



Nordic Ecolabelling of De-icers

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Nordic Ecolabelling

In 1989, the Nordic Council of Ministers decided to introduce a voluntary official ecolabel, the Swan. 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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This is a translation of the criteria document in Danish.

In any case of dispute, the original document should be taken as authoritative.

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Nordic Ecolabelling of De-icers

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What is a Nordic Ecolabelled de-icer?

De-icers bearing the Nordic Ecolabel meet a number of environmental, health and quality requirements.

This means that requirements are imposed on the effectiveness of the de-icers and their effects on the environment and people. This is done by imposing threshold values and bans on chemical products and heavy metals that might be harmful to humans and the environment. Requirements are for example imposed on the oxygen demand of the de-icers, content of chlorides, nutrients and additives classified as harmful to health and the environment. Requirements are also imposed to ensure that the de-icers function efficiently without having an excessive corrosive effect on buildings, aircraft and vehicles.

Why choose Nordic Ecolabelled de-icers?

- Manufacturers of de-icers with a licence to use the Nordic Ecolabel may display this trademark in their marketing material. The Nordic Ecolabel enjoys a high level of recognition and credibility in the Nordic countries.
- The Nordic Ecolabel is a cost-effective and simple means for a business to draw the attention of customers and suppliers to its environmental work and commitment to the environment.
- Environmentally friendly operations also prepare the business for future environmental requirements.
- Environmental issues are complex and it may take some time to familiarize oneself with the specific issues. Nordic Ecolabelling can be viewed as an aid in this work.
- The Nordic Ecolabel criteria contain not only environmental requirements, but also quality requirements since environment and quality are parameters that go hand in hand. This means that the Nordic Ecolabel licence can also be viewed as a mark of quality.

What de-icers qualify for a Nordic Ecolabel?

A Nordic Ecolabel may be awarded for de-icers used for the purpose of removing ice and snow on flat areas, preventing further ice formation or maintaining friction on for example runways at airports and roads.

The de-icers may be either liquid or solid (granulate). Sand and grit cannot be Nordic Ecolabelled.

Please note that Nordic Ecolabelled de-icers may contain a maximum of 1.0 percent by weight of chloride ions and that a threshold for oxygen consumption of the de-icers has been established in relation to dosage.

How to apply

The application and written documentation showing that the manufacturer fulfils the requirements of this document should be sent to the secretariat in the Nordic country in which the products are manufactured or in the Nordic country in which the products are on sale.

Application forms are available on the websites of the individual ecolabelling organization. Fill out an application form for the product for which a Nordic Ecolabel licence is sought. Attach documentation demonstrating compliance with all requirements and a list of contents for the documentation to the application.

This document can be used as a checklist. The applicant must keep copies of all documents.

What requirements apply?

The following is required in order to be awarded a Nordic Ecolabel licence:

- A completed application form must be submitted.
- The requirements contained in Chapters 1 and 2 must be fulfilled.
- The national ecolabelling organization must make an inspection visit to the business.

Each requirement is marked with the letter R (for requirement) and a number. For each requirement the applicant must specify whether the requirement has been fulfilled or not. This is shown as: yes no in the document. Every requirement is followed by the symbol that describes how the applicant must document the requirement.

All documentation must be numbered, and the appropriate number must be entered in the field headed "Appendix No. ____". In many cases, applicants need simply complete the pre-prepared appendices to provide the necessary documentation. These appendices will be found at the end of this document.

For requirements regarding test institutions, see Chapter 4.

1 Environmental requirements

R1 Information about the product

The applicant must provide detailed information on the de-icer for which a Nordic Ecolabel is sought.



The trademark/trade name.

The countries and sales outlets in which the products are expected to be on sale.

The forecast annual sales of the product (in terms of turnover and weight) in each Nordic country.

The volume of package the products will be sold in (e.g. 2 litres, 5 kilos or larger amounts).

A description of the products (e.g. liquid or solid).

R2 Classification of the product

The product must not be subject to classification in accordance with the EU substance and preparation directive 67/548/EEC and 1999/45/EC (with applicable adaptations) in any of the following danger classes: very toxic (Tx), toxic (T), environmentally harmful (N or no symbol), harmful to health (Xn), corrosive (C), local irritant (Xi), sensitising (Xn/Xi), carcinogenic (T/Xn), mutagenic (T/Xn), toxic for reproduction (T/Xn), explosive (E), oxidising (O), extremely flammable (Fx), highly flammable (F) or flammable (no symbol).

Special rules in force in individual Nordic country may encompass both special national classification rules and national exemptions from the list of dangerous substances. The ecolabelling organization will be able to provide information on special rules where applicable.



Product safety datasheets for the de-icer in accordance with Directive 2001/58/EC.

R3 Biodegradability

The de-icer must be biodegradable in accordance with at least one of the following requirement levels:

- Test methods OECD 301 A, OECD 301 E, ISO 7827, OECD 302 A, ISO 9887, OECD 302 B or ISO 9888 must show a degradation percentage of at least 70% during the course of 28 days.
- Test methods OECD 301 B, ISO 9439, OECD 301 C, OECD 302 C, OECD 301 D, ISO 10707, OECD 301 F, ISO 9408, ISO 10708 or ISO 14593 must show a degradation percentage of at least 60% during the course of 28 days.
- Test methods OECD 303 or ISO 11733 must show a degradation percentage of at least 80% during the course of 28 days.



The applicant must submit the relevant documentation, product safety datasheets, test reports and/or declaration from a manufacturer. The test method and results must be specified as outlined above.

R4 Declaration of the oxygen demand

The oxygen demand of the de-icer as used, COD or ThOD, is to be measured and stated.

- The result of analyses from a test institution in accordance with ISO 6060 (or equivalent) of chemical oxygen demand, COD, or calculations for determining ThOD (theoretical oxygen demand).

R5 Oxygen consumption during degradation

The oxygen consumption during degradation of the recommended dosage, (see R13) of the de-icer at preventive usage at -5 °C must not exceed 5 g O₂/m².

- Calculation and statement of g O₂/m² at recommended dosage.

The calculation of ThOD must be performed on the product C_cH_hCl_{cl}N_nNa_{na}O_oP_pS_s in accordance with one of the following methods as described in OECD 301 (a discussion of which methods are used is attached):

Without nitrification: ThOD_{NH₃} (gram O₂/gram de-icer) =

$$\frac{16[2c + 1/2(h - cl - 3n) + 3s + 2,5p + 1/2na - o] \text{ g/g}}{\text{MW (molar weight)}}$$

With nitrification: ThOD_{NO₃} (gram O₂/gram de-icer) =

$$\frac{16[2c + 1/2(h - cl) + 2,5n + 3s + 2,5p + 1/2na - o] \text{ g/g}}{\text{MW (molar weight)}}$$

R6 Information on chemical content

The applicant must provide detailed information on the chemical content of the de-icer for which a Nordic Ecolabel is sought.

- A description of the contents of the product (complete recipe) and known pollutants. The description must include the trade name, chemical name, specification of quantity and CAS number of each ingredient in the product.
- A specification of the manufacturer and function of each individual ingredient, i.e. the reason for which the individual ingredient has been added to the product.
- Specification of the water content (as a percentage) of each individual ingredient.
- Product safety datasheets for each individual ingredient in accordance with Directive 2001/58/EC.

R7 Ecotoxicity

Only products that fulfil the following requirements must be present in the product in concentrations in excess of 0.1 percent by weight for individual substances and 0.2 percent by weight in total:

The substance must not have IC₅₀ (for algae) or EC₅₀ (for daphnia) or LC₅₀ (for fish) ≤ 1 mg/l according to the test methods OECD 201 for algae, OECD 202 for daphnia and OECD 203 for fish.

If LC₅₀ (for algae) or EC₅₀ (for daphnia) or LC₅₀ (for fish) lies between 1 mg/l and 100 mg/l according to the test methods OECD 201 for algae, OECD 202 for daphnia and OECD 203 for fish, the substance must be readily degradable according to the test methods OECD 301A-E or have a logP_{ow} (log octanol/water distribution

coefficient) ≤ 3.0 (unless the experimentally determined bioconcentration factor (BCF) ≤ 100).

The above requirements are imposed on the basis of the criteria for the classification of toxicity for waterborne organisms in Council Directive No. 92/32 of 30 April 1992 concerning the classification, packaging and labelling of dangerous substances.

It will be sufficient for the applicant to assess the toxicity data on the basis of one or two of the three aforementioned groups of organisms (fish, daphnia or algae) if the applicant does not have toxicity data on all three groups (for example in the form of datasheets).

If toxicity data is available for more than one of the three mentioned groups of organisms, the value of the group that shows the highest toxicity (that is the lowest toxicity dose) must be used.

If toxicity data is available for several species within the same group of organisms (fish/algae/daphnia) the value for the species within the group showing the highest toxicity must be applied.

- Product safety datasheets for the individual ingredients in the de-icer in accordance with Directive 2001/58/EC, in which toxicity is specified.

If toxicity is not specified in the product safety datasheet in accordance with the above, and information can not be found elsewhere in literature, the results of analyses conducted by a test institution must be submitted.

R8 Chloride ions

Ingredients in the de-icer as used must contain less than 1 percent by weight of chloride ions.

- Product safety datasheets for each individual ingredient in accordance with Directive 2001/58/EC or technical description of the product showing the overall content of chloride ions in the de-icer.

R9 Heavy metals

The total content of heavy metals must be less than:

Arsenic	10 mg/kg DS
Cadmium	0.8 mg/kg DS
Chromium	40 mg/kg DS
Copper	40 mg/kg DS
Lead	40 mg/kg DS
Mercury	0.8 mg/kg DS
Nickel	30 mg/kg DS
Zinc	30 mg/kg DS

DS = Dry substance

- Analysis report with test results conducted by a test institution

Test method: When testing for the content of heavy metals, ICP- or AAS methods shall be used. For each metal a method using a detection limit of at least ten times lower than the level of the requirement must be applied. The analysis report must contain the results of testing for the total content of heavy metals, information on the method of analysis and the sensitivity of the method.

R10 Nutrients

The total content of nitrogen (N) and phosphorus (P) must be less than 1 percent by weight.

- Product safety datasheets for each individual ingredient in accordance with Directive 2001/58/EC or technical descriptions of the product, showing the total content of N and P in weight percentage.

R11 Corrosion

The de-icer must not cause corrosion damage in excess of the following values:

On aluminium (AMS 4041 or equivalent test): 0.3 mg per cm² during the course of 24 hours.

On carbon steel (AMS 5045 or equivalent test): 0.8 mg per cm² during the course of 24 hours.

- The results of analyses performed by a test institution where test method ASTM F 483 is used in tests on the solution in use of the product.

R12 Efficiency

The applicant must be able to prove that the de-icer has a satisfactory efficiency in relation to the purpose of the use.

The efficiency must be measured by either:

- 1) test from laboratory, or
- 2) user test

Both tests are to assess the capability of the de-icer to melt ice (melting capacity).

1. Test from laboratory:

The melting capacity of the de-icer must be more than 1.8 g ice melted/g de-icer used after 30 minutes.

Alternatively the melting capacity must be more than 2.4 g ice melted/g de-icer after 60 minutes.

2. User test

If the applicant chooses to show the efficiency of the de-icer by using a user test, this must be performed as in the following description:

A. Answer must be received from at least 3 users forming a representative selection of all users.

B. Test method and dosage must resemble recommendations in instruction of use from the manufacturer of the de-icer.

C. Test period must last for at least 2 weeks, or the de-icer must have been used for at least 1 month.

D. Each of the 3 users must evaluate the efficiency of the de-icer by assessing the ability of the de-icer to melt ice. Test on a transport area in asphalt must be a part of the assessment.

E. The answers must be measured on a scale with at least 3 levels: "not sufficient efficient", "sufficient efficient" and "very efficient".

F. All 3 users must evaluate the ability of the de-icer as "sufficient efficient" and "very efficient".

G. The applicant in their testing of a de-icer must not in any way influence users.

(Appendix 2 may be used for documentation of the test.)

Test from laboratory must be performed at -5°C using the recommended dose for spreading on ice at -5°C. The user test shall be performed using a dosage corresponding to the weather conditions (See R13).



1. Test from laboratory:

Test results from a test institution must be attached to the application. The test must be performed in accordance with the methods specified in the SHRP H - 205.1 (in the case of de-icers in solid form) and SHRP H - 205.2 (in the case of liquid de-icers) or similar tests. As a minimum, three replications of the test must be made. The test method shall not necessarily meet demands to cold room.

2. User test

Test results from 3 users must be attached to the application. The results must be signed by the users. A declaration stating that tests has been performed without influence of the applicant must also be signed by the user and attached to the application. Information about where, when and by whom the test has been performed together with information about weather conditions (temperature, rain, snow, wind) must be attached.

R13 Instructions for use

Instructions for use must be supplied with the de-icer, either on the packaging or in a text attached to the packaging. The instructions for use must briefly explain what dosage is recommended to provide the most satisfactory result. The explanation must provide information on the dosages that are to be used under various weather conditions (including variations in temperature and precipitations) and surrounding environment (parks, forests, harbours, airports, bridges, car parks etc.).

For de-icers on solid form (granulate) the instruction must also contain an instruction on the use of security equipment (e.g. gloves and protection glasses).



A copy of the instructions for use.

R14 Recycling systems

Relevant national laws, rules and agreements with the line of business concerning systems for recycling of products and packaging must be met in the Nordic country where the ecolabelled products are sold.



Registration number of the national recycling system for products and packaging showing that criteria for recycling systems are met, must be attached the application.

2 Other requirements

2.1 Requirements of the authorities

R15 Requirements of the authorities as to safety, the working environment and the external environment

Holders of licences for Nordic Ecolabelled products are responsible for ensuring that their de-icers and the production of de-icers fulfil the requirements, statutes and regulations on the environment and the working environment in force in the country of production in question.

The licence may be revoked if this requirement is not fulfilled.

2.2 Eco and quality assurance

R16 Eco and quality assurance

Manufacturers holding an ecolabelling licence themselves or through distributors/importers must seek to secure the following by means of documented procedures and instructions:

- that the requirements of the ecolabelling criteria are met
- that the level of quality of the Nordic Ecolabelled products encompassed by the licence is maintained
- that the organization of the internal quality and eco-assurance is structured in such a way that it ensures that the Nordic Ecolabel criteria are fulfilled
- that a person within the organization is allocated responsibility for maintaining contact with Nordic Ecolabelling

☒ The following must be attached to the application:

- Written details of the organizational structure, contact person and other persons with responsibility and their areas of responsibility.
- Procedures aimed at ensuring that the requirements of the criteria document are fulfilled.
- Procedures for documenting and reporting planned changes to production with a bearing of fulfilment of the Nordic Ecolabel criteria.
- Procedures for processing and reporting unforeseen deviations from the Nordic Ecolabel criteria.
- Procedures for processing and reporting complaints and claims relating to Nordic Ecolabelling. The license holder shall keep complaints and claims.
- The procedures of the contact person for reporting to the ecolabelling organization.
- Procedures for ensuring the trace ability of the Nordic Ecolabelled products in the production process to distinguish them from other production.

2.3 Marketing

R17 Marketing

The marketing of Nordic Ecolabelled de-icers must comply “Regulations for the Nordic Ecolabelling of products”.

- ☒ The applicant must provide a short description of planned marketing measures and complete and submit Appendix 1.

3 Control

3.1 Control at the time of application

The ecolabelling organization will conduct control measures in accordance with the Regulations for Nordic Ecolabelling of products. The application material will be checked against the documentation instructions for each requirement. Inspections will also be made at relevant points in the production process for, during which the documentation in the application will be compared with observed conditions.

During the inspection visit checks will be made to ensure that the operation and organization of production complies with the information provided in the application.

3.2 Follow-up inspection

The national ecolabelling organization may make follow-up inspection visits to manufacturers holding Nordic Ecolabel licences and their suppliers. An inspection of this type may take a variety of forms. The ecolabelling organization may, for example, make inspection visits to ensure that production follows the guidelines described in this document. The licence holder will be liable for the cost of inspections of this kind if the production process does not comply with the information provided in the application.

4 Test institutions

The test institution used must be competent and impartial as provided for in the following:

The laboratory must fulfil the general requirements contained in the standard DS/EN SO/IEC 17025 or be an officially GLP-approved laboratory. The applicant is liable for the cost of documentation and analyses.

DS/EN SO/IEC 17025 was formerly EN 45000.

The manufacturers own laboratory may be approved for the performance of such analyses if the authorities are granted access to perform monitoring. The

manufacturer's laboratory may also be approved if it operates under a quality assurance system certified to ISO 9001 or ISO 9002.

The design of the ecolabel

See Regulations for Nordic Ecolabelling of products, for further details on the design of the Nordic Ecolabel. The Nordic Ecolabel and the allotted licence number (shown as 000-000) and the wording "De-icers" must have the following design:



000-000
De-icers

The licence number and the wording "De-icers" may also follow the underside of the logo or be printed elsewhere near the logo.

The top text varies from country to country; see the rules on the correct top texts in various languages in "Regulations for Nordic Ecolabelling of products", which also provide information on the colour and size of the logo.

The wording "De-icers" also varies from country to country, and one or more of the following should therefore be used:

Danish:	Tømiddel
Norwegian:	Isbekjempningsmiddel
Swedish:	Halkbekämpningsmedel
Finnish:	Liukkaudentorjunta-aine
Icelandic:	Hálkueyðir
English:	De-icer

If other languages are to be used this must be agreed in writing with the ecolabelling organisation.

The Nordic Ecolabel may be displayed on the Nordic Ecolabelled products and in printed advertising material. However, the latter is permitted only if there can be no doubt about the products to which the Nordic Ecolabel applies.

The validity of the criteria document

This criteria document was adopted by Nordic Ecolabelling on 18 March 2004 and will remain in force until 18 March 2009.

On 15 April 2008, the Secretariat managers meeting decided to prolong the validity of the criteria. At the same time, a change in the requirement to laboratory test on melting efficiency was adopted. The new version is called 2.1 and it is valid until 31 December 2011.

On 9 November 2010, the Secretariat Managers Meeting decided to prolong the validity of the criteria. The new version is called 2.2 and is valid until 30 June 2013.

On 15 June 2012, the Nordic Ecolabelling Board decided to prolong the validity of the criteria. The new version is called 2.3 and is valid until 31 December 2014.

During the validity of the criteria document the criteria may be adjusted, clarified and/or extended by Nordic Ecolabelling, in which case a new version will be issued. This will not normally entail the reassessment of existing licences.

Nordic Ecolabelling will give notice of the future criteria at least 12 months before the expiry of the current criteria document.

Future criteria

In future criteria Nordic Ecolabelling will consider the possibility of improving the efficiency requirements and introducing lower threshold values for heavy metals and nutrients.

Ecolabelling is in constant development, for which reason it cannot be excluded that other criteria proposals will be put forward.

Marketing of ecolabelled products

Appendix 1

This is to certify that we are familiar with the regulations for the use of the Nordic Ecolabel described in “Regulations for Nordic Ecolabelling of products.”

We hereby agree to undertake all marketing work in accordance with these regulations.

This is also to certify that we are familiar with the criteria document for de-icers.

We hereby agree to ensure that all personnel within our company who market the ecolabelled products will receive training in the content of the above-mentioned document.

_____	_____
Place/date	Name of company
_____	_____
Contact person	Tel. no.
_____	_____
Marketing Manager	Tel.no.

A new certificate must be submitted to the ecolabelling organization as and when the above positions are re-appointed.

Appendix 2 – User test

Appendix to be use during application for Nordic Ecolabelling of de-icers.

Name of the product:	
Name of the manufacturer:	
Test performed by: Company: Contact person: Telephone:	
Test period:	
User method:	
Temperature when the test was performed:	
Dosage:	
Conditions on road (ice, snow etc.):	
Has the product been tested on transport area with asphalt? Yes <input type="checkbox"/> no <input type="checkbox"/>	
Assessment of the products efficiency (ability to melt ice):	
Not sufficient efficient	<input type="checkbox"/>
Sufficient efficient	<input type="checkbox"/>
Very efficient	<input type="checkbox"/>
Comments to test performance:	

Date

Company

Signed by the responsible for the test