About Nordic Swan Ecolabelled

Ski wax



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Nordic Ecolabelling

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This document is a translation of an original in Norwegian. 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 Swan Ecolabel. These organisations/companies operate the Nordic Ecolabelling system on behalf of their own country's government. For more information, see the websites:

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1 Summary

This background document contains a brief description of the product group ski wax and its impact on human health and the environment, an overview of the Nordic market and the background to the requirements set out in the criteria document.

Globally, there are approximately 25-30 players in the ski wax industry. There are approximately 10-15 players in the Nordic region. Glide wax products represent the largest share of the ski wax market. The product group includes glide wax products for all types of skis and boards intended for use on snow. This includes products that improve glide on skin skis.

Ski wax products that contain organofluorine compounds (perfluorocarbons) are being increasingly used by both competitive skiers and recreational skiers. A Relevance, Potential and Steerability investigation shows that significant benefits to human health and the environment can be achieved through the Nordic Swan Ecolabelling of ski waxes. It is most relevant to avoid organofluorine compounds.

In this first version of the criteria document, Nordic Ecolabelling has chosen to set requirements for other constituent substances too in order to minimise the risk of fluorine compounds being replaced by other substances that are harmful to health and the environment.

Performance is a key aspect of ski wax. If Nordic Swan Ecolabelled products are to catch on and become popular among skiers who currently use low fluorine-content products, it is crucial that the technical performance of Nordic Swan Ecolabelled products is as good as these. The criteria therefore also include requirements for performance.

2 Basic facts about the criteria

Products that can be labelled

Glide wax products for all types of skis and boards intended for use on snow. This includes products that improve glide on skin skis.

Base prep waxes, kick/grip waxes, klister and wax removers cannot be Nordic Swan Ecolabelled.

For more information, see Chapter 7.1.

Justification for Nordic Ecolabelling

Nordic Ecolabelling stipulates requirements within the stages of the product's life cycle where Relevance, Potential and Steerability (RPS) exist. The greatest environmental benefits are achieved by selecting requirements that have most relevance, potential and steerability in the life cycle of the product.

Awareness of and concern about the effects on human health and the environment caused by emissions of organofluorine compounds have steadily increased in the last 15 years (cf. Chapter 6). A number of types of ski wax

contain organofluorine compounds and ski wax products that contain these compounds are being used more and more widely, not only by competitive skiers but also by recreational skiers. Ski wax is therefore a very relevant product group to focus on to reduce the emissions. Promoting non-fluorinated ski wax is the best way to prevent the spread of organofluorine compounds in the environment. The manufacturers choose the ingredients themselves and it is possible to produce effective glide wax products without the use of organofluorine compounds. In other words, there are obvious relevance, potential and steerability for prohibiting organofluorine compounds and setting requirements for other substances in ski waxes.

A Nordic Swan Ecolabelled ski wax:

- Is fluorine-free
- Provides good glide performance
- Is dirt-repellent
- Has good wear resistance
- Its effectiveness has been proved to be as good as equivalent fluorine-containing waxes.

Version and validity of the criteria

Nordic Ecolabelling adopted version 1.0 of the criteria for ski wax on 15 June 2018. The criteria are valid until 30 June 2023.

3 The Nordic Market[1]

Globally, there are approximately 25-30 players in the ski wax industry. There are approximately 10-15 players in the Nordic region. Swix is the world-leading supplier of ski wax with a market share of about 40 %. Its subsidiary, Toko, is the second largest with a market share of about 15 %. The rest of the market is shared among a number of smaller, mainly Nordic and European producers, such as Vauhti, Rex, Star, Start, Ski-Go, Holmenkol, Rode, HWK, Gallium and Vola.

Glide wax products represent the largest share of the ski wax market. Sports stores account for the majority of the sales. Sales are also generated via the manufacturers' own online stores and through direct sales at ski races and events. Products are sold directly to the professional market. The same products are available to private customers and professionals.

Ski wax products that contain organofluorine compounds (perfluorocarbons) are being used more and more widely, not only by competitive skiers but also by recreational skiers. Products that are being used and which may contain fluorine are glide waxes (gliders), fluoro powder waxes, fluoro liquid glide waxes, kick/grip waxes and klister. Glide waxes containing fluorine are marketed with qualities such as improved glide performance, less ice build-up and better dirt repellent properties. There is a wide range of glide waxes designed for optimal performance at different temperatures and snow conditions.

[1] Communication with Christian Gløgård at Swix, September-November 2017

The glide wax products can be grouped roughly into three categories with regard to fluorine content:

- Hydrocarbon-based fluorine-free products
- Low-fluoro products (LF, low fluorine, about 0.5 -1.5 % perfluorocarbons)
- High-fluoro products (HF, high fluorine, about 4 -12 % perfluorocarbons)

They each have a market share (value) of approximately 1/3.

There has been a trend in recent years to focus on more convenient waxing products that are less time-consuming to apply. The last two or three years have also seen some focus on less environmentally-harmful products. Furthermore, new types of skis, such as skin skis, are paving the way for new categories of ski wax. For instance, users of skin skis want products that give optimal glide and prevent the skin from icing up. This means that even if sales of traditional skis face competition from new types of skis, there is still the need for waxes and waxing products.

The environment as a competitive advantage

It is both necessary and desirable to be able to ecolabel fluorine-free products in the ski wax category. The Nordic Swan Ecolabel is well-established in the largest markets that are relevant for ecolabelled ski wax. Consumer and seller awareness of fluorine-free products seems to be low[2]. Yet in Norway, and in Sweden to some extent, considerable media and public attention is being paid to health and environmental issues associated with fluorine (organofluorine compounds) in ski waxes (see Chapter 4).

Marketing of fluorine-free ski wax with the Nordic Swan Ecolabel will be a clear environmental message that is consistent with other product groups where the Nordic Swan Ecolabel promotes fluorine-free alternatives (paper packaging for food, disposable items in contact with food, textiles, furniture).

4 Other labels

As far as Nordic Ecolabelling is aware, there are no official environmental labels or systems for ski waxes.

There has been an increased awareness and concern about the health and environmental impacts of per- and polyfluorinated compounds the last 15 years, and the environmental authorities in the Nordic countries work actively with

[2] http://www.testfakta.se/sv/kropp-halsa/article/miljoskadliga-amnen-sprids-fran-skidvallan (viewed 24 November 2017)

mapping and restricting the use and emissions of such compounds[3][4][5][6][7]. The Norwegian Environment Agency recommends avoiding the use of fluorinated ski waxes[8], and both the Norwegian Environment Agency and the Norwegian Institute of Public Health recommend ski wax technicians and users to take precautions when using fluorinated waxes for the preparation of skis[9] [10]. Several environmental organisations in Norway and Sweden, and the Norwegian Ski Association, generally recommend the use of fluorine-free alternatives[11]. Furthermore, the Norwegian Ski Federation recommends the use of fluorine-free glide wax products at all cross-country ski races, especially in the under-16 classes[12]. It is the understanding of Nordic Ecolabelling that not as much attention is being given to fluorinated ski waxes in Finland and Denmark.

5 About the criteria development

Goals of the criteria development process

The main objective has been to create clear, consistent and credible criteria that take both human health and the environment into account and also ensure that "ordinary" skiers (not elite skiers) have access to effective products. This is achieved by prohibiting organofluorine compounds and by setting specific requirements for constituent substances so as to minimise the risk of fluorine compounds being replaced by other substances that have adverse effects on human health and the environment. Effective products are ensured by setting requirements for performance testing.

About this criteria development process

A feasibility study was undertaken by the Nordic Swan Ecolabelling in Norway. It showed that it is possible to create criteria for ski wax with few environmental requirements that distinguish between the ski wax products available in the market. Against this background, the project has been implemented as a "fast-

[3] http://www.ymparisto.fi/download/noname/%7BC7CCDE2E-857E-40C8-9573-00373E7EBC11%7D/119667 (viewed 15 December 2017)
[4] http://mst.dk/kemi/kemikalier/fokus-paa-saerlige-stoffer/listen-over-uoenskede-stoffer/status-for-lous/9-pfas/ (viewed 15 December 2017)
[5] https://www.kemi.se/om-kemikalieinspektionen/verksamhet/handlingsplan-for-en-giftfri-vardag/hogfluorerade-amnen-pfas (viewed 15 December 2017)
[6] http://www.miljostatus.no/tema/kjemikalier/prioritetslisten/PFOS-PFOA-og-andre-PFCs/ (viewed 15 December 2017)
[7] Bonefeld-Jörgensen, E., et al. (2013), Per- and polyfluorinated substances in the Nordic Countries: Use, occurence and toxicology, Nordic Council of Ministers, Copenhagen. http://dx.doi.org/10.6027/tn2013-542
[8] http://www.erdetfarlig.no/Artikler/Nyhetsartikler/styr-unna-miljogifter-i-skisporet/ (viewed 12 October 2017)
[9] http://www.miljodirektoratet.no/no/Nyheter/Nyheter/2017/Oktober-2017/Styrket-grunnlag-for-forholdsregler-ved-skismoring/ (viewed 23 October 2017)
[10] Folkehelseinstituttet, Innånding av støvpartikler ved bruk av fluorholdige skismøringsprodukter, M-843|2017 (The Norwegian Institute of Public Health, Inhalation of dust particles when using fluorinated ski wax products). http://www.miljodirektoratet.no/Documents/publikasjoner/M843/M843.pdf (viewed 23 October 2017)
[11] https://naturvernforbundet.no/forurensing/miljogifter/velg-miljovennlig-i-skisporet-dropp-fluorkarbon-gli-article30707-156.html; https://www.framtiden.no/201704077135/aktuelt/swix-sprer-miljogifter-i-skisporet.html; https://blogg.naturskyddsforeningen.se/blog/2013/02/26/fixa-glidet-utan-giftig-valla/; http://www.greenpeace.org/sweden/se/nyheter/blogg/ngot-r-ruttet-i-skidspret/blog/54827/; http://www.skiforeningen.no/aktuelt/fluor-i-skismoring/ (viewed 12 October 2017).

[12] https://www.skiforbundet.no/sogn-og-fjordane/nyhetsarkiv/2017/10/forbod-mot-fluor/ (viewed 22 November 2017)

track project" by Nordic Ecolabelling. Swix, the world-leading supplier of ski wax, contributed technical data and market information from the start of the criteria development process.

A proposal for criteria was on consultation from 10 January to 10 March 2018. A total of 21 consultation bodies answered. 11 approved the proposal, 1 opposed and 9 did not take position but 5 of them submitted comments. The most commented subjects were:

- The test methods.
- Several consultation bodies expressed support to the ban or organifluorine compounds.
- Three consultation bodies commented that there exist other, mechanical methods that may be used as an alternative to glide wax products.
- Two consultation bodies commented that inhalation of aerosols/vapors may cause adverse health effects. This will not be addressed in this first criterion generation, but will be considered in the next criteria generation.

As a result of the consultation responses, the criteria document was slightly adjusted in relation to the consultation draft.

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6 Environmental impact of ski wax

To achieve environmental benefits, the requirements that are set to obtain the Nordic Swan Ecolabel must be relevant. There must also be potential to differentiate between the products that are better for the environment compared with other products, and the possibility to use ecolabelling requirements to steer the specific environmental issue. These three parameters must be viewed in context. They are referred to as **R**elevance-**P**otential-**S**teerability, RPS. The greatest environmental benefits are achieved by selecting requirements that have most relevance, potential and steerability in the life cycle of the product. It is believed that the use phase and the waste phase account for the greatest environmental impact from the chemicals used in ski waxes.

Relevance

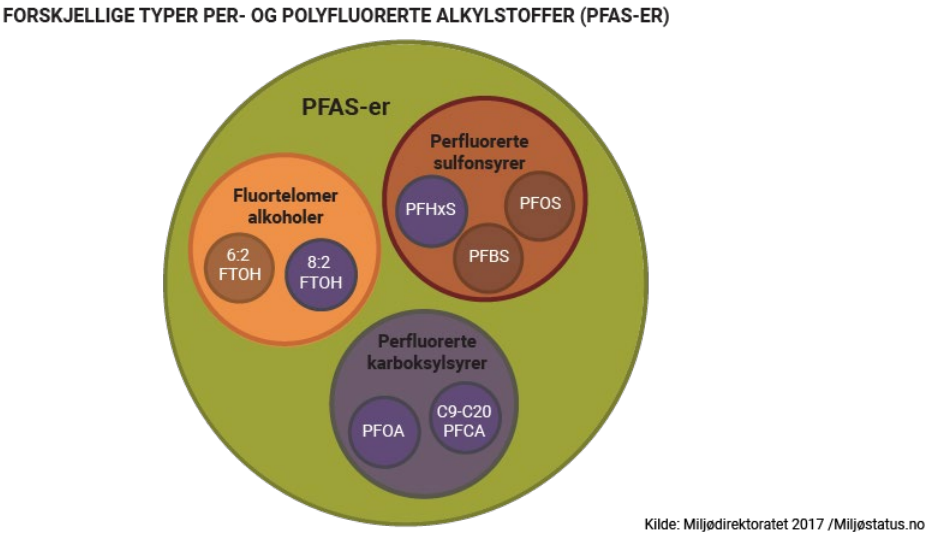
Awareness of and concern about the effects on human health and the environment caused by emissions of organofluorine compounds have steadily increased in the last 15 years. A number of types of ski wax contains organofluorine compounds. Ski wax is therefore a very relevant product group to focus on to reduce the emissions. Ecolabelling may be a tool to guide consumers and help them choose less environmentally-harmful ski waxes.

The risk of human exposure to organofluorine compounds from ski wax is greatest when glide waxes containing fluorocarbons are heated up, scraped and brushed off. Norwegian and Swedish studies have shown that concentrations of PFOA (Perfluorooctanoic acid) and PFNA (Perfluorononanic acid) were 25-100 times higher in professional ski wax technicians than in the average population[13,14]. In recent years, professional ski wax technicians have become much better at using personal protective equipment, but much of the ski preparation process is carried out in poorly ventilated spaces. The Norwegian Institute of Public Health has recently published a study in which it found that the concentration of dust and fluorine-containing substances in conjunction with the application of ski waxes by amateur skiers is comparable with the concentration which has been shown to present health problems for professional ski wax technicians[15]. Organofluorine compounds also have serious effects on the environment. In a study commissioned by the Norwegian Environment Agency and carried out by the Norwegian Institute for Air Research, increased levels of PFAS was observed in earthworms at the Voksenkollen ski area. This may indicate contributions from fluorinated ski wax[16].

Ski waxes can contain different per- and polyfluoroalkyl substances (PFAS), especially PFAS precursors. A schematic overview of some different types of PFASs is shown in Figure 1.

[13] STAMI Report 2009 No. 8 Year 10 «Chemical exposure and effects on the respiratory system of professional ski wax technicians»; https://stami.no/publikasjon/kjemisk-eksponering-og-effekter-pa-luftveiene-blant-profesjonelle-skismorere/ (viewed 23 October 2017)
[14] Nilsson H, Kärrman A, Westberg H, Rotander A, van Bavel B, Lindström G. (2010) A time trend study of significantly elevated perfluorocarboxylate levels in humans after using fluorinated ski wax. Environ. Sci.Technol. 44: 2150-2155.
[15] Folkehelseinstituttet, Innånding av støvpartikler ved bruk av fluorholdige skismøringsprodukter, M-843/2017 (The Norwegian Institute of Public Health, Inhalation of dust particles when using fluorinated ski wax products). http://www.miljodirektoratet.no/Documents/publikasjoner/M843/M843.pdf (viewed 23 October 2017)
[16] Herzke, D., Nygård, T., Heimstad, E.S., Uggerud, H. (2015). Environmental pollutants in the terrestrial and urban environment 2014 (The Norwegian Environment Agency Report, M-354/2015) (NILU OR, 24/2015). Kjeller:NILU http://www.miljodirektoratet.no/Documents/publikasjoner/M354/M354.pdf; And http://www.miljodirektoratet.no/no/Nyheter/Nyheter/2015/November-2015/Kan-ha-funnet-skismoring-i-meitemark/ (viewed 23 October 2017)

Figure 1. Different types of per- and polyfluoroalkyl substances (PFASs)[17].



PFASs are synthetic substances and are produced in many countries in the world. Perfluorinated compounds are very stable. This means they are highly resistant to biodegradation. They thus accumulate in the human body and in the environment and are spread worldwide. Studies conducted in Norway show that overall levels of PFASs in earthworms, moss, polar bears and human blood are equivalent to or higher than the levels of other known environmental toxins, such as PCB (Polychlorinated biphenyls)[18].

PFOS (Perfluorooctanesulfonic acid), PFOA and PFNA (C9-PFCA) are classified as dangerous. Animal studies have shown that prolonged or repeated exposure to these substances causes damage to organs (liver) and can lead to birth defects in mammals. There are also indications that the substances have carcinogenic potential. PFOS is classified as toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment. PFOA and several long-chain Perfluorocarboxylic Acids (C9 - C14 PFCA) have been identified as compounds that are resistant to biodegradation, that accumulate in living organisms and have serious long-term adverse effects on human health and the environment (PBT)[19].

Some PFASs can transform into PFOA in the body or the environment and PFOA is therefore found in animals, plants and other environmental media, even if PFOA is not used. Due to known environmental risks with long-chain PFASs, a large part of the industry has in general switched to producing compounds with short-chain perfluorinated compounds. Much less is known about the effects of

[17] http://www.miljostatus.no/tema/kjemikalier/prioritetslisten/PFOS-PFOA-og-andre-PFCs/ (accessed 25 August 17)
[18]The section is based on http://www.miljostatus.no/tema/kjemikalier/prioritetslisten/PFOS-PFOA-og-andre-PFCs/ (accessed 25 August 17)
[19] Ibid

the short-chain perfluorinated compounds[20]. However, it is known that they are also very persistent and will therefore remain in the environment for a long time[21,22]. For that reason, Nordic Ecolabelling is of the opinion that short-chain perfluorinated compounds are also undesirable compounds, on the basis of the precautionary principle.

Potential and Steerability

PFOSs were added to the Priority List of the Norwegian authorities in 2002, PFOA in 2007 and other long-chain perfluorinated acids in 2014. In 2014, Norway introduced a ban on the use of perfluorooctanoic acid (PFOA) in consumer products, including ski wax. PFOA is being, or is in the process of being, phased out through stringent regulations in Norway (since 2013) and the EU (from 2020). The EU ban, spearheaded by Norway and Germany, is even stricter and more comprehensive than the Norwegian ban. The ban will come into force in the EU in 2020 and includes PFOA and hundreds of other substances that break down into PFOA. Moreover, the European Commission is working towards the implementation of a global regulation for the substance under the Stockholm Convention[23].

As a consequence of the upcoming EU regulation, product development of ski wax with fluorine is transitioning to short-chain perfluorinated compounds (C6). Some players are also using various types of siloxanes as substitutes for fluorine[24]. As in other product areas, the regulated fluorine compounds are being replaced by other compounds that are not regulated/restricted, but may also eventually prove to be harmful to health and the environment. Both short-chain fluorine compounds and siloxanes may have properties that have adverse effects on the environment and health (cf. Background to Requirement O4).

Promoting non-fluorinated ski wax is the best way to prevent the spread of organofluorine compounds. Nordic Ecolabelling stipulates specific requirements with regard to health and the environment for all ingoing substances in Nordic Swan Ecolabelled ski waxes in order to ensure there is no possibility of organofluorine compounds being replaced by chemicals with other properties that have adverse effects on the environment and health. The manufacturers choose the ingredients themselves and it is possible to produce effective glide wax products without the use of organofluorine compounds. In other words, there is both potential and steerability for prohibiting organofluorine compounds and setting requirements for other substances in ski waxes.

[20] KEMI report 6/15: Förekomst och användning av högfluorerade ämnen och alternativ. https://www.kemi.se/global/rapporter/2015/rapport-6-15-forekomst-och-anvandning-av-hogfluorerade-amnen-och-alternativ.pdf (accessed 7 March 18).
[21] The section is based on http://www.miljostatus.no/tema/kjemikalier/prioritetslisten/PFOS-PFOA-og-andre-PFCs/ (accessed 25 August 17)
[22] Perkola, Noora, Fate of artificial sweeteners and perfluoroalkyl acids in aquatic environment, Doctoral dissertation Department of Environmental Sciences, Faculty of Biological and Environmental Sciences, University of Helsinki, Finland 12 December 2014, https://helda.helsinki.fi/bitstream/handle/10138/136494/fateofar.pdf?sequence=1
[23] The section is based on http://www.miljostatus.no/tema/kjemikalier/prioritetslisten/PFOS-PFOA-og-andre-PFCs/ (accessed 25 August 17)
[24] Communication with Christian Gløgård at Swix, September-November 2017

7 Justification of the requirements

This chapter presents proposals for requirements and explains the background to the requirements and the selected requirement levels. The appendices referred to are those that appear in the criteria document “Nordic Swan Ecolabelling of Ski Wax”.

7.1 Product group definition

The criteria cover glide wax products for all types of skis and boards intended for use on snow. This includes products that improve glide on skin skis.

Grip waxes (base prep waxes, kick waxes, klister) and wax removers cannot be Nordic Swan Ecolabelled.

This criteria document focuses on product segments in which products with organofluorine compounds represent a key share of the market. There is a particularly high RPS (relevance-potential-steerability) for replacing the organofluorine substances. Wax removers are not covered, as it is not common to use organofluorine compounds in these. There are grip waxes with organofluorine compounds, but the fluorine levels are significantly lower than in glide wax products. Tests to assess the performance of grip waxes are complicated and there are no standardised methods. If appropriate test methods become available, it will be possible to consider including grip waxes in future revisions.

Nordic Ecolabelling is aware that there also exist alternative, non-chemical methods to glide waxes (scraping, polishing, brushing). The starting point for Nordic Swan Ecolabelling of ski wax is, however, the current market situation, where a significant number of skiers nevertheless choose to use glide wax products. The goal is to get the skiers who today use fluorinated products (initially low-fluoro LF products) to switch to fluorine-free Swan-labelled products. Such alternative methods are therefore not included in the criteria. In future criteria generations it may be possible to further develop the concept and include non-chemical alternatives to the product group. That would be in line with the fact that the substitution principle not only includes change of chemicals but also alternative technology. However, in this first generation of the criteria, Nordic Ecolabelling's opinion is that the greatest environmental benefit can be achieved by clearly pointing out fluorine-free alternatives among the ski waxes, by using the Nordic Swan Ecolabel.

7.2 General requirements

The requirements in the criteria document and its appendices apply to all ingoing substances in the ski wax, but not to impurities unless otherwise stated in the specific requirement. Ingoing substances and impurities are defined below.

Ingoing substances: All substances in the ski wax, including additives (e.g. preservatives and stabilisers) in the raw materials. Substances known to be released from ingoing substances (e.g. formaldehyde, arylamine, in situ-generated preservatives) are also regarded as ingoing substances.

Impurities: Residuals, pollutants, contaminants etc. from production, including production of raw materials that remain in the finished ski wax in concentrations less than 100.0 ppm (0.01000 % by weight, 100.0 mg/kg).

Impurities in the raw materials at concentrations of more than 1.0 % are always regarded as ingoing substances, regardless of the concentration in the finished ski wax.

Examples of impurities are residues of the following: residues of reagents including residues of monomers, catalysts, by-products, scavengers, and detergents for production equipment and carry-over from other or previous production lines.

O1 Description of the product

Applicants must provide the following information about the product:

- A description of the product, including a description of its uses, as related to the product descriptions in "What can carry the Nordic Swan Ecolabel?".
- Product formulation. For each ingoing substance, the formulation must specify:

  Trade name

  Chemical name

  Constituent quantities

  CAS no./EC no. where possible

  Function
- A safety data sheet for each raw material

  If the raw materials are made up of several ingoing substances, information about all of the ingoing substances must be provided on the product formulation.

☒ A description of the product as related to the product description in "What can carry the Nordic Swan Ecolabel?" For example a label and/or user instructions.
☒ Complete formulation with information in compliance with the requirement.
☒ A safety data sheet for each raw material in compliance with current European legislation (Appendix II of REACH, Regulation No. 1907/2006/EC) if required for the product.

Background to Requirement O1

A description of the product and its uses is required in order to be able to assess whether the product falls within the product group definition.

It is necessary to provide an overview of the raw materials used in the product as well as safety data sheets for the raw materials in connection with ingoing substance requirements (cf. Requirement O3). Nordic Ecolabelling also needs to know the quantities of each of the raw materials in order to be able to assess any impurities in the raw materials in relation to the impurity limit of 100 ppm, and in order to be able to assess whether the classification of the product is reasonable (cf. Requirement O2 concerning classification of the finished product).

O2 Classification of product

The product may not be classified as specified in table O2 below.

Table O2 Classification of product

CLP Regulation 1272/2008:		
Hazard class	Hazard class and category	Hazard code
Toxic to the aquatic environment	Aquatic Acute 1 Aquatic Chronic 1 Aquatic Chronic 2 Aquatic Chronic 3 Aquatic Chronic 4	H400 H410 H411 H412 H413
Hazardous to the ozone layer	Ozone 1	H420
Carcinogenic*	Carc. 1A or 1B Carc. 2	H350 H351
Germ cell mutagenicity*	Muta. 1A or 1B Muta. 2	H340 H341
Reproductive toxicity*	Repr. 1A or 1B Repr. 2 -	H360 H361 H362
Acute toxicity	Acute Tox. 1 or 2 Acute Tox. 1 or 2 Acute Tox. 1 or 2 Acute Tox. 3 Acute Tox. 3 Acute Tox. 3 Acute Tox. 4 Acute Tox. 4 Acute Tox. 4	H300 H310 H330 H301 H311 H331 H302 H312 H332
Specific target organ toxicity	STOT SE 1 STOT SE 2 STOT RE 1 STOT RE 2 STOT SE 3**	H370 H371 H372 H373 H335, H336
Corrosive to the skin	Skin Corr. 1A, 1B or 1C	H314
Serious eye damage	Eye Dam.1	H318
Aspiration hazard	Asp. Tox. 1	H304
Sensitisation by inhalation or skin contact	Resp. Sens. 1, 1A or 1B Skin sens. 1, 1A or 1B Products labelled with "Contains <name of sensitising substance>. May cause an allergic reaction." are not permitted.	H334 H317 EUH208

** Including all combinations of stated exposure route and stated specific effect. For example, H350 also covers H350i.*

***The prohibition applies to products that are applied with spray or heat.*

✉ A safety data sheet for the product in compliance with current European legislation (Annex II of REACH, Regulation No. 1907/2006/EC) if required for the product.
✉ The product's label.

Background to Requirement O2

Nordic Ecolabelling prohibits all CLP environment hazard classifications at product level. Environment hazard classification is not consistent with the Nordic Swan Ecolabel.

Nordic Swan Ecolabelled ski waxes must be an option that is beneficial to health. Accordingly, substances with specific properties that are adverse to health are restricted and prohibited. As part of this, substances that are classified by the CLP Regulation as most hazardous to health are prohibited at product level. The ban on CMR substances (carcinogenic, mutagenic and reprotoxic) follows from the ban on CMR classifications for ingoing substances (Requirement O3). The ban is still included in O2 for communication purposes.

The prohibition of "May cause respiratory irritation" or "May cause drowsiness or dizziness" (STOT SE3, H335, H336) applies to products applied with spray or heat, because it is assumed that the risk of exposure is greater for such applications. These classifications are allowed for other types of products, such as products applied with sponge applicator.

7.3 Requirements concerning ingoing substances

O3 Classification of ingoing substances

Ingoing substances may not be classified as specified in table O3 below.

Table O3 Classification of ingoing substances

CLP Regulation 1272/2008:		
Hazard class	Hazard class and category	Hazard code
Carcinogenic*	Carc. 1A or 1B Carc. 2	H350 H351
Germ cell mutagenicity*	Muta. 1A or 1B Muta. 2	H340 H341
Reproductive toxicity*	Repr. 1A or 1B Repr. 2 -	H360 H361 H362

** Including all combinations of stated exposure route and stated specific effect. For example, H350 also covers H350i.*

✉ Safety data sheets for each raw material in compliance with current European legislation (Annex II of REACH, Regulation No. 1907/2006/EC)
✉ Duly completed and signed declarations from manufacturers and from raw material producers/suppliers. Appendices 2 and 3 are used.

Background to Requirement O3

Nordic Ecolabelling currently has no detailed knowledge of the presence of CMR substances in ski waxes. Nevertheless, it has decided to impose a total ban as a precautionary measure. The ban on CMR substances is part of Nordic Ecolabelling's general principles for substances that are harmful to health and the environment.

O4 Substances that must not be present

The following substances must not be present in the product:

- Organofluorine compounds
- Halogenated and/or aromatic solvents
- Substances of Very High Concern (SVHC) on the Candidate List in REACH: https://echa.europa.eu/candidate-list-table
- Siloxane D4, D5, D6, HMDS (octamethylcyclotetrasiloxane CAS no. 556-67-2, decamethylcyclopentasiloxane CAS no. 541-02-6, dodecamethylcyclohexasiloxane CAS no. 540-97-6, hexamethyldisiloxane CAS no. 107-46-0).

  Impurities of D4, D5, D6 and HMDS in silicone raw materials at concentrations of more than 0.10 % are always considered to be ingoing substances.
- Substances that are PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative) according to the criteria in Annex XIII of REACH.
- Substances 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 is available for viewing at http://ec.europa.eu/environment/chemicals/endocrine/pdf/final_report_2007.pdf (Appendix L, pages 238 - 249)
- Phthalates
- Nanomaterial/particles as defined in the European Commission's recommendation no. 2011/696/EU.

"A nanomaterial is a natural, incidental or purposely manufactured material containing particles in an unbound state or as an aggregate or as an agglomerate and where, for at least 50 % of the particles in the number size distribution, one or more external dimensions is in the size range 1–100 nm" (extract from the European Commission's recommendation no. 2011/696/EU, published 18 October 2011). Examples include ZnO, TiO2, SiO2, Ag and laponite with particles of nanosize at concentrations above 50 %. Polymer emulsions are not considered to be a nanomaterial.

✉ Duly completed and signed declarations from manufacturers and from raw material producers/suppliers. Appendices 2 and 3 are used.

Background to Requirement O4

Organofluorine compounds

Per- and polyfluorinated compounds (PFCs) are a group of substances that have harmful properties. Certain per- and polyfluorinated compounds can be broken down into the very stable PFOS (perfluorooctane sulphonate) and PFOA (perfluorooctanoic acid) and similar substances. These substances are found all

over the globe, from the large oceans to Arctic regions. PFOS have also been found in birds and fish and in their eggs. The substances are extremely persistent and are easily absorbed by the body.[25] The substances in this group impact on the biological processes of the body and are suspected of being endocrine disruptors, carcinogenic and having adverse effects on the human immune system.[26] PFOA, APFO (ammonium pentadecene fluoro octanoate) and certain fluoride acids are on the Candidate List because of their reprotoxicity and PBT characteristics. More recent research findings show that even shorter chains (2-6 carbons) are found in the environment.[27]

Per- and polyfluoroalkyl substances are used in ski waxes to a large extent. The substitution of these compounds is the fundamental basis of the Nordic Swan Ecolabelling of ski waxes (see Chapter 6 "Environmental impact of ski wax"). Nordic Ecolabelling has decided to use broad language for the ban and consequently prohibits all organofluorine compounds.

Halogenated and/or aromatic solvents

Halogenated organic compounds include many substances that are harmful to health and the environment, are highly toxic for aquatic organisms, carcinogenic or harmful to health in other ways. Halogenated organic compounds are recalcitrant to biodegradation, which increases the risk of harmful effects from the substances. Volatile organic solvents may have detrimental effects on the ozone layer.

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

SVHC, Substances of Very High Concern, is a term that describes the substances that meet the Article 57 criteria of the REACH Regulation: Substances that are CMR (categories 1A and 1B in accordance with the CLP Regulation), PBT substances, vPvB substances (see the section below) and substances that are endocrine disruptors or environmentally hazardous without meeting the PBT or vPvB requirements. SVHC can be included on the Candidate List with a view to subsequent inclusion on the Authorisation List. This means that the substance is subject to regulation (prohibition, phasing-out or other type of restriction). On the basis of these adverse characteristics, Nordic Ecolabelling prohibits Candidate List substances. Other SVHC substances are addressed via bans on the use of PBT and vPvB substances, ban of CMR classifications and ban of endocrine disruptors.

[25] Borg, D., Tissue Distribution Studies And Risk Assessment Of Perfluoroalkylated And Polyfluoroalkylated Substances (PFASS), Doctoral thesis, Institute Of Environmental Medicine (IMM) Karolinska Institutet, Stockholm, Sweden 2013
http://publications.ki.se/xmlui/bitstream/handle/10616/41507/Thesis_Daniel_Borg.pdf?sequence=1
[26] For example, Heilmann, C. et al, Persistente fluorbindelser reducerer immunfunktionen, Ugeskr Læger 177/7, 30.3.2015 OSPAR 2005: Hazardous Substances Series, Perfluorooctane Sulphonate (PFOS), OSPAR Commission, 2005 (2006 Update), MST, 2005b: Environmental project no. 1013, 2005, More Environmentally Friendly Alternatives to PFOS-compounds and PFOA, Danish Environmental Protection Agency, 2005.
[27] Perkola, Noora, Fate of artificial sweeteners and perfluoroalkyl acids in aquatic environment, Doctoral dissertation Department of Environmental Sciences, Faculty of Biological and Environmental Sciences, University of Helsinki, Finland 12 December 2014,
https://helda.helsinki.fi/bitstream/handle/10138/136494/fateofar.pdf?sequence=1

Silicones and siloxanes (D4, D5, D6, HMDS)

Some players use various types of siloxanes as substitutes for fluorine in ski wax. Siloxanes have properties that can have adverse effects on the environment and health.

Low-molecular, volatile siloxanes (e.g. D4 and D5) evaporate when they are used and can be spread over large distances in the air. The distribution of cyclic siloxanes is greatest in the environment, particularly D4 (octamethyl cyclotetrasiloxane, CAS no. 556-67-2) and D5 (decamethyl cyclopentasiloxane, CAS no. 541-02-6). D4 is classified as Aquatic Chronic 3 with H413 and Repr. 2 with H361f. D5 is structurally related to D4 and is on the Norwegian authorities' list of prioritised hazardous substances[28]. D5 is also under evaluation as a PBT substance but no conclusion has yet been reached. D4, D5 and the linear siloxane, HMDS (hexadimethyl siloxane, CAS no. 107-46-0) are categorised as HPVCs (High Production Volume Chemical) in the EU. D6 is bioaccumulative with BCF = 39874 / logKow = 9.06 and is not biodegradable (4.47 % in 28 days).[29] A Swedish study found D4, D5, D6 and HMDS in the breast milk of 11 out of 39 women[30] and, in trials carried out on rats, D4 has a certain tendency to affect hormone production in female rats.[31] Although there is no ecotoxicological data, it is expected that D6 has some characteristics consistent with D4 and D5. For example, it is expected that D6 will affect the liver on repeated exposure[32].

D4 and D5 are residues of the manufacturing process of polydimethylsiloxane (PDMS). As far as Nordic Ecolabelling is aware, PDMS raw materials with residual values of below 0.10 % are commercially available[33]. Nordic Ecolabelling has therefore decided to set the maximum impurity limit for D4, D5, D6 and HMDS in silicone raw materials at 0.10 % instead of 1.0 %, which is the impurity limit for other raw materials (cf. the definition of impurities in Chapter 7.2).

O4 is a dual requirement for D4 in that it is prohibited through Requirement O3. But it is natural to mention it here along with D5, D6 and HMDS. All other, non-mentioned silicones and siloxanes must meet relevant environmental requirements in the criteria like other ingoing substances.

PBT and vPvB

PBT (Persistent, Bioaccumulative and Toxic) and vPvB (very Persistent and very Bioaccumulative) are organic substances that meet the criteria in Annex XIII of REACH. These are substances of very high concern (SVHC) with regard to human health and/or the environment and can be included on the Candidate List. The ban on the use of PBT and vPvB substances applies to all substances that meet the Annex XIII criteria, and also to substances that are not included on the Candidate List.

[28] http://www.miljostatus.no/tema/kjemikalier/prioritetslisten/siloksaner/ (accessed 1 November 2017)
[29] (ECHA, 2015)
[30] (Miljøstyrelsen, 2014)
[31] (Miljøstyrelsen, 2014)
[32] (Environment Canada, Health Canada, 2008), (Miljøstyrelsen, 2014)
[33] About Nordic Swan Ecolabelled Grease-proof paper, supplementary module. Version 4.0. Background to ecolabelling (Nordic Ecolabelling 2014). http://www.svanemerket.no/PageFiles/1849/Bakgrund_049_4_0.pdf

Potential endocrine disruptors

Potential endocrine disruptors are substances that can affect the endocrine balance of people and animals. Hormones control a number of vital processes in the body and are particularly important for development and growth in humans, animals and plants. Changes in the hormone balance can have adverse effects, and so there is greater focus on hormones that affect sexual development and reproduction. Several studies have shown effects on animals that are probably due to changes in the hormone balance. Effluent discharges are one of the major sources of the presence and distribution of endocrine disruptors in aquatic ecosystems[34]. Nordic Ecolabelling prohibits the use of substances that are considered to be potential endocrine disruptors, category 1 (there is evidence of a change in endocrine activity in at least one animal species) or category 2 (there is evidence of biological activity related to changes in the hormone balance), in line with the EU's original report on "Endocrine disruptors"[35] or subsequent studies[36].

The Commission is in the process of developing criteria for endocrine disruptors[37]. Nordic Ecolabelling is monitoring this development and may modify the requirement when the EU criteria for identification of endocrine disruptors have been published.

Nanomaterials/particles

Nanotechnology, which also includes nanoparticles, is used in many product areas, including ski wax[38]. The greatest cause for concern is the use of nanoparticles that can be released and thereby affect health and the environment. There is concern among public authorities, environmental organisations and others about the lack of knowledge regarding the potential detrimental effects on health and the environment.

On 18 October 2011, the European Commission made a recommendation for a definition of nanomaterials, stating that "A nanomaterial is a natural, incidental or purposely manufactured material containing particles in an unbound state or as an aggregate or as an agglomerate and where, for at least 50 % of the particles in the number size distribution, one or more external dimensions is in the size range 1–100 nm" (extract from the European Commission's recommendation no. 2011/696/EU, published 18 October 2011). Nordic Ecolabelling adheres to the wording in this definition.

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[34] Miljøstatus i Norge (2008) (Environmental status in Norway): Endocrine disruptors: http://www.miljostatus.no/Tema/Kjemikalier/Noen-farlige-kjemikalier/Hormonforstyrrende-stoffer/#D (dated February 26 2009)

[35] DG Environment (2002): Towards the establishment of a priority list of substances for further evaluation of their role in endocrine disruption. FINAL REPORT. European Commission DG ENV / BKH Consulting Engineers with TNO Nutrition and Food Research. 21 June 2000

[36] DG Environment. (2002): Endocrine disruptors: Study on gathering information on 435 substances with insufficient data. http://ec.europa.eu/environment/endocrine/documents/bkh_report.pdf#page=1, European Commission / DG ENV / WRc-NSF. (2002): Study on the scientific evaluation of 12 substances in the context of endocrine disruptor priority list of actions, http://ec.europa.eu/environment/chemicals/endocrine/pdf/wrc_report.pdf#page=29
DHI water and environment. (2007): Study on enhancing the Endocrine disruptor priority list with a focus on low production volume chemicals. DG Environment. http://ec.europa.eu/environment/chemicals/endocrine/pdf/final_report_2007.pdf

[37] Chemical watch, News, Andriukaitis promises EDC criteria 'before the summer', 4 February 2016, https://chemicalwatch.com/44841/andriukaitis-promises-edc-criteria-before-the-summer

[38] http://sustainable-nano.com/2017/02/21/nanomaterials-make-skiing-more-fun/ (accessed 1 November 2017).

Phthalates

According to data from the Swedish product register, phthalates are used to some extent in ski waxes[39]. Several phthalates, including DEHP, DBP and BBP, are identified as substances of very high concern (SVHC) because they are reproductive toxicants and are on the REACH Candidate List. Furthermore, DEHP has been added to the Candidate List because the substance is an endocrine disruptor for environment organisms and it has been agreed to list DEHP, DBP, DIBP and BBP due to their endocrine disrupting properties which probably have serious effects on human health[40]. Consequently, these phthalates are already prohibited in the requirements for ski waxes. Nordic Ecolabelling has decided to prohibit all phthalates (esters of phthalic acid) as a precaution.

O5 Aerobic degradability

All organic ingoing substances and their degradation products must be aerobically biodegradable in accordance with OECD 301 A-F or OECD 310 (readily biodegradable) or 302 A-C (inherently biodegradable).

- Dyes are exempted from this requirement.

✉ The degradability must be documented in a test report. See Appendix 1.1 on test laboratory requirements. Documentation from other sources, such as the safety data sheet for the substance or a REACH dossier, will be accepted as an alternative to a complete test report. In such cases, proof must be provided that the test laboratory complies with the requirement of Appendix 1.1 and there must be references to the test method and a summary of the test results.

✉ For substances on the DID List, the degradability may be documented with reference to the DID List part A, dated 2016 or subsequent versions (see Appendix 1.2).

Background to Requirement O5

Requirements for biodegradability of organic substances generally provide eco-labelled products with a good degradation profile and reduce the risk of accumulation of poorly degradable substances from ski waxes in the environment. Glide wax products largely consist of various petroleum-based waxes. According to safety data sheets, some of the waxes used are potentially degradable, but break down over a long period of time.

Nordic Ecolabelling considers that requirements for ready biodegradability for all ingoing substances may be disproportionately strict and restrictive for the manufacturers. In this first version of the criteria, we have therefore decided to accept ingoing substances that are potentially biodegradable in accordance with OECD 302.

Dyes are used to distinguish between products that are intended for different conditions of use (e.g. different temperatures) and thus to inform consumers. Dyes are often persistent (cf. the DID List Part A no. 2550). They generally constitute a small part of the products. The biodegradability requirement for dyes is therefore considered to be disproportionately strict. They are therefore exempt

[39] KEMI report 4/15: Phthalates which are toxic for reproduction and endocrine-disrupting - proposals for a phase-out in Sweden. https://www.kemi.se/global/rapporter/2015/report-4-15-phatalates.pdf (accessed 1 November 2017).
[40] http://www.miljostatus.no/ftalater (accessed 1 November 2017)

from the requirement. Note that other requirements for ingoing substances, including bans on PBT and vPvB substances (Requirement O4), apply to dyes.

7.4 Functionality

The Nordic Swan Ecolabelled product must be equally as good as or better than a reference product in terms of glide, wear resistance and dirt-repellent properties.

O6 Reference product

- The reference product must be a well-established product in the market in the Nordic region or one of the Nordic countries.
- The reference product must be tested under the same surface conditions as the Nordic Swan Ecolabelled product.
- The reference product must be a fluorine-containing product of the type LF (Low Fluorine) or higher.
- If the Nordic Swan Ecolabelled product is to be marketed in the category of HF products, Nordic Ecolabelling requires that it shall be tested against a HF product.

The same reference product must be used for all the tests.

✉ Rationale for the choice of reference product, in line with the requirement.

O7 Glide and wear resistance

Glide performance and wear resistance must be tested on cross-country skis. The applicant shall, upon request by Nordic Ecolabelling, enable Nordic Ecolabelling to monitor at least one test run in field.

Glide must be tested in the field (glide test 1) on freshly-prepared skis.

Wear resistance must be tested in the field (glide test 2). This test is carried out after the product and the reference product have been used on a ski tour. The test requires ski touring over a distance of 25 to 35 kilometres.

One test session comprises glide test 1, a ski tour and glide test 2. At least six test sessions must be performed. Each test session must comprise at least six runs down the test slope with each product (each pair of skis) in glide test 1 and glide test 2. The test sessions must be conducted in weather conditions and surface conditions that are representative of the conditions for which the products are designed and intended.

- Glide test 1. The glide performance of the product must be equally as good as or better than the reference product in at least 80 % of the glide tests on newly-prepared skis (at least 5 out of 6 times).
- Glide test 2. The glide performance of the product must be equally as good as or better than the reference product in at least 80 % of the glide tests after ski touring.

See Appendix 4 for a description of the criteria for glide tests.

✉ A test report containing the information that is specified below. Appendix 5 can be used.

- The person responsible for conducting the test
- Weight and height of the testing persons
- Information about the skis: make and production series, number of pairs, and how the skis have been prepared, and ski length
- A description of the glide track
- Information about the weather conditions and surface conditions for the glide tests and the ski tours: Time of day, weather, air temperature, humidity, snow temperature and a description of the snow quality. State the reason why the weather conditions and surface conditions are relevant.
- Location, distance (in kilometres) and duration (time) of the ski trips
- Results, including relevant statistical evaluation
- A description of how the skis have been prepared before calibration, between calibration and the first test session and between the test sessions

O8 Dirt-repellent properties

The dirt-repellent properties of the product should be equally as good as or better than those of the reference product. This shall be documented by a laboratory test measuring water contact angle with a goniometer (same or greater hydrophobicity).

- The product and the reference product must be tested on a relevant surface (e.g. Ultra High Molecular Weight Polyethylene, which is used in ski bases).
- At least six tests must be run in parallel per product.
- The tests must be performed in a laboratory that meets the requirement for test laboratories stated in Appendix 1.1.

✉ A test report that shows that this requirement has been met, performed by a laboratory that meets the requirement stated in Appendix 1.1.

Background to Requirements O6, O7, O8

If Nordic Swan Ecolabelled products are to catch on and become popular among skiers who currently use fluorine-containing products, it is crucial that the technical performance of Nordic Swan Ecolabelled products is as good as fluorine-containing products (for “ordinary” skiers at all levels). The reference product must therefore be a fluorine-containing product of the type LF (Low Fluorine) or higher. If the Nordic Swan Ecolabelled product is to be marketed in the category of HF products, Nordic Ecolabelling requires that it shall be tested against a HF product.

The glide and the properties of the snow can vary greatly depending on the weather conditions and surface conditions. For this reason, the weather conditions and surface conditions must be documented in careful detail to make it possible to explain any variations in the results of the different test sessions. It is essential that the weather conditions and surface conditions are relevant to ensure the products are tested under the conditions for which they are designed and intended.

Glide, wear resistance and dirt resistance are the three main properties of a glide wax product.

Glide: Testing the glide performance in the field is a well-established practice in the industry. There is currently no satisfactory correlation between laboratory tests and glide performance results in the field. For this reason, glide performance must be tested in the field. The test protocol is based on protocols used in glide performance tests for cross-country skis in the industry today. The industry prefers to test the glide wax products on cross-country skis. As well as being expensive and time-consuming to conduct, there are a number of sources of error associated with tests on downhill skis[41].

Wear resistance: There is no common practice in the industry for testing wear resistance, nor are there any standard laboratory tests. Testing the glide performance after a ski tour represents a real use situation. A 25-35-kilometre ski tour is classed as a "medium-length" ski tour and is therefore an appropriate distance. Because dirt will also be absorbed under the skis during a ski trip this test will, depending on the skiing conditions, reflect a combination of wear resistance and dirt-repellent properties.

The field tests (glide and wear resistance) can be performed by the applicant. Nordic Ecolabelling therefore wishes that the applicant shall enable Nordic Ecolabelling to monitor at least one test run in field, as an independent third party. Nordic Ecolabelling will assess the need for presence case by case for each application.

Dirt-repellent properties: The contact angle between the surface and water is a measure of the hydrophobicity of the surface. (If the contact angle is greater than 90 degrees, the surface is defined as hydrophobic.) The most common dirt problem during a ski tour is caused by organic particles in the snow. Organic particles that have dissolved in the water that comes into contact with the skis will be "rinsed off" the hydrophobic surface along with the water. Hydrophobicity is therefore a relevant parameter for dirt-repellent properties.

7.5 Packaging

O9 Spray cans

Metal spray cans with propellant gas must have an information text on the label explaining how to dispose of the packaging. The text must be in accordance with national recommendations.

Denmark and Norway: The empty spray can must be disposed of to the municipality as hazardous waste.

Finland and Sweden: A spray can that is completely empty of contents and propellant gas goes into the normal metal recycling. Otherwise, it should be disposed of as hazardous waste.

✉ The product's label.

[41] Communication with Christian Gløgård at Swix, September-November 2017

Background to Requirement O9

The metal from spray cans can be recycled and traded, and there is a well-functioning market for this. As a consumer, however, you can be uncertain how to dispose of metal spray cans with propellant gas as this varies from country to country and if the packaging is empty or not. In order to facilitate the correct sorting, Nordic Ecolabelling requires information in accordance with national recommendations on the label.

7.6 Quality and regulatory requirements

The quality and regulatory requirements are general requirements that are always included in Nordic Ecolabelling's product criteria. The purpose of these requirements is to ensure compliance with environmental legislation and fundamental requirements for quality management. They must also ensure compliance with Nordic Ecolabelling's requirements for the product throughout the period of validity of the licence.

To ensure compliance with Nordic Ecolabelling requirements, the following procedures must be implemented.

O10 Responsible person and organisation

The company shall appoint individuals who are responsible for ensuring the fulfilment of the Nordic Ecolabelling requirements, for marketing and for finance, as well as a contact person for communications with Nordic Ecolabelling.

✉ Organisational chart showing who is responsible for the above.

O11 Documentation

The licensee must archive the documentation that is sent in with the application, or in a similar way maintain information in the Nordic Ecolabelling data system.

🔑 Checked on site as necessary.

O12 Quality

The licensee must guarantee that the quality of the Nordic Swan Ecolabelled product does not deteriorate during the validity period of the licence.

🔑 The claims archive is checked on site.

O13 Planned changes

Written notice must be given to Nordic Ecolabelling of planned changes in products and markets that have a bearing on Nordic Ecolabelling requirements.

✉ Procedures detailing how planned changes in products and markets are handled.

O14 Unplanned nonconformities

Unplanned nonconformities that have a bearing on Nordic Ecolabelling requirements must be reported to Nordic Ecolabelling in writing and journalled.

✉ Procedures detailing how unplanned nonconformities are handled.

O15 Traceability

The licensee must be able to trace the Nordic Swan Ecolabelled ski wax in the production. For a produced/sold product, it must be possible to trace time and date, production site and, if relevant, on which production line the product was produced. Moreover, it must be possible to trace which raw materials were actually used for the specific product (raw material batches, suppliers).

✉ Description of/procedures for the fulfilment of the requirement.

O16 Legislation and regulations

The licensee shall ensure compliance with all applicable local laws and provisions at all production facilities for the Nordic Swan Ecolabelled product, e.g. with regard to safety, working environment, environmental legislation and site-specific terms/permits.

✉ Duly signed application form.

8 Areas without requirements

Perfluorinated organic compounds represent the single most important factor with regard to environmental and health impacts for ski wax products. In this first version of the criteria, the intention is to promote ski wax that does not contain perfluorinated organic compounds and, at the same time, ensure a good level of performance.

Nordic Ecolabelling explicitly prohibits microplastics in several product groups. There are no explicit requirements for microplastics in these ski wax criteria. Microplastics are considered to be taken care of through the requirement O5 aerobic degradability, in which we require that all organic ingoing substances and their degradation products must be aerobically biodegradable.

New criteria

For the next revision, when generating the second generation of the ski wax criteria, the following will be considered:

No requirements are set for material types and packaging recyclability. This may change in future versions of the criteria.

It may be presumed that the quantities of inhalable aerosols from spray-on ski waxes exceed those from waxes applied by other means. o requirements are set for mechanisms to control or restrict the quantities of inhalable aerosols from spray products. This may increase the risk of adverse health impacts. Heating during application of glide wax may also increase the risk of adverse health effects due to evaporation of product, which can be inhaled. In future revisions it may be appropriate to look into this.

Other areas for which no requirements are set, but which may be reviewed and changed in future versions of the criteria, are volatile organic compound content restrictions, requirements promoting use of renewable raw materials and requirements for health, environmental and safety instructions for the application of the products.