furniture, while a carry cot is included in this product group.

7.2 Definition of concepts used in the criteria

Material that may be in contact with the child or the adult: Defined here as material elements in the final product that may be in contact with the child or the adult during normal intended use of the product.

Fibre types: Types of textile fibres such as cotton, wool, polyester or viscose fibres.

Textile types: Defined as textiles with a specific mix of textile fibres. Examples are polyester or a mix of cotton and viscose. For textiles of fibre mixes, the fibre requirements are activated if more than 40 wt% of the fibre type is included in the textile element. A textile element which consists of 60 wt% cotton and 40 wt% polyester must thereby be able to document fibre requirements for cotton.

Textile element: "Textile element" is the designation of a unique textile element on the final product. Various textile elements have different supply chains or are produced differently, but may be of the same fibre type.

Textiles that only differ in terms of dye or printing by the same supplier are considered to be the same textile element. 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.

Supply chain: Supply chains comprise suppliers of fibres, wet processes, printing, finishing, membranes, laminates and coatings.

Recirculated raw materials: Pre-consumer or post-consumer recirculated raw materials, cf. the definition in the ISO 14021 standard.

Constituent substances and contaminants are defined as the following, unless otherwise stated:

Constituent substance: All substances in the chemical product, including additives (such as preservatives and stabilisers) from the raw materials. Known products released from constituent substances (such as formaldehyde, arylamine and in-situ generated preservatives) are also considered to be constituent.

Contaminants: Residual substances from production, including raw materials production, that are found in a raw material or the chemical product in concentrations ≤ 100.0 ppm (≤ 0.01000 wt%, ≤ 100.0 mg/kg).

Contaminants in a raw material in concentrations ≥ 1.0% are always counted as constituent substances, irrespective of the concentration in the chemical product.

Examples of contaminants are residues of the following: reagents including monomers, catalysts, byproducts, "scavengers" (i.e. chemicals used to eliminate/minimise adverse substances), cleaning agents for production equipment, and "carry-over" from other/earlier production lines.

Colours: Colours can be divided into dyes or pigments.

Pigments: Pigments are in practical terms insoluble in the medium in which they are incorporated. Pigments are defined as dry, insoluble substances which, when dissolved in a liquid phase, are used as a colour. According to wikipedia.org, a pigment is generally insoluble and has no affinity for the substrate, in contrast to a dye.

Dyes: Dyes are dissolved during application and thereby lose their crystal structure or particle-formed structure during the process. According to wikipedia.org, a dye has affinity for the substrate to which it is applied. A dye can normally be dissolved in a medium.

Coating: a resin that is converted to a coating film on the textile.

Laminate: a film or foam that is combined with the textile using glue (may consist of several layers).

Membrane: an example of laminate with a breathable synthetic film, which can also be a layer between the outer material and the inner material/lining.

7.3 Minimum thresholds for materials

The following minimum thresholds generally apply to textiles:

- Sewing thread is exempt from the requirement.
- In overall terms, irrespective of the following minimum thresholds and exemptions, any textile element (see definition in section 7.2) that may be in contact with the child or the adult during normal use must comply with section 7.6.1 "Test of the final textile" irrespective of the quantity.

- Textile elements (see definition in section 7.2) are exempt from the chemical requirements in section 7.5.2, if the individual textile element is included at less than 5 wt% of the overall amount of textile in the final product. The overall amount of textile elements exempt from the chemical requirement may not exceed 20 wt% in the final product.
- Recirculated fibre is not required to fulfil the requirements for fibre production, but must comply with section 7.6.1 "Test of the final textile". For a definition of recirculated raw material, see section 7.2.
- Fur, skins and leather may be included as details with a maximum for each of 5 wt% of the textile amount, and must comply with section 7.6.1 "Test of the final textile" irrespective of the amount. If the individual part coveres more than 5%, fur skins and leather must comply with the requirement for those material types in the criteria for Nordic Ecolabelling of Textiles, skins and leather.

For minimum thresholds for other materials, see Table 2 below and the introtext in the relevant materials section. In addition, please use the Excel sheet "requirement activation" to find the requirements that are activated for each product.

Table 2 Requirements in the criteria

Material	Level	Requirement	Appendix
All products	General requirement	O1	1
Textile	General requirement	O2	
Textile fibres Comprises textile fibres included with 20 wt% or more of the total amount of textile in the product	Cotton and other natural seed fibres of cellulose	O3	3
	Wool	O4-O5	4
	Polyester	O6	
	Acrylic	O7	
	Elastane	O8	
	Polyamide	O9	
	Regenerated cellulose fibres	O10-O13	6 and 7
Chemicals (Textiles) Comprises chemicals in textile elements included at 5 wt% or more of the total amount of textile in the product	General requirements	O14-O19	8
	Textile of wool fibres	O20	4
	Wet processes	O21	
	Dyeing and printing processes	O22-O27	9 and 10
	Finishing and assembly	O28-O31	11
Textile glue	General requirement	O32	12
Emissions to water (Textile)	Wet processes	O33	
Storage and transport of textile elements in contact with the child	General requirement	O34	13
The final textile and hide/skin and leather details For elements in contact with the	General requirements	O35-O39	
	Textiles of synthetic fibres	O40	
	Elastane and acrylic	O41	
	Cotton, flax, bamboo and other bast fibres	O42	

child, or which account for more than 5 wt% of the overall textile amount in the product	Wool and other keratin fibres	O43	
Filling and stuffing materials	General requirements (for all)	O44-O46	14
	General requirements (>20 wt% of total filling if more than 5 wt% of total product)	O47-O52	15
Glue for filling	General requirement	O53	12
Wood-based panels	General requirements	O54-O55	16
Metal	General requirements (metal element in contact with the child/adult)	O56-O58	17
	General requirements (metal element > 5 wt% of product or contact)	O59-O62	18 and 19
	General requirement (metal element > 5 wt% of product)	O63	
Plastic, silicone and rubber (latex)	General requirements (component in contact or > 5 wt% of product)	O64-O69	20
Quality and function requirements (Textiles)	Textile element > 20 wt% of overall textile	O70-O75	
	Textile element of natural fibre and > 20 wt% of overall textile	O76	
	Textile element for child car seats, baby carriers, prams, strollers and pushchairs > 20 wt% of overall textile	O77	
Safety and function of the final product	General requirement	O78	
Requirements of working conditions	General requirement	O79	
Other requirements	General requirements	O80-O86	

7.4 Description of the product

O1 Description and composition of the Nordic Ecolabelled product

The applicant must state the following information concerning the product(s):

- Product type (see under "What can be Nordic Ecolabelled") and trade name(s).
- Description of the product's manufacturing process. Subsuppliers must be described with the company name, production site, contact person and the production processes performed, such as textile dyeing, or metal coating. For the textiles, the production and supply chain must be described using a flow chart, for example as shown in Appendix 2.
- Where the products are to be sold (to professional users or consumers, shops, webshops, etc.).
- Illustrations or photos of the product. In illustrations/photos the areas where the child or the adult may be in contact with the product during normal use must be marked.
- Overview of materials: Overall of all constituent materials, for which information is to be given (see e.g. in Appendix 1):
    - Type of material. (Sewing thread and minor elements such as fittings, screws and bolts with which the child or the adult is not in contact are exempt from the requirements and are not required

to be disclosed). Each textile element is stated separately (see definition of textile element in section 7.2).

- Supplier of the material.
- Weight of material in the babyproduct.
- Percentage by weight in relation to the overall babyproduct.
- For each textile element, besides the percentage by weight in relation to the overall product, the percentage by weight in relation to the total textile amount must also be stated. Fur, skin and leather details must be included in the overall textile amount.
- For each filler material, besides the percentage by weight in relation to the overall product, the percentage by weight in relation to the total filler amount in the product must also be stated.
- Where/on which element of the product the material is used.

✉ Description and photos of the products included in the application in accordance with the requirement. Product data sheets for the products covered by an application can be submitted as part of the documentation. Brief description of the production of the products

✉ Submit overview of materials with the information required in accordance with Appendix 1.

✉ Submit a flowchart to describe the production chain for the textiles. See example in Appendix 2.

Background to requirement O1

To gain an overview of which products are to be ecolabelled and the production chain, the applicant is required to provide information concerning the product, including trade name, production site, overview of production processes and subsuppliers, and where the products are to be sold. An overview of production processes and subsuppliers can be documented in a flowchart.

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

Here, the criteria apply the concept of "textile element", as the designation of a unique textile element in the final product. See the definition of textile element in section 7.2. The individual textile element must be stated in form 1 in requirement O1.

In overall terms, for each textile element in the product a unique supply chain must be examined, in order to obtain documentation of the textile element. The product group includes products that may be highly complex in terms of materials, and can include several different textiles.

A minimum threshold has therefore been defined for when the individual requirements are activated for the textile element. The overall minimum thresholds for textiles are stated in requirement O2, but defined more specifically for the individual requirement areas in the respective requirement sections.

The minimum thresholds in the individual requirements are assessed on the basis of where in the life cycle and supply chain the requirement is to be documented, and the environmental effect and health effect of the requirement in relation to

this particular product group. The applicant's steerability is hereby set against documenting the requirement and its environmental and health effects.

The limit for fibre types and textile elements without requirements is set to ensure that an ecolabelled product mainly contains materials that are subject to requirements in the criteria. However, all textile types that are in contact with the child during normal use must comply with section 7.6.1 "Test of the final textile", irrespective of the quantity. This ensures that the child is not exposed to hazardous chemicals, even if this concerns small textile elements.

7.5 Textiles

O2 Nordic Ecolabelled textile

Nordic Ecolabelled textile with a valid licence will automatically fulfil all requirements of textiles in section 7.5, Textiles.

If the textile is included in products that are not washed before use, such as prams and strollers, pushchairs and car seats, it must be documented that relevant requirements in section 7.6, Exposure requirements - test of textiles, are complied with.

If the textile is intended for car seats, baby carriers, prams and strollers and pushchairs, which are exposed to frequent wear from the child or adult, or have a bearing effect, requirement O75 Wearing strength must be complied with.

✉ State the trade name and licence number of the ecolabelling licence for the textile and requirement O75, if relevant.

Background to requirement O2

The criteria are generally harmonised with the Nordic Ecolabelling criteria for Textiles, hides/skins and leather. Here, there are minor differences, but overall more textile requirements are made of Nordic Ecolabelled textiles than in this product group, since often several types of textile are included here, as well as several other material types besides textiles.

These criteria include an extra quality requirement of the textile in terms of the Nordic Ecolabelling criteria for Textiles, hides/skins and leather. This is to ensure that it is hard-wearing on use in car seats, baby carriers, prams, strollers and pushchairs.

7.5.1 Fibre production

The criteria set requirements of the production of the fibre types which are used most in the product group's products. The requirements are made for the individual fibre types in fibre production, where there is the greatest opportunity to achieve a positive environmental benefit from ecolabelling.

For some fibre types, organic or other sustainable cultivation is required, while for other fibres there are COD requirements of the water discharged from the washing process.

Activation of fiber requirements is defined by the following two steps:

1. First, assess whether the textile item is subject to requirements:

Textile element * is subject to fiber requirements in section 7.5.1, if it is included with more than 20% by weight of the total textile amount in the product.

2. Next, check which types of fiber in the textile element are subject to requirements:

The fiber type is subject to fiber requirements in section Fejl! Henvisningskilde ikke fundet. if it accounts for more than 40% by weight of the fiber type in the specific textile element. At the same time, at least 50% of the fibers in the textile element must document fiber requirements. Here you can choose the fiber types with the highest proportion of the textile element. This only applies if there are requirements for the particular fiber type.

* Textile element is explained in section 7.2 Definition of concepts used in the criteria.

O3 Cotton and other natural seed fibres of cellulose

The requirement concerns textile elements of cotton and other natural seed fibres of cellulose, including kapok, cf. the activations limits for the textile element described under section 7.5.1.

One of the following three alternatives must be fulfilled:

1. On an annual basis, 50% of the cotton used must be organic

or

2. 100% of the cotton used must be cultivated in accordance with the IPM principles and be certified as BCI, CmiA or Fair Trade Premium (see explanation later in the requirement).

or

3. A combination of organic and IPM cotton is used. The following formula must be used to calculate the ratio between organic and IPM cotton, calculated on an annual basis:

$\%_{ø}$: Per cent organic cotton

$\%_{I}$: Per cent IPM cotton

$2 \times \%_{ø} + \%_{I} = 100$

The calculation must give 100.

Organic cotton

Organic cotton is cotton cultivated in accordance with Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production of agricultural products, or products produced in the same way and under similar control schemes. Examples are: KRAV, IFOAM, KBA, OCIA, TDA, DEMETER.

IPM cotton

IPM (Integrated Pest Management) cotton is cultivated in accordance with the IPM principles as defined by the UN Food and Agriculture Organisation (FAO)'s IPM programme, or systems with Integrated Crop Management (ICM), comprising IPM principles. IPM cotton programmes which can be used for documentation of the requirements are: Better Cotton Initiative (BCI) and Cotton Made in Africa (CmiA).

✉ For organic cotton; State the supplier of organic cotton, with name and address. Valid certificate showing that the cotton has been grown organically in accordance with Council Regulation (EEC) no. 2092/91 of 24 June 1991

concerning organic production of agricultural products and indications referring thereto on agricultural products. In conjunction with cultivation subject to transition, if there is no certificate, details of supplier and cultivation method can be sent to Nordic Ecolabelling, together with adequate documentation that the cultivation is subject to transition to organic production. The cotton producer can have inspection visits by Nordic Ecolabelling.

- ☒ A valid GOTS certificate version 4.0 or later may also be used as documentation.
- ☒ For IPM cotton: State the supplier of IPM cotton with name and address.
- ☒ This must document that the cotton is cultivated by farmers who have attended formal training programmes under the UN's Food and Agriculture Organisation, or public IPM and ICM programmes, and/or has been audited as part of IPM schemes certified by a third party. The verification must either take place annually for each country of origin, or on the basis of certification of all of the IPM cotton bales purchased to manufacture the product.
- ☒ Production plan and procedures showing how the requirements of organic/IPM cotton are fulfilled must be submitted.

Background to requirement O3

The requirement demands for either 50% organic cotton, 100% IPM cotton or a combination of these. As IPM cotton, either Better Cotton Initiative (BCI), Cotton Made in Africa (CmiA) or Fair Trade cotton are accepted. Nordic Swan Ecolabelling has chosen to apply the EU Ecolabel's cotton requirements in the Textile Products version 2014, where these three certification systems are accepted as documentation for that the IPM principles have been met.

The cultivation of cotton has an environmental impact in terms of water consumption, area use and, for conventional cotton, use of pesticides and chemical fertilisers.

There are several different initiatives in terms of reducing the environmental impact of cotton production. Besides organic cotton, which ensures that no pesticides and chemical fertiliser are used, there are, for example, the Better Cotton Initiative (BCI)[12] and Cotton Made In Africa (CMIA)[13]. Both of these initiatives work with, for instance, Integrated Pest Management - the IMP principles defined by the UN Food and Agriculture Organisation. This reduces the chemical impact of cultivation and these programmes also focus on, for example, labour terms and conditions, soil quality and biodiversity. The programmes do not have absolute requirements, but promote development towards more sustainable cotton production.

Organic cotton production still accounts for a small proportion of overall cotton production. In 2014, global cotton production was calculated to be around 27

[12] The Better Cotton Initiative website: http://bettercotton.org/
[13] CmiA website: http://www.cottonmadeinafrica.org

million MT fibre, of which organic cotton accounted for around 0.5%[14] - 1%[15], depending on the year and the statistics used. But considering the total ratio of sustainable cotton, including e.g. BCI and CMIA, the ratio has increased strongly within the last 5-10 years. In 2014, the ratio of sustainable cotton was up to 8% of global cotton production[16]. In 2013, BCI established a partnership agreement with Cotton Made In Africa (CmiA), under which CmiA cotton can now be sold as BCI. In 2015, BCU cotton production totalled 2.6 million Mtonnes, equivalent to 12% of the world's cotton production. Of this, only 251,000 Mtonnes was bought from distributors, which means that the remaining 83% was sold as conventional cotton. BCI therefore has great focus on increasing the textile industry's purchasing of BCI cotton, so that the farmers are motivated to retain the more sustainable production. Based on these statistics, an alternative requirement of 100% IPM cotton is therefore realistic.

Organic cotton does not solve all of the problems related to cotton production. There is still high water consumption and area use. Together with the present limited use, it is therefore obvious to make it possible to also fulfil the requirement by using other programmes for sustainable cotton production. Especially if it is possible to require 100% on using this alternative. For the Baby products with textiles product group, there are several stages of the product's life cycle in which no or reduced use of hazardous pesticides will give positive benefits. Besides the actual cultivation phase, this is also of positive significance for the actual use of the cotton textile in the use phase, when the child is often in close contact with the textile. It has therefore been decided that the requirement can be fulfilled by using 100% IPM cotton. IPM stands for Integrated Pest Management, and in these cultivation systems measures to prevent pest attacks are combined with chemical control, as required.

The requirement sets 3 requirement alternatives, where the first is that at least 50 wt% of the cotton used annually in Nordic Ecolabelled production must be organically cultivated, or cultivated under transition to organic cultivation. Organic fibres must be produced and controlled in accordance with Council Regulation (EEC) no. 2092/91 of 24 June 1991 concerning organic production of agricultural products and indications referring thereto on agricultural products, such as KRAV, IFOAM, KBA, OCIA, TDA, DEMETER et al.

As the criteria require that the final textile (unless it consists of 100% organic cotton) must be tested for pesticide content, it is ensured that the final product does not contain pesticides in quantities that are hazardous to health. See more in requirement 042.

The second requirement alternative is that 100% of the cotton must be cultivated in accordance with the IPM principles, as defined in the UN Food and Agriculture

[14] Mind the Gap: Towards a More Sustainable Cotton Market, Pesticides Action Network UK, Solidaridad, and WWF, 2016
[15] Textile exchange, 2010 Farm and Fiber report, 2010, http://farmhub.textileexchange.org/upload/library/Farm%20and%20fiber%20report/Farm_Fibre%20Report%202010%20Final_exec%20summary_web.pdf (available 6 Sept. 2011)
[16] Mind the Gap: Towards a More Sustainable Cotton Market, Pesticides Action Network UK, Solidaridad, and WWF, 2016

Organisation (FAO)'s IPM programme, or systems with Integrated Crop Management (ICM), comprising IPM principles. The requirement states the Better Cotton Initiative (BCI) and Cotton Made In Africa (CmiA) or Fair Trade Premium as certifications that may be used to document compliance with the IPM principles.

The third alternative is the opportunity to combine organic and IMP cotton. Organic cotton is given double weighting, cf. the formula stated in the requirement text.

IPM

IPM (Integrated Pest Management) cotton is cultivated in accordance with the IPM principles as defined by the UN Food and Agriculture Organisation (FAO)'s IPM programme, or systems with Integrated Crop Management (ICM), comprising IPM principles. The FAO's definition is as follows:

"The careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment. IPM emphasizes the growth of a healthy crop with the least possible disruption to agro-ecosystems and encourages natural pest control mechanisms."

The latest version of FAO's IMP principles was approved by the FAO Conference in June 2013. The code of conduct is supported by technical guidelines developed by an expert panel. FAO's IMP program is a voluntary framework that has been approved by FAO members, and is supported by pesticide industry organizations and civil society organizations.

The IPM principles complement the legally binding instruments such as the Rotterdam Convention on certain hazardous chemicals and pesticides in international trade and the Stockholm Convention on Persistent Organic Pollutants.

The purpose of the IMP principles is to establish voluntary standards for using pesticides for all public and private parties that influence the use of pesticides, especially in countries where there is insufficient or no national legislation regulating pesticides.

The "Code of Conduct" document focuses especially on authorities and producers, while on FAO's website is a list of what Integrated Pest Management means, for example, from the angle of cotton growers[17].

GMO cotton

A requirement to prohibit the use of genetically modified (GM) cotton has been assessed.

There is great uncertainty concerning the environmental effects of genetically modified plants. It is questioned, for example, whether the use of pesticides will be

[17] How to practice Integrated Pest Management? Set den 21/9 2016 på http://www.fao.org/agriculture/crops/thematic-sitemap/theme/spi/scpi-home/managing-ecosystems/integrated-pest-management/ipm-how/en/

reduced if GMO are used, as claimed by GMO supporters. Various social and ethical issues are also relevant to GMO production[18]. Nordic Ecolabelling has wished to prohibit GM cotton, but cannot see that this is controllable at this time. See further details in the background to Nordic Ecolabelling of Textiles, hides/skins and leather, generation 4.

O4 Wool and other keratin fibre (wool from sheep, camel, lama and goat)

The requirement concerns textile elements of wool and other keratin fibres, cf. the activations limits for the textile element described under section 7.5.1.

The total content of the following substances may not exceed 0.5 ppm:

ɣ-hexachlorocyclohexane (lindan), α-hexachlorocyclohexane, β-hexachlorocyclohexane, δ-hexachlorocyclohexane, aldrin, dieldrin, endrin, p,p'-DDT, p,p'-DDD, cypermethrin, deltamethrin, fenvalerate, cyhalothrin and flumethrin.

The total content of the following substances may not exceed 2 ppm:

diazinon, propetamphos, chlorfenvinphos, dichlorfention, chlorpyrifos, fenchlorphos, diflubenzuron and triflumuron.

The analysis must be performed on raw wool before wet treatment, for each consignment of wool received.

The tests must be in accordance with IWTO Draft Test Method 59 or equivalent.

The requirement does not apply if it can be documented which farmers have produced at least 75 wt% of the wool or keratin fibres, and that the farmers can confirm that the substances named in the requirement have not been used in the relevant areas or animals.

The requirement does not apply either if the wool is certified as organic. See O3 for a definition of organic.

☒ Test report showing that the requirement is fulfilled

or

☒ Confirmation from the farmers that the stated substances are not used and an overview of the ratio of wool concerned. Appendix 4 may be used. Alternatively a valid certificate that the wool is organic in accordance with Council Regulation (EEC) no. 2092/91 of 24 June 1991 concerning organic production of agricultural products and indications referring thereto on agricultural products

or

☒ EU Ecolabelling licence version 2014 or GOTS version 4 may also be used as documentation.

Background to requirement O4

To avoid parasites in the wool, the animals may be exposed to chemicals that are hazardous to health and the environment such as organophosphates and pyrethroids. To avoid exposing the animals to a number of problematic substances, test reports are required to be submitted in accordance with IWTO Draft Test Method 59 or equivalent.

The levels that are permitted in the requirement are so low that if these substances are used they will be over the limit, and in practice these substances are therefore prohibited from use in wool that is to be approved for a Nordic Ecolabel. The

[18] "Genetically modified organisms – a summary of potential adverse effects relevant to sustainable development", 2011

requirement can also be documented through traceability back to the farmers for at least 75 wt% of the wool or keratin fibres, and a confirmation from the farmers that the substances are not used.

As the requirement is equivalent to the requirement in Nordic Ecolabelled Textile, EU Ecolabel and GOTS version 4, this can also be documented with a valid licence or certificate under these schemes.

It has also been assessed whether the requirement should be made that the wool must be organically produced. It is possible to obtain organic wool, but the market is very small. Contact with the industry[19] shows that organic wool is difficult to obtain. Total wool production is estimated at approximately 2.1 million tonnes[20], and Australia is the largest producer, at approximately 25%[21]. In Australia, approximately 1% of the wool production is organic[22]. Nordic Ecolabelling has not been able to obtain a more accurate figure regarding how much of the world's total wool production is organic, but based on these figures, it can be said that access to organic wool is limited. Nordic Ecolabelling therefore does not require wool to be organic, as its market availability is limited, and steerability and potential are low.

O5 Emissions from wool-scouring facilities

The requirement concerns textile elements of wool and other keratin fibres, cf. the activations limits for the textile element described under section 7.5.1.

Emissions of the chemical oxygen consumption, COD, whether it is cleaned on-site or off-site, may be maximum:

- Coarse wool: 25 g/kg (greasy wool, expressed as an annual average)
- Fine wool: 45 g/kg (greasy wool, expressed as an annual average)

For off-site cleaning, the COD emission is calculated by multiplying the COD emission from the wool-scouring facility by the cleaning plant's average cleaning effect. Measurement of PCOD, TOC or BOD may also be used if a correlation to COD is shown.

The wool-scouring facility must describe how the effluent from scouring is treated, and show how COD emissions are monitored.

COD content must be tested according to ISO 6060 or equivalent. The report must contain a calculation showing the release of COD in g per kg of wool. The requirement can be documented by releasing COD on an annual basis. Measurement of PCOD, TOC or BOD can also be used if a correlation to COD is shown.

The requirements of analysis laboratory and test methods for COD/TOC are stated in Appendix 4.

☒ Test report from the wool-scouring facility showing that the requirement is fulfilled.

or

☒ Nordic Ecolabelling licence Textile version 4, EU Nordic Ecolabelling version 2014 or GOTS version 4 may also be used as documentation for fine wool.

[19] Pers. Comm: JOHA: Ingemette Jakobsen, Gabriel: Kurt Nedergaard (QEP) and Neutral.com: Christina E. Larsen.
[20] http://www.naturalfibres2009.org/en/fibres/wool.html
[21] http://en.wikipedia.org/wiki/Wool (available 15 Sept 2011)
[22] http://www.treehugger.com/files/2007/09/organic_wool_th.php (available 15 Sept 2011)

Background to requirement O5

Scouring takes place in a series of washing stages. Detergents are added to remove dirt and grease from the wool. Lanolin is valuable and can be used in ointments, creams and soaps. The effluent may contain large amounts of substances which which consume oxygen during decomposition. When effluent with a high COD (chemical oxygen demand) content is released to the aquatic environment, this degradation can lead to oxygen depletion of the water, to the detriment of flora and fauna. The COD content of wool scouring varies from 150-500 g/kg unprocessed wool and a number of micropollutants from pesticide treatment of the sheep[23]. The COD content in the effluent is therefore required to be minimised. Several wool-scouring facilities have been discontinued in recent years and today they only exist in a few European countries, such as the UK and Belgium[24], as well as the Czech Republic and Italy[25]. The same trend applies in the major wool-producing countries such as Australia and New Zealand, where the number of scouring facilities is currently strongly reduced, in contrast to China, which is expanding and currently washes 80% of the Australian wool.[26]

According to the Australian CRISO, Commonwealth Scientific and Industrial Research Organisation, in Australia there are now only two wool-scouring facilities, while in New Zealand there is only one company with a total of two facilities. In Australia, NZ and the UK (Andar system), Sirolan CF-A chemical coagulation/flocculation is used as the primary cleaning on-site, which at full capacity can achieve 60 g COD/kg wool. Scouring can then continue to other phases of the system, CF-B, which performs biological burning of the wastewater from CF-A. This process further reduces the COD content by 77-88% in 70 hours. However, currently most of the aforementioned wool-scouring facilities send the wastewater for external purification instead of using CF-B.[27] For the scouring facilities, often the unit mg/L is used to calculate COD in the effluent, making it important to be aware of which unit of measurement is required in documentation. According to CRISO, confusion concerning the measuring unit used has been a possible reason for the caution as to whether 45 g/kg can be achieved. On the EU Ecolabel revision of version 3, the COD level of 20 g/kg unprocessed is proposed for both on-site and off-site scouring. Achievement of this scouring before discharge to the surface water is also confirmed by Europe's largest wool-scouring facility, Modiano and BremerWollHandelskontor[28] and New Zealand's Kaputone[29].

O6 Polyester

The requirement concerns polyester fibres in textile elements, cf. the activation limits for the textile part described under section 7.5.1.

The amount of antimony in polyester fibre, measured as the average value on an annual basis, may not exceed 260 ppm.

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[23] Integrated Pollution Prevention and Control (IPPC) Reference Document on Best Available Techniques for the Textiles Industry, July 2003
[24] Kjersti Kviseth, Norwegian sheep husbandry as basis for Cradle to Cradle ® development, Oslo 10.05.2011
[25] G. Modiano Limited, http://www.gmodiano.com/new/
[26] Ian Russel, CSIRO (Commonwealth Scientific and Industrial Research Organisation, Australia).
[27] Ian Russel, CSIRO (Commonwealth Scientific and Industrial Research Organisation, Australia), 6/8-2012
[28] Jens Behrmann, BremerWollHandelskontor, 13/08-2012
[29] Christine Nunn, The Merino company, information forwarded from Don Caradus from Kaputone, 13/8-2012.

Antimony (Sb) must be tested by the following method: direct determination by atom absorption spectrometry. The test must be performed on raw fibre before wet treatment.

Emission of VOC on polymerisation and fibre production, measured for the process stages where it occurs, including diffuse emissions, may not exceed 1.2 g/kg polyestermass produced, expressed as an annual average.

VOC are defined as organic compounds with a steam pressure of 0.01 kPa or above at 293.15 K, or an equivalent volatility during conditions for use.

☒ Declaration from the polyester producer that antimony is not used, or a test report showing fulfilment of the requirement concerning antimony. Appendix 5 may be used.

☒ For VOC emissions, detailed information and/or test reports must be submitted, as well as a confirmation from the polyester producer that the requirement is fulfilled. Appendix 5 may be used.

☒ Alternatively, the entire requirement can be documented with a licence for Nordic Ecolabelled Textiles, generation 4, or Textiles with the EU Ecolabel from 2014.

Background to requirement O6

In the context of textiles, polyester means PET, which is a synthetic polymer of terephthalic acid (or dimethyl terephthalate) and monoethylene glycol. These are raw materials which are readily available from cracking of crude oil. The raw materials therefore originate from non-renewable sources, but are considered to be chemicals with low toxicity which are readily available. Production of PET fibres is often with the catalyst diantimony trioxide (Sb2O3).

There is a requirement concerning residues of the antimony catalyst in polyester since antimony is a hazardous substance with the Carc 2 (previously Cat. 3) classification, and has been risk assessed as an existing substance in EU 2008 (SE)[30]. The risk assessment concluded that the substance's classification could be maintained (without environmental hazard classification). The report states that the risk areas for further investigation were exposure of people and the environment in the production and handling of pure diantimony trioxide, also within the PET industry. Polyester usually contains antimony in concentrations of 150-350 ppm (mg/kg)[31].

According to an operator in the textile market there is greater focus on phasing out antimony from the production of PET bottles than for textiles, because PET bottles are used in the food industry.

To minimise anthropogenic production, collection and exposure of hazardous substances in circulation, Nordic Ecolabelling should continue to maintain a limiting requirement of the residual content of such substances, even if the requirement primarily serves as a signal to the industry to maintain a good technical level for the production of PET.

[30] European Union, Risk Assessment Report DIANTIMONY TRIOXIDE, Swedish Chemicals Inspectorate, DRAFT 2008
[31] Danish Environmental Protection Agency, Environmental project no. 892, 2004, Antimony - consumption, dissemination and risk

Since the content of diantimony trioxide (Sb2O3) in final PET fibre can vary, the requirement should be set as an average over a period of time comprising a number of months or one year.

There is also a requirement of VOC emissions during polymerisation. The requirement is identical with the Nordic Ecolabel's requirements of textiles, hides/skins and leather generation 4 and by and large the same as the EU Ecolabel's Textile criteria from 2014. There is a differentiated requirement, however, with a separate requirement level of 10.3 g/kg for filament fibres.

As GOTS does not include synthetic fibres, there are no equivalent requirements under GOTS. Oeko-Tex Baby sets requirements of the amount of antimony in the finished textile. This means that Oeko-Tex does not directly handle antimony leaching in conjunction with wet processes in textile production. The Oeko-Tex certificate therefore cannot be used as documentation for this requirement. Oeko-Tex also sets requirements of the VOC content in the finished textile, for some product types. This requirement cannot be equated with the requirement in these criteria.

The VOC level depends on where the measurement is performed. For example, whether measurement is at the smokestack or inside the factory premises.

It is therefore specified in the requirement that the VOC measurements must take place at the process stages where emissions occur, including diffuse discharges.

The requirement is identical with Nordic Ecolabelled Textile generation 4 and by and large identical with Textiles with the EU Ecolabel from 2014.

O7 Acrylic

The requirement concerns acrylic fibres in textile elements, cf. the activation limits for the textile part described under section 7.5.1.

The residual of acrylonitrile content in raw fibres from the fibre production plant shall be less than 1.5 mg/kg. The amount of acrylonitrile shall be measured using the following method of analysis: Extraction with boiling water and quantification with capillary gas-liquid chromatography. Cf. ISO 4581 or equivalent (assessed by test institute or Nordic Swan Ecolabelling).

Emissions of acrylonitrile to the air (during polymerisation and until the solution is ready for spinning) shall be less than 1g/kg produced fibre, expressed as an annual average.

N,N - Dimetylacetamide (DMAc, cas no 127-19-5) may not be used in acrylic production.

☒ An analysis report from the acrylic manufacturer showing that the requirement is fulfilled. For emissions to the air, the applicant shall attach documentation and/or test reports, as well as a confirmation that the requirement is fulfilled. A valid EU Ecolabel licence in accordance with the Commission's decision from July 2009 can document the requirements to acrylonitrile.

☒ A declaration from the acrylic manufacturer that DMAc is not used in acrylic production.

Background to requirement O7

Acrylic fibres are produced through the polymerisation of acrylonitrile (at least 85%) with a comonomer (max. 15%). Acrylonitrile is relatively toxic, LC50 (Daphnia) = 7.6 mg/l, and is classified as carcinogenic108.

Nordic Ecolabelling therefore sets requirements for remaining monomers in the polymer, and for emissions of acrylonitrile in the process.

Toxic solvents are also used in spinning, dimethylformamide (DMF) or N,N Dimethylacetamide (DMAc). N,N Dimethylacetamide (DMAc, cas no. 127-19-5) is among the new substances on the REACH candidate list, and Nordic Ecolabel do not allow DMAc in the production of acrylic and elastane. The requirement is harmonized with the criteria for Nordic Ecolabelled Textile, skins and leather generation 4.

O8 Elastane

The requirement concerns elastane fibres in textile elements, cf. the activation limits for the textile part described under section 7.5.1.

- Organotin compounds shall not be used.
- Emissions to the air of aromatic diisocyanates during polymerisation and fibre production shall be less than 5 mg/kg produced fibre, expressed as an annual average.
- N,N - Dimetylacetamide (DMAc, cas no 127-19-5) may not be used in elastane production.

✉ A declaration from the elastane manufacturer that organotin compounds are not used. Detailed information and/or analysis reports from the elastane manufacturer showing that the requirement is fulfilled.

✉ A declaration from the elastane manufacturer that DMAc is not used in elastane production.

Background to requirement O8

Elastane is a polyurethane elastomer. It is not used as a textile fibre alone, but is incorporated in other textiles in order to make them elastic. Either special amines or organic tin compounds can be used as catalysts in the polymerisation. Organotin compounds are very toxic, both for humans and animals, and a requirement is set that organotin compounds shall not be used. The requirement shall be documented with a statement that organotin compounds are not used.

Requirements are also set for emissions of aromatic diisocyanates in the polymerisation and spinning. These compounds can cause allergic reactions in the eyes, lungs and skin in the event of emissions to the air. The requirement shall be documented through test reports and/or detailed information that shows that emissions of aromatic diisocyanates do not exceed 5 mg/kg produced fibre.

Elastane can be produced in four different ways: by extrusion, reaction spinning, solution dry spinning or solution wet spinning. Solution dry spinning is used in more than 94.5% of the world's elastane production. With this method, DMAC is used as a solvent. Many other solvents can also be used, such as dimethylformamide (DMF) and nitric acid (HNO3).

As mentioned above, DMAc is among the new substances on the REACH candidate list, and Nordic Ecolabel changes the requirement to not allow DMAc in the production of acrylic and elastane[32]. The requirement is harmonized with the criteria for Nordic Ecolabelled Textile, skins and leather generation 4.

[32] Background document for Nordic Ecolabelled Textile, skins and leather generation 4

O9 Polyamide

The requirement concerns polyamide fibres in textile elements, cf. the activation limits for the textile part described under section 7.5.1.

Emissions of nitrogen dioxide (N2O) to the air from the production of monomers must not exceed 10 g/kg produced polyamide 6 fibre, and 50 g/kg produced polyamide 6.6 fibre, expressed as an annual average.

✉ Detailed information and/or a test report from the polyamide manufacturer showing that the requirement is fulfilled.

Background to requirement O9

The requirement is harmonized with the criteria for Nordic Ecolabelled Textile, skins and leather generation 4.

Regenerated cellulose fibre (including viscose, modal and lycocell fibres)

O10 Bleaching with chlorine gas

The requirement concerns cellulose fibres in textile elements, cf. the activation limits for the textile element described under section 7.5.1.

Chlorine gas may not be used for bleaching of cellulose mass or cellulose fibre.

✉ Declaration from producers of cellulose mass and regenerated cellulose that the requirement is fulfilled. Appendix 6 may be used.

✉ Alternatively, a certificate from Nordic Ecolabelling Textile version 4, or EU Ecolabel version 2014, may also be used as documentation.

Background to requirement O10

Cellulose mass may not be bleached with chlorine gas. This is not used in Europe today, but this use has not yet been discontinued in every part of the world. Chlorine gas is an effective bleaching agent, but gives high emissions of organochlorine compounds. There are good alternative bleaching methods for cellulose mass today.

Setting the requirement for the prohibition of chlorine bleaching will reduce AOX emissions.

EU Ecolabel version 2014 has requirements of AOX emissions and not of bleaching with chlorine gas. It is nonetheless accepted that the requirement is documented with a valid licence certificate for the EU Ecolabel in accordance with the Commission decision from June 2014, as the requirement of the EU Ecolabel in practice means that bleaching with chlorine gas is prohibited.

The requirement is identical with the Nordic Ecolabel's requirements of Textiles, hides/skins and leather generation 4 and EU Ecolabel version 2014, and the requirement can therefore be documented with a licence for Nordic Ecolabelled Textiles, hides/skins and leather.

O11 Viscose and modal, sulphur emissions

The requirement concerns viscose and modal fibres. The requirement concerns textile elements cf. the activation limits for the textile element described under section 7.5.1.

Sulphur emissions to the air may not exceed 120 g S/kg filament fibres and 30 g/kg staple fibres, expressed as an annual average.

☒ Test report from the viscose producer showing that the requirement is fulfilled Appendix 6 may be used.

☒ Alternatively, a licence for Nordic Ecolabelled Textile version 4, or the EU Ecolabel for Textiles 2014, can also be used as documentation.

Background to requirement O11

Production of viscose gives emissions of sulphur (S). To limit these emissions, requirements are set for emissions of these substances.

The requirement is identical with the Nordic Ecolabel requirement for Textiles, hides/skins and leather generation 4. The EU Ecolabel's criteria from 2014 have by and large the same requirements. Here, the requirement level for filament fibres is differentiated, however, in relation to the various production processes of staged and integrated washing, with values of 40 and 170 g S/kg, respectively. It is assessed, however, that the EU Ecolabel licence can be accepted as documentation for this requirement.

GOTS and Oeko-Tex do not have equivalent requirements and thus cannot be used as documentation for this requirement.

O12 Viscose, zinc emissions

The requirement concerns viscose fibre. The requirement concerns textile elements cf. the activation limits for the textile element described under section 7.5.1.

Emissions of zinc to water may not exceed 0.3 g Zn/kg regenerated cellulose, expressed as an annual average.

Information on sampling, analysis methods and analysis laboratories is given in Appendix 21.

☒ Test report from the viscose producer showing that the requirement is fulfilled Appendix 6 may be used.

☒ Alternatively, a licence for Nordic Ecolabelled Textile version 4 may also be used as documentation.

Background to requirement O12

Production of viscose gives zinc (Zn) emissions. The requirement is set in order to limit emissions. The requirement is identical with the Nordic Ecolabel requirement for Textiles, hides/skins and leather generation 4. A licence for Nordic Ecolabelled Textiles, hides/skins and leather generation 4 can therefore be used as documentation.

GOTS and Oeko-Tex do not have equivalent requirements and thus cannot be used as documentation for this requirement.

O13 Traceability and certified wood raw material

The requirement concerns regenerated cellulose fibre. cf. the activation limits for the textile element described under section 7.5.1.

All 4 points of the requirement must be complied with

1 Banned tree species

Species of trees on the Nordic Swan Ecolabelling list of protected tree species may not be used in regenerated cellulose fibre/pulp.

The complete list of protected tree species is available for viewing at:

www.nordic-ecolabel.org/wood/

The requirement only applies to virgin tree species and not tree species defined as recycled material*.

2 Tree species

The manufacturer must state the name (species name in Latin, Scandinavian or English language) of the wood raw material used in regenerated cellulose fibre/pulp.

3 Chain of Custody certification

The manufacorer of the regenerated cellulose fibre or the dissolving pulp must have a Chain of Custody certification under the FSC/PEFC schemes.

4 Certified wood raw material

On an annual basis;

-a minimum of 50% of the wood raw material in the regenerated cellulose fibre or dissolving pulp must be certified as sustainably forested under the FSC or PEFC schemes. The remaining percentage of wood raw materials must be FSC Controlled Wood or wood from PEFC Controlled Sources.

or

-a minimum of 75% of raw materials from fibres shall be recycled wood material*

or

-a combination of certified raw material and recycled wood material, calculated by the following formula:

Requirements to the percentage of fibre raw material from certified forestry (Y):

$Y\ (\%) \geq 50 - 0.67x$

where x = percentage of recycled wood material.

The requirement must be documented as purchased wood or fibre on a yearly basis (volume or weight) of the producer of regenerated fibre or the manufacturer of the dissolving pulp.

If several pulps are mixed, the certification rate must be met for the finished pulp used in the textile production.

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

Definition of pre-consumer material: Material diverted from the waste stream during a manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

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

Nordic Swan Ecolabelling defines byproducts from primary wood industries (sawdust, wood chips, bark, ect.) or residues from forestry (bark, branches, roots etc.) as recycled material.

✉ Declaration from applicant/manufacturer/supplier that the requirement to tree species not permitted to be used in the regenerated cellulose fibre or the dissolving pulp are met. Appendix 7 may be used.

✉ Name (species name in Latin, Scandinavian or English language) of the wood raw materials that are used in the regenerated cellulose fibre or the dissolving pulp. Appendix 7 may be used.

☒ The manufacturer of the fibre or the dissolving pulp is required to submit a valid FSC/PEFC Chain of Custody certificate that covers all wood raw materials used in the regenerated cellulose fibre or the dissolving pulp.

☒ Invoice from the dissolving pulp manufacturer showing that the requirement to the percentage of certified wood or recycled material are met.

☒ Documentation from producer of the dissolving pulp, which shows purchased quantity of certified wood raw material, eg. an Excel file with information about deliveries of certified wood raw materials as stated in Appendix 7. The quantities purchased must be supported by invoice or delivery slip (paper or E-billing). The proportion of certified fibre must be updated and reported annually during the validity of the license.

Background to requirement O13

The raw materials for regenerated cellulose fibre, like viscose, are mainly wood mass (cellulose) and waste from the cotton plant, but may also be bamboo. On using wood or bamboo in products it is therefore relevant to consider whether the raw materials have been harvested from protected areas, or areas with unclear ownership and user rights. It is also important that the raw materials come from legal sources.

7.5.2 Chemicals used in textileproduction

After the actual fibre production, the fibre can undergo several processes, such as fiber treatment, spinning, weaving, knitting, wet processes such as washing, bleaching, dyeing and printing (including plastisol printing). Coats, membranes and laminates may also be applied. The following requirements are made for chemicals used in these processes including auxiliary chemicals used in production.

Textile elements which constitute less than 5 wt% of the total amount of textile in the product and not are in contact with the child or the adult, are exempt from the requirement in this section 7.5.2 Chemicals (used in textile production).

∗ See definition of contact with children or adult in section 7.2.

Certificates from other textile labeling schemes can be used as documentation for specific requirements as specified in Appendix 22 and in the documentation requirement for individual requirements.

O14 Textile componets, which are < 5 wt% and in contact with the child or adult

Textile components, which individually account for < 5% of the total textile product and is in contact with the child or adult, is excepted from the requirements here in section 7.5.2, if it is documentet, that the fabric is certified to one of the following labeling schemes applicable versions:

- The Nordic Swan Ecolabel of Textile, skinds and leather
- EU Ecolabel
- GOTS
- Oeko-Tex Standard 100 Class I baby

At the same time, halogenated flame retardants must not be an ingoing substance[1] in the textile. Neither in the textile fiber itself nor as added to the textile.

[1] For definition of ingoing substances, see section 7.2 for definitions.

Note, that all textile elements, irrespective of the amount, which is in contact with the child during normal use of the product, must fulfil relevant requirements in section 7.6.

Some certifications shemes can also be used as documentation for selected requirements in section 1.5.1.

☒ Documentation that shows that the textile components are certified by one of these labels. Alternatively, the relevant requirements of section 7.5.2 must be documented.

☒ Declaration from manufacturer/supplier of the material that compliance with halogenated flame retardants is complied with.

Background to requirement O14

The requirement is set to ensure that even very small textile parts also comply with some basic chemical requirements without providing a comprehensive documentation burden. It is therefore intended, that it should be possible to use other textile labels having requirements for either applied chemistry in textile production or requirements for the chemistry of the finished textile. These textile labels is not completely identical to the requirements for the Nordic Ecolabel for Babyproducts with textile. Hence all chemical requirements for the textile production are activated, when the textile componont constitute more than 5 wt% of the total textile. However, there are several requirements that may be provided by other textile labels and it is clear both from the documentation requirement in the individual requirements and an overview of appendix 22.

O15 Chemicals overview for textile elements

All chemicals used in textile elements covered by this section must be stated in an overview and documented with safety data sheets for the various processes which the textile undergoes after fibre production, such as spinning, weaving, wet processes (such as washing, bleaching and dyeing) and chemicals for printing, coatings, membranes, laminates, of textile, hide/skin and leather, etc.

Nordic Ecolabelled textile

If the textile is certified to Nordic Ecolabelled Textile generation 4, the requirements in this section can be omitted. A declaration must solely be given that the textile has not been subsequently processed.

If subsequent processing has taken place, the chemicals used for this subsequent processing will be subject to the requirements in the criteria and must therefore be stated.

☒ A chemicals overview for all of the chemicals used in the various processes, cf. the requirement text, specifying which processes the various chemicals belong to and their function.

☒ For each chemical: A safety data sheet (in accordance with Annex II of the REACH regulation (EC) No. 1907/2006 and classification in accordance with regulation (EC) No. 1272/2008).

☒ Alternatively a licence for Nordic Ecolabelled Textile generation 4 and an overview of chemicals for any finishing.

Background to requirement O15

To gain an overview of which chemicals are used in the various processes after fibre production, a requirement is made for the submission of an overview of the chemicals used.

O16 CMR classification of constituent substances in chemicals

The requirement includes constituent substances[1] of all chemicals used in the production of the textile, as described in the intro text to paragraph 7.5.2. [1]See definition of ingoing substances in section 7.2.

Substances, which are classified, with the classification given in the table below, must not be present in chemicals used in the textileproduction:

CLP Regulation 1272/2008		
Hazard class	Signal word, Category code	Hazard statement
Carcinogenic	Hazardous, Carc. 1A or 1B Warning, Carc. 2	H350 H351
Mutagenic	Hazardous, Muta. 1A or 1B Warning, Muta. 2	H340 H341
Reprotoxic	Hazardous, Repr. 1A or 1B Warning, Repr. 2, Lact.	H360 H361

✉ Declaration from the chemical supplier showing that the requirement is met. Appendix 8 may be used.

Background to requirement O16

The ban on CMR substances categories 1A, 1B and 2 has its own requirement. Nordic Ecolabelling strives to that health and environmental impact of the products must be as low as possible. Therefore, the requirement ban substances with CMR classification, which remove some of the most problematic classifications of substances. From the production the requirement includes all chemicals used in textile production to ensure that there is focus on this in all processes whre chimicals are used.

O17 Prohibited substances

The following chemical substances may not be included[1] in the preparations or compounds used:

- Substances which are included on REACH's candidate list at any time may not be used in the processes after fibre production. Link to Reach's candidate list: http://echa.europa.eu/web/guest/candidate-list-table
- Halogenated flame retardants
- Alkylphenol ethoxylates (APEO)
- Linear alkylbenzene sulphonates (LAS)
- Ditalg-dimethyl ammonium chloride (DTDMAC), disterayldimethylammonium chloride (DSDMAC), dihydrogenated tallow dimethyl ammonium chloride (DHTDMAC)
- Ethylenediaminetetraacetic acid (EDTA) and diethylenetriaminepentaacetic acid (DTPA)
- Phthalates listed in REACH's Annex XVII
- Fluorinated organic compounds such as PFOA[2] (perfluorooctanoic acid and its salts/esters), PFOS (perfluorooctanesulfonate and its compounds), and PTFE (polytetrafluoroethylene), etc.

[1]See the definition of constituent substances in section 7.2.

[2]Be aware of national legislation concerning PFOA, if the product is to be sold/marketed in Norway. In Norway, PFOA is governed by the "Regulation on restrictions to the use of health- and environmentally-hazardous chemicals and other products (Product Regulations)", Section 2-32.

✉ Declaration from the chemicals supplier that the requirement is met. Appendix 8 may be used.

Background to requirement O17

Use of a number of chemicals in the further processing of the fibre is prohibited. Substances on REACH's candidate list are very problematic and may for example be carcinogenic and hazardous to the environment. Nordic Ecolabelling considers it important to ensure that no substances on this list are used in Nordic Ecolabelled products. The candidate list can be downloaded from ECHA's website: http://echa.europa.eu/web/guest/candidate-list-table.

The requirement is harmonised with Nordic Ecolabelled Textiles, hides/skins and leather generation 4 and the licence for these criteria can therefore be used as documentation for the requirement. The background to the requirement is described in the background to Nordic Ecolabelling of Textiles, hides/skins and leather, generation 4.

O18 Biocides and antibacterial substances

The following substances, which may have a biocides and/or antibacterial effect in the fibre, piece goods or the final textile, including any finishing, may not be included[1]:

- Antibacterial substances (including silver ions, the nanosilver and nanocopper) and/or
- Biocides in the form of pure active substances or biocidal products.

[1]*See the definition of constituent substances in section 7.2.*

✉ Declaration from the chemical supplier showing that the requirement is met. Appendix 8 may be used.

Background to requirement O18

Biocide products and antibacterial products are not desirable in ecolabelled products, Nordic Ecolabelling has therefore introduced a requirement which prohibits the addition of biocides and antibacterial substances. There is an increase in products to which these substances have been added, for example in sportswear to prevent odours. One of the substances added is nanosilver, which is known for its antibacterial function.

Biocides and antibacterial substances, such as nano, are not necessary additives to a product. Concerning use of antibacterial substances, there is concern that increased use of such substances can increase bacteria's resistance to antibiotics.

Substances such as nanosilver is by the US Environmental Protection Agency (EPA) considered as biocides. There is particular concern that the release of nanosilver for waste water and other diversification can eliminate bacteria and cause bacterial resistance.

A licence for Nordic Ecolabelled Textiles, hides/skins and leather generation 4 can be used as documentation. GOTS, EU Ecolabel and Oeko-Tex do not have equivalent requirements and therefore cannot be used as documentation.

O19 Nanoparticles

Nanoparticles from nanomaterial* may not be included in chemical products, with the following exceptions:

- Pigment**
- Naturally occurring inorganic filler***
- Polymer dispersions

The definition of nanomaterial follows the European Commission's definition of nanomaterial of 18 October 2011 (2011/696/EU).

***Nano-titanium dioxide is not considered to be a pigment, and is therefore covered by the requirement.*

****Applies to filler subject to Annex V, clause 7 of REACH.*

[1]*See the definition of constituent substances in section 7.2.*

✉ Declaration from the producer of fibre, piece goods and textiles that nanoparticles, have not been added. Appendix 8 and appendices for the respective fibres may be used.

Background to requirement O19

Nanoparticles are not desirable in ecolabelled products. It may be nanometals such as nanosilver, nanogold or nanocopper. Nanometals, such as nanosilver and nano copper is a separate problem, since they are found in many products to achieve an antibacterial effect.

It is specified that polymer emulsions are not considered to be nanomaterial, and where there is exemption from the requirement. "Nanomaterial": a natural, incidental or manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate, and where, for 50% or more of the particles in the number size distribution, one or more external dimensions is in the size range of 1-100 nm*.

It must be specified that Nordic Ecolabelling does not require a test for all raw materials in terms of nanoparticles. The requirement needs a declaration from the raw materials supplier for raw materials that are not covered by the exemption. The declaration is that the raw material does not contain nanomaterial in accordance with the requirement's definition.

A licence for Nordic Ecolabelled Textiles, hides/skins and leather generation 4 can be used as documentation. GOTS, EU Ecolabel and Oeko-Tex do not have equivalent requirements and therefore cannot be used as documentation.

O20 Bleaching agents and treatment against felting (wool)

Chlorinated substances may not be used as bleaching agents for yarn, piece goods and finished goods or on carded and loose, scoured wool in conjunction with treatment against felting.

This requirement does not apply to the production of regenerated cellulose fibre, which must fulfil O10.

✉ Declaration that no chlorinated bleaching agents are used. Appendix 4 and 8 may be used.

✉ Alternatively, a certificate for GOTS version 4.0 can be used as documentation.

7.5.3

Background to requirement O20

Chlorinated bleaching agents are environmentally hazardous and are therefore not permitted. The use of chlorinated bleaching agents has been reduced and there are alternatives such as hydrogen peroxide (H2O2)[33]. The requirement does not apply to the production of regenerated cellulose fibre as this is a process where it can be more difficult to replace chlorinated bleaching agents. Requirements are made of bleaching agents for regenerated cellulose fibre in requirement O10. Halogenated substances are added to avoid felting of wool and for the wool to be washed in the washing machine. These can react with other organic compounds in water, forming AOX, for example. It has therefore been added to the requirement that the requirement also applies to carded and loose, scoured wool in conjunction with supplementary anti-felting treatment.

A certificate for GOTS version 4.0 may be used as documentation where there are equivalent requirements of wool. GOTS, EU Ecolabel and Oeko-Tex do not have equivalent requirements and therefore cannot be used as documentation.

O21 Degradability of detergents, plasticisers and complexing agents

The requirement concerns wet processes in dyeworks, in printing and any supplementary treatment.

Surface-active substances in detergents and plasticisers at each wet treatment plant must be completely anaerobically degradable*.

At least 95 wt% of plasticisers, complexing agents and detergents at each wet treatment plant must be sufficiently degradable or can be eliminated in the - treatment plant*.

*For testing methods for complete aerobic degradability and sufficient degradability, see Appendix 21.

☒ Documentation in accordance with the requirement and test report in accordance with the test methods stated in Appendix 21. If the test result and testing method are stated in the safety data sheet, submission of a test report may be omitted.

☒ Alternatively, EU Ecolabel licence version 2014 or GOTS version 4 certificate may be used as documentation.

Background to requirement O21

Requirements of the degradability of surface-active substances and other relevant substances are standard requirements in the criteria for various chemical products in Nordic Ecolabelling and legal requirements within the EU. Degradability is an important parameter in order to reduce the environmental impact and is very relevant for production outside Europe.

Linear alkylbenzenesulfonates (LAS) and DTDMAC, DHTDMAC, DODMAC/DSDMAC (dialkyldimethylammonium salts) are used, for example, in washing chemicals to wash filler and stuffing materials and may be replaced by less problematic substances.

Linear alkylbenzene sulfonates (LAS) are toxic for aquatic organisms and are not degradable in an anaerobic environment.

[33] The EU Ecolabel's background document, 2007

Dialkyldimethylammonium salts have several adverse environmental effects. They are slowly degradable and are often highly toxic for aquatic organisms.

A licence for Nordic Ecolabelled Textiles, hides/skins and leather, EU Ecolabel and GOTS version 2014 may be used as documentation. GOTS prohibits "Inputs which are bio-accumulative and not rapidly degradable". Oeko-Tex does not have equivalent requirements and therefore cannot be used as documentation.

O22 Dyes, colorants and pigments

Dyes, colorants and pigments used in dyeing and printing processes must be classified in accordance with current European legislation and may not be classified according to table 3 below. In addition, all constituent substances must also comply with the ban on CMR classification in requirements O16.

The following colorants may furthermore not be used:

C.I. Basic Red 9; C.I. Disperse Blue 1,3,7,26,35,102,106,124; C.I. Acid Red 26; C.I. Basic Violet 14; C.I. Disperse Orange 1,3,11,37, 76, 149; C.I. Direct Black 38; C.I. Direct Blue 6; C.I. Direct Red 28; C.I. Disperse Yellow 1,3,9, 23, 39, 49; C.I. Disperse Brown 1; C.I. Disperse Red 1, 11, 17.

Table 3 Classification of dyes, colorants and pigments

CLP Regulation 1272/2008		
Hazard class	Signal word, Category code	Hazard statement
Hazardous to the aquatic environment	Warning, Aquatic acute 1 Warning, Aquatic chronic 1 -, Aquatic chronic 2	H400 H410 H411
Hazardous to the ozone layer	Warning, Ozone	H420
Acute toxicity	Hazardous, Acute Tox. 1 or 2 Hazardous, Acute Tox. 1 or 2 Hazardous, Acute Tox. 1 or 2	H300 H310 H330
Specific target organ toxicity	Hazardous, STOT SE 1 Hazardous, STOT SE 1	H370 H372
Senstitising (allergenic)	Hazardous, Resp. Sens. 1 Warning, Skin Sens. 1	H334* H317*

Classification in accordance with regulation (EC) No. 1272/2008

** Here, there is an exemption for non-dispersed colorants classified as H334 or H317, which can document that the dye, colorant or pigment is a non-dusting formulation, or that it is used by automatic dosing in dyehouses and printing works.*

✉ Declaration from the dyehouse and/or printing works that dyes, colorants and pigments are not classified in accordance with the requirement and that the stated colorants are not used. Appendix 10 may be used.

✉ Documentation that the dye, colorant or pigment is a non-dusting formulation, or that it is used by automatic dosing in dyehouses and printing works. Appendix 9 may be used. Applies to non-dispersed colorants classified as H334 or H317.

Background to requirement O22

Requirements are made that colorants, pigments or compounds used may not be classified as environmentally hazardous, carcinogenic, mutagenic, reprotoxic or allergenic. Nordic Ecolabelling has formulated the requirement as a combination of a general prohibition of the stated classifications, in order to capture all problematic colorants, as well as a negative list of specific colorants.

Reducing the use of environmentally hazardous chemicals and substances classified with CMR is central to Nordic Ecolabelling's Overall Principles for substances that are hazardous to health and the environment.

Here, only the dusting, dispersed colorants that are classified as allergenic (with H334 or H317) are prohibited, and not other types of colorants solely on the basis of allergy classification. The reason is that specifically dispersed colorants are still allergenic after the wet process, while other types of colorants, such as reactive colorants, react in the wet process and are thereafter not allergenic.

The requirement is by and large identical with the requirements of Nordic Ecolabelled Textiles, hides/skins and leather generation 4 and the licence for these criteria can therefore be used as documentation for the textile.

EU Ecolabel and GOTS version 2014 do not exclude the specific colorants and can therefore only be used as documentation for the classification requirement. Here, further information must therefore be obtained in order to document the requirement.

O23 Azo dyes

Azo dyes which can release the aromatic amines given in table 2 may not be used.

Navn	**Cas Nr.**
2,2'-dichloro-4,4'-methylenedianilin (MOCA)	101-14-4
4-aminodiphenyl	92-67-1
Benzidine	92-87-5
4-chlor-o-toluidine	95-69-2
2-naphthylamine	91-59-8
o-amino-azotoluene	97-56-3
2-amino-4-nitrotoluene	99-55-8
p-chloraniline	106-47-8
2,4-diaminoanisol	615-05-4
4,4´-diaminodiphenylmethane	101-77-9
3,3´-dichlorbenzidine	91-94-1
3,3´-dimethoxybenzidine	119-90-4
3,3´-dimethylbenzidine	119-93-7
3,3´-dimethyl-4,4´-diaminidophenylmethane	838-88- 0
p-cresidine	120-71-8
4,4'-oxydianiline	101-80-4
4,4'-thiodianiline	139-65-1
o-toluidine	95-53-4
2,4-diaminotoluene	95-80-7
2,4,5-trimethylaniline	137-17-7
4-aminoazobenzene	60-09-3
o-anisidine	90-04-0
2,4-Xylidine	95-68-1
2,6-Xylidine	87-62-7

The REACH Regulation has a maximum limit of 30 mg/kg (or 0.003% (w/w)) for each of the listed aromatic amines in the table, except of 2,4-xylidine and 2,6-xylidine. However, this requirement in the criteria completely exclude the use of azo dyes, that may discard some of the 24 aromatic amines in the table.

☒ Declaration from manufacturer of color/dye that the requirement is met. Appendix 9 may be used.

☒ Declaration from the dyeing or printing house that azo dyes, that may discard the specified aromatic amines, have not been used. Appendix 10 may be used.

☒ Alternatively, a valid Nordic Swan Ecolabeled Textile, skins and leather Certificate or a valid GOTS certificate may be used as documentation.

O24 Metals in dyes, colorants and pigments

For colorants, dyes and pigments used in dyeing and printing processes, the following metals may only be included as impurities and only if the following values in Table 4 below are not exceeded.

The requirement does not include metals that are an integrated part of the colorant molecule (e.g. metal complex dyes and certain reactive colorants), on assessing whether these values are fulfilled, as they solely concern impurities.

Testing of impurities can be performed by for example atomic absorption spectroscopy method.

Table 4 Threshold values for metals in colorants and pigments

Metals	Threshold value for colorants with fibre affinity	Threshold value for insoluble colorants without fibre affinity
Ag	100 ppm	-
As	50 ppm	50 ppm
Ba	100 ppm	100 ppm
Cd	20 ppm	50 ppm
Co	500 ppm	-
Cr	100 ppm	100 ppm
Cu	250 ppm	-
Fe	2500 ppm	-
Hg	4 ppm	25 ppm
Mn	1000 ppm	-
Ni	200 ppm	-
Pb	100 ppm	100 ppm
Se	20 ppm	100 ppm
Sb	50 ppm	250 ppm
Sn	250 ppm	-
Zn	1500 ppm	1000 ppm

☒ Declaration from the producer of the colorant that the requirement is fulfilled. Appendix 9 may be used.

☒ Declaration of the dyeing or printing house that only dyes and pigments are used that comply with the requirement in textiles for Nordic Swan Ecolabeled products. Appendix 10 may be used.

Background to requirement O24

A colorant may contain metals as impurities, as they are used as catalysts during production. Inorganic pigments are based on such metals as zinc, barium, lead, iron, cadmium and chromium. A few of the metals are heavy metals.

To limit the content of metals in colorants and pigments, the requirement is made that a number of metals may not exceed specific threshold values.

The criteria also set requirements of the maximum content of extractable metals in the finished textile in requirement O37. This requirement is both an environmental and health requirement, however, since it ensures a minimal impact on the aquatic environment from wastewater from dyeworks, and also protects the child from exposure to hazardous metals in the use phase. It thus makes sense to have both requirements, where this requirement solely concerns the textile elements included with high ratios, and the requirement to extract metals in the finished textile concerns all textile elements in contact with the child.

The requirement is identical with the requirements of Nordic Ecolabelled Textiles, hides/skins and leather generation 4 and the licence for these criteria can therefore be used as documentation for the textile.

O25 Metal complex dyes and pigments

Metal complex dyes and pigments based on either copper, nickel, cobalt or chromium are not permitted.

However, there is an exception for the following:

Metal complex dyes based on copper are allowed if copper does not exceed 5% by weight of the metal complex dye, by coloring:

- wool fibers
- polyamide fibers
- blends of wool and/or polyamide with regenerated cellulose fibers
- cotton fibers and fiberblends of at least 50% cotton, if a polyfunctional (bifunctional) reactive metal complex dye, with a fixation degree of at least 80% (indicative of the dye manufacturer) is used

☒ Declaration from the dyeing house and/or printing house, that no metal complex dyes and pigments have been used. Appendix 10 may be used.

or

☒ Declaration from the dyeing house and/or printing house, that used metal complex dyes are based on copper and which textile fibers they are used for. Appendix 10 may be used.

☒ Declaration from the manufacturer of metal complex dye, that the requirements is met. Appendix 9 may be used.

Background to requirement O25

Metal complex dyes are problematic because they contain toxic heavy metals. There is therefore also a requirement that if metal complex dyes are used, the effluent must be treated.

Metal complex dyes are only permitted for the dyeing of wool mixed with viscose. It is difficult to avoid the use of metal complex dyes for this mix for individual dark colours and for turquoise, and using alternative dyeing methods does not achieve the same clarity of colour and colour fastness as on using metal complex dyes for these colour nuances. Wool and viscose absorb colour in different ways, and the optimum dye bath for wool is not optimal for viscose.

To achieve piece goods dyed uniformly without metal dyes, either wool and viscose must be dyed separately before spinning, or fully spun yarn (or possibly woven white piece goods) must be dyed in two different dye baths. This will give good dyeing and good colour fastness (especially resistance to rubbing), but still not the same clarity of colour as when using metal complex dyes. Both elements require the use of two dye baths, with increased water and energy consumption, and with regard to dyeing yarn/woven fabric, this also entails strong wear of the wool fibre. The industry often needs to dye white spun yarn in order to dye this according to the customer's order, especially for less popular colours. We believe it is justified to use metal complex dyes for the colours where this is necessary for quality reasons.

It is known that also for wool/polyamide mixes it can be difficult to achieve individual colours with the clarity of colour and resistance to rubbing required by the customer without using metal complex dyes. In this case there are fewer problems, however, since the polyamide fibre performs relatively similar to the wool fibre and yarn, and piece goods can be dyed in the same dye bath, also when using alternative dyes. Some elements of the industry believe that it is completely acceptable to phase out metal complex dyes, also for these dark colours, and still produce fabrics of good quality demanded by the market. Other companies believe that this makes it more difficult for them to produce all of the goods which the market demands, with the limitations now introduced. This is probably because the companies target different markets.

The requirement is identical with the requirement of Nordic Ecolabelled Textiles, hides/skins and leather generation 4 and the licence for these criteria can therefore be used as documentation for the textile.

O26 VOC in printing paste

Printing paste may not contain more than 5% volatile organic compounds (VOC), such as mineral turpentine.

VOC are defined as compounds with a steam pressure of 0.01 kPa or above at 293.15 K, or equivalent volatility during conditions for use.

✉ Declaration from the printing paste producer/supplier showing that the requirement is fulfilled Appendix 9 may be used.

Background to requirement O26 - VOC in printing paste

The requirement concerning VOC in printing paste is made to avoid the use of printing paste with a high VOC content, such as white spirit. The requirement is identical with the requirements of Nordic Ecolabelled Textiles, hides/skins and leather generation 4 and the licence for these criteria can therefore be used as documentation.

O27 Colour extraction or depigmentation

Salts of heavy metals (except iron) or formaldehyde may not be used for colour extraction or depigmentation.

✉ Declaration from the printing house/dyeworks that these products are not used. Appendix 10 may be used.

Background to requirement O27

On using water-based printing, if dyed textiles are to be printed, the textile must first be stripped of colour, which requires the use of a discharge base or an activator that may contain formaldehyde. Here, a requirement has therefore been introduced that formaldehyde and salts of heavy metals may not be used to remove colour.

The requirement is identical with the requirement of Nordic Ecolabelled Textiles, hides/skins and leather generation 4 and the licence for these criteria can therefore be used as documentation.

O28 Plastisol-based printing

Plastisol-based printing is only permitted if the printing paste does not contain halogenated polymers and phthalates.

☒ Declaration from the producer/supplier of printing paste that the requirement is met. Appendix 9 may be used.

☒ Alternatively, a certificate for GOTS version 4 can be used as documentation.

Background to requirement O28 - Plastisol-based printing

Nordic Ecolabelling wishes to permit plastisol-based printing without halogenated polymers (including PVC) and phthalates. The requirement is identical with the requirement of Nordic Ecolabelled Textiles, hides/skins and leather generation 4 and the licence for these criteria can therefore be used as documentation.

GOTS version 4 prohibits printing with chlorinated plastic or phthalates and a GOTS certificate version 4 could therefore be used as documentation.

Finishing and mounting

The following requirements concern finishing, use of membranes, laminates and coatings, and any mounting of fibres, yarns, textiles and piece goods. Examples of finishing are treatment for water, oil and soil resistance, anti-felt treatment, anti-shrinkage, anti-creasing, anti-static treatment, softening, biocide treatment, coating, lamination and printing.

Chemicals used for finishing and mounting must also fulfil the relevant general chemical requirements in the rest of section 7.5.2 for textiles in the criteria document, e.g. if membranes, laminates and coatings are dyed, the dyes must fulfil the relevant requirements in section 7.5.2.

O29 Classification of chemicals on finishing

Chemicals for finishing which contain more than 0.1 wt% of substances which have or may be given one or several of the risk statements in Table 5 are not permitted. In addition, all constituent substances must also comply with the ban on CMR classification in requirements O16.

Table 5 Classification of finishing chemicals

CLP Regulation 1272/2008		
Hazard class	Signal word, Category code	Hazard statement
Hazardous to the aquatic environment	Warning, Aquatic acute 1 Warning, Aquatic chronic 1 -, Aquatic chronic 2	H400 H410 H411
Hazardous to the ozone layer	Warning, Ozone	H420

Classification in accordance with regulation (EC) No. 1272/2008. Please note that the chemicals producer is responsible for correct classification.

☒ Declaration from the textile producer that no finishing agents have been used, or

☒ An overview from the finisher of which finishing agents have been used, and a safety data sheet (in accordance with current European legislation) showing that the requirement is fulfilled. Appendix 11 may be used.

Background to requirement O29 - Classification of finishing agents

Finishing is any physical or chemical treatment, which gives the textile, hide/skin or leather specific characteristics, making it soft, watertight or crease-free, for example. In general, this finishing takes place after dyeing, although individual chemicals can be added to the dye bath, such as agents to prevent moths in wool. Other finishing may be "easy care" of cellulose fibres and anti-static treatment of synthetic fibres. The requirement prohibits the use of chemicals that are classified as environmentally hazardous, carcinogenic, reprotoxic and mutagenic.

The requirement is identical with the requirement of Nordic Ecolabelled Textiles, hides/skins and leather generation 4 and the licence for these criteria can therefore be used as documentation for the textile.

O30 PVC and fluorinated polymers

Coatings, laminates or membranes of PVC are not permitted.

Coatings, laminates or membranes coated with or based on fluorinated organic compounds are not permitted.

☒ Declaration from the applicant that PVC is not used and declaration from the producer of the coating, laminate or membrane that fluorinated organic compounds are not used. Appendix 11 may be used.

☒ Alternatively, a certificate for GOTS version 4 can be used as documentation.

Background to requirement O30

The two main coating products in the market are vinyl products and polyurethane. There is no wish to label textile products consisting of PVC (polyvinyl chloride). PVC is used, among other things, in rain covers for prams/strollers and pushchairs. PVC may contain hazardous phthalates and since they are not chemically bound to the plastic, they can leak out of the products[34].

In addition, soft PVC on the textile is not required during the waste phase, where it can either be problematic in incineration facilities or when textile fibre is recycled.

Fluorinated polymers are widely used as coatings, laminates and in membranes, to achieve a product with breathable properties, while also being water resistant. This can be in the form of a coating, as in rainwear and rain capes, impregnation, as in shell jackets, or as laminate or membrane in e.g. all-weather jackets. The compounds within this group that were investigated have environmentally hazardous characteristics.

[34]Environmental status in Norway: http://www.miljostatus.no/no/Tema/Kjemikalier/Noen-farlige-kjemikalier/Ftalater/ (available 4 December 2011)

Polyfluorinated alkyl substances (PFAS) are the designation of a group of chemical compounds which contain a fully fluorinated alkyl chain and a group which gives the compounds a degree of solubility in water.

Perfluorinated alkylated substances are highly persistent (stable) and are slowly degraded. The compounds are very slowly soluble in water and grease, and accumulation takes place as they are bound to surfaces of particles or tissue.

They are bound to proteins and can be found with a high content in top-predators In a Nordic screening survey, PFAS compounds were shown in all of the sample types investigated, and the highest level was found in marine mammals. The report concluded that PFAS are found in significant concentrations in the Nordic environment. There is greatest focus on the PFAS compound perfluorooctane sulfonate (PFOS), which is toxic for aquatic organisms, birds and bees.[35]

The requirement is identical with the requirement of Nordic Ecolabelled Textiles, hides/skins and leather generation 4 and the licence for these criteria can therefore be used as documentation for the textile.

GOTS prohibits the use of synthetic finishing such as coatings, which means that a certificate for GOTS version 4 can be used as documentation for the requirement.

EU Ecolabel Textiles limits selected phthalates and fluoropolymer membranes, without a total prohibition, and therefore cannot be used as documentation.

O31 Plasticisers or solvents

Coatings, laminates and membranes may not be produced using plasticisers or solvents that are classified in accordance with the risk statements in the table below. In addition, all constituent substances must also comply with the ban on CMR classification in requirements O16.

Table 1 Classification of plasticisers and solvents.

CLP Regulation 1272/2008		
Hazard class	Signal word, Category code	Hazard statement
Hazardous to the aquatic environment	Warning, Aquatic acute 1 Warning, Aquatic chronic 1 -, Aquatic chronic 2 -, Aquatic chronic 3 -, Aquatic chronic 4	H400 H410 H411 H412 H413

Classification in accordance with regulation (EC) No. 1272/2008.

Please note that the producer is responsible for correct classification.

☒ Declaration from the producer of the coating/membrane/laminate that plasticisers or solvents with the stated classifications are not used. Appendix 11 may be used.

☒ Alternatively, a certificate for GOTS version 4 can be used as documentation.

[35] Norwegian Pollution Control Authority (2005) Monitoring of air and precipitation transported over long distances.

Background to requirement O31

The requirement is identical with the requirement of Nordic Ecolabelled Textiles, hides/skins and leather generation 4 and the licence for these criteria can therefore be used as documentation. For background text, reference is made to Nordic Ecolabelling of Textiles.

Both Nordic Ecolabelled Textiles and GOTS version 4 can be used as documentation for the requirement.

O32 Silicone treatment, siloxane

Octamethylcyclotetrasiloxane, D4, (CAS 556-67-2) and decamethylcyclopentasiloxane, D5, (CAS 541-02-6) may not be included[1] in chemical products that are used in silicone treatment.

D4 and D5, which are included as pollutants [2] in concentrations below 800 ppm (0.08 wt%, 800 mg/kg) are exempt from this requirement.

[1 and 2] For a definition of constituent substances and pollutants, see section 7.2. Note that this requirement has its own pollution limit.

✉ Declaration from the producer/supplier of the silicone product that the requirement is fulfilled. Appendix 11 may be used.

Background to requirement O32 - Silicone treatment, siloxane

A wide variety of silicone technology is used in the textile industry, from production of fibres, yarns and piece goods to finishing the final product.[36]. In the textile industry, silicones modified with functional amine groups are used because the amine groups give better affinity to the textile fibres. Silicone is used to give the products water-resistant characteristics and silicone treatment can soften hard and brittle materials.

Silicones are organically modified polymerised siloxanes. Siloxanes are a group of substances that has long been a focus area for the environmental authorities because some of the substances are not readily degradable and are easily bioaccumulated in organisms. According to the Norwegian Climate and Pollution Agency (Klif), especially the annular siloxanes octamethylcyclotetrasiloxane (D4) and decamethylcyclopentasiloxane (D5) have adverse environmental characteristics because they are readily degradable in water and sediment and can become concentrated in organisms[37]. D4 is toxic for aquatic organisms. D4 is classified as reprotoxic with the risk statement: "Possible risk of impaired fertility" and must also be marked with the risk statement "May have adverse long-term effects in the aquatic environment". In 2006, D5 was included in the authorities' prioritised list. There is now on ongoing process in the EU to assess regulation of the use of siloxane types D4 and D5.

[36] M. Muthu Manickam, Silicone chemistry for fabric care, Colourage, vol. 56, issue 22, p 86, Nov. 2009.
[37]Website of Klif in Norway: http://www.klif.no/Sok/?query=siloksan (Sept 2012)

According to Klif, researchers at the Norwegian Institute for Water Research (NIVA) and Stockholm University have shown high levels of the environmentally hazardous siloxane type D5 in the fish species trout, vendance and smelt in Lake Mjøsa, and in zooplankton and the small shrimp-like Ice Age crayfish (Mysis). The study was published in May 2012[38].

No chemical analysis is required, but the producer must declare that the requirement is fulfilled. A licence for Nordic Ecolabelled Textiles generation 4 can be used as documentation for the requirement.

GOTS prohibits the use of synthetic finishing such as e.g. coating. But there are examples of biobased silicone[39], which means that a certificate for GOTS cannot be used as documentation of the requirement.

Textile adhesive

O33 Textile adhesive

The requirement concerns adhesive used for the glueing of textile with another textile or coating material, such as a membrane or adhesive used for other finishing.

The following aspects must be complied with:

- Colophony resin may not be included in the adhesive used, with the exception of pollutants under 100 ppm (0.01 wt%, 100 mg/kg) (see definition of constituent substances and pollutants in section 7.2).
- Formaldehyde may not be included in the adhesive used, with the exception of formaldehyde generated during the production process, but maximum 250 ppm (0.0250%) measured by newly produced polymer dispersion. At the same time, the content of free formaldehyde in hardened glue may not exceed 10 ppm (0.001%).
- In addition, adhesive used for textiles must fulfil requirements O16 CMR classification of constituent substances and O17 Prohibited substances. However, with the exception of formaldehyde and isothiazolinones used as preservation. Both, which has a specific regulation in this requirement.
- Substances for preserving in the adhesive must comply with the level of concentration in the adhesive specified in the table below. The amount of preservative also includes preservative from used raw materials in the glue. The limit values in the table are the maximum permitted theoretical amount in the finished adhesive. The amount must be calculated from the preservatives added and the maximum amount in the raw materials.

Preservative	Concentration limit
Total amount of isothiazolinones in the adhesive	200 ppm (0,0200 weight %)
2-metyl-2H-isothiazol-3-one (CAS No. 2682-20-4) (MIT)	100 ppm (0,0100 weight %)
5-klor-2-metyl-4-isothiazolin-3-on/2-metyl-2H-isothiazol-3-one (3:1) (CAS No. 55965-84-9) (CMIT/MIT)	15 ppm (0,0015 weight %)

[38] Borgå, Fjeld et al.: Food web accumulation of cyclic siloxanes in Lake Mjøsa, Norway, Environmental Science and Technology
[39] Chen Li et al., ACS Sustainable Chem. Eng., 2016, 4 (6), pp. 3113–3121

☒ Declaration from the glue supplier that the adhesive used fulfils the requirement. Appendix 12 may be used.

☒ The analysis result concerning the adhesive's content of formaldehyde in accordance with the requirement. Appendix 12 can be used.

Background to the requirement O33

A requirement concerning adhesive has been added to the criteria document because it can be relevant to use adhesive in the assembly of various products, such as handbags and other accessories. The requirement states that the adhesive may not contain colophonium and formaldehyde, with the exception of impurities. Colophonium is not permitted as it can give contact dermatitis, Colophonium is tapped as resin from pine trees and extracted with turpentine. The mix contains many allergens.

Colophonium impurities are residues from raw materials production included in concentrations below 100 ppm (0.01 wt%,100 mg/kg), but not substances added to the raw material or product deliberately and for a purpose, whatever the quantity.

The content of formaldehyde may not exceed 250 ppm in newly produced polymer dispersion and 10 ppm in hardened glue, as formaldehyde can give allergic reactions. This requirement is identical with the formaldehyde requirement for Nordic Ecolabelling of chemical building products. Hotmelts are exempt from this requirement as formaldehyde is not relevant for hotmelt adhesives..

Phthalates may also be included in adhesives. Unrequired phthalates are already excluded in O17.

7.5.4 Emissions from textile production

O34 COD, temperature and pH in wastewater from wet processes

The requirement concerns textile elements which constitute more than 5 wt% of the total amount of textile in the final Baby product with textiles.

Emissions of COD in wastewater from wet processes in dyeworks and printing houses direct to recipient ∗ may be total 20 g/kg fiber.

∗ By "direct to recipient" is meant wastewater, which do not pass to municipal or other external treatment.

COD content must be tested in accordance with ISO 6060 or equivalent (assessed by a test institute or Nordic Swan Ecolabelling. The report must include a calculation showing emissions of COD in g per kg of textile.

Calculation of COD g/kg of textile:

C: COD concentration measured in mg/l in wastewater from wet processes discharged to recipient

W: Amount of water used in m^3 during the period

P: Weight of manufactured textile in the period indicated in tonnes

Emissions of COD in wastewater: (C/1000)x(Vx1000)/(Px1000)= _____ COD g/kg

The requirement can be documented by emissions of COD on an annual basis. Measurement of PCOD, TOC or BOD may also be used if a correlation to COD is shown.

The pH value of the wastewater released to the surface water must be 6-9 (unless the pH value in the recipient lies outside this interval), and the temperature must be lower than 40°C (unless the temperature in the recipient is higher).

✉ Test report for COD emissions showing that the requirement is fulfilled, and reports showing pH and temperature measurements in the wastewater.

✉ Alternatively, a valid certificate for GOTS version 4 can be used as documentation.

Background to requirement O34

High levels of COD in the effluent can lead to oxygen depletion of the aquatic environment and thereby harmful effects on flora and fauna. The requirement is also made that the temperature of the effluent must be lower than 40°C (unless the recipient's temperature is higher) and that the pH must be between 6 and 9 (unless the recipient's value lies outside this interval). Measurement of PCOD, TOC or BOD may also be used if a correlation to COD is shown.

The requirement is identical with the requirement of Nordic Ecolabelled Textiles, hides/skins and leather generation 4 and the licence for these criteria can therefore be used as documentation. The requirement can also be documented with a certificate for GOTS version 4 for the textile.

7.5.5 Storage and transport of textile and babyproduct with textile

Requirement O35 concerns all textile elements with which the child or the adult may be in contact.

O35 Chlorophenols (and salts and esters of chlorophenol), PCB and organic tin compounds on transport and storage

The requirement concerns textiles or finished baby products with textiles which are stored or transported outside the EU:

Chlorophenols (and salts and esters of chlorophenol), PCB and organic tin compounds may not be used in connection with the transport or storage of products and semi-manufactures.

✉ Declaration from the supplier or another person responsible for transportation of the textile or babyproduct with textile, that these substances or compounds are not used. Appendix 3 may be used.

✉ Alternatively, a licence for EU Ecolabel for Textiles version 2014 may be used as documentation.

Background to requirement O35

The requirement that chlorophenols, PCB and organic tin compounds are not permitted in transport or storage includes the textile both before and after any finishing. These chemicals can be used to prevent the textiles from being exposed to moths and other insects during storage and transport. These are all chemicals that are hazardous to the environment and health and are therefore not permitted.

Chlorophenols and salts and esters of chlorophenol are substances that are seldom used, but are still considered to be relevant, as individual suppliers can still use these biocides during transport and storage. These may not be used within the EU, but this may still occur for raw materials originating from outside the EU[40].

In GOTS version 4 the following requirement is made of storage and transport: "In cases where pesticides/biocides are to be used in storage rooms or means of transport, they must comply with current international or national organic production standards." It is unclear, however, what this entails and how it is controlled. Textile with GOTS must therefore also document this requirement.

If the declaration is to be verified, the following test method and threshold value are used: derivatisation with acetic acid anhydride, determination with capillary gas-liquid chromatography with detection with electron capture; the threshold value is 0.05 ppm.

The requirement is identical with the requirement of Nordic Ecolabelled Textiles, hides/skins and leather generation 4 and EU Ecolabel for Textiles version 2014 and the licence for these criteria can therefore be used as documentation.

7.6 Exposure requirement - test of the finished textile

Background to exposure requirement

Nordic Ecolabelling sets requirements of the finished textile to ensure that the child is not exposed to chemicals unnecessarily on using the product.

The product group Baby products with textiles has a special use phase since the products are used by babies who, during use, are often in close contact with the textile in the product, and often for longer periods at a time. The product group comprises products that are either never or very rarely washed. The product group thereby differs from clothing textile that is washed before use, and thereafter many times. Textile production involves a lot of chemistry in many different stages. Even though the criteria set stringent requirements for the chemistry used it is important for this particular product group to ensure that the final product is without problematic chemistry. Therefore here a requirement is made of the chemistry content for selected substances in the final textile in the product.

To reduce the workload in terms of documenting these requirements, the focus has been for these requirements of the finished textile to be documentable under other certification schemes, which focus on the health aspect of the final textile. It is therefore described whether the requirement can be documented with Oeko-Tex class I baby, Nordic Ecolabelled Textiles, hides/skins and leather, or GOTS version 4.

7.6.1 Test of the finished textile

The requirements concern the finished* textile elements in the product. The following tests must therefore be performed after any finishing of the textile.

[40] Stefan Rydin, pers. comm.

All textile, hide/skin and leather elements that are in contact with the child or the adult or constitute more than 5 wt% of the textile in the final baby product must fulfil the requirements in section 7.6.1.

Some of the requirements solely concern specific textile types. In such case this is stated in the requirement.

* Finished textile, hide/skin and leather are textiles, hide/skin and leather which have undergone and received all types of processing (wet processes, printing, finishing, surface treatment, membranes, laminates, etc.), which the textile, hide/skin or leather has on the final baby product.

O36 PH in the finished textile, hide/skin and leather

PH in the finished textile, hide/skin and leather must be between 4.0 and 7.5.

pH must be tested in accordance with ISO 3071.

✉ Test report showing that the requirement is fulfilled

✉ Alternatively, a certificate for Oeko-Tex 100 class I Baby or GOTS version 4 (approved for baby textiles (babywear) or skin contact) can also be used as documentation.

Background to requirement O36

Several textile processes comprise the use of chemicals with either low or high pH. The requirement is made to ensure that the pH of the final textile does not irritate the child's skin.

Both Oeko-Tex 100 class I Baby and GOTS version 4 set a pH requirement of the final textile and can thereby be used as alternative documentation.

O37 Extractable metals

Extractable metals must be tested in accordance with: Extraction: EN ISO 105-E04 (perspiration-proof (acidic)). Detection: ICP-MS or ICP-OES.

For the individual textile, hide/skin and leather element the extractable metals may at most be the following:

Metal	Extractable metal in mg/kg
Antimony (Sb)	30.0 mg/kg
Arsenic (As)	0.2 mg/kg
Cadmium (Cd)	0.1 mg/kg
Chromium (Cr)	1.0 mg/kg
Cobalt (Co)	1.0 mg/kg
Copper (Cu)	25.0 mg/kg
Lead (Pb)	0.2 mg/kg
Nickel (Ni)	1.0 mg/kg
Mercury (Hg)	0.02 mg/kg

✉ Test report showing that the requirement is fulfilled.

✉ Alternatively, a certificate for Oeko-Tex 100 class I Baby or GOTS version 4 or later can also be used as documentation.

✉ Alternatively, a certificate from EU Ecolabel version 2014 can be used as documentation, if the textile is shown to be approved for children under 3 years of age.

Background to requirement O37

The requirement is made to ensure that the child or the adult is not exposed to the effects of hazardous metals from the textile.

O38 Total metal content

For the individual textile, hide/skin and leather element, the total content of the following metals may not exceed:

- Lead (Pb) 90 mg/kg.
- Cadmium (Cd): 45 mg/kg.

The metal content must be tested in accordance with EPA 3050 B (ICP/MS).

☒ Test report showing that the requirement is fulfilled.

☒ Alternatively, a certificate from Oeko.Tex 100 class I Baby or GOTS version 4 can also be used as documentation. For hide/skin and leather, a licence for Nordic Ecolabelled Textile generation 4 can be used as documentation.

Background to requirement O38

The requirement is made to ensure that the child or the adult is not exposed to the effects of hazardous metals from textile, hide/skin or leather in the product.

O39 Formaldehyde in textile, hide/skin and leather

Formaldehyde in textile:

The amount of free and partly hydrolysable formaldehyde in the finished textile may not exceed 20 ppm for the individual textile element.

Testing must be in accordance with EN ISO 14184-1.

☒ Test report showing that the requirement is fulfilled.

☒ Certificate from Oeko-Tex 100 class I Baby or Nordic Ecolabelled Textiles, hides/skins and leather generation 4 or later can also be used as documentation.

☒ Certificate from GOTS version 4, specifically approved for babywear, can also be used as documentation.

Formaldehyde in hide/skin and leather:

The amount of free and partly hydrolysable formaldehyde in the final hide/skin or leather may not exceed 75 ppm.

The content of formaldehyde must be tested in accordance with EN ISO 17226-1 or 2.

☒ Test report showing that the requirement is fulfilled.

Alternative:

☒ Certificate for Nordic Ecolabelled Textiles, hides/skins and leather generation 4 can also be used as documentation.

☒ A certificate from Oeko-Tex 100 class I Baby or class II with skin contact can also be used as documentation.

☒ A certificate from GOTS version 4 or later can also be used as documentation, but it must be documented that the textile is approved for babywear or for skin contact.

Background to requirement O39 - Formaldehyde

The threshold values for the permitted content of formaldehyde in the finished textile are harmonised with the threshold value for Nordic Ecolabelled textile for products for babies and children under the age of 3. Formaldehyde is classified as hazardous to health as carcinogenic and irritating to the eyes, throat and skin. Residues of formaldehyde in textile can often originate from finishing with anti-crease agents.[41]

Oeko-Tex and GOTS have equivalent requirement levels of formaldehyde emissions, but here the requirement is not divided into textile and leather. Leather may have both labels, however. Even though the test method differs from the requirement, a certificate from Oeko-Tex Baby and GOTS is accepted.

O40 Polycylical aromatic hydrocarbons (PAHs):

For the individual textile element which includes more than 5 wt% synthetic fibre, the sum of the PAHs stated here must be below 5 mg/kg and each individual PAH must be below 0.5 mg/kg.

The requirement concerns the following PAHs:

Substance name	CAS no.	Substance name	CAS no.
Benzo[A]Pyrene	50-32-8	Benzo[A]Pyrene	50-32-8
Benzo[E]Pyrene	192-97-2	Benzo[E]Pyrene	192-97-2
Benzo[A]Anthracene	56-55-3	Acenaphthylene	208-96-8
Dibenzo[A,H]Anthracene	53-70-3	Acenaphthene	83-32-9
Benzo[B]Fluoranthene	53-70-3	Anthracene	120-12-7
Benzo[J]Fluoranthene	205-82-3	Fluorene	86-73-7
Benzo[K]Fluoranthene	207-08-9	Naphthaline	91-20-3
Chrysene	218-01-9	Phenanthrene	85-01-8
Benzo[ghi]perylene	191-24-2	Fluoranthene	206-44-0
Indeno[1,2,3-cd]pyrene	193-39-5	Pyrene	129-00-0

Must be tested in accordance with ISO 18287 or ZEK 01.2-08 (GC/MS).

☒ Test report showing that the requirement is fulfilled.

☒ A certificate from Oeko-Tex 100 class I Baby can also be used as documentation.

Background to requirement O40 - Polycylic aromatic hydrocarbons (PAHs)

There are more than 100 PAH compounds. Several of the PAHs are carcinogenic with Carc.1B and genotoxic. The PAHs usually originate from two types of additives, which are plasticising and process oils (extender oils) and carbon black, which is found in rubber and plastic products, and which is known to contain PAHs. Plasticising and process oil is a mineral oil product which originates from crude oil (petrogenic PAHs), while carbon black is a product that is produced by incomplete incineration or thermal degradation processes for heavy oils, such as coal tar (primarily pyrogenic PAHs). Carbon black is used as a dye, for example.

[41] Norwegian Institute of Public Health:
http://www.fhi.no/eway/default.aspx?pid=233&trg=MainLeft_6039&MainArea_5661=6039:0:15,4521:1:0:0:::0:0&MainLeft_6039=6041:70095::1:6043:3:::0:0 (available 26.11.2011)

From December 2015, the first 8 PAHs in the table became illegal to use in quantities of more than 0.5 mg/kg in plastic and latex components in contact with the child[42].

The requirement here in the criteria is harmonised with Oeko-Tex class I baby, where requirements are made of testing and a threshold level of maximum 0.5 mg/kg for each of the 8 REACH PAHs, and a requirement is made of a sum of maximum 5 mg/kg for 24 stated PAHs. Oeko-Tex only makes requirements of textiles with synthetic fibres. The same applies here. Here, however a requirement is defined concerning textile elements with more than 5 wt% synthetic fibres. This achieves control of the statutory requirement for the 8 limited PAHs and the limitation of a larger amount of PAHs than stipulated in legislation.

GOTS has a threshold level of under 1 mg/kg for the individual PAH and a sum of maximum 10 mg/kg for 18 selected PAHs. This means that a GOTS version 4 certificate cannot be used alone as documentation for the requirement.

Tests must be presented showing fulfilment of the requirement.

O41 N,N-dimethylacetamide in elastane or acrylic

The requirement concerns textile elements that include elastane or acryclic, in any amount.

The content o N,N-dimethylacetamide (DMAc, CAS 127-19-5) may not exceed 0.1 wt%.

The content must be tested by extraction with solvents, gas chromatography-mass spectrometry (GC-MS) or liquid chromatography-mass spectrometry (LC-MS).

✉ Test report showing that the requirement is fulfilled.

✉ Licence/Certificate from Oeko-Tex 100 class I baby or Nordic Ecolabelled Textiles generation 4 or EU Ecolabel version 2014 may also be used as documentation.

Background to requirement O41

Elastane can be produced in four different ways: by extrusion, reaction spinning, solution dry spinning or solution wet spinning[43]. Solution dry spinning is used in the production of more than 94.5% of the world's elastane production. In this method, DMAC can be used as the solvent[44]. Many other solvents can also be used, such as dimethylformamide (DMF) and nitric acid (HNO3). As stated above, DMAc is among the new substances on the REACH candidate list.

To ensure that other certification schemes can be used, the requirement level is harmonised with Oeko-Tex class I Baby, where the level is 0.1 wt%. Both Oeko-Tex class I Baby and EU Ecolabel for Textiles can thus be used as documentation. In EU Ecolabel for Textiles, the limit is 0.001% for textiles for babies and 0.005% for others.

[42] Visited 14/9 2016 ANNEX XVII TO REACH – Conditions of restriction, ECHA https://echa.europa.eu/documents/10162/176064a8-0896-4124-87e1-75cdf2008d59
[43] Wikipedia.com: http://en.wikipedia.org/wiki/Elastane (Sept 2012)
[44] http://www.kpatents.com/pdf/applications/apn-4-05-03.pdf (Sept 2012)

The requirement can be documented with a licence for Nordic Ecolabelled Textiles, hides/skins and leather generation 4. Here, there is no testing for N,N-dimethylacetamide, but the use of N,N-dimethylacetamide in elastane and acrylic production is prohibited.

O42 Pesticides in cotton and other natural seed fibres of cellulose, as well as flax, bamboo or other bast fibres

The requirement concerns textile elements which include cotton or other natural seed fibres of cellulose, and flax, bamboo or other bast fibres.

The total sum of pesticides in the individual textile element may not exceed 0.5 mg/kg.

The pesticides to be tested for are:

Aldrin, captafol, chlordane, DDT, dieldrin, endrin, heptachlor, hexachlorobenzene, hexachlorocyclohexane (total isomers), 2,4,5-T, chlordimeform, chlorobenzilate, dinoseb with salts, monocrotophos, pentachlorophenol, toxaphene, methamidophos, methyl parathion, parathion, phosphamidon, gluphosinate and glyphosate.

Textile elements of 100% organic fibre are exempt from the requirement. See the definition or organic under requirement O3.

The content must be tested in accordance with Section 64 LFGB L 00.0034 (GC/MS); Section 64 LFGB L 00.00-114 (LC/MS/MS) or equivalent EN test standards (assessed by a test institute or Nordic Swan Ecolabelling).

A test report must be submitted at the time of application and the applicant must have a routine to test annually in accordance with the requirement and ensure that the requirement is complied with. Nordic Ecolabelling must be notified if the requirement is not complied with.

If the requirement is documented with either a license for the Nordic Swan Ecolabelled Textile, Hides and Leather, certificate for the Oeko-Tex 100 Class I Baby or GOTS Transaction Certificate, it must be ensured, that a valid license/ certificate exists throughout the lifetime of the license. A valid license/certificate must be available on request from Nordic Ecolabelling.

✉ Test report at the time of application, showing fulfilment of the requirement, or valid certificate showing that the fibres are organic.

✉ Written routine describing, that a test is performed annual according to the requirement and self-monitoring is done to ensure that the requirement is complied with.A licence for Nordic Ecolabelled Textiles, hides/skins and leather generation 4 can be used as documentation.

✉ A certificate from Oeko-Tex 100 class I Baby or GOTS version 4 or later can also be used as documentation.

Background to requirement O42 - Pesticides

Since it is possible to use a combination of organic, IPM and conventional cotton, it is assessed that for this product group, where the textile is not washed as often as garment textile, it is relevant to ensure a minimum content of pesticides in the finished textile.

The requirement is identical with the requirements of Nordic Ecolabelled Textiles, hides/skins and leather generation 4 and the licence for this can therefore be used as documentation for the requirement.

Textile elements of 100% organic fibre are exempt from the requirement. See the definition of organic under requirement O3. Textile elements which include either conventional or IPM cotton are subject to the requirement.

There is little difference in which pesticides other schemes exclude. Oeko-Tex tests for more pesticides, but lacks these: Chlorobenzilate (CAS 510-15-6), Phosphamidon (CAS 13171-21-6), Glufosinate (CAS 77182-82-2) and Glyphosate (CAS 1071-83-6), as well as Pentachlorophenol (CAS 87-86-5), which do not stand under pesticides, but chlorinated phenols for Oeko-Tex, although it is assessed that Oeko-Tex can be accepted as documentation.

The requirement is adjusted with a documentation requirement for a routine, that describes that tests are performed annually according to the requirement. Testing for each cotton batch will be very resource intensive and a great expense, while just one test at the application will be too little to ensure, that the requirement is complied with. It is therefore considered, that a requirement for an annual test is appropriate and realistic.In GOTS version 4 it is not stated clearly which pesticides are tested for. Conventional cotton is not used in GOTS textile, so that here the requirement is set to ensure a minimum content of pollutants. GOTS certificate can thereby be used as documentation for the requirement.

O43 Ectoparasiticides in wool and other keratin fibres:

The requirement concerns textile elements that include wool or other keratin fibres, in any amount.

Textile elements of 100% organic wool fibres, or which have documented that the textile element fulfils requirementO4, are exempt from this requirement. See the definition of organic under requirement O3. At the same time wool fibers, that have already documented compliance with requirement O4 are exempted from this requirement.

The total sum of ectoparasiticides in the individual textile element may not exceed 0.5 mg/kg.

The ectoparasiticides to be tested for are:

ɣ-hexachlorocyclohexane (lindan), α-hexachlorocyclohexane, β-hexachlorocyclohexane, δ-hexachlorocyclohexane, aldrin, dieldrin, endrin, p,p'-DDT and p,p'-DDD, cypermethrin, deltamethrin, fenvalerate, cyhalothrin, flumethrin, diazinon, propetamphos, chlorfenvinphos, dichlorphenthion, chlorpyriphos, phenchlorphos, diflubenzuron and triflumuron.

The content must be tested in accordance with Section 64 LFGB L 00.0034 (GC/MS); Section 64 LFGB L 00.00-114 (LC/MS/MS).

✉ Test report showing fulfilment of the requirement, or valid certificate showing that the fibres are organic, cf. def. in O3. Appendix 3 may be used.

✉ Licence for Nordic Ecolabelled textile generation 4, EU-Ecolabel version 2014 or Certificate from Oeko-Tex 100 class I Baby or GOTS version 4 can also be used as documentation.

Background to requirement O43 - Ectoparasiticides

The Nordic Ecolabel's Textile criteria, generation 4, EU Ecolabel for Textiles version 2014, Oeko-Tex class I baby and GOTS version 2014 have requirements for the maximum content of ectoparasiticides.

However, GOTS has not specified which should be measured, and there is a small variation in what is measured for Oeko-Tex and the Nordic Ecolabel, as Oeko-Tex does not measure these: flumethrin (CAS 69770-45-2, dichlorphenthion (CAS 97-17-6), chlorpyriphos (CAS 2921-88-2), phenchlorphos (CAS 299-84-3), diflubenzuron (CAS 35367-38-5), triflumuron (CAS 64628-44-0).

The Nordic Ecolabel's expanded requirements are found in these criteria in requirement O4 and apply to textile elements included with more than 20 wt%. These requirements are set to ensure that small textile elements also have a low content of ectoparasiticides.

7.7 Filling and stuffing materials

Filling and stuffing materials in the final babyproduct with textile must fulfil the relevant requirements in this section. Filling and stuffing materials include synthetic foam such as latex foam and polyurethane foam, fibre wadding, expanded polystyrene, polyester balls, wool, down, feathers and vegetable fibre and seeds.

Selected requirements can alternatively be documented with other certification schemes. The individual documentation requirements state which can be used.

Filling and stuffing materials (under textile with contact or more than 5 wt%)

The following requirements concern filling and stuffing materials used underneath textiles in contact with either child or adult, or which represents more than 5 wt% of the total amount of filling and stuffing material in the product.

O44 Wool, down, feathers and vegetable fibre and seeds

Filling and stuffing materials of wool, down, feathers or vegetable fibers and seeds without chemical additives and chemical treatments can skip requirements O45 to O47.

✉ The filling/stuffing material supplier/manufacturer must declare, that chemical are not added or used to treatments of the material. Appendix 14 may be used.

Background to requirement O44

Fillings and stuffing materials of natural ingredients, with no added chemicals, or otherwise treated chemically, are exempt from the requirement O46 to O49. These materials must instead comply with the relevant requirements for the materialtype in requirements O50 and O52.

O45 Emission requirements of filling and stuffing materials

The following substances and substance groups may have maximum emissions of the levels stated in the following table 6:

Table 6 Requirement levels for emissions

Emission of volatile organic compounds mg/m3	
Substance or substance group	Requirement limit
Formaldehyde (50-00-0)	0.1
Toluene (108-88-3)	0.1
Styrene (100-42-5)	0.005
Vinylcyclohexene (100-40-3)	0.002
4-Phenylcyclohexene (4994-16-5)	0.03

Vinyl chloride (75-01-4)	0.002
Aromatic hydrocarbons	0.3
Volatile organic compounds	0.5

Emission tests must be performed according to the ISO 16000 standard, parts 3, 6, 9, & 11.

☒ Test reports showing that the requirement is fulfilled. Appendix 14 ca be used.

☒ Alternatively, a licence for EU Ecolabel for mattresses, or a certificate for either Oeko-Tex class I baby or CertiPUR, can be used as documentation for the requirement.

Background to requirement O45

Filling and stuffing materials can include hazardous chemicals, either as residue from polymer production, or additives in the material.

For example, polyurethane foam and polystyrene balls may contain and emit volatile organic compounds which may be hazardous to health[45]. As the child may 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 filling and stuffing materials and here a requirement has therefore been set which can be documented with customary certification schemes. There are small differences, such as that Certipur has a threshold value for aromatic hydrocarbons of 0.5 instead of 0.3. It is assessed, however, that the requirement can still be documented with a Certipur certificate.

O46 Prohibition of halogenated flame retardants

Halogenated flame retardants must not be used in[1] in filling and stuffing materials used in the product.

[1] *For definition of constituent substances see Section 7.2 for definitions.*

☒ Declaration from the producer/supplier of the material that the requirement is fulfilled. Appendix 14 may be used.

Background to requirement O46 - flame retardants

The requirement requires a declaration by the manufacturer/supplier that halogenated flame retardants are not added to the in filling or stuffing material.

The requirement is made to ensure that no harzardous halogenated flame retardants are including in filling and stuffing materials in the product. In this product group, filling and stuffing materials will often be in close contact with the child, just below the textile. This makes it highly relevant with regard to exposure to hazardous chemicals from filling and stuffing materials. Halogenated organic compounds such as chlorinated paraffins or brominated compounds can, for example, be used as flame retardants in foam materials and polystyrene balls[46].

[45] Mapping and discharges and health assessment of chemical substances in baby products, Danish Environmental Protection Agency, 2008
[46] Mapping and discharges and health assessment of chemical substances in baby products, Danish Environmental Protection Agency, 2008

The flame retardants Tris(2-chloroethyl)phosphate (TCEP) and Tris (1,3-dichloro-2-propyl)phosphate (TDCP), and a third substance, Tris(2-chlor-1-methylethyl)phosphate (TCPP), were recently prohibited within the EU from toys for children under three years of age, and from toys intended to be put in the mouth. The prohibition does not include prams and strollers, but does include such products as stuffed animals, floor puzzles and toys that resemble food. Exposure to TCPP can take place via inhalation, and also via skin exposure or by consumption of dust particles. The Danish Environmental Protection Agency has investigated products for children for content of the three chlorinated flame retardants (TCEP, TDCP and TCPP), which are suspected of being carcinogenic, and Denmark is now working for an EU prohibition of these three flame retardants in products with which children are in contact[47].

The three flame retardants are already prohibited from toys for children under three years of age, and from toys intended to be put in the mouth.

The Danish Environmental Protection Agency has put TCPP, which is mainly used in polyurethane foam (PUR foam), on the LOUS list as a consequence of the Danish Environmental Protection Agency's self-classification (based on QSAR predictions) of the substance as Muta 2, H341 (Suspected of causing genetic effects) and Repr 2., H 361 (Suspected of impairing reproductive ability or the unborn child). On the basis of analogies drawn with TCEP, TCPP is also classified as Carc. 2; H451. TDCP is mutagenic in vitro, but not in vivo, and is also classified as Carc 2, H451.[48]

Brominated flame retardants such as Hexabromocyclododecane, CAS no. 25637-99-4. (HBCD) are used extensively, especially in Europe. In contrast to reactive flame retardants, additive flame retardants such as HBCD are not chemically bound in the material. This means that they can be released from the material relatively easily throughout the product's useful life, giving diffuse pollution of the environment. HBCD displays the same chemical and physical characteristics as well-known persistent organically polluting substances, which also at first glance appeared to be harmless, as was the case with PCB in the 1950s. HBCD can be used in extruded and expanded polystyrene foam. Substances were found in polystyrene balls in two nursing pillows investigated in the Danish Environmental Protection Agency's analysis from 2008[49].

It is assessed that alternatives to the most problematic flame retardants exist.

First of all, there are design-related tools to increase the flame retardant effect:

- Use of wool, which has a certain natural flame retardant effect
- Use of "barrier substances" or packing of foam/padding (Ansi, 2012)

It is also possible to substitute hazardous flame retardants with less hazardous substances.

[47] Visited on 8/9 2016 http://mst.dk/service/nyheder/nyhedsarkiv/2016/sep/danmark-arbejder-for-eu-forbud-mod-skadelige-flammehaemmere/
[48] Chemical substances in child car seats and other products with textile for children, Danish Environmental Protection Agency 2015.
[49] Mapping and discharges and health assessment of chemical substances in baby products, Danish Environmental Protection Agency, 2008.

These include finishing the products with burnblock, which is on Oeko-Tex's list of approved active chemical products. Burnblock consists of inter alia sodium benzoate and citric acid and works by preventing oxygen from reaching the treated product, thereby preventing ignition of the product (Burnblock, 2012).

The requirement must be documented by a declaration from the manufacturer or supplier. Other labels for these material types does not ban all halogenated flame retardants.

Filling and stuffing materials included with more than 20 wt%

The following requirements concern filling and stuffing materials which are individually included with more than 20 wt% out of the total amount of filling or stuffing material in the finished product.

At the same time the requirements are activated only if the individual filling or stuffing material is weighing more than 25 grams in the finished product.

O47 Additives

The requirement concerns filling and stuffing materials which are included with more than 20 wt% out of the total amount of filling and stuffing material in the product.

The following substances and substance groups may not be included[1] in filling and stuffing materials:

- Substances, that are listed on REACH's candidate list at any time, must not be used in the processes after fiber preparation. Link to Reach's candidate list: http://echa.europa.eu/web/guest/candidate-list-table
- PVC
- Organic chlorinated paraffins
- Halogenated bleaching chemicals
- Aziridine and polyaziridines
- Carcinogenic, mutagenic and reprotoxic compounds (Category 1A and 1B according to CLP-regulation 1272/2008)
- Alkylphenol ethoxylates (APEO)
- Phthalates listed on REACH's annex XVII[3]
- Fluorinated organic compounds such as PFOA[3] (perfluorooctanoic acid and its salts/esters), PFOS (perfluorooctanesulfonate and its compounds), and PTFE (polytetrafluoroethylene), etc.
- Organic tin compounds
- Biocides or biocide products intended to add a disinfecting or antibacterial effect

[1]See the definition of constituent substances in section 7.2 definitions.

[2]"Be aware of national legislation concerning PFOA, if the product is to be sold/marketed in Norway. In Norway, PFOA is governed by the "Regulation on restrictions to the use of health- and environmentally-hazardous chemicals and other products (Product Regulations)", Section 2-32.

[3]Note that phthalates listed on the EU candidate list are also excluded in this requirement.

✉ Declaration from the producer/supplier of the filling/stuffing material showing that the requirement is fulfilled. Appendix 15 must be used.

Background to requirement O47

The requirement is made to ensure that highly health- and environmentally-hazardous substances are not included in filling and stuffing materials which are a large part of the product.

Fluorinated organic compounds are used for e.g. impregnation. Chlorinated paraffins may be used as flame retardants and as plasticisers, so that substitution of chlorinated paraffins will depend on the effect to be achieved.

Organic tin compounds: Polyurethane foam (PU) may contain organic tin compounds such as dibutyltin (DBT) and tributyltin (TBT), which can e.g. be applied as antibacterial treatment[50].

O48 Dyes

The requirement concerns filling and stuffing materials which are included with more than 20 wt% out of the total amount of filling and stuffing material in the product.

Dyes may only be used to distinguish between different qualities (such as hard and soft foam) within the same type of stuffing material, or if the stuffing material is visible and used without covering. If dyes are used, requirement O22 in section 7.5.2 must be fulfilled. At the same time metal complex dyes are prohibited.

✉ Reason for the use of dyes or declaration that none are used, in accordance with Appendix 15.

✉ If dyes are used: Documentation in accordance with requirement O22.

Requirements of specific filling and stuffing materials

O49 Textile fibres in filling and stuffing materials

Textile fibres in filling and stuffing materials of cotton, wool, polyester or regenerated cellulose, which are individually included with more than 20 wt% of the total weight of the filling and stuffing material in the finished product, must fulfil the following requirements for textile fibres:

- Cotton fibre: requirement O3
- Wool fibre: requirements O4 and O5
- Polyester fibre: requirement O6
- Regenerated cellulose fibre: requirements O10 and O13

✉ Here the same documentation is required as stated in the requirements referred to.

Background to requirement O49

The requirement is made to ensure that the environmental impact from raw materials production is also handled for products where filling and stuffing materials are of great relative importance compared to the other materials in the product. Reference is made to the individual fibre requirements' background texts.

[50] Mapping and discharges and health assessment of chemical substances in baby products, Danish Environmental Protection Agency, 2008.

O50 Synthetic latex (SBR) and natural latex

The requirement includes latex as filling material, which represents more than 20% by weight of the total amount of fillling and stuffing materials in the product.

The butadiene content must be lower than 1 mg/kg latex.

The concentration of N-nitrosamines may not exceed 0.0005 mg/m^3 measured by the climate chamber test.

✉ The latex producer must state test results in accordance with the requirement. Test methods are stated in Appendix 15.

Background to requirement O50

See background text to requirement O65.

O51 Feathers and down

The requirement concerns feathers or down which are included with more than 20 wt% of the total amount of filling and stuffing material in the finished product.

Use of feathers and down plucked from live birds is prohibited.

Feathers and down must comply with the EN 12935 standard: Feathers and down - R Hygiene and cleanliness requirements - Requirements of the filler materials' microbial purity.

✉ Declaration from the supplier of the down and feathers that the requirement is fulfilled Appendix 15 may be used. And a test report showing fulfilment of the EN 12935 standard.

✉ Alternatively, a Responsible Down standard certificate can be used as documentation that feather and down are not plucked from live birds.

Background to requirement O51

Down and feathers can be plucked from live birds, which is painful. This is primarily by plucking down from geese, but may also be relevant for 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. EFSA (the European Food Safety Authority) has investigated the issue and concluded that it is possible to pluck down and feathers from live geese without causing pain, if this takes place during the moulting period[51]. The problem is that this is not taken into consideration in commercial operation and there are cases where the law is not complied with in all EU member states. The recommendation from EFSA is that geese down and feathers may only be plucked during the moulting period, and that control systems are created for this. No such control system is in place yet, however, and Nordic Ecolabelling has therefore required the prohibition of the use of down and feathers plucked from live birds.

Textile Exchange has published a certifiable standard for down and feathers. Responsible Down Standard (RDS). RDS ensures an independent third party's assessment of the important aspects of breeding and handling the animals, and ensures traceability all the way back in the supplier chain.

[51] EFSA Scientific Opinion on the practice of harvesting (collecting) feathers from live geese for down production, 25 November 2010.

The purpose of the standard is to improve the birds' welfare and also to ensure retailers and consumers greater reliability in terms of securing procurement of sustainable material. 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 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 is 100% certified. The certification ensures, for example, that forced feeding is prohibited and that down and feathers may not be plucked from live birds.

It is also ensured that the birds are not kept in cages and have space for natural activity. This includes the requirement that there must be nesting areas for female birds[52].

In June 2016, there were seven certified down and feather suppliers. They can be found here: http://responsibledown.org/for-business/find-certified-companies/ These feathers and down are used in various products in the market, such as clothing, duvets and other filled textile products.

In addition, feathers and down must fulfil the EN 12935 standard: Feathers and down - Hygiene and cleanliness requirements - Requirements of the filler materials' microbial purity. Feathers and down for use as filler material must comply with the standard, to ensure a high standard of hygiene and sanitation.

O52 Polyurethane foam

The requirement concerns polyurethane foam which individually accounts for more than 20 wt% in relation to the total weight of filling and stuffing materials in the final product.

The following must be fulfilled:

- CFC, HCFC, HFC, methylene chloride or other halogenated organic compounds may not be used as blowing agents.
- Isocyanate compounds may only be used in a closed process, with the prescribed protective equipment in accordance with the official requirements.
- N,N - Dimethylacetamide (DMAc) may not be used in production.

✉ Declaration from the foam producer/supplier in accordance with Appendix 15.

Background to requirement O52

Blowing agents

Halogenated organic compounds may not be used as blowing agents or auxiliaries for these. Improvements in production processes, especially for foam, mean that the existing criteria may be obsolete, especially in relation to emissions during production.
Historically, CFC, HCFC and HFC have been used in the production of PUR foam, and it is generally known that these substances are harmful to the environment, especially as greenhouse gases and as ozone layer-depleting substances. The present criterion prohibits the use of halogenated organic compounds that are used as blowing agents or auxiliaries for these. Many producers of PUR foam have replaced CFC and HCFC with carbon dioxide.

[52] http://responsibledown.org/wp-content/uploads/2015/07/TE-Responsible-Down-Standard-2.0-opt.pdf visited on 7 June 2016

Blowing agents are only relevant for PUR foam, as the production of latex foam does not require blowing agents.

Isocyanates

PUR foam is usually produced on the basis of a number of polyols, usually polyether, which is normally made from fossil raw material.

Diisocyanates are the second-most used important raw material for PUR production. Toluene diisocyanate (TDI, CAS number: 26471-62-5) and methylene diphenyl diisocyanate (MDI, CAS number: 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 producers' most customary choice today.

TDI and MDI carry a large number of risk 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[53].

MDI appears to be less problematic, especially with regard to inhalation of the substance, and for the environment. Use of MDI could increase the level of protection of employees and the environment. Producers 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.

The EU Ecolabel for mattresses makes the requirement that the total chlorine content of the isocyanates used in PUR foam production may not exceed 0.07 wt%. The requirement is also made that halogenated organic compounds may not be used as a foaming agent (blowing agent), or auxiliary foaming agent.

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

7.7.1 Adhesive used for material in the product

O53 Adhesive used for materials

Adhesive used for gluing materials in the product, such as fillers and stuffing materials, plastic or metal parts must comply with the requirement O33 Adhesive for textile.

✉ Declaration in accordance with appendix 12 from the producer/supplier of the Adhesive.

Background to requirement O53 - Free formaldehyde

Glue can be used in this product group both for the glueing of filler and textile, or for glueing solid materials. See the background information to requirement O33.

[53] Updated Working Document for THE REVISION OF THE EU ECOLABEL CRITERIA FOR BED MATTRESSES, version4 2013

7.8 Wood-based panels

Wood-based panels may be used as bases in carry cots, prams and strollers, combiprams, pushchairs, bicycle trailers and travel cots. The requirements concern wood fibre panels, such as chipboard, OSB panels and MDF panels. See any minimum thresholds under the individual requirement.

O54 Adhesive in the panel

The requirement concerns the adhesive system in the panel.

The total content of the Kathon compound (CMIT/MIT) 5-chloro-2-methyl-2H-isothiazol- 3-on (CAS no.: 26172-55-4) and 2-methyl-2H-isothiazol-3-on (CAS no.: 2682-20-4) (3:1) in the adhesive may not exceed15 ppm (0.0015 wt%, 15 mg/kg).

The total content of isothiazolinone compounds in the adhesive may not exceed 500 ppm (0.05 wt%, 500 mg/kg).

2-Methyl-3(2H)-isothiazolinone may not be included at more than 200 ppm in the adhesive.

✉ Declaration in accordance with Appendix 16 from the adhesive producer/supplier.

✉ Safety data sheet for the adhesive in accordance with current European legislation.

Background to requirement O5454

For this product group, wood-based panels are most relevant, such as bases in carry cots and prams and strollers. The child will thereby be relatively close to the panel, and adverse chemicals may give off gases to the interior of the pram or stroller. The requirement therefore focuses on addressing one of the most health-relevant emissions from the glue in the panel - namely the isothiazolinone compounds, due to their sensitising effects. Another relevant emission is formaldehyde. This is handled in the next requirement O55.

Isothiazolinones are used as a preservative in many products, where they act as fungicides, bactericides and algal growth inhibitors. They are, however, toxic to aquatic organisms and they have varying degrees of sensitising effect. Nordic Ecolabelling wishes to limit the use of isothiazolinones on the grounds of their environmental and health profile. In general terms, it has been common to preserve "chemical building products" using formaldehyde and/or formaldehyde-releasing substances. From this perspective, MIT and other isothiazolinones are more part of the solution than they are a problem, since the sensitising risks of isothiazolinones are considerably less than the risks of using carcinogenic formaldehyde and formaldehyde-releasing substances. MIT has no harmonised classification, but is self-classified by the industry, although in the majority of companies in the EU (see ECHA) MIT is classified as Skin sens 1 with H317. A harmonised product classification is pending (ECHA website, Registry of Intention of classification and labelling). If MIT is included in a mix in concentrations from 0.1% up to 1%, the product is required to be labelled with "contains isothiazolinone, may cause an allergic reaction". There is an ongoing debate concerning preservatives, primarily MIT. Several of the discussions concern the allergy risks concerning MIT in particular. Nordic Ecolabelling limits all isothiazolinones, and not only MIT, since there are other preservatives besides MIT that are known or suspected of sensitising effects, and the chemical building products usually include combinations of several isothiazolinones in the products.

The requirement has the same threshold values as the criteria for Building and Façade Panels, generation 6.

O55 Formaldehyde emission from wood-based panels

The requirement concerns all wood-based panels included in the Nordic Ecolabelled Baby product with textiles. For panels which contain formaldehyde-based additives, one of the following two requirements must be fulfilled:

1. The content of free formaldehyde must on average not exceed 5 mg formaldehyde/100 g dry matter for MDF panels and 4 mg/100 g dry matter for all other panels, when this is determined according to the current version of EN-120 or equivalent methods approved by Nordic Ecolabelling (see section in Appendix 1).

The requirement concerns wood panels with a moisture content of H = 6.5%.

If the panels have another moisture content within the range of 3-10%, the analysed perforator value must be multiplied by a factor F, which is derived from the following formula:

For chipboard: F=-0.133 H + 1.86 For MDF: F = -0.121 H + 1.78

2. The emission of formaldehyde may on average not exceed 0.09 mg/m^3 air for MDF panels and 0.07 mg/m^3 air for all other panels, when this is determined according to the current version of EN 717-1 or equivalent methods approved by Nordic Ecolabelling.

✉ Analysis report including measurement methods, measurement results and measurement frequency. It must be clear which method has been used, who performed the analyses and that the test institution is an independent third party. Other analysis methods than those stated may be used, if the correlation between test methods can be confirmed by an independent competent third party. For further details of analysis method, see Appendix 21.

Background to requirement O55 formaldehyde emission

The background to the requirement is that the use of formaldehyde must be limited in wood-based panels because it is hazardous to health and can lead to health problems on the production and use of the products. Formaldehyde is a toxic and sensitising substance that has a carcinogenic effect and must therefore be limited as far as possible. Pure formaldehyde is classified as Carc 1B for its carcinogenic effect[54]. Glue systems with formaldehyde are often used for wood-based panels. The development has been towards reducing formaldehyde emissions from the finished panel.

Wood-based panels are most often used in this product group as the base in a pram or stroller, carry cot or travel cot. Here, the child will lie close to the panel for a long time and any formaldehyde emission may affect the child. For further details of the background to the requirement, see the equivalent formaldehyde requirement in Background to Nordic Ecolabelling of Building and Façade Panels, generation 6.

Only chipboard panels with a Carb Phase II certificate can fulfil the requirement level in this requirement. Chipboard panels are not, however, assessed to be very relevant to this requirement.

[54] http://mst.dk/media/130997/28-formaldehyd.pdf

7.9 Metals

All metal components with which the child or adult is in contact

The requirements in this section include all metal parts, which the child or the adult are in contact with during normal use. See definition of "contact" in section 1.1.

O56 Metals (extractable and total content)

For all metal elements with which the child or the adult can be in contact during normal use (e.g. zips and buckles) requirements O37 "Extractable metals" and O38 "Total content of heavy metals" must be complied with. The requirement also applies to metal elements with which the adult has skin contact on using the product.

✉ Test report with measurement data showing that requirements O37 "Extractable metals" and O38 "Total content of heavy metals" for metals are fulfilled. Appendix 17 may be used.

✉ Alternatively, a current certificate for GOTS or Oeko-Tex 100 class 1 baby as accessories can be used as documentation.

Background to requirement O56

Heavy metals have an impact on the environment and several heavy metals are toxic, and some are carcinogenic (see further details below). This makes it relevant to ensure that metal parts used in the product group are without the heavy metals chromium, nickel, lead and cadmium.

As the product group contains several product types that may consist of many small material elements, such as a pushchair or child car seat, a lot of documentation would have to be obtained to cover all metal elements. The requirement is therefore limited to concern metal elements with which the child may be in contact. Furthermore, requirement O61 prohibits coatings with the stated heavy metals. This also includes large metal parts with which the child is not in contact. To avoid requiring unnecessary tests, the requirement is harmonised with both GOTS and Oeko-Tex's class 1 baby requirements of metal accessories. Here the possibility is therefore included to use either a GOTS or an Oeko-Tex 100 class 1 baby certificate.

O57 Emission requirement of metal parts with surface treatment

For all surface-treated metal parts with which the child or the adult may be in contact during normal use (e.g. zips and buckles), the following substances and substance groups may have a maximum emission at the levels stated in table below:

Emission of volatile organic compounds mg/m3	
Substance or substance group	Requirement limit
Formaldehyde (50-00-0)	0.1
Toluene (108-88-3)	0.1
Styrene (100-42-5)	0.005
Vinylcyclohexene (100-40-3)	0.002
4-Phenylcyclohexene (4994-16-5)	0.03
Vinyl chloride (75-01-4)	0.002
Aromatic hydrocarbons	0.3
Volatile organic compounds	0.5

Emission tests must be performed according to the ISO 16000 standard, parts 3, 6, 9, & 11.

✉ Test reports showing that the requirement is fulfilled.

✉ Alternatively, a certificate for Oeko-Tex class I baby can be used as documentation for the requirement.

Background to requirement O57

Metal parts with surface coating may contain harmful chemicals. See further details in the background to requirement O58. As the child will be in close contact with these materials and will be exposed to any emissions, requirements are set for the most important substances. For Oeko-Tex 100 class I baby there are the same emission requirements for surface-coated accessories for textile and here a requirement has therefore been drawn up which can be documented with an Oeko-Tex 100 class I baby certificate.

7.9.1 Surface treatment (metal parts more than 5 wt% and/or contact)

All metal parts more than 5 wt% in the product or in contac with the child og the adult during normal use, are subject to the following requirements of the surface treatment of the metal. For metal parts of the same type, for example 10 identical screws, these must be counted as a single part by weight. At the same time metal parts except requirements of this section if they account for less than 50 g and not in contact with the child or adult during normal use (see definition of "contact" in section 7.2).

Chemical products with a licence for Nordic Ecolabelling of Chemical Building Products automatically fulfil requirements O58 O59 and O60. In such case, product type, producer and licence number must be stated as documentation.

O58 Chemical products, classification

Chemical products used for surface treatment of metal parts in the product may not be classified in accordance with table X below. The chemical product must be classified in accordance with current European legislation.

Surface treatment in the form of metallisation is not subject to this requirement, but instead requirement O61 Metal coating.

Table 2 List of non-permitted classifications of the chemical product.

CLP Regulation 1272/2008		
Hazard class	Signal word, Category code	Hazard statement
Hazardous to the aquatic environment	Warning, Aquatic acute 1 Warning, Aquatic chronic 1 -, Aquatic chronic 2	H400 H410 H411
Hazardous to the ozone layer	Warning, Ozone	H420
Carcinogenic	Hazardous, Carc. 1A or 1B Warning, Carc. 22	H350 H351
Mutagenic	Hazardous, Muta. 1A or 1B Warning, Muta. 2	H340 H341
Reprotoxic	Hazardous, Repr. 1A or 1B Warning, Repr. 2-, Lact.	H360 H361 H362

Acute toxicity	Hazardous, Acute Tox. 1 or 2 Hazardous, Acute Tox. 1 or 2 Hazardous, Acute Tox. 1 or 2 Hazardous, Acute Tox. 3 Hazardous, Acute Tox. 3 Hazardous, Acute Tox. 3	H300 H310 H330 H301 H311 H331
The following prohibition below concerns chemical products to metal parts which the child may be exposed (either skin or oral contact) durign normal use of the product.		
Specific organ toxicity	Hazardous, STOT SE 1 Warning, STOT SE 2 Hazardous, STOT SE 1 Warning, STOT RE 2	H370 H371 H372 H373
Sensitising	Hazardous, Resp. Sens. 1 Warning, Skin Sens. 1	H334 H317

☒ Safety data sheet for the chemical product in accordance with current European legislation.

☒ Declaration from the producer of the chemical product – used for surface treatment, showing that the requirement is fulfilled. Appendix 8 may be used.

Background to requirement O58

Nordic Ecolabelling strives to ensure that the health and environmental impacts of the products are as low as possible. Therefore a requirement is made for the prohibition of specific classifications of the chemical products used in production.

The requirement is made to ensure metal parts without problematic chemicals in surface coating and any preliminary treatment performed. This is relevant with regard to the child's exposure to the metal part and in relation to when the metal part is to be reused after use has ended. The requirements will, for example, exclude the use of problematic heavy metals in pigments and other additives, and exclude the use of carcinogenic, mutagenic and reprotoxic substances in surface coatings.

Surface coating with paint and varnish is vital to the lifetime and design of most industrially produced items. To achieve specific optical and durability characteristics, materials are combined for the surface coating of a number of chemical raw materials: pigments, fillers, binders, solvents and additives of various types. Some of these substances have adverse environmental and toxicological characteristics. This applies 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 paint 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 this avoids solvents, but in this case more energy is used for the process instead.

Before the actual surface coating, pre-treatment often takes place. Pre-treatment often concerns aqueous processes in vats or by rinsing. This commences with degreasing, followed by rinsing and process stages in which thin layers of phosphates, chromates or newer coatings with titanium and zircon content are precipitated.

The pre-treatment establishes attachment between the surface (metal) and the following surface coating. Some pre-treatments also have a favourable barrier effect which prevents corrosion[55].

O59 CMR classification of constituent substances

The constituent substances used in chemical products for surface treatment may not be classified in accordance with the table below. See the definition of constituent substances in the section for definition of terms, 7.2.

Surface treatment as metallisation is not subject to this requirement, but instead requirement O61 Metal coating.

CLP Regulation 1272/2008:		
Hazard class	Signal word	Hazard statement
Carcinogenicity	Hazardous, Carc. 1A or 1B	H350
Mutagenicity in reproductive cells	Hazardous, Muta. 1A or 1B	H340
Toxic for reproduction	Hazardous, Repr. 1A or 1B	H360

The classifications in the Table concern all classification variants. For example, H350 also comprises the H350i classification.

✉ Safety data sheet for the chemical product in accordance with current European legislation.

✉ Declaration from the producer/supplier of the chemical product for surface treatment, that the requirement is fulfilled. Appendix 18 may be used.

Background to requirement O59

In this version of the criteria, the prohibition of CMR substances in categories 1A and 1B has gained its own requirement. The requirement is also updated to CLP regulation 1272/2008.

Nordic Ecolabelling strives to ensure that the health and environmental impacts of the products are as low as possible. Therefore there is a requirement to prohibit specific CMR classification, which thereby excludes some of the, in health terms, most problematic classifications of substances. Nordic Ecolabelling has drawn up an Environmental Toxins Policy[56] in which CMR substances are one focus area.

In section 6.2 of the RPS analysis, generally high RPS is found for strict chemical requirements for this product group. For further information see the background text to requirement O58.

O60 Other excluded substances

The requirement concerns all constituent substances (see definition in section 7.2) in the chemical products used in the surface treatment of the metal.

The following substances may not be included:

- Substances on the EU's candidate list in accordance with REACH, 1907/2006/EC, article 59, section 10, ECHA's website.
- Substances that are assessed by the EU to be PBT substances (persistent, bioaccumulative and toxic substances) or vPvB substances (very persistent and very bioaccumulative) in accordance with the criteria in Annex XIII of REACH.

[55] Mapping of substitution possibilities and health and environmental assessment of paint systems for industrial surface coating of metal and wood, Danish Environmental Protection Agency, 2011.
[56] NM Hedstein, 2007

- Substances that are considered to be potential endocrine disruptors in category 1 or 2 on the EU's priority list of substances that are to be investigated further for endocrine disruptive effects. The list can be found here: http://ec.europa.eu/environment/chemicals/endocrine/pdf/final_report_2007.pdf

In addition, the following substances and substance groups may not be included. There may be overlaps between the substances on the following item list and the substances or groups of substances of which the characteristics are listed above:

- Halogenated organic compounds[1] in general (including chlorinated polymers). For example PVC, organic chlorinated paraffins, fluorine compounds, flame retardants and bleaching chemicals. The biocides bronopol and CMIT in combination with MIT are exempt and have their own threshold value; see below
- Bisphenol A compounds
- The biocides chlorophenols (their salts and esters) and dimethyl fumarate
- Bronopol Cas. No. 52-51-7 in more than 0.05 wt%
- Isothiazolines in more than 0.01 wt%
- The compound (3:1) of CMIT/MIT (5 chloro-2-methyl-4-isothiazoline-3-one Cas. no. 247-500-7; 2-methyl-4-isothiazoline-3-one Cas. no. 220-239-6) in more than 0.0015 wt%
- Alkyl phenols, alkyl phenol ethoxylates or other alkyl phenol derivatives[2]
- Phthalates listed on REACH's annex XVII[3]
- Aziridine and polyaziridines
- Pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds
- Volatile aromatic compounds in more than 1 wt%
- VOC (volatile aromatic compounds) in glue in more than 3 wt%[4]
- No biocides or biocide products may be added to the surface of the final product or material in the product in order to add a disinfecting or antibacterial effect

[1]Be aware of national legislation concerning PFOA, if the product is to be sold/marketed in Norway. In Norway, PFOA is governed by the "Regulation on restrictions to the use of health- and environmentally-hazardous chemicals and other products (Product Regulations)", Section 2-32.

[2]Alkyl phenol derivatives are defined as substances which split from alkyl phenols on degradation.

[3]Note that phthalates listed on the EU candidate list are also excluded.

[4]Volatile organic compounds are here defined as organic compounds with a steam pressure exceeding 0.01kPa, at 20°C. For products and raw materials subject to the EU's directive (2004/42/EC), where steam pressure is not stated: Organic substances with an initial boiling point which is lower than or equal to 250°C measured at a normal pressure of 101.3 kPa.

☒ Declaration from the raw materials producer/supplier showing that the requirement is fulfilled. Appendix XXXX may be used.

Background to requirement O60 - Other excluded substances

The requirement is set on the basis of Nordic Ecolabelling's knowledge of the product group and the materials used in the product.

In the criteria for Nordic Ecolabelling of Furniture and Furnishings generation 4 there is a description of the environmental and health impacts of the excluded substances. For further information on the requirement's relevance to this product group, see the background text to requirement O58.

The requirement is by and large identical with the requirement in the Nordic Ecolabel criteria for Furniture and Furnishings generation 4. Here, the requirement is extended to also exclude the EU's candidate list substances, PBT substances and vPvB substances, as well as endocrine disrupting substances.

O61 Metal coating

Metal parts may not be coated with cadmium, chromium, nickel, zinc and their compounds.

It can be accepted, that small metal parts are surface-coated with zinc (such as screws, bolts and mechanisms) or other metalparts, if this is necessary due to extensive physical wear or on safety-related grounds.

The galvanising process must use either a cleaning technique, ion exchange technique, membrane technique or similar technique to reuse the chemical coating products to the greatest possible extent.

Discharges from the surface coating must either go to recycling and destruction, or may as a maximum be:

Zinc: 0.5 mg/l

Sampling method for zinc: EN ISO 11885. Sampling frequency: Discharges to water are calculated as the year's mean value and based on at least one representative 24-hour measurement per week. Sampling: Samples of the process water must be taken after external purification and the analyses must be performed on unfiltered samples. Alternatively a sampling frequency determined by the authorities will be accepted.

✉ Declaration from the producer or supplier of surface-coated metal showing that cadmium, chromium, nickel and zinc are not used. Appendix 19 may be used.

On surface coating with zinc:

✉ The need for this type of surface coating must be documented via tests or another report showing that the metal surface is exposed to major physical wear or is of safety-related importance requiring zinc coating.

✉ A description and any test report on galvanisation from the producer or supplier of surface-coated metal, showing fulfilment of the requirement. Appendix may be used.

Background to requirement O61

Metals in the Nordic Ecolabelled product may not be coated with cadmium, chromium, nickel or zinc. Cadmium is a highly environmentally toxic heavy metal. 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, and the child is not in contact with the metal part. Allowing zinc coating may be motivated by how it is important for the product's function that critical parts are as durable as possible. The zinc coating must, however, be performed so as to fulfil the stated requirement values.

The requirement is partly identical with the requirement in the Nordic Ecolabel criteria for Furniture and Furnishings generation 4. Here, however, an exemption is only granted for zinc and this requirement is therefore more stringent.

Metal parts more than 5 wt% in the product

O62 Recycling of materials

It must be possible to separate metal parts from other materials (does not include surface coating) without using special tools.

Here, an exemption is made from the requirement, however, it there is a need for other assembly types on safety grounds. In such case this must be described.

✉ Description of how the metals can be separated from other materials, and of the need for any exemptions from the requirement.

Background to requirement O62

The requirement is made to allow for recirculation of metal parts used after the end of use of the product. Here, an exemption from the requirement is granted, however, if another type of assembly is necessary to ensure a very safe product. This must be explained in the documentation submitted.

Metal is used in several of the product group's product types. This is often as a frame with a bearing function such as in a pram or stroller, a pushchair, or a baby rocker chair. Metal may also be included in smaller quantities as fittings in e.g. child car seats and baby rocker chairs.

Metal extraction is by mining, which is a complex and intensive process which leads to environmental and social changes, no matter where it occurs. There are many links in the metal production chain. This makes it difficult to set sustainability requirements right back to the actual metal extraction. This will be possible, however, with sustainability certification systems that also include traceability back in the production chain. This type of certification system is being developed in the industry[57], but until this has been developed and disseminated an important environmental initiative is to ensure that the metal used in the product can be easily separated from the other materials after use has ended.

7.10 Plastic, silicone and latex (rubber) (contact or > 5 wt%)

The requirements in this section concern all product elements of plastic (incl foamed plastic not used as filling), silicone and natural and synthetic latex. The requirements include both virgin and recycled raw materials. The requirements include product parts as a child or adult comes into contact during normal use or which represents more than 5 wt% of the finished product. However, plastic parts are excepted from the requirements of this section, if the part weights less than 50 g and are not in contact with the child or adult.

Polymer materials, which are used as textiles and filler materials, are not subject to the requirement in this section, but instead sections 7.5.1 and 7.7, and must therefore not be included in the wt% limit for plastic materials. For example, polyurethane foam (PUR foam) must fulfil the requirements of filler materials in the section.

O63 Plastic type

It must be stated with chemical name, which types of plastic the plastic elements consist of.

[57] IRMA standard http://www.responsiblemining.net/irma-standard/

Plastic elements of polyvinyl chloride (PVC) and polyvinyl dichloride (PVDC) may not be included in the product.

✉ Description of plastic types (chemical name) for the product's plastic elements. Appendix 1 can be used.

Background to requirement O63

The requirement is set to ensure that PVC and PVDC are not included in the product, and to give an overview of the types of plastic included.

PVC can be used as soft or hard PVC. PVDC is a type of PVC with double chlorine atoms. Besides the risk of phthalates in the soft PVC, especially the waste treatment of PVC is problematic. This is due to how, on the incineration of 1 kg of PVC, from 0.4 to 1.7 kg flue gas purification products are formed, which are sent to landfills. The volume depends on the types of incineration process used[58]. See further details of the background to the prohibition of PVC in Background to Nordic Ecolabelling of Office and Hobby Items, generation 4.

O64 Prohibition of halogenated flame retardants

Plastic, silicone or latex compoents in the product must not contain[1] halogenatet flame retardants.

[1] For definition of constituent substances see Section 7.2 for definitions.

✉ Declaration from the producer/supplier that the requirement is met. Appendix 20 may be used.

Background to requirement O64

The requirement requires a declaration by the manufacturer/supplier that the parts do not contain halogenated flame retardants.

For the product group has high relevance to exposure of harmful chemicals and the requirement is made to ensure that the child and the adult are not exposed to harmful halogenated flame retardants in the product.

O65 Plastic, natural latex and synthetic latex (rubber)

The requirement concerns product elements of plastic, natural latex or synthetic latex with which the child can be in contact, or with which the adult has contact during normal use.

- The content of 1,3-butadiene in natural latex and synthetic latex must be less than 1 mg/kg latex.
- For plastic, natural latex and synthetic latex, the content of the following PAHs in Table 1 must be complied with, with the stated requirement limits.
  Test must be performed according to the ZEK 01-2-08 test method from the Central Experience Exchange Committee (ZEK). Alternatively, the PAH requirement can be documented with a GS-Mark AfPS GS 2014: 01 PAK Category 1 or an Oeko-Tex 100 Class I Baby Certificate.
- The pollution limit of 100 ppm thus does not apply in this requirement.

Requirement of content of selected PAHs in the latex material:

Substance name	CAS no.	Requirement limit
Benzo[A]Pyrene	50-32-8	< 0.2 mg/kg
Benzo[E]Pyrene	192-97-2	< 0.2 mg/kg

[58] Memo: Ole Hjelmar, DHI – Institute for Water and the Environment in 2002 Memo on mass flows on incineration of PVC

Benzo[A]Anthracene	56-55-3	< 0.2 mg/kg
Dibenzo[A,H]Anthracene	53-70-3	< 0.2 mg/kg
Benzo[B]Fluoranthene	53-70-3	< 0.2 mg/kg
Benzo[J]Fluoranthene	205-82-3	< 0.2 mg/kg
Benzo[K]Fluoranthene	207-08-9	< 0.2 mg/kg
Chrysene	218-01-9	< 0.2 mg/kg
Benzo[ghi]perylene	191-24-2	< 0.2 mg/kg
Indeno[1,2,3-cd]pyrene	193-39-5	< 0.2 mg/kg
Benzo[A]Pyrene	50-32-8	< 0.2 mg/kg
Benzo[E]Pyrene	192-97-2	< 0.2 mg/kg
Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Pyrene, Anthracene, Fluoranthene,	208-96-8, 83-32-9, 86-73-7, 85-01-8, 129-00-0, 120-12-7, 206-44-0	Sum < 1 mg/kg
Naphthalene	91-20-3	< 1 mg/kg
Sum of 18 PAK *		Sum < 1 mg/kg

**Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Chrysene, Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[j]fluoranthene, Benzo[a]pyrene, Benzo[e]pyren, Indeno[1,2,3-cd]pyrene, Dibenzo[a,h]anthracene, Benzo[g,h,i]perylene.*

Test protocol from test of the content of 1,3-butadiene and the PAHs in latex stated in the requirement, showing that the requirement is fulfilled. Appendix 20 may be used.

✉ Alternatively, GS-Mark certificate according to the AfPS GS 2014:01 PAK category1 standard or a Oeko-Tex 100 class I baby certificate can be used as documentation for the PAH content.

Background to requirement O65

1,3-butadiene

Several synthetic rubbers contain substances that are hazardous to the environment and health, such as substances that are (suspected to be) carcinogenic, such as 1,3 butadiene, CAS. 106-99-0, in SBR rubber, which has the following classification: H340: May cause genetic defects and H350: May cause cancer. Butadiene functions as a monomer in the production of latex and the requirement must ensure that it is sought to have the lowest possible monomer content in the final product.

Here, the requirement is made as a test of the content in the latex material. The requirement is identical with the Nordic Ecolabel criteria for Furniture and Furnishings.

PAHs

The requirement is made of both the content of the individual PAHs and the total content of a large group of stated PAHs in latex or plastic material. The requirement also concerns the 8 PAHs which are limited in accordance with REACH (see below), but goes further than the REACH requirement for articles for young children, which is less than 0.5 mg/kg. In the Nordic Ecolabelling requirement, the threshold level is less than 0.2 mg/kg.

The requirement is set with the same requirement levels as the German GS-Mark's certification, where German AfPS (Committee for Product Safety) in the AfPS GS 2014:01 PAK standard among other things sets requirement levels for the content of PAHs in their GS-Mark certification. Alternatively, a GS-Mark certificate according to the AfPS GS 2014:01 PAK category1 standard can be used as documentation for the PAH content.

However, an Oeko-Tex certificate may not be used as documentation for this requirement. Oeko-Tex class I baby sets requirements with tests and a threshold level of maximum 0.5 mg/kg for each of the 8 REACH PAHs and thereby does not meet the requirement limit of less than 0.2 mg/kg. Furthermore, Oeko-Tex class I baby sets requirements of a sum of maximum 5 mg/kg for 24 stated PAHs.

The PAHs usually originate from two types of additives, which are plasticising and process oils (extender oils) and carbon black, which is found in rubber and plastic products, and which is known to contain PAHs. Plasticising and process oil is a mineral oil product which originates from crude oil (petrogenic PAHs), while carbon black is a product that is produced by incomplete incineration or thermal degradation processes for heavy oils, such as coal tar (primarily pyrogenic PAHs). Carbon black is used as a dye and reinforcement in rubber and plastic products.

Several PAHs are classified as carcinogenic with Carc.1B and eight of these are subject to the following limitation of PAHs recently adopted by the EU:

COMMISSION REGULATION (EU) No. 1272/2013 of 6 December 2013 amending Annex XVII to Regulation (EC) No. 1907/2006 of the European Parliament and of the Council – restriction of polycyclic aromatic hydrocarbons.

"In order to protect the health of consumers from the risk arising from exposure to PAHs in articles, limits on the PAH content in the accessible plastic or rubber parts of articles should be set, and the placing on the market of articles containing any of the PAHs in concentrations greater than 1 mg/kg in those parts should be prohibited. Taking into account the vulnerability of children a lower limit value should be established. 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.

This restriction should only apply to those parts of articles 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. Articles or parts thereof which are only in short and infrequent contact with the skin or oral cavity should not be included within the scope of the restriction as the resulting exposure to PAHs would be insignificant. Further guidance in this respect should be developed.

Alternative raw materials containing low levels of PAHs have been identified in the Union market. Those include carbon black and oils meeting the requirements of Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food[59]."

[59] http://eur-lex.europa.eu/legal-content/DA/TXT/PDF/?uri=CELEX:32013R1272&qid=1450165369006&from=DA visited on 15/12 2015

Carbon Black is classified by IARC (International Agency for Research on Cancer) (2006), as a group 2B carcinogen. However, Carbon Black is not on the list of harmonised classification and marking of hazardous substances (Annex VI of the EU's Classification Directive 2008/1272/EC).

Heavier mineral oils used as additives in materials included in the production of e.g. consumer products are therefore expected to be a source of measurable concentrations of PAHs in the products. There are methods to remove PAHs from plasticiser and process oils, which makes it possible to use "cleaner" plasticiser and process oils in the production of consumer products (BAuA, 2010). There is also Carbon Black with a reduced content of PAHs in the market. Carbon Black is used as an additive and even though the PAHs in Carbon Black are to some extent removed during production, residual concentrations of PAHs in Carbon Black are still expected to be found. Here, the PAHs are not considered to be pollutants and are therefore not subject to the pollution limit in these criteria.

In May 2016, the Danish Consumer Council THINK Chemicals performed a test of seven combiprams for young children in which, among other things, PAHs were found in the handles of several of the combiprams tested[60]. Including the PAH naphthalene (cas. 91-20-3). Naphthalene is classified as potentially carcinogenic. These substances are therefore not advisable in baby products such as pushchairs, although both chlorinated paraffins and naphthalene are permitted in baby products, in accordance with legislation[61]. Stine Müller from Danish Consumer Council THINK Chemicals explains that when products for children are tested, it is usually other PAHs than the eight regulated REACH PAHs that are found. This makes it relevant to consider additional PAHs to the eight regulated in REACH. Among other PAHs, it is important to include naphthalene (cas. 91-20-3), which is classified as potentially carcinogenic, although it is also obvious to set a requirement level for the sum of a large number of PAHs[62].

In 2013, the Danish Environmental Protection Agency screened PAHs in 20 different toy and children's products in the Danish market. 55% of the samples had <1 mg/kg based on the sum of 16 EPA PAHs, while 40% contained 1-10 mg/kg, and 5% (one sample) contained 100-1000 mg/kg. Equivalently, 90% of the samples were below 1 mg/kg based on the sum of eight REACH PAHs and 5% at 1-10 mg/kg and 10-100 mg/kg, respectively. The Danish Environmental Protection Agency's study concluded that PAHs are common in toy and children's products in the Danish market (ed. probably also in the rest of the Nordic region).

With the exception of two products, the study shows a PAH content which is below a threshold value of 0.2 mg/kg for each of the eight REACH PAHs. The threshold value of 0.2 mg/kg is proposed by the German authorities, which has also investigated PAHs in consumer products[63].

[60] Test: Chemicals in combiprams, May 2016, visited here http://kemi.taenk.dk/bliv-groennere/test-kemi-i-kombivogne
[61] Swedish Chemicals Agency, visited on 24 May 2016 http://www.kemi.se/prio-start/kemikalier-i-praktiken/kemikaliegrupper/klorparaffiner
[62] Telephone call on 31-5-2016 with Stine Müller from Danish Consumer Council THINK Chemicals.
[63] PAHs in products for children, Danish Environmental Protection Agency, Mapping of chemical substances
in consumer products, No. 114 2011.

GS-Mark certification

In the AfPS GS 2014:01 PAK standard, the German AfPS (Committee for Product Safety) sets requirement levels for the content of PAHs in their GS-Mark certification. Requirements are made of PAH content in three different categories, in terms of exposure in the use phase. Category 1 is the strictest and comprises materials which are intended for use in situations where the material is put in the mouth, used in toys, or used where there is prolonged skin contact (longer than 30 seconds). Here there is a requirement below < 0.2 mg/kg for ten selected PAHs, which include the eight REACH PAHs, and an additional seven that must have an overall sum below 1 mg/kg; a limitation of naphthalene below 1 mg/kg and a limitation of a further 18 which must have an overall sum of < 1 mg/kg[64]. These requirements seem to be some of the strictest found in various certification systems. Certification appears to be very widespread and is offered by many large accredited test institutes such as Eurofins and TÛV. As certification may be granted by many different test institutes, there does not appear to be one overall database of certified products and materials.

There are alternative oils with low levels of PAHs that can be used and that are used in consumer products. Both the Swedish Chemicals Agency (2003) and BAuA (2010) have drawn up lists of these alternatives to the traditional plasticiser and process oils. The amount of PAHs in Carbon Black can be further reduced by using special extraction methods, such as Soxhlet extraction with organic solvents at high temperatures (ICBA, 2010), or by thermal processing under pressure, or solvent extraction in an atmosphere consisting of inert gases at temperatures > 300°C (BAuA 2010).

O66 Nitrosamines in latex (rubber) and silicone

The requirement concerns components of silicone, natural latex or synthetic latex with which the child or the adult can be in contact during normal use, or which are included at more than 5 wt% in the final product.

The content of nitrosamines or nitrosatable substances may not exceed 0.01 mg/kg and 0.1 mg/kg latex and silicone, respectively.

✉ Declaration from the producer/supplier of the component in accordance with Appendix 20.

Background to requirement O66

Latex (rubber) and silicone contain a number of substances which could be released by the material. Substances that are hazardous to health, such as nitrosamines, can be formed during the vulcanisation process. Latex is an elastomer which, on vulcanisation, can be changed so that the material is virtually insoluble in a solvent at boiling point. Elastomers are macromolecular materials which quickly regain their original form after significant deformation caused by stretching or pulling.

[64] GS-MARK certification http://www.tuv-sud.com/home-com/resource-centre/publications/e-ssentials-newsletter/consumer-products-e-ssentials/vol.-90/germany-german-gs-mark visited on 1 June 2016

Danish Order no. 5 of 05/01/2016 concerning dummies and bottle teats states the following: "Sale of dummies and bottle teats made from elastomer or rubber is permitted, provided that it cannot be shown that they release N-nitrosamines above 10 µg/kg rubber or elastomer, or release nitrosatable substances above 100 µg/kg rubber or elastomer on using the method stated in subsection 2."[65]

The rules are made to avoid young children being exposed to hazardous substances in their dummies. The background is that on contact with spittle, rubber and silicone can form nitrosamines or nitrosatable substances. Most of these substances can be carcinogenic. Nordic Ecolabelling assesses that this requirement of rubber and silicone is also relevant for product elements in e.g. a pram or baby carrier, if the child can come into contact with the material. The same requirement is therefore set as for dummies and bottle teats.

Oeko-Tex does not appear to have requirements concerning nitrosamines for accessories.

O67 CMR substances in additives.

The requirement concerns components of plastic (foamed plastic included), silicone, natural latex or synthetic latex with which the child or the adult can be in contact during normal use, or which are included at more than 5 wt% in the final product.

The requirement concerns constituent substances in additives which are actively added to the polymer raw material in the master batch or compound in the production of plastic, rubber or latex, and any surface coating of the product element. See the definition of constituent substances in the section for definition of terms 7.2.

Constituent substances in additives may not be classified in accordance with the table below:

CLP Regulation 1272/2008:		
Hazard class	**Signal word**	**Hazard statement**
Carcinogenicity	Hazardous, Carc. 1A or 1B	H350
Mutagenicity in reproductive cells	Hazardous, Muta. 1A or 1B	H340
Toxic for reproduction	Hazardous, Repr. 1A or 1B	H360

The classifications in the Table concern all variants of the classification. For example, H350 also comprises the H350i classification.

☒ Declaration from the producer/supplier of the plastic, rubber or latex element showing that the requirement is fulfilled Appendix 20 may be used.

Background to requirement O67

In this version of the criteria, the prohibition of CMR substances in categories 1A and 1B has gained its own requirement. The requirement is also updated to CLP regulation 1272/2008.

Nordic Ecolabelling strives to ensure that the health and environmental impacts of the products are as low as possible.

[65] https://www.retsinformation.dk/Forms/R0710.aspx?id=175520#id80a6d214-8b59-49d6-9d3f-e6a8ec32c913 visited on 7 June 2016.

Therefore there is a requirement to prohibit specific CMR classification, which thereby excludes some of the, in health terms, most problematic classifications of substances. Nordic Ecolabelling has drawn up an Environmental Toxins Policy[66] in which CMR substances are one focus area.

In section 6.2 of the RPS analysis, generally high RPS is found for tight chemical requirements for this product group. For further information see the background text to requirement O58.

O68 Additives and surface coating

The requirement concerns additives which are actively added to the polymer raw material in the master batch or compound in the production of plastic, rubber or latex, and any surface coating of the product element.

The following substances may not be included in additives:

- Substances on the EU's candidate list in accordance with REACH, 1907/2006/EC, article 59, section 10, ECHA's website.
- Substances that are assessed by the EU to be PBT substances (persistent, bioaccumulative and toxic substances) or vPvB substances (very persistent and very bioaccumulative) in accordance with the criteria in Annex XIII of REACH.
- Substances that are considered to be potential endocrine disruptors in category 1 or 2 on the EU's priority list of substances that are to be investigated further for endocrine disruptive effects. The list can be found here: http://ec.europa.eu/environment/chemicals/endocrine/pdf/final_report_2007.pdf

In addition, the following substances and substance groups may not be included. There may be overlaps between the substances on the following item list and the substances or groups of substances of which the characteristics are listed above:

- Halogenated organic compounds[1] in general (including chlorinated polymers). For example, PVC, organic chlorinated paraffins, fluorine compounds, flame retardants and bleaching chemicals. The biocides bronopol and CMIT in combination with MIT are exempted and have their own threshold value; see below
- Bisphenol A compounds
- The biocides chlorophenols (their salts and esters) and dimethyl fumarate
- Bronopol Cas. no. 52-51-7 in more than 0.05 wt%
- Isothiazolines in more than 0.01 wt%
- The compound (3:1) of CMIT/MIT (5 chloro-2-methyl-4-isothiazoline-3-one Cas. no. 247-500-7; 2-methyl-4-isothiazoline-3-one Cas. no. 220-239-6) in more than 0.0015 wt%
- Alkyl phenols, alkyl phenol ethoxylates or other alkyl phenol derivatives[2]
- Phthalates
- Aziridine and polyaziridines
- Pigments and additives based on lead, tin, cadmium, chromium VI and mercury, and their compounds
- Volatile aromatic compounds in more than 1 wt%
- VOC (volatile aromatic compounds) in glue in more than 3 wt%[3]

[66] NM Hedstein, 2007

- No biocides or biocide products may be added to the surface of the final product or material in the product in order to add a disinfecting or antibacterial effect.

[1]Be aware of national legislation concerning PFOA, if the product is to be sold/marketed in Norway. In Norway, PFOA is governed by the "Regulation on restrictions to the use of health- and environmentally-hazardous chemicals and other products (Product Regulations)", Section 2-32.

[2]Alkyl phenol derivatives are defined as substances which split from alkyl phenols on degradation.

[3]Volatile organic compounds are here defined as organic compounds with a steam pressure exceeding 0.01kPa, at 20°C. For products and raw materials subject to the EU's directive (2004/42/EC), where steam pressure is not stated: Organic substances with an initial boiling point which is lower than or equal to 250°C measured at a normal pressure of 101.3 kPa.

✉ Declaration from the producer of the component in accordance with Appendix 20.

Background to requirement O68 - Additives

The requirement is set on the basis of Nordic Ecolabelling's knowledge of the product group and the materials used in the product.

The requirement does not concern the actual polymer production. It is not considered to be realistic that the producer of a baby product with textiles would be able to obtain this data. All additives subsequently used in the polymer raw material in the master batch or compound are subject to the requirement.

Additives in plastic can be categorised as:

- Functional additives (stabilisers, anti-static agents, flame retardants, plasticisers, lubricants, release agents, hardening, foam agents, biocides, etc.)
- Dyes
- Fillers (mica, talc, kaolin, clay, calcium carbonate, barium sulphate)
- Reinforcements (e.g. glass fibre, carbon fibre).

All of these are subject to the requirement.

Most hazardous substances used as additives are not chemically bound in the polymer, but are capable of migration. On migration, the chemical substances in the plastic migrate to the surface of the plastic material or to a medium that is in contact with the plastic material. On the surface, the substance can evaporate or be removed by washing or contact with human skin or another medium. Plasticisers, such as pthalates, and flame retardants, such as brominated flame retardants, are substances that are known to migrate, but many other substances also migrate.

Only the reactive organic additives, such as some flame retardants, are polymerised with plastic molecules and thus become part of the polymer chain[67]. This e.g. applies to Polyester fibre with incorporated flame retardant Trevira CS[68].

Examples of additives used in plastic

Plasticisers: phthalates (e.g. DIHP, BBP, DEHP and TCE) or short- and medium-chain chlorinated paraffins

Flame retardants: Boric acid, brominated flame retardants and short- and medium-chain chlorinated paraffins.

Stabilisers, antioxidants and UV stabilisers: Bisphenol A (BPA), cadmium compounds, lead compounds, nonylphenol compounds, octylphenol.

Hardeners: 4,4'- Diaminodiphenylmethane (MDA); 2,2'-dichloro-4,4'-methylenedianiline (MOCA); Formaldehyde - reaction products with aniline; Hydrazine; 1,3,5-Tris(oxirane-2-ylmethyl)- 1,3,5-triazinane-2,4,6-trione (TGIC)/1,3,5-tris[(2S and 2R)- 2,3-epoxypropyl]-1,3,5- triazine-2,4,6-(1H,3H,5H)-trione (β-TGIC)[69].

In May 2016, Danish Consumer Council THINK Chemicals performed a test of seven combiprams for young children in which, among other things, chlorinated paraffins were found in the handles of several of the combiprams tested[70]. Chlorinated paraffins are on the Danish Environmental Protection Agency's list of adverse substances and are among other things suspected of endocrine disrupting effects. The substances are therefore not to be used in baby products such as pushchairs, but chlorinated paraffins are permitted in baby products in accordance with legislation.

Chlorinated paraffins are e.g. used as plasticisers and as flame retardants in rubber. Chlorinated paraffins are stable, slowly degradable compounds that can bioaccumulate in the environment. Short- and medium-chain chlorinated paraffins are highly toxic for aquatic organisms and can have adverse long-term effects in the aquatic environment. Short-chain chlorinated paraffins are identified as Substances of Very High Concern (SVHC) in the Reach regulation and are included on the candidate list[71].

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[67] Hazardous substances in plastic materials, Prepared by COWI in cooperation with Danish Technological Institute 2013

[68] Visited on 7/6 2016 http://www.trevira.com/en/textiles-made-from-trevira/home-textiles/flame-retardant-textiles-trevira-cs/how-trevira-cs-works.html

[69] Hazardous substances in plastic materials, Prepared by COWI in cooperation with Danish Technological Institute 2013.

[70] Test: Chemicals in combiprams, May 2016, visited here http://kemi.taenk.dk/bliv-groennere/test-kemi-i-kombivogne

[71] Swedish Chemicals Agency, visited on 24 May 2016 http://www.kemi.se/prio-start/kemikalier-i-praktiken/kemikaliegrupper/klorparaffiner

Substitution: There are alternatives for most hazardous substances in plastic, either as other chemical substances which fulfil the same function as the hazardous substance, or as other technical solutions which represent another way of fulfilling the same function in the final product[72].

In the criteria for Nordic Ecolabelling of Furniture and Furnishings generation 4 there are further details of the environmental and health impacts of the excluded substances.

7.11 Quality and function requirements for textiles

The requirements concern textile components included in the product with more than 20 wt% of the total amount of textile in the product. Except for requirements O69 and O74, where the requirement describes what is included. However, at least 70 wt% of the total textile in the product must document the requirements in this section.

Background to the quality and function requirements for textiles

The starting point for the requirement concerning quality tests is the wish for ecolabelling of products of high quality, which is a key environmental aspect. The product group comprises products that are intended for an active and intensive use phase, where they are often used several times a day so that it is important that the textile is of high quality and long duration. The environmental impact is closely related to the product's lifetime, since a longer lifetime means less new production. This achieves large environmental benefits since the product stays in good condition and can be used for several children.

It is possible to use other test methods than those stated, if an independent third party can confirm that the test method is equivalent to the specified test method.

O69 Colour fastness to light

Colour fastness to light must be at least level 5.

For textiles that are both lightly dyed (standard depth < 1/12) and consist of mixes with more than 20% wool or other keratin fibres, or of mixes with more than 20% flax or other bast fibres, level 4 is permitted.

Tests must be performed in accordance with EN ISO 105 B02 or equivalent.

The requirement does not concern mattress bolsters and mattress covers.

✉ Test report showing that the requirement is fulfilled.

Background to requirement O69

The requirement is set in order to ensure that a dyed or printed textile can resist colour changes (fading) due to the influence of light, so that the product has the required colour for a long time. Fade resistance expresses how quickly the colour disappears under the influence of light. A high degree of fade resistance is required, which can primarily be achieved by appropriate choice of the dye used, while the actual dyeing process also has an influence.

[72] Hazardous substances in plastic materials, Prepared by COWI in cooperation with Danish Technological Institute 2013.

The requirement refers to the EN ISO 105 B02 standard: Textiles - Testing of colour fastness - Part B02: Colour fastness to artificial light: xenon blue as light source. The artificial light represents daylight.

The requirement of high colour fastness to light is especially relevant for products used outdoors, such as a pram or stroller. In the safety and quality standard for wheeled child conveyances, EN 1888, no requirements are made of this area and it is therefore relevant to have a separate requirement for this.

Nordic Ecolabelled Textile generation 4 has equivalent requirements, and a licence for this can therefore be used as documentation for the requirement.

O70 Colour fastness to washing

Colour fastness must be at least level 3-4 for colour change and at least 3-4 for discolouration.

The requirement does not concern textile elements that are clearly labelled "dry clean only" or equivalent (if the product in question is normally labelled in this way), nor white products, products that are neither dyed nor printed, nor textiles that are not intended for removal and washing.

The tests must be performed in accordance with ISO 105 C06 (a single wash at the temperature stated on the product), or equivalent.

✉ Test report showing that the requirement is fulfilled.

Background to requirement O70

The requirement is set to ensure high quality and long lifetime for the products. Nordic Ecolabelled Textile generation 4 has equivalent requirements and a licence for this can therefore be used as documentation of the requirement.

The requirement refers to the ISO 105 C06 standard: Textiles - Testing of colour fastness - Part C06: Colour fastness to household and industrial washing.

O71 Colour fastness to rubbing (wet)

Colour fastness to wet rubbing must be at least level 2-3.

The requirement does not concern white products or products that are neither dyed nor printed.

Tests must be performed in accordance with ISO 105 X12 or equivalent.

✉ Test report showing that the requirement is fulfilled.

Background to requirement O71

The requirement is set to ensure that the dye is well-fixed in the textile. If the colour fastness to wet rubbing is good, the other characteristics such as wash resistance and durability will automatically also be good, since wet rubbing in accordance with ISO 105 X12 is a standardised method to control fixing of the dye on the fabric.

The requirement refers to EN ISO 105-X12 Textiles – Testing of colour fastness – Part X12: Colour fastness to rubbing.

This requirement is relevant in relation to the textile's durability, and also to ensure that the dye does not rub off when the product is used.

Nordic Ecolabelled Textile generation 4 has equivalent requirements and a licence for this can therefore be used as documentation for the requirement.

O72 Colour fastness to rubbing (dry)

Colour fastness to dry rubbing must be at least level 4.

Tests must be performed in accordance with ISO 105 X12 or equivalent.

The requirement does not apply to wet products, or products that are neither dyed nor printed.

✉ Test report showing that the requirement is fulfilled.

Background to requirement O72

The requirement is set to ensure that the dye is well-fixed in the textile. If the colour fastness to wet rubbing is good, the other characteristics such as wash resistance and durability will automatically also be good, because wet rubbing in accordance with ISO 105 X12 is a standardised method to control the fixing of dye in the fabric.

The requirement refers to EN ISO 105-X12 Textiles – Testing of colour fastness – Part X12: Colour fastness to rubbing

This requirement is relevant in relation to the textile's durability, and also to ensuring that the dye does not rub off when the product is used. Nordic Ecolabelled Textile generation 4 has equivalent requirements and a licence for this can therefore be used as documentation for the requirement.

O73 Pilling

The requirement concerns textile elements included in the product with more than 5 wt% of the overall textile, and which are used on the product's sitting or lying surface, or is otherwise exposed to frequent wear or rubbing.

Pilling resistance must be equivalent to minimum level 3.

Tests must be performed in accordance with EN ISO 12945-2 or an equivalent standard.

✉ Test report showing that the requirement is fulfilled.

Background to requirement O73

Pilling indicate how much a textile fuzzes. Pilling occurs when wear and rubbing in use causes textile fibres to begin to push out from the surface of the textile, forming small fibre bobbles. Since the products in the product group are intended for an active and intensive use phase, where they are often used several times a day, it is important that the textile stays in good condition for a long period, and does not pill.

The requirement refers to the EN ISO 12945-2 standard: Textiles - Determination of fabric propensity to surface fuzzing and to pilling - Part 2: Modified Martindale method.

The requirement is identical with the Nordic Ecolabelling requirement of pilling in the criteria for Furniture and Furnishings.

O74 Dimension changes during washing and drying (natural fibre)

Dimension change for textile elements of natural fibre, which are washable or are used outdoors, must be less than 2.0%. If the textile fits the filler material after washing, larger changes can be approved.

The requirement does not concern textile elements that are clearly labelled "dry clean only" or equivalent (if the product in question is normally labelled in this way), nor textiles that are not intended for removal and washing.

The tests must be performed in accordance with EN ISO 6330, ISO 5077, ISO 3759 or equivalent. The following testing procedure must be followed: Wash three times at the temperature stated on the product, with subsequent tumble drying unless another drying process is stated on the product.

✉ Test report showing that the requirement is fulfilled.

Background to requirement O74

The requirement concerns textile elements of natural fibre in the product which are intended for washing or can become wet when used outdoors. The requirement is by and large identical with the Nordic Ecolabel requirement of dimension changes in the criteria for Furniture and Furnishings. In this case, however, the requirement is adjusted to the product group's use phase and is thereby expanded to include textile elements of natural fibre that are intended for outdoor use.

The requirement refers to the following standards:

- ISO 6330:Textiles - Domestic washing and drying procedures for textile testing
- ISO 3759 Textiles - Preparation, marking and measuring of fabric specimens and garments in tests for determination of dimensional change
- EN ISO 5077 Textile testing - Determination of dimensional change in washing and drying

Nordic Ecolabelled Textile generation 4 has equivalent requirements and a licence for this can therefore be used as documentation for the requirement.

O75 Wearing strength

The requirement concerns textile elements included at more than 20 wt% of the overall textile in child car seats, baby carriers, prams, strollers and pushchairs that are exposed to frequent wear from the child or adult, or which have a bearing effect.

The textile must have a wearing strength that gives breaks at maximum two threads on at least 40,000 wear effects.

Tests must be performed in accordance with EN ISO 12947-2 or equivalent standard.

✉ Test report showing that the requirement is fulfilled.

Background to requirement O75

The requirement is set to ensure that the textile has high resistance to wear effects in relation to breakdown. Wearing strength corresponds to the number of wear effects needed for two threads on a woven piece of textile to be worn across. In this case, wearing strength is set to be able to withstand minimum 40,000 wear impacts.

Frequent wear concerns textile surfaces, for example, where the child sits or lies. Or textile elements to which closing devices are attached. The requirement refers to ISO 12947-2: Textiles. Determination of the abrasion resistance of fabrics by the Martindale method. Part 2: Determination of specimen breakdown.

The requirement is by and large identical with the Nordic Ecolabelling requirements of Furniture and Furnishings generation 4, where the requirement is applied to furniture fabrics. In this case, however, only the requirement level for furniture fabrics for public use is included - 40,000 wear impacts (public use in textiles), as it is assessed that for this product group there will often be a need for especially hard-wearing textile. Especially for baby carriers, prams and strollers, and pushchairs.

For furniture textile, the wearing strength can vary from 20,000 and right up to 120,000. [73]

7.11.1 Quality and function requirements of the final product

Besides compliance with more stringent environmental and health requirements, a Nordic Ecolabelled product must also fulfil the important quality, function and safety parameters which are relevant for the product type. Viewed from an environmental and life cycle perspective, the product's lifetime (use phase) is important in terms of minimising the environmental impact. A product with good function and safety qualities is more likely to last for longer and be used for several children.

O76 Safety and function requirements of the final product.

The Nordic Ecolabelled product must comply with the relevant safety standard for the product type.

The table below presents the relevant safety standards. If the product type does not match these, Nordic Ecolabelling must be contacted. If the product includes products, such as a child's harness and carry cot in a pram, they must also comply with the relevant safety standard. Multi functional products comply with all relevant safety standards from the table below.

Manufacture	**Safety standard***
Pushchairs, prams and strollers, etc.	EN 1888: Child care articles - Wheeled Child Conveyances - Safety requirements and test methods
Cycle trailers	EN 15918: Cycle trailers - Safety requirements and test methods
Carry cots and baby nests	EN 1466 + A1: Child use and care articles - Carry cots and stands - Safety requirements and test methods
Children's harnesses	EN 13210: Child care articles - Children's safety harnesses, reins and similar type articles - Safety requirements and test methods
Car child seats	Child Restraint Systems UN Regulation no. 129 or UN Regulation no. 44 (ECE R 44)
Child carriers	EN 13209-1: Child use and care articles - Baby carriers. Safety requirements and test methods - Part 1: Soft carriers
Children's slings	CEN/TR 16512: Child care articles - Guidelines for the safety of children's slings
Baby carriers	EN 13209-2: Child use and care articles - Baby carriers. Safety requirements and test methods - Part 2: Soft carriers

[73] https://www.bolia.com/da-dk/mod-os/kundeservice/pleje-og-vedligehold/stofguide/ visited on 12/9 2016.

Reclined cradles	EN 12790: Child use and care articles - Reclined cradles
Travel cots	EN 716 Furniture- Children's cots and folding cots for domestic use - Part 1: Safety requirements
Cot bumpers	prEN 16780: Textile child care articles - Safety requirements and test methods for children's cot bumpers
Sleeping and carrier bags	prEN 16781: Textile child care articles - Safety requirements and test methods for children's sleep bags

* The requirement refers to the latest version of the standard. For prEN 16780 and prEN 16781, the final standards will apply when these are approved.

✉ Test report from accredited testing institute showing that the product comply with the relevant safety standard. The test institute must comply with the requirements for test institutes described in Appendix 21.

Background to requirement O76

Within the product group there are the following obvious standards for testing of product safety and function. If the applicant assesses that other standards prove to be more relevant, Nordic Ecolabelling must approve this. All of the safety standards stated are "pass or fail", so that the standard does not have several levels.

In some of the following standards there may be an overlap between some of the other requirements in the criteria, such as the requirement concerning formaldehyde emission to the textile. If the requirement level is identical, it is possible to reuse the documentation.

The reason that both requirement types exist is that this requirement concerns the overall finished product and sets requirements of this, while the requirements elsewhere in the criteria may be made of the individual textile element and will thereby ensure that the individual textile element which fulfils the requirement of e.g. formaldehyde concerns a requirement made of the individual textile and will thus be more stringent.

EN 1888:2012 Child care articles - Wheeled Child Conveyances - Safety requirements and test methods

This standard specifies safety requirements and testing methods for wheeled child conveyances designed for the transport of one or more children of up to 15 kg each and a further 20 kg on each integrated platform on which a child can stand.

EN 1466 + A1:2007 - Child use and care articles - Carry cots and stands - Safety requirements and test methods

This standard specifies safety requirements and test methods for products which are intended to carry a lying child with the help of handles and stands that can be used together with these products.

EN 13210:2004 - Child care articles - Children's safety harnesses, reins and similar type articles - Safety requirements and test methods

This standard specifies minimum safety requirements and test methods for harnesses to fix/retain children of up to four years of age.

Child car seats: Child Restraint Systems UN Regulation no. 129 or UN Regulation no. 44 (ECE R 44)

Both UN Regulation 44 and UN Regulation 129 are used as safety approval of child car seats. Many child car seats in the market are labelled and approved in accordance with R44 and are categorised by weight. These models are still legal to sell and use. With the more recent car restraint systems (CRS) UN Regulation R129, which entered into force in 2013, safety standards have been strengthened and four new provisions added[74].

EN 13209-1:2004 - Child use and care articles - Baby carriers. Safety requirements and test methods - Part 1: Baby carriers

This standard specifies safety requirements and testing methods for baby carriers. These child carriers are for children who can sit alone (around six months' old, and they are intended to be attached to an adult's upper body so that the adult's hands are free in standing or walking position.

EN 13209-2:2005 - Child use and care articles - Baby carriers. Safety requirements and test methods - Part 2: Baby carriers

This European standard specifies safety requirements and test methods for baby carriers with integrated leg openings, intended to carry a child when the baby carrier is attached to the bearer's body. These baby carriers are designed to allow the bearer to have free hands when the bearer is standing or walking. These baby carriers can be used for children of up to maximum 15 kg.

EN 12790:2009: Child use and care articles - Reclined cradles

This standard specifies safety requirements and related testing methods for fixed or collapsible reclined cradles for children with a weight of up to 9 kg, or for children who are unable to sit up without help.

EN 716 Furniture- Children's cots and folding cots for domestic use - Part 1: Safety requirements

This part of the DS/EN 716 series specifies test methods for the assessment of the safety of children's cots and collapsible folding cots for domestic use.

DSF/prEN 16780: Textile child care articles - Safety requirements and test methods for children's cot bumpers

The purpose of the standard is to minimise the most important risks related to the product type on use as a sleeping environment for infants and young children.

DSF/prEN 16781: Textile child care articles - Safety requirements and test methods for children's sleep bags

The standard (draft) concerns sleeping bags for younger children who cannot crawl out of the cot alone (below the age of around 24 months).

[74] United Nations Economic Commission for Europe. UN Regulation 129
http://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2013/R129e.pdf

EN 14036:2003 - Child care articles - Baby bouncers - Safety requirements and test methods

The standard concerns vertically suspended baby bouncers for domestic use for children who can hold up their own heads and weigh up to 12 kg.

Changing mats/cushions/pillows

The EN 12221 standard specifies safety requirements of changing units for domestic use. Changing pillows are only subject to this standard, however, if they are part of a changing unit. Changing pillows are only part of this product group if they are sold separately and are thereby not part of a changing unit. A changing unit, with or without a changing pillow, on the other hand, can be Nordic Ecolabelled according to the criteria for Nordic Ecolabelling of Furniture and Furnishings.

A Nordic Ecolabelled changing pillow must thus only fulfil the quality requirements of the actual textile.

7.11.2 Ethics

O77 Working conditions

Fundamental rights and principles for working conditions must be fulfilled in the production of Nordic Ecolabelled Textiles, hides/skins and leather. The licence holder must ensure that relevant current acts and provisions are complied with at all production sites, as well as the ILO conventions stated below, for the Nordic Ecolabelled Textiles, hides/skins and leather. Relevant acts and provisions may, for example, concern safety, working environment, environmental legislation and plant-specific terms/concessions.

The licence holder must ensure that the production of Textiles, hides/skins and leather complies with the core ILO conventions, which concern:

- prohibition of child labour (Convention concerning Minimum Age for Admission to Employment, Convention 138, and Convention concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labour, Convention 182);
- freedom of organisation (Freedom of Association and Protection of the Right to Organise, Convention 87);
- prohibition of discrimination (Equal Remuneration Convention 100 and Discrimination (Employment and Occupation) Convention 111); and
- prohibition of forced labour (Convention concerning Forced or Compulsory Labour, Convention 29 and Abolition of Forced Labour, Convention 105).

The employees or labour organisation must be informed of the statutory labour rights and how they are followed up by the company (Code of Conduct equivalent to SA8000).

✉ The licence holder must have procedures to ensure that relevant current acts and provisions are complied with at all production sites for the Nordic Ecolabelled Textiles, hides/skins and leather and procedures showing that work is ongoing to ensure that production companies are focused on observing rights based on the ILO's core conventions.

- This requirement must be documented by one of the following alternatives:
- SA8000 certification (valid certificate) or

- Nordic Swan Ecolabelling may be agreement approve documentation of the requirement by the production company publishing, e.g. on its website, how the requirements in the ILO convention are complied with and controlled by a third party (valid certificate) or other documentation of fulfilment of the requirement.

If the producer is in an SA8000 certification process, a licence can be granted under the given conditions. The most recent report from the certification body, including an action plan with stated deadlines, must be submitted for assessment. The Nordic Ecolabelling licence may be withdrawn if the licence holder no longer fulfils the SA8000 requirements or does not adhere to the deadlines stated in any action plans.

Background to requirement O77

The requirements of working conditions are based on the conventions of the ILO (International Labour Organisation, under the UN) for child labour, forced labour, health and safety, freedom of organisation and right to collective bargaining, discrimination, discipline, working hours and pay. The ILO has eight core conventions or human rights conventions, which set minimum standards for working life. Nordic Ecolabelling does not wish to set qualitative requirements and requirement levels for working conditions, but will be based on documentation via the producer's certification in accordance with existing standards. The requirement of working conditions may therefore be documented via SA8000 certification where a valid certificate must be submitted or other documentation that the requirements are fulfilled. SA8000 stands for Social Accountability and is a worldwide scheme.

The SA8000 standards include requirements concerning:

- Prohibition of child labour
- Prohibition of forced labour and prison labour
- Health and safety requirements
- Freedom of organisation and collective bargaining
- Discrimination
- Disciplinary practice (penalties)
- Working hours
- Pay
- Management systems

As of September 2011, there are 2,785 SA8000-certified production sites in different countries, and around 20% of these are in the garment, textile and leather industry 165. One of the ILO core conventions, ILO 98, concerns freedom of organisation and to collective bargaining.

This includes protecting employees who exercise freedom of organisation, non-interference between employees' and employers' organisations, and the promotion of voluntary collective bargaining. In some countries, such as China, this right is limited in relation to the official requirements. In China, there is e.g. only one trade organisation.

Nordic Ecolabelling believes that the right of organisation is a fundamental right, but nonetheless does not make any requirement that ILO 98 must be followed, as we do not see any possibility of controlling this.

Nonetheless, requirements of working conditions are an area of which we wish to make stricter requirements in the future, e.g. by requiring that alternative ways are arranged for workers to organise and negotiate freely and independently.

So as not to exclude producers in the process of achieving SA8000 certification, in some cases a licence can be granted in the given conditions. To achieve these conditions, the last report from the certification body will be assessed according to how much work is left before a licence can be granted, and which areas deviate from the standard. In addition, concrete action plans with specified deadlines are required to be submitted. The licence may be withdrawn if the licence holder no longer fulfils the SA8000 requirements or does not follow the deadlines specified in any action plans. By agreement, Nordic Ecolabelling may approve documentation of the requirement by the production company's publication, e.g. on its website, of how the requirements in the ILO convention are complied with and controlled by a third party.

7.12 Quality and regulatory requirements

Quality and regulatory requirements are general requirements that are always included in Nordic Swan Ecolabelling's product criteria. The purpose of these requirements is to ensure that fundamental quality assurance and current regulatory environmental requirements are handled. They must also ensure that Nordic Ecolabelling's product requirements are complied with throughout the lifetime of the licence.

O78 Responsible person and organisation

The company shall appoint individuals who are responsible for ensuring the fulfilment of Nordic Swan Ecolabel requirements, for marketing and for finance, as well as a contact person for communications with Nordic Swan Ecolabelling.

✉ Organisational chart showing who is responsible for the above.

O79 Documentation

The licensee must archive the documentation that is sent in with the application, or in a similar way maintain information in the Nordic Swan Ecolabelling data system.

🔑 Checked on site as necessary.

O80 Quality of babyproducts with textile

The licensee must guarantee that the quality of the Nordic Swan Ecolabelled product does not deteriorate during the validity period of the licence.

✉ Procedures for archiving claims and, where necessary, dealing with claims and complaints regarding the quality of the Nordic Swan Ecolabelled babyproduct with textile.

🔑 The claims archive is checked on site.

O81 Planned changes

Written notice must be given to Nordic Swan Ecolabelling of planned changes in products and markets that have a bearing on Nordic Ecolabel requirements.

✉ Procedures detailing how planned changes in products and markets are handled.

O82 Unplanned nonconformities

Unplanned nonconformities that have a bearing on Nordic Ecolabel requirements must be reported to Nordic Swan Ecolabelling in writing and journalled.

✉ Procedures detailing how unplanned nonconformities are handled.

O83 Traceability

The licensee must be able to trace the Nordic Swan Ecolabelled babyproduct with textile in the production.

✉ Description of/procedures for the fulfilment of the requirement.

O84 Take-back system

Nordic Ecolabelling decided on the 9 October 2017 to remove this requirement.

Background to requirement O73

There has previously been a voluntary industry agreement on packaging operations in Norway, which has led Nordic Ecolabelling to have a requirement to ensure that licensees for a number of (45) product groups comply with this regulation.

Requirements for return systems have now been incorporated into the Norwegian Waste Regulations, which means that the Nordic Ecolabelling requirement for membership in a return company will be out of date and therefore no longer need to be managed by Nordic Ecolabelling in a separate requirement.

O85 Legislation and regulations

The licensee shall ensure compliance with all applicable local laws and provisions at all production facilities for the Nordic Swan Ecolabel product, e.g. with regard to safety, working environment, environmental legislation and site-specific terms/permits.

✉ Duly signed application form.

8 New criteria

This first generation of the criteria focuses on the chemistry used in the production of both textiles, filling materials and other materials in the product. This is important for both the use stage, where the child is in close contact with the product and the possibility of recycling the materials in new products.

For generation 2 of the criteria, these areas are still considered to be the main focus. In addition, it would be relevant to look further into, how product design can support the circular economy.

9 Document version history

Nordic Ecolabelling adopted the criteria for Babyproducts with textile on 14th June 2017. The criteria are valid until 31th June 2021, version 1.0.

On 9 October 2017 Nordic Ecolabelling decided to remove requirement O84 Take-back system and on the 16 August 2018 Nordic Ecolabelling approved an adjustment in the wording of requirement O42 Pesticide test. The new version is called 1.1.

On 19 December 2018 Nordic Ecolabelling decided to prolong the criteria until 31 June 2023. The new version is called 1.2.

Appendix 1 Environmental assessment of the product group

9.1.1 Textile fibres

Textile is a recurring material for the product group and has therefore received most focus in the environmental assessment of the product group. Production of textile fibre affects several different environmental impact categories, cf. table 3 below, and the various textile fibre types have different impacts in the individual categories.

For natural fibres such as cotton, especially the use of land and water is of great environmental relevance in the raw material phase, while artificial fibre such as polyester and nylon draws on fossil oil. The report entitled "The sustainability of cotton"[75] describes the environmental problems related to the cultivation and harvesting of cotton. Especially the use of pesticides and chemical fertilisers leads to both environmental and health problems.

Several LCA studies have been performed for textiles. The environmental impact factors receiving greatest focus in the studies are energy and water consumption. For other parameters such as global warming, consumption of natural resources, use of chemicals, pesticides and fertilisers, and use of land, there is variation in the information available.

Generally, the environmental impact varies in different phases of the product's life cycle, depending on the type of fibre that is investigated. This makes it difficult to designate a fibre type which is better than others for all parameters. It is sought to illustrate this complexity in a simple way in Figure 4, from the report "The role and business case for existing and emerging fibres in sustainable clothing".[76] The Figure is based on LCA studies which consider fibre production, i.e. from cradle to port. The further processing of the textile fibre and the use phase and waste phase are not included in the Figure below.

Since it is not possible to designate the environmentally best fibre type, instead it is possible to set environmental and health requirements of the individual fibre types. It is hereby necessary to focus on the environmental relevance for the individual textile fibre type and not for textile fibres as an overall entity.

[75] "The sustainability of cotton – consequences for man and environment", Kooistra K., Termorshuizen A., Pyburn R., Wageningen University & Research Centre, report number 223, April 2006.
[76] "The role and business case for existing and emerging fibres in sustainable clothing", April 2010, report from the Department for Environmental, Food and Rural Affairs, UK.

Table 3 Ranking of fibre types' environmental impact in various categories (chemicals are not in focus here in this analysis)

Environmental impact	Energy consumption	Water consumption	Climate gases	Effluent	Use of land
Highest	Acrylic	Cotton	Nylon	Wool	Wool
	Nylon	Silk	Polyester	Regen. cellulose	Ramie
	Polyester	Nylon	Lyocell	Natural bast fibre	Cotton
	Regen. cellulose (viscose, Modal)	Regen. cellulose	PLA	Nylon	Linen
	PLA/Cotton/Lyocel	Acrylic	Viscose	Polyester	Hemp
	Wool	Hemp	Modal		Viscose and Modal
	Natural bast fibre (nettle, hemp, flax)	Wool	Cotton		Jute
		Natural bast fibre	Natural bast fibre		PLA
Lowest		Polyester	Wool		Lyocell

9.1.2 Resources (Materials)

The great material variation in the product group also gives differences in material relevance in relation to consumption of resources. The greatest resource relevance for the product group is seen with regard to ensuring that the products have a long lifetime and that the resources are thereby used optimally. In addition, resource relevance is seen for products with a high content of fossil materials (crude oil) such as textile of nylon and polyester and filler of fossil oil-based materials such as PU or polyester fibre wadding. For prams and strollers, pushchairs and child car seats, plastic elements are also used, such as ABS plastic and polyamide plastic. The relevance depends, for example, on the opportunity to reuse the material after use.

With regard to the recycling of plastic, this is most relevant for prams and strollers/pushchairs and child car seats, in which there is most plastic. This will usually be collected as scrap and end up at waste stations. Here, consumers will be able to separate the plastic from the rest, if possible. There is little probability that this is the case. Usually black plastic is used for pushchairs, prams and strollers, and child car seats. Black plastic cannot be sorted off at sorting systems for plastic waste that use NIR (near infrared) recognition technology. They are not registered by NIR spectroscopy and therefore end up in the residual waste for incineration or dumping[77]. Plastic elements on pushchairs and prams and strollers are usually black. New MIR (Medium Infra Red) scanners make it theoretically possible to sort plastic dyed with Carbon Black. The technology is still relatively new, however, and is currently five to six times more expensive than the NIR scanners used by sorting facilities today. It is assessed that it will take around five years for sorting of black plastic to become more common[78]. It can therefore be assumed that in future it will be possible to sort black plastic elements, if they can be easily separated from the actual product.

For products with metal frames (prams and strollers and pushchairs) there is also a material relevance in the raw material phase in the form of the use of metal such as steel and aluminium.

[77] http://www.affaldogressourcer.dk/article-2184-Nye-genanvendelsesl%C3%B8sninger-for-plast.html
[78] Black plastic - the challenges and good advice for ecofriendly alternatives, Plastic Zero

This is limited, however, for products where it is possible to reuse the metal after use. Steel is easily recycled since it is sorted using magnets and is 100% recyclable. It can be infinitely recirculated without losing quality. Steel is the most recirculated material in the world.[79] Aluminium also has a high recycling rate, especially for products which are scrapped.

For both fossil textiles and plastic materials, as well as metal raw materials, there is also a material relevance in the form of the use of energy raw materials in material production.

For the renewable materials, which here are mainly cotton, wood fibre for viscose and wool, there is material relevance with regard to land use and for cotton also in relation to water consumption.

9.1.3 Energy

Textiles such as nylon and polyester are materials with energy-intensive production processes. The same applies to metal such as primary aluminium and primary steel, and plastic materials such as ABS and polyamide and e.g. PU and polyester fibre in filler. However, the plastic industry usually only states the average for the industry and it is therefore rarely possible to select the most energy-effective producers of a specific type of plastic.

Actual production of the product can vary considerably, depending on whether it is a pram or a nursing pillow. It has not been possible to obtain specific energy data for this production, so it is difficult to specify the energy relevance in the production phase. It is reasonable to assume, however, that there is not any high energy relevance for production of e.g. nursing pillows and changing pads.

For prams, strollers and pushchairs no great energy relevance in actual production is assessed to exist. The actual assembly of prams often takes place manually, in combination with small machines (sewing machines and metalworking machines).

The probably of recirculation of the metal is reasonably high. It will probably come into a shredder system to separate metals from other materials. The rest of the materials are hereby contaminated by metal dust and are therefore characterised as hazardous waste and thereby cannot be reused, but dumped, possibly with processing of some parts. If it is possible for the consumer to separate textile and plastic from the metal frame, the most probable waste route will be incineration with energy utilisation for the other materials besides metal. The textile in a pushchair will often be coated to achieve a water-repelling effect and will therefore not be obvious to recycle. It is not assessed to be likely that the small plastic elements will be recycled. In this case, incineration with energy utilisation is the most likely waste route. Textile from e.g. cot bumpers and nursing pillows can easily be recycled and it has become more common in the Nordic region to collect textile for either reuse or recycling.

[79] FACT SHEET: ENERGY USE IN THE STEEL INDUSTRY (OCTOBER 2014) World Steel Association

9.1.4 Chemicals

Textile - general

Textile production involves many stages such as the cultivation and extraction of raw materials, spinning, bleaching, dyeing, washing, impregnation and sewing. Many chemicals are used in raw materials cultivation, production of polymer, dyeing and other chemical treatment of the textiles, to achieve the required quality.

For cultivation of cotton fibre, especially the use of pesticides is relevant.[80] Use of chemical fertilisers and possibly also natural fertiliser is also an important impact. Synthetic fibre is usually produced from fossil raw materials, but can also be produced from bio raw materials or recycled raw materials, such as nylon.

Many chemicals are used in the production of synthetic fibres. Production of nylon, for example, will give emissions of nitrous oxide, which is a greenhouse gas, while antimony trioxide, which is classified as potentially carcinogenic, may be a problem in catalysts on the production of polyester.

During actual textile production, chemicals are also used, of which most are washed out again, including auxiliary chemicals, which all end up in the wastewater from the processes. On poor cleaning of wastewater, chemicals which are hazardous to the environment and health may be discharged to nature. There can also be problems with a high content of organic material in the wastewater, which can lead to oxygen depletion and poor habitat conditions for organisms in the aquatic environment.

Relevance of chemicals in the use phase

For the entire product area there is a generally high chemical relevance with regard to how young children are strongly exposed to these products due to skin contact, and for some products that the child in wrapped in them for a longer period. Babies might be exposed to the impact of any content of hazardous chemicals such as dyes in products by absorption through the skin, by sucking on them, or by inhaling gases and particles ("dust") from the actual material.

Textile coating/surfacing

In recent years there has also been a lot of focus on "new" environmental toxins, such as perfluorinated compounds used for e.g. impregnation and coating of leisure clothing for outdoor use. These are also assessed to be relevant for such products as prams and strollers, pushchairs and possibly baby carriers, as these are all used outdoors. Also products used for their anti-soiling effect. THINK test of prams and strollers from 2014 found small traces of perfluorooctanoic acid, PFOA, in an outer material, but these were very small and stayed within the limits applying to textiles marked with Oeko-Tex[81].

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

[81] http://taenk.dk/test/barnevogne

The perfluorinated compounds are persistent, hazardous to health and can damage reproductivity. New investigations have shown that fluorinated compounds can have a negative effect on immunal defences[82]. There is great concern regarding the increased use of perfluorinated compounds and studies show that they are accumulated in nature and freighted over long distances to the Arctic[83].

In addition, new technology has appeared in the market, with for instance use of nanomaterials such as nanosilver. Products with nanotechnology are often launched in the market without any good assessment of environmental and health effects. Nanosilver is used in more and more consumer products in order to give the products antibacterial properties. There is particular concern that emissions of nanosilver to effluent and other dissemination may eliminate benign bacteria and cause bacteria resistance. Several studies point to harmful health and environmental effects from using nanosilver[84].

Both outdoor and indoor products with plastic coating or with plastic-treated surfaces may contain pthalates (PVC plasticisers) (see further details of phthalates below). It has also been seen how such products contain the biologically active agent triclosan (bacterial growth inhibitor)[85].

Dyes and pigments

Both dyed and printed fabrics may contain heavy metals and carcinogenic amines from azo dyes and pigments. Textile coverings that have printed patterns and/or an impregnating or surface coating, may contain formaldehyde. Dyed polyester fabrics may contain allergenic dispersion dyes[86].

Pthalates

The Danish Consumer Council THINK in Denmark tested 7 prams in 2014 with the following results[87]. One of these prams had a concentration of over 20% DEHP on the underside of the hood. The concentration of DEHP in toys or items for young children may not exceed 0.1%[88]. In a survey by the Swedish Chemicals Agency, the pthalate DEHP (Di(2-ethylhexyl)phthalate) was found in the child car seats investigated[89]. This substance is from a gasket under an arm support. The consumer portal in Norway has tested prams and strollers. The test reveals that one of the prams contains one of the most hazardous pthalates (DEHP, which is toxic and can damage the foetus and the ability to reproduce). The amount of DEHP exceeded the legal threshold values, both in the pram's plastic window and in the logo. Two other prams also contained pthalates, but of another type (DINP, which is also prohibited from products for young children)[90].

Flame retardants

[82] "Persistent fluorinated compounds reduce the immunal function", Heilmann C et al., Journal of the Danish Medical Association 177/7, March 2015.
[83] "Organophosphorous flame retardants in Arctic biota", Statlig program for forurensningsovervåking, report no. 1092/2011.
[84] Farmen et al, Acute and sub-lethal effects in juvenile Atlantic salmon exposed to low µg/L concentrations of Ag nanoparticles, Aquatic Toxicology, Volume 108, February 2012, Pages 78–84.
[85] Mapping and emission and health assessment of chemical substances in baby products, MST 2008
[86] Mapping and emission and health assessment of chemical substances in baby products, MST 2008
[87] http://taenk.dk/test/barnevogne
[88] http://taenk.dk/nyheder/barnevogn-meldt-til-miljoestyrelsen
[89] Analysis of chemicals in child car seats, Swedish Chemicals Agency 2013.
[90] http://www.nrk.no/livsstil/--farlige-barnevogner-1.7076342

For textile products for babies, a risk is seen of a burden shift between high safety requirements, which can e.g. lead to the use of flame retardants in the textile, and the wish for low exposure to hazardous chemicals.

The THINK test from 2014 found 2 flame retardants, Tris (2-chloroethyl) phosphate (TCEP) and Tris(2-chloro-1-(chloromethyl)ethyl)phosphate (TDCP) in the foam in the upper leather of another pram. TCEP is on the EU's candidate list of especially problematic substances, since it can be carcinogenic and damage reproductivity. TDCP may also be carcinogenic, but there is no harmonised classification of the substance. The factory says that they have now begun to use another type of material and another type of flame retardant, which are both Oeko-Tex-certified and without TCEP[91].

TDCP was also found in the upper leather and hood on a third pram in the THINK test. Children are in close contact with the pram's upper leather, when they hold and suck on it, which makes it problematic that the upper leather's foam material contains the substances. Small traces of flame retardants were found in two other prams.

The flame retardants TCEP and TDCP and a third substance, TCPP, were recently prohibited within the EU from toys for children under three years of age, and from toys intended to be put in the mouth. The prohibition does not include prams and strollers, but does include such products as stuffed animals, floor puzzles and toys that resemble food. Exposure to TCPP and TDCPP can take place via inhalation, and also via skin exposure or by consumption of dust particles.

Brominated flame retardants such as Hexabromocyclododecane, CAS no. 25637-99-4 (HBCD) are used extensively, especially in Europe. In contrast to reactive flame retardants, additive flame retardants such as HBCD are not chemically bound in the material. This means that they can be released from the material relatively easily throughout the product's useful life, giving diffuse pollution of the environment. HBCD shows the same chemical and physical characteristics as for well-known persistent organic pollutants, and HBCD can be used in extruded and expanded polystyrene foam. Substances were found in polystyrene balls in two nursing pillows investigated in the Danish Environmental Protection Agency's analysis from 2008[92].

Filler materials

Products with filler of polyester fibre wadding do not present the same risk of hazardous substances as fillers of polyurethane foam (PU) or polystyrene balls. Polyurethane foam and polystyrene balls may contain flame retardants (possibly brominated agents) and may also emit volatile organic compounds, which may be hazardous to health.

Polyester fibre wadding may, however, contain the heavy metal antimony, which is used as a catalyst. Polyester fibre can be recirculated and several schemes such as GOTS and Bra Miljøval require recirculated polyester fibre.

[91] Critical flame retardants out of prams from Odder Barnevognsfabrik, Comment on THINK article, week 22 2014
[92] Mapping and discharges and health assessment of chemical substances in baby products, Danish Environmental Protection Agency, 2008

It is therefore relevant to examine how they handle any problematic substances in recirculated fibre. In addition, polyurethane foam (PU) may contain the organic tin compounds dibutyltin (DBT) and tributyltin (TBT), which are applied as an antibacterial treatment[93].

For filling/foam materials there is thus high relevance for content of flame retardants, organic tin compounds, tin and antimony.

9.1.5 Other

Animal welfare and working conditions

Production of materials such as wool and feathers and down involve livestock husbandry, where animal welfare is relevant.

Since either the product itself or sub-components such as textiles can often be produced outside the EU, such as in Asia, for example, there will be a risk of production in poor working conditions. This might be child labour, forced labour, low pay or where health and safety are compromised. Especially the textile industry has focus on this and here there is assessed to be relevance for the product group – especially when the products are for children.

[93] Mapping and discharges and health assessment of chemical substances in baby products, Danish Environmental Protection Agency, 2008