Nordic Ecolabelling of

Closed Toilet Systems



Version 3 • datum - datum
Consultation draft

Nordic Ecolabelling

Content

What is a Nordic Ecolabelled closet toilet system? 3

Why choose the Nordic Ecolabel? 3

What can carry the Nordic Ecolabel? 3

How to apply 4

What are the requirements of the Nordic Ecolabelling? 5

1 Material composition 6
2 Environmental requirements 6
2.1 Plastics 6
2.2 Insulating material 7
2.3 Power supply 7
2.4 Chemicals 7
2.5 Product function requirements 9
2.6 Waste and packaging 12
3 Quality and regulatory requirements 12

Marketing 14

Design of the Nordic Ecolabel 14

Follow-up inspections 14

How long is a licence valid? 15

New criteria 15

Appendix 1 Marketing of Nordic Ecolabelled closed toilet systems
Appendix 2 Declaration by plastics supplier
Appendix 3 Declaration of classification of chemical products
Appendix 4 Assembly, installation and user instructions
Appendix 5 Background memorandum on closed toilets
Appendix 6 Testmethod for closed toilet systems

052 Closed Toilet Systems, version 3, 07 October 2013

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 Swan. These organisations/companies operate the Nordic ecolabelling system on behalf of their own country's government. For more information, see the websites:

Denmark
Ecolabelling Denmark
Danish Standards Foundation
Kollegievej 6
DK-2920 CHARLOTTENLUND
Tel: +45 72 300 450
Fax: +45 72 300 451
info@ecolabel.dk
www.ecolabel.dk

Finland
Ecolabelling Finland
Box 489
FI-00101 HELSINKI
Tel +358 424 2811
Fax +358 424 281 299
joutsen@motiva.fi
www.ecolabel.fi

Iceland
Ecolabelling Iceland
Umhverfisstofnun
Suðurlandsbraut 24
IS-108 REYKJAVIK
Tel: +354 591 20 00
Fax: +354 591 20 20
svanurinn@ust.is
www.svanurinn.is

Norway
Ecolabelling Norway
Henrik Ibsens gate 20
NO-0255 OSLO
Tel: +47 24 14 46 00
Fax: +47 24 14 46 01
info@svanemerket.no
www.svanemerket.no

Sweden
Ecolabelling Sweden
SE-118 80 STOCKHOLM
Tel: +46 8 55 55 24 00
Fax: +46 8 55 55 24 01
svanen@ecolabel.se
www.ecolabel.se

This document may only be copied in its entirety and without any type of change.

It may be quoted from provided that Nordic Ecolabelling is stated as the source.

What is a Nordic Ecolabelled closed toilet system?

'Closed toilet system' refers to toilets that do not need to be connected to sewerage systems. The criteria document covers closed toilet systems with and without electrical power supplies.

Nordic Ecolabelled closed toilets are among those on the market with the lowest environmental impact. Special features of these toilets are that:

- They produce peat directly in situ, without the use of chemicals.
- Effective composting is assured thanks to extensive function testing. The end product can be used as a fertiliser.
- There are environmental and health requirements on the chemicals used in the production of the closed toilets.

It is primarily toilet systems based on biodegradation processes that are able to satisfy the criteria, and the end product must be suitable for use as a fertiliser. The materials used are subject to environmental requirements, and the toilets must function without the use of additives harmful to health and the environment. A Nordic Ecolabelled toilet system has documentation from thorough function testing showing that it works in practice.

Why choose the Nordic Ecolabel?

- Manufacturers and retailers can use the Nordic Ecolabel trademark in their marketing. This is a very well-known and trusted trademark in the Nordic region.
- The Nordic Ecolabel is a cost-effective and simple way for manufacturers to communicate their environmental work and commitment to customers and suppliers.
- More eco-aware operations prepare the manufacturer for future environmental requirements.
- Environmental issues are complex and it can take a long time to gain an understanding of a specific area. Nordic Ecolabelling can be seen as an aid in this work.
- The Nordic Ecolabel not only covers environmental but also quality requirements, since the environment and quality often go hand in hand. This means that a Nordic Ecolabel licence can also be seen as a mark of quality.

What can carry the Nordic Ecolabel?

The product group covers closed toilet systems with and without electrical power supplies. 'Closed toilet' refers to toilets that do not need to be connected to sewerage systems. Toilet systems based on biodegradation processes are able to satisfy the criteria. The end product must be suitable to use as a fertiliser.

Closed toilet systems include one or more containers for urine and faeces. If the toilet uses external composting, the system must also include external compost containers. External composting means that the compost/waste can be moved from an internal to an external compost container for aftercomposting. The ecolabelling also covers the toilet bowl and seat.

Toilets that use water as a means of transporting urine and faeces (flush toilets) and urine-separating toilets fall outside the scope of the product group.

How to apply

Each requirement is marked with the letter O (obligatory requirement) and a number. All requirements must be fulfilled to be awarded a licence.

Icons in the text

The text describes how the applicant shall demonstrate fulfilment of each requirement. There are also icons in the text to make this clearer. These icons are:

✉ Enclose

🔑 The requirement checked on site

🕮 Enclose procedure in environmental and quality management system

Application

Applications are made to the national ecolabelling organisation and the application is valid for 12 months. Applications may be processed by another ecolabelling organisation according to agreement between the organisations. The applicant is notified of this. Companies located outside the Nordic countries make applications to the national ecolabelling organisation of the primary market.

The application must consist of a completed application form together with all of the documentation required to demonstrate compliance with the requirements specified in the criteria document (this is specified for each requirement). The application form must specify in which Nordic countries the products in question are to be sold and the estimated turnover from the products in each country.

Further information and assistance may be available. Visit the relevant national website for information.

Sales in the Nordic region

Once granted, a licence is valid throughout the Nordic region. The licence document specifies in which Nordic countries the products are sold according to the information provided on the application. The products are published on Nordic Ecolabelling's website(s). The licensee undertakes to inform Nordic Ecolabelling of any changes as to where the product is sold. If the product is to be sold in other Nordic countries than those initially specified in the application, the licensee must provide written notification of this and submit any extra documentation required to Nordic Ecolabelling in the country that issued the license.

On-site inspection

In connection with handling of the application, Nordic Ecolabelling performs an on-site inspection to ensure adherence to the requirements. For such an inspection, data used for calculations, original copies of submitted certificates, test records, purchase statistics, and similar documents that support the application must be available for examination.

Costs

An application fee is charged to companies applying for a licence. There is an additional annual fee based on the turnover of the Nordic Ecolabelled closed toilet system.

Enquiries

Please contact Nordic Ecolabelling if you have any queries or require further information. See page 2 for addresses.

What are the requirements of the Nordic Ecolabelling?

To be awarded a Nordic Ecolabel licence, all the requirements must be fulfilled.

To be granted a Nordic licence, the following documentation must be enclosed with the application:

- User instructions in all relevant languages
- Documentation showing compliance with national regulations, laws and any trade agreements on take-back systems for packaging.

1 Material composition

O1 Description of the products

A description must be provided of the closed toilet system, showing that it meets the definition of what can carry the Nordic Ecolabel. The description must include

- Type of closed toilet system (constituent parts, external container, etc.)
- Materials used in the toilet system such as plastics, metal and wood, including percentage by weight
- Suppliers of the various materials
- Expected annual energy consumption (kwh/year) for closed toilets that require an electrical power supply

✉ Description in accordance with the above.

2 Environmental requirements

2.1 Plastics

O2 Halogenated plastics

Halogenated plastics must not be used in the toilet system. This requirement does not apply to halogenated plastics in electric cables.

✉ Declaration from manufacturer of compost container or plastics manufacturer/supplier stating that no halogenated plastics have been used.

O3 Recovered/recycled plastics

Plastics used in the product must contain at least 30% recovered/recycled plastics by weight. This requirement does not apply to PEX or plastic composite, e.g. glass fibre-reinforced polyester (GUP).

Recovered plastics are defined as post-consumer recovered material such as scrapped plastics products or packaging or production waste from external suppliers. Production waste from production of the compost container is not recovered material. This is in line with the definitions in standard ISO 14021 Environmental labels and declarations.

Recovered plastics must not contain halogenated flame retardants. However, impurities of up to 100 ppm are permitted.

✉ Declaration from plastics manufacturer/supplier that the raw material has been recovered and percentage of recovered plastic. Declaration from plastics manufacturer/supplier that the plastic does not contain halogenated flame retardants. Appendix 2 can be used.

O4 Marking of plastics

Plastics parts weighing more than 50 g must be marked in accordance with ISO 11469 Generic identification and marking of plastics products.

✉ Declaration from plastics manufacturer or supplier. Appendix 2 can be used.

2.2 Insulating material

O5 Blowing agent

Blowing agents for insulating foam must have an ozone depletion potential (ODP) = 0 and a global warming potential (GWP_{100}) < 15 (calculated as CO_2 equivalents over a period of 100 years).

The blowing agent must not contain halogenated organic compounds.

✉ Overview of blowing agent used and confirmation from manufacturer/supplier of blowing agent showing that the requirement is met.

2.3 Power supply

O6 Power supply

The power supply must not exceed 320 W.

✉ Information on maximum power supply.

2.4 Chemicals

The requirements cover all chemical products such as glue, varnish, paint, wood preservatives and similar used by the manufacture in the production of the Nordic Ecolabelled products and by the manufacturer's subcontractors in the production of parts for the Nordic Ecolabelled products.

Auxiliary substances such as lubricants and detergents are not covered by the requirements.

Metals and metal coatings are exempt from the requirements.

Plastics are exempt from O7-O8. See separate requirement (O9) for additives in plastics.

O7 Overview of chemicals

The manufacturer of the closed toilet must provide an overview of the chemicals used in the production, e.g. glue, varnish and paint. Chemicals which are used by subcontractors and in the production of parts for the Nordic Ecolabelled product must also be specified.

✉ Overview from manufacturer of the closed toilet of the chemicals used in production.

O8 Classification of production chemicals

Production chemicals used in the production of the closed toilet must not be classified in accordance with Table 1.

Table 1: Classification

Classification	Danger symbols and R-phrases/Hazard classes, hazard category and hazard statement	
	EU Preparations Directive 1999/45/EC	CLP Regulation 1272/2008
Harmful to the environment	N with R50, R50/53, R51/53, R52/53 (without N) and/or R59.	Hazardous to the aquatic environment. Category: acute 1 H400, chronic 1 H410, chronic 2 H411, chronic 3 H412. Hazardous to the ozone layer EUH 059 or H420
Very toxic	Tx (T+ in Norway) with R26, R27, R28 and/or R39	Acute toxicity, category 1 or 2 with H330, H310 and/or H300 and/or Specific target organ toxicity – single exposure, category 1 with H370
Toxic	T with R23, R24, R25, R39 and/or R48	Acute toxicity, category 2 or 3 with H330, H331, H311 and/or H301 and/or Specific target organ toxicity – single exposure, category 1 with H370, and/or Specific target organ toxicity – repeated exposure, category 1 with H372
Carcinogenic	T with R45 and/or R49 (Carc 1 or Carc 2) or Xn with R40 (Carc 3)	Carc 1A/1B/2 with H350* and/or H351
Mutagenic	T with R46 (Mut 1 or Mut 2) or Xn with R68 (Mut 3)	Mut 1A/1B/2 with H340 and/or H341
Toxic for reproduction	T with R60 and/or R61 (Repr 1 or Repr 2) or Xn with R62, R63 and/or R64.	Repr 1A/1B/2 with H360*, H361*, H362

The classification applies under the EU's Preparations Directive 1999/45/EC as amended and/or the CLP Regulation (EC) No 1272/2008 as amended. During the transition period, i.e. until 1 June 2015, classification under the EU's Preparations Directive or the CLP Regulation may be used. After the transition period, only classification under the CLP Regulation will apply.

** If it is definitively proven that the hazard cannot be caused by other routes of exposure, the route of exposure can be stated as part of the hazard statement. One or two letters after the hazard statement indicate the route of exposure (e.g. H350i – May cause cancer by inhalation) and/or type of effect. All additional codes are included in the criteria.*

Be aware that it is the manufacturer who is responsible for the classification.

✉ Confirmation from manufacturer of the chemicals and safety data sheet/product sheet in accordance with the relevant legislation in the country in which the application is being made, e.g. Appendix II of REACH (Regulation (EC) No 1907/2006). Appendix 3 can be used.

O9 Additives in plastics

Halogenated paraffins, halogenated flame retardants, phthalates, pigments based on copper, lead, boron, tin, cadmium, chromium^{VI} or mercury, or their compounds, must not be actively added to plastics.

Plastics used in electric cables are exempt from the requirement concerning phthalates.

The requirement does not apply to recycled plastics.

✉ Declaration from the plastics supplier. Appendix 2 can be used.

2.5 Product function requirements

O10 Design and durability

The design and durability of the toilets must be tested and fulfil the requirements for imperviousness, impact resistance, rigidity, flammability, strength of materials, wear and tear, and design in accordance with "Test method for closed toilet systems"; see Appendix 6 (Part 1, Section 4).

✉ Copy of test report.

For licensees under version 2: Provided no changes of functional importance have been made, licensees with a licence under version 2 are exempt from this requirement, i.e. no new test or report is necessary. Confirmation that no functional changes have been made must be enclosed.

O11 Properties

The functionality of the toilet systems must be tested in accordance with "Test method for closed toilet systems"; see Appendix 6.

Alternatively, if sales of at least 50 units that have been in operation for at least two years can be documented, the manufacturer may choose to carry out a field test in accordance with "Test method for closed toilet systems"; see Appendix 6 (Part 2, Sections 5.3 and 5.4).

The cleaning, maintenance and emptying required must be such that they can be carried out by most users. These procedures must not cause soiling of persons or surroundings.

✉ Copy of test report. For licensees under version 2, see O10.

O12 Capacity

The total capacity for toilets is stated for 1 year's use and a minimum of 4 person-equivalents.

If the toilet system uses external composting, the external composting system must have a volume capacity equivalent to at least 1 year's use.

The capacity is defined as the lower of the capacity limits calculated for either solid matter or liquid. The applicant must define the capacity for which the toilet system is to be tested.

✉ Description of capacity from manufacturer.

✉ Copy of test report. For licensees under version 2, see O10.

O13 Usage - chemicals.

Use of the toilet must not require the addition of chemical substances or products that are classified in accordance with Table 2.

Table 2: Classification

Classification	Danger symbols and R-phrases/Hazard classes, hazard category and hazard statement	
	EU Preparations Directive 1999/45/EC	CLP Regulation 1272/2008
Harmful to the environment	R52, R53 or R52/53. N with R50, R50/53, R51/53 and/or R59	Hazardous to the aquatic environment. Category: acute 1 H400, chronic 1 H410, chronic 2 H411, chronic 3 H412. Hazardous to the ozone layer EUH 059 or H420
Very toxic	Tx (T+ in Norway) with R26, R27, R28 and/or R39	Acute toxicity, category 1 or 2 with H330, H310 and/or H300 and/or Specific target organ toxicity – single exposure, category 1 with H370
Toxic	T with R23, R24, R25, R39 and/or R48	Acute toxicity, category 2 or 3 with H330, H331, H311 and/or H301 and/or Specific target organ toxicity – single exposure, category 1 with H370, and/or Specific target organ toxicity – repeated exposure, category 1 with H372
Carcinogenic	T with R45 and/or R49 (Carc 1 or Carc 2) or Xn with R40 (Carc 3)	Carc 1A/1B/2 with H350* and/or H351
Mutagenic	T with R46 (Mut 1 or Mut 2) or Xn with R68 (Mut 3)	Mut 1A/1B/2 with H340 and/or H341
Toxic for reproduction	T with R60 and/or R61 (Repr 1 or Repr 2) or Xn with R62, R63 and/or R64	Repr 1A/1B/2 with H360*, H361*, H362
Harmful to health	Xn with R20, R21, R22, R65	Acute tox. 1-4 with H300, H301, H302 or H304
Sensitising	Xn with R42 or Xi with R43	Resp sens 1 with H334 or Skin sens 1 with H317
Corrosive	C with R34 or R35	Skin corr 1A, 1B, 1C with H314

The classification applies under the EU's Preparations Directive 1999/45/EC as amended and/or the CLP Regulation (EC) No 1272/2008 as amended. During the transition period, i.e. until 1 June 2015, classification under the EU's Preparations Directive or the CLP Regulation may be used. After the transition period, only classification under the CLP Regulation will apply.

** If it is definitively proven that the hazard cannot be caused by other routes of exposure, the route of exposure can be stated as part of the hazard statement. One or two letters after the hazard statement indicate the route of exposure (e.g. H350i – May cause cancer by inhalation) and/or type of effect. All additional codes are included in the criteria.*

Be aware that it is the manufacturer who is responsible for the classification.

✉ Confirmation from manufacturer of the chemicals and safety data sheet/product sheet in accordance with the relevant legislation in the country in which the application is being made, e.g. Appendix II of REACH (Regulation (EC) No 1907/2006).

O14 Discharge of liquid

If there is a risk of uncontrolled seepage, the toilet must be equipped with an appropriate fluid level indicator and drainage facility. Controlled drainage of liquid to an external liquid container is permitted.

Excess liquid must be channelled to an internal or external compost container. Returning excess liquid to the internal compost container must proceed without manual intervention.

✉ The manufacturer must provide a description of how the excess liquid is to be handled. The description must be included in the user instructions and is also used when function-testing the toilet.

O15 End product

The end product must be tested and fulfil the requirements for dry matter content, heat-tolerant coliform bacteria, pH, odour, consistency and N content in accordance with "Test method for closed toilet systems" (Part 2, Section 6).

✉ Copy of test report. For licensees under version 2, see O10.

O16 Assembly, installation and user instructions

Instructions for assembly, installation and correct use and operation in the language(s) of the relevant country must be supplied with the toilet system.

The instructions must cover the points described in Appendix 4.

The instructions must use the national language. Closely related languages may be used in exceptional cases, provided there are no expressions that may be difficult to understand.

✉ Copy of the instructions.

O17 Marketing material

Marketing material must state the capacity and space required for the toilet system, and contain a description of the principles for the toilets' function, and conditions for satisfactory functioning with respect to composting, addition of pellets and food waste (if appropriate), maintenance and emptying requirements. Handling and use of the final product must be explained.

Requirements for dimensioning of the containers must be specified if the toilet system is to be used in a cold climate.

The marketing material must specify the number of times the internal container must be emptied per year at maximum capacity, plus the weight of the container when it is emptied if the container must be moved for emptying. The costs of any pellets and energy consumption per year and at maximum capacity must be calculated and specified in the marketing material.

✉ Copy of marketing material.

O18 Warranty

The toilet systems must have a 5-year warranty. The warranty requirement does not apply to parts that are subject to a high level of wear and tear. Such parts must be defined in the assembly instructions, and must be available throughout the warranty period. Parts that are subject to wear and tear must be easy to replace.

The manufacturer must guarantee that materials and design tolerate temperatures from - 30°C to + 40°C, and freezing of the content of the containers. This must be clear from the warranty document.

✉ Confirmation from manufacturer describing warranty and availability of replacement parts.

2.6 Waste and packaging

O19 Production waste

Manufacturers of toilet systems must have a waste plan that covers sorting relevant waste fractions by source material.

✉ Waste plan with description of how the waste is sorted according to source material.

O20 Packaging

Halogenated plastics can not be used as packaging.

✉ Description of the packaging.

3 Quality and regulatory requirements

The following procedures must be implemented to ensure that the Nordic Ecolabelling requirements are fulfilled.

If the applicant has a certified environmental management system in accordance with ISO 14001 or EMAS in which the following procedures are implemented, it is sufficient for the accredited auditor to document that the requirements are implemented.

O21 Legislation

The licensee must ensure compliance with the applicable health and safety provisions, environmental legislation and installation-specific terms/permits at all the production sites for the Nordic Ecolabelled product.

No documentation is required, but Nordic Ecolabelling may revoke the licence if the requirement is not fulfilled.

O22 Licence administrators

The company must appoint an individual responsible for the Nordic Ecolabelling requirements being fulfilled and a contact person for communications with Nordic Ecolabelling.

✉ Organisational chart showing who is responsible for the above.

O23 Documentation

The licensee must be able to provide a copy of the application and the supporting fact sheets and calculation data (including test reports, documents from subcontractors and so on) for the documentation submitted as part of the application.

🔑 On-site inspection.

O24 Product quality

The licensee must guarantee that the quality of the production of the Nordic Ecolabelled product is maintained throughout the licence period.

✉ Procedures for collating and, where necessary, dealing with claims and complaints regarding the quality of the Nordic Ecolabelled product.

O25 Planned changes

Planned product- and market-related changes affecting the Nordic Ecolabelling requirements must be notified in writing to Nordic Ecolabelling.

✉ Procedures detailing how planned product- and market-related changes are dealt with.

O26 Unforeseen non-conformities

Unforeseen non-conformities affecting the Nordic Ecolabelling requirements must be reported in writing to Nordic Ecolabelling and logged.

✉ Procedures detailing how unforeseen non-conformities are handled.

O27 Traceability

The licensee must have traceability for the production of the Nordic Ecolabelled product.

✉ Description/procedures for how the requirement is fulfilled.

O28 Take-back system

Relevant national regulations, legislation and/or trade agreements regarding take-back systems for products and packaging must be complied with in all the Nordic countries where the Nordic Ecolabelled product is marketed.

✉ Declaration from the applicant regarding affiliation to existing recovery/processing agreements.

O29 Marketing

Marketing of the Nordic Ecolabelled product must be carried out in accordance with "Regulations for the Nordic Ecolabelling of Products".

✉ Appendix 1 duly completed.

Marketing

The Nordic Ecolabel is a very well-known and well-reputed trademark in the Nordic region. Nordic Ecolabelled products and services may be marketed using the Nordic Ecolabel so long as the associated licence is valid.

The label must be positioned so that there is no doubt as to what the label refers and so that it is clear that the closed toilet system is ecolabelled.

More information on marketing can be found in "Regulations for the Nordic Ecolabelling of products" 22 June 2011 or later versions.

Design of the Nordic Ecolabel

Design of the Nordic Ecolabel:



Each licence has a unique six-figured licence number that must be displayed along with the label.

More information on the design of the label can be found in "Regulations for the Nordic Ecolabelling of products" 22 June 2011 or later versions.

Follow-up inspections

Nordic Ecolabelling may decide to check whether the closed toilet system fulfils Nordic Ecolabel requirements during the licence period. This may involve a site visit, random sampling or similar test.

The licence may be revoked if it is evident that the closed toilet system does not meet the requirements.

Random samples may also be taken in-store and analysed by an independent laboratory. If the requirements are not met, Nordic Ecolabelling may charge the analysis costs to the licensee.

How long is a licence valid?

Nordic Ecolabelling adopted the criteria for XX on DAY MONTH YEAR. The criteria are valid until DAY MONTH YEAR.

The ecolabel licence is valid providing the criteria are fulfilled and until the criteria expire. The validity period of the criteria may be extended or adjusted, in which case the licence is automatically extended and the licensee informed.

Revised criteria shall be published at least one year prior to the expiry of the present criteria. The licensee is then offered the opportunity to renew their licence.

New criteria

- Consider increasing the percentage of recycled plastics
- Consider chemical requirements for plastics production
- Consider requirements for constituent substances in chemicals
- Consider introducing requirements for wood
- Look at the possibility of setting more stringent requirements for electricity consumption

Appendix 1 Marketing of Nordic Ecolabelled closed toilet systems

We hereby certify that we are well acquainted with the regulations governing the use of the Nordic Ecolabel, as detailed in "Regulations for the Nordic Ecolabelling of products" 22 June 2011 or later versions. We agree to follow these regulations when marketing the Nordic Ecolabelled closed toilet system.

Further, we confirm that we are familiar with the criteria document regarding the Nordic Ecolabelling of closed toilet systems.

We undertake to advise those individuals within the company involved in marketing the Nordic Ecolabelled closed toilet system of the criteria for the Nordic Ecolabelling of closed toilet system and "Regulations for the Nordic Ecolabelling of products" 22 June 2011 or later versions.

Date and place	Company
Signature, contact person	
Clarification of name	Phone
Signature, marketing director	
Clarification of name	Phone

In case of a change in personnel, a new declaration must be submitted to Nordic Ecolabelling.

Appendix 2 Declaration by plastics supplier

Type of plastic
Manufacturer/supplier

Do(es) the plastics material(s) contain(s) PVC? Yes □ No □

What percentage of the plastics raw material is recovered? _____%

Recovered plastics are defined as post-consumer recovered material such as scrapped plastics products or packaging or production waste from external suppliers. Production waste from production of the compost container is not recovered material. This is in line with the definitions in standard ISO 14021 Environmental labels and declarations.

Does the recovered plastics raw material contain halogenated flame retardants? Yes □ No □

Are plastics parts weighing over 50 g marked for recovery in accordance with ISO 11 469? Yes □ No □

Have any of the following been actively added: halogenated paraffins, halogenated flame retardants, phthalates, pigments based on copper, lead, boron, tin, cadmium, chromium^{VI} or mercury, or their compounds? Yes □ No □

The requirement does not apply to recycled plastics.

Signature of the manufacturer/supplier:

Date	Company name
Contact person	Phone

Appendix 3 Declaration of classification of chemical products

Product name and area of use
Manufacturer/importer of the product

Is the product classified in accordance with the table below?

Classification	Danger symbols and R-phrases/Hazard classes, hazard category and hazard statement		
	EU Preparations Directive 1999/45/EC	CLP Regulation 1272/2008	
Harmful to the environment	R52, R53 or R52/53. N with R50, R50/53, R51/53 and/or R59	Hazardous to the aquatic environment, category: acute 1 H400, chronic 1 H410, chronic 2 H411. EUH 059	Yes □ No □
Very toxic	Tx (T+ in Norway) with R26, R27, R28 and/or R39	Acute toxicity, category 1 or 2 with H330, H310 and/or H300 and/or Specific target organ toxicity – single exposure, category 1 with H370	Yes □ No □
Toxic	T with R23, R24, R25, R39 and/or R48	Acute toxicity, category 2 or 3 with H330, H331, H311 and/or H301 and/or Specific target organ toxicity – single exposure, category 1 with H370, and/or Specific target organ toxicity – repeated exposure, category 1 with H372	Yes □ No □
Carcinogenic	T with R45 and/or R49 (Carc 1 or Carc 2) or Xn with R40 (Carc 3)	Carc 1A/1B/2 with H350, H350i and/or H351	Yes □ No □
Mutagenic	T with R46 (Mut 1 or Mut 2) or Xn with R68 (Mut 3)	Mut 1B/2 with H340 and/or H341	Yes □ No □
Toxic for reproduction	T with R60, R61 and/or R33 (Repr 1 or Repr 2) or Xn with R62, R63	Repr 1A/1B/2 with H360, H361, H362	Yes □ No □

The classification applies under the EU's Preparations Directive 1999/45/EC as amended and/or the CLP Regulation (EC) No 1272/2008 as amended. During the transition period, i.e. until 1 June 2015, classification under the EU's Preparations Directive or the CLP Regulation may be used. After the transition period, only classification under the CLP Regulation will apply.

** If it is definitively proven that the hazard cannot be caused by other routes of exposure, the route of exposure can be stated as part of the hazard statement. One or two letters after the hazard statement indicate the route of exposure (e.g. H350i – May cause cancer by inhalation) and/or type of effect. All additional codes are included in the criteria.*

Be aware that it is the manufacturer who is responsible for correct classification.

☒ Safety data sheet/product sheet for each product in accordance with current legislation in the country in which the application is being made, e.g. Appendix II of REACH (Regulation (EC) No 1907/2006).

Signature of the manufacturer/importer:

Date	Company name
Contact person	Phone

Appendix 4 Assembly, installation and user instructions

Instructions must be drawn up for assembly, installation, and correct use and operation.

It must be stated that the toilet satisfies material and functional requirements provided that assembly, use and maintenance are carried out in accordance with the instructions.

The instructions must use the national language. Closely related languages may be used in exceptional cases, provided there are no expressions that may be difficult to understand.

Assembly

Illustrated assembly and installation instructions must be supplied with the toilet. The assembly instructions must contain a list of parts and an overview of the parts that experience shows are subject to wear and tear. The instructions must show how the individual parts of the toilet are put together, and the tool required for assembly.

Installation

The installation instructions must show how the toilet, including ventilation system and devices for emergency drainage of liquid, is intended to be installed in buildings. It must be possible to ventilate via the ridge of the roof or using another solution that satisfies the requirement for operational stability and does not cause odour nuisance.

The ventilation system must ensure that air is not sucked up from the toilet system and into the room where the toilet is situated. The ventilation system must be described and illustrated with arrows showing the airflow.

The area required around the toilet for maintenance and repair must be specified, together with requirements for the room where the toilet is to be installed with regard to ventilation, heating and any emergency drainage. If the toilet system has to be insulated, the type and quantity of insulation required for various installation solutions must be stated.

The instructions must state clearly which work must be carried out by an authorised fitter.

User instructions

The user instructions must contain the following points: type designation, manufacturer, importer/supplier, type number/year, area of use, capacity and energy consumption, ecolabelling, incl. warranty and fulfilment of requirements.

The user instructions must contain a description of the principles for the toilet's function and conditions for satisfactory function with regard to composting, addition and quality of pellets (if appropriate) and food waste, recommended composting time for the waste, dealing with excess liquid (see Section 5.6), care, regular maintenance, use of tools (if appropriate), and emptying. Handling and use of the final product must also be explained.

The user instructions must contain a troubleshooting guide.

Essential maintenance must be specified in the user instructions.

The user instructions must also specify the number of times the internal container must be emptied per year at maximum capacity, plus the weight of the container when it is emptied if the container must be moved for emptying

Appendix 5 Background memorandum on closed toilets

History and licensing

Nordic Ecolabelling of closed toilets has been in place since 1997. No background document has been written, and neither was the current revision project, which is smaller in scope, charged with drawing up such a document. It was, however, considered important briefly to summarise the most important points that we have worked on during the revision process. For this reason this document should not be viewed as a regular background document, but rather we refer to more detailed argumentation relating to requirements that are familiar from other criteria documents (e.g. outdoor furniture).

Since Nordic Ecolabelling of closed toilets began, only minor adjustments have been made to the criteria because the products have not changed substantially over the years. The product function requirement has proved sound, and the Nordic Ecolabelling function test is the only one on the market carried out on these products by an independent third party. The test for the current two licences has been carried out by Bioforsk (formerly Jordforsk, Roald Åsen) in Norway. The function test has not been revised. This means that if the Nordic Ecolabelled product still has the same functional structure (documentation required), current licensees do not need to repeat the function test in connection with reassessment of current licences.

There are a total of two licences in the Nordic region: one Swedish and one Norwegian (data from 2013). The licences have been in place for a number of years and contact with the licensees shows that they remain interested in Nordic Ecolabelling of their products. They emphasised that the Nordic Ecolabel is important because it is the only labelling scheme for these products where an independent third party can select the most environmentally friendly products. They consider the Nordic Ecolabel to be an important part of their marketing.

Market information, environmental impact and product group delimitation in brief

The market for composting toilets has shrunk in recent years. This is partly because many holiday homes are now connected to the municipal sewerage system and partly because new closed toilet options that are easier for consumers to handle have come onto the market, such as separation and incinerator toilets. There is no Nordic Ecolabelling for these types of toilets as they do not carry out effective composting, and also have an increased environment impact, among other things because of releasing urine into the ground, higher energy consumption and emission of gases from incineration.

However, there now seems to be a renewed increased level of interest in biological toilets. This is probably because certain municipalities have noticed the environmental impact of the new closed toilets, e.g. in Norrtälje[1] municipality in Sweden, households with separation toilets are required to have a separate urine-processing and latrine-

[1] http://www.norrtalje.se/Bygga-bo-och-miljo/Avfall-och-atervinning1/Avfall-och-atervinning/Kompostering1/Kompostering-av-toalettavfall/Torrtoalett/ juni 2013

composting facility. The Norwegian retailer Hyttetorget[2] also states that the market is actually starting to turn back to compostable toilets because incinerator toilets cost more to use, and are also not so easy to operate or empty. In the Nordic region, interest in Nordic Ecolabelled closed toilets is biggest in Norway. In 1997 Nordic Ecolabelling in Norway carried out a successful campaign in this area aimed at the municipalities, and it is estimated that 20-30% of Norwegian municipalities still require closed toilets to be Nordic Ecolabelled[3] .

The parameter for closed toilets that has the greatest environmental impact is the toilet's ability to produce good compost, its care and how the waste is dealt with. The life of a closed toilet naturally depends on how much it is used and how it is maintained, but it is not unusual for a toilet to work for a very long time. This means that a good-quality, well-functioning toilet has a significantly lower environmental impact than one with inferior performance. As such, the Nordic Ecolabelling criteria comprise an extensive function test that shows whether the toilet achieves effective composting of organic waste, together with a number of requirements relating to materials.

The environmental impact from the constituent materials derives mainly from the plastics. The dominant materials in the container are glass fibre-reinforced polyester, polyethylene, ABS (acrylonitrile butadiene styrene) and stainless steel. The bowl and seat are made of porcelain, plastics or wood. Fans, motors, heating elements, etc. are made of various metals and types of plastics. External containers are made of plastics or wood.

The table shows examples of materials currently used in the manufacture of closed toilets:

Material
polyethylene (HDPE), cross-linked polyethylene (PEX)
heating cables: fluorine polymer
glass fibre-reinforced polyester
porcelain
polyurethane
pipes and connections: PVC, polypropylene + polyurethane as insulation in roof pipes
fan: ABS plastic and copper wires
polystyrene
polystyrene sheet
fans and pipes: polypropene

[2] Gunnar Larsen, on telephone january 2013
[3] Gunnar Larsen, on telephone january 2013

Background to Nordic Ecolabelling's requirements for closed toilets in brief

Requirements of current criteria

The material and chemical requirements were previously that

- plastics materials must not include chemical compounds containing cadmium, lead, mercury, chlorinated/brominated paraffins, brominated diphenyl ethers or phthalates
- gas used in the production of insulating material must not be harmful to the ozone layer.

In general, several of the substances banned in the current criteria are linked to the production of PVC.

New material requirements

As the table shows, several different types of plastics are used in the toilets. One typical material is glass fibre-reinforced polyester (GUP). This is a composite material that can not directly be recycled into new glass fibre-reinforced polyester. In theory, it is possible to produce GUP from recycled polyester, but in practice this is not a commercialised method.

When it comes to recycling and use of recycled material, the same problem exists with cross-linked polyethylene (PEX).

Other plastics types, such as polystyrene and polyethylene, can be recycled, and recycled plastics can be used in the production of closed toilets.

The following material requirements are proposed:

Requirement	New/old	Explanation
30% of the plastics material must be recycled. Recycled plastics must not contain halogenated flame retardants. This requirement does not apply to PEX or plastic composite, e.g. glass fibre-reinforced polyester (GUP).	New	Wish to promote use of recycled material. Exemption for PEX and GUP based on description above.
Ban on halogenated plastics with exception of electric cables.	Partly new	The previous requirement regarding banned chemical compounds in plastics largely precluded use of PVC. Use of PVC in wires is considered difficult to avoid, and so an exemption is granted for electric cables.
Plastics parts weighing over 50 g must be marked in accordance with ISO 11469.	New	The marking will facilitate efficient sorting of plastics after use and thus increase recycling of plastics.
Blowing agents used in the production of insulation must have ODP = 0, GWP < 15.	Old	The requirement is retained but reworded into a more "modern" formulation that is more rigorous than the current requirement.

Other materials

Where wood is concerned, it is proposed that no requirements are introduced in this version. However, it is proposed that this can be included as an item on the list of "future criteria".

It is proposed that no requirements are set for other materials such as porcelain or metals (steel).

New chemical requirements

In proposing new chemical requirements, reference has mainly been made to the Nordic Ecolabelling criteria for outdoor furniture and toys.

The following chemical requirements are proposed:

Requirement	Old/new	Explanation
Overview of production chemicals	New requirement	It is proposed that a requirement is introduced for an overview of production chemicals to be submitted. This information requirement provides an overview of which chemicals are being used and ensures that we have received a declaration of classification requirements for the chemicals used. Plastics are exempt from the requirement.
Requirement concerning prohibited classification for production chemicals	New	This is a new requirement, which makes the current criteria more stringent. The requirement captures any use of chemicals, e.g. glue or, if relevant, chemicals used for wood. Plastics are exempt from the requirement.
Requirements for additives in plastics (halogenated paraffins, halogenated flame retardants, organic tin compounds, phthalates, pigments based on copper, lead, boron, tin, cadmium, chromium^{VI} or mercury, or their compounds).	Partly new	There were requirements for additives previously – some of these have been retained, such as flame retardants and phthalates, whilst others have been removed as they were primarily used in PVC, which is banned in O2. Requirements concerning pigments have also been added.

Product function requirements

The requirement O13 concerning the use of the toilet must not require the addition of chemical products or substances classified in a number of hazard classes is retained, but the ban on flammable and explosive substances is removed as this is considered to be of little relevance.

There are no other changes to the product function requirements, although they have been assigned individual requirement numbers.

Testmethod for

Closed Toilet Systems

14 June 1999

Nordic Ecolabelling

Table of Contents

1. Introduction **1**

2. General preconditions for testing **1**

2.1 Location and assembly 1
2.2 Technical equipment required in the laboratory 1
2.3 Technical equipment required in the field 2

3. Testing materials and design **3**

3.1 Testing tightness 3
3.2 Testing impact resistance 3
3.3 Testing flammability 3
3.4 Testing of deformation 3
3.5 Testing mixing mechanism and other mechanical devices 3

4 Requirements as regards materials and construction **3**

4.1 The design of the toilet 3
4.2 Required degree of tightness 3
4.3 Impact resistance 4
4.4 Acceptable deformation 4
4.5 Flammability 4
4.6 Quality and durability of materials 4
4.7 Mechanical components 4
4.8 Drainage 4
4.9 Electrical components 4
4.10 Ventilation of the toilet 4
4.11 Inspection facility 4
4.12 Assessments 4

5 Function testing **5**

5.1 Preconditions for function testing in a laboratory 5
5.2 Performance of the test 7
5.3 Preconditions for testing function in field tests 8
5.4 Implementation of the field test 9
5.5 Sample taking and analyses of the end product 9

6 Requirements as to function **11**

6.1 Capacity 11
6.2 End products 11
6.3 Assessments 11

7 Requirements as to instructions for use **12**

7.1 Instructions for use 12
7.2 Assembly instructions 12
7.3 Installation instructions 13

8 Documentation and conclusion **13**

Appendix 1: Map over climatic zones in the Nordic countries
Appendix 2: Interview form for field test

1. Introduction

Closed toilet systems for which an ecolabel is sought must be tested in terms of design/durability and function. For testing operation/function manufacturers who have sold over 50 units, which have been in operation for over two years, may choose between a field test or a laboratory test. All others must undergo laboratory testing. .

Testing materials and construction

Design and durability must be tested in a laboratory. This includes testing whether the containers is tight, whether it is able to withstand impact (which is important during, for example, transportation), and whether the mixing mechanism and other mechanical devices are able to withstand wear. All toilets must undergo this test. Nevertheless an exception has been made for toilets which have previously been approved in accordance with the Nordic quality norms for biological toilets (where JORDFORSK functioned as the test/consultative body) or by the National Sanitation Foundation (N.S.F.) in the United States. Nevertheless these must undergo testing of deformation of the toilet pan. This is a new test requirement

The function test

The function test is a test of whether the toilet systems can be expected to function in practice. The laboratory test is designed for toilets both with and without a power supply.

At the request of The Norwegian Foundation for Environmental Labelling JORDFORSK has compiled a test for biological toilets.

With effect from 1995 onwards, the Nordic ecolabelling system functions as the official quality norm for closed toilet systems.

2. General preconditions for testing

2.1 Location and assembly

This section encompasses the laboratory testing of materials and construction and the laboratory testing of function.

The test premises must not be open to unauthorized third parties.

The toilets (main units) must be assembled in accordance with their assembly instructions. The test body may require the applicant to assemble the toilet. All parts of the toilet that have a bearing on its functioning must be assembled by the applicant or in accordance with written instructions accompanying the test object.

The toilet must be installed in climatic chamber at the laboratory. The ventilation duct of the toilet must be connected to the laboratory's ventilation system by means of a vertical duct (min. 1 metre). Extracted air must be measured and adapted to the documented volume of extracted air. The documentation requirement applies to equipment intended for mains voltage (220/230 V), solar cells (12/24 V), solar collectors and other mechanical components.

On toilets with natural extraction the quantity of air extracted through the extraction pipe will be standardized at 10 ± 3 m^3 per hour. The air quantity must be cross-checked after the start of the test by means of a hotwire anemometer at at least six measurement points.

2.2 Technical equipment required in the laboratory

The test laboratory must be capable of generating humidity of up to 60% RH and cooling/heating to 8° and 20° C ± 2° C respectively. Precise dosage pumps or corresponding devices (urinators) must be used for channelling artificial urine to the toilets. The urinator must have an accuracy of at least ± 2 ml per dose.

In addition to general laboratory equipment the test laboratory must be equipped with the following equipment for testing materials and function:

* Pedestal (adjustable/water)
* Wattmeter/clock
* Impact weight with rig (45)
* Torque wrench
* Electrical start relay
* A scale with an accuracy of ± 0.1 g
* Instruments for measuring air quantity/speed, e.g. hotwire anemometer
* Humidifier
* 2 electronic humidity gauge, at least one with data saving facilities
* Urinator, e.g. with magnetic valve or magnetic clamp
* Pump and prefilter for urine container
* Urine container
* Waste water sacks for surplus liquid (volume at least 10 litres)
* Drying cabinet (105° C) with extractor
* Annealing furnace (550° C)
* Sampling equipment for thermotolerant coliform bacteria
* Fire extinguishing equipment and other protective equipment

The laboratory must have the facilities to chill stored slurry materials to 4° C± 2° C. The same cooling requirements apply to compost samples awaiting subsequent chemical/microbiological analyses.

2.3 Technical equipment required in the field

All results measured in the field must be recorded in a journal.

The following equipment is required for tests in the field:

* Map (1:50.000)
* Flashlight
* Folding ruler
* Sampling equipment (sterile equipment) for thermotolerant coliform bacteria, pH, conductivity
* Equipment for cooling compost samples
* Interview forms
* Protective equipment

PART I MATERIALS AND CONSTRUCTION

3. Testing materials and design

This test applies to all types of closed toilet systems, with and without electrical power supplies.

3.1 Testing tightness

The toilet must be examined for leaks by means of internal filling or external spraying of water. The test is to be performed before and after the function test.

3.2 Testing impact resistance

The impact resistance of the container and any external containers must be tested at 20° C ± 3° C with blows from a pendulum weighing 3 kilos with an arm of 75 cm and an angle of 45° . If function is also tested in the laboratory, the impact resistance must be tested before and after function testing. The bob on the pendulum must be made of steel and spherical with a diameter of 10-12 cm.

3.3 Testing flammability

To test the toilet bowl and container for flammability a naked flame (e.g. a burning match) must be held against what are deemed to be the most flammable parts, e.g. the joint seals in the compost container. The flame must be kept alight and at rest horizontally for at least 10 seconds.

3.4 Testing of deformation

The toilet pan must be subjected to a static load of 150 kg. The load must be evenly distributed over the whole toilet pan. Porcelain toilet bowls need not undergo this test.

3.5 Testing mixing mechanism and other mechanical devices

The toilet shall be emty and cleaned after the funtion test and then be inspected visually for material damage and damage caused by wear.

4 Requirements as regards materials and construction

4.1 The design of the toilet

The toilet must have no sharp edges or projections that might cause injury to users or repair personnel. The diameter on the pipe between the toilet bowl and the container for decomposing waste must not exceed 20 cm. The waste outlet pipe may have a greater diameter, but if so the toilet bowl must be tapered so that the opening between the toilet bowl and the waste outlet pipe is equal to or less than 20 cm in diameter.

If the toilet is equipped with mechanical moving parts and/or electrical/electronic equipment, these must not be capable of causing injury to the user. Warning of faults in the electrical system must be given by means of lights or some other form of signal.

The toilet must be equipped with physical barriers to prevent the ingress of insects and rodents e.g. in the form of grids over air vents etc. The safety of the toilet for use by children must also be assessed.

4.2 Required degree of tightness

The assembled toilet must not have any leaks. If leaks are discovered before the function test, the test must be abandoned immediately.

4.3 Impact resistance

After the impact test the materials in the container and external container must not display cracks that penetrate all the way through the material.

4.4 Acceptable deformation

After loading the toilet pan must not exhibit deformation that is > 1 cm.

4.5 Flammability

The materials in the bowl and container must not ignite when exposed to a naked flame (e.g. a match) over the course of 10 seconds.

4.6 Quality and durability of materials

The materials in the bowl and container and any external container must exhibit no visible damage after function testing.

4.7 Mechanical components

Motors with drive gears must normally have a torque that is 50% higher than the torque required to rotate the agitator. The agitator, transmissions, drive gear, motor etc. must not display visible damage after wear testing has been concluded.

The toilet must be emptied and cleaned after function testing and inspected visually for material damage and wear.

4.8 Drainage

Liquid must normally not be drained from the toilet. The toilet must be equipped with an emergency overflow and draining facility. If there is a danger of uncontrolled seepage, the toilet must be equipped with an appropriate fluid level indicator.

4.9 Electrical components

Manufacturers must document that their toilets satisfy the requirements laid down by the authorities as regards electrical components (see also Section 6 in the criteria document).

4.10 Ventilation of the toilet

Fans and insect nets/grids etc. must be examined for blocking by dust, toilet paper and the like. Grids in fans must be replaceable. Conspicuous noise and vibrations from fans or other mechanical devices must be evaluated and, if appropriate, commented upon.

4.11 Inspection facility

The compost container must provide an inspection facility in the form of e.g. a hatch. If special tools are required for emptying or cleaning, these must be supplied with the toilet.

4.12 Assessments

For the toilet to be approved all requirements with regard to materials and construction must be fulfilled.

PART II FUNCTION

5 Function testing

The function test is designed for use on toilets both with and without an electrical power connection. Test methods have been developed for testing in a laboratory and testing in the field. Unless otherwise specified the toilet system must be tested in accordance with the manufacturer's instructions for use.

5.1 Preconditions for function testing in a laboratory

5.1.1 Duration of test

The test comprises of one period during which loading/filling of compost raw material takes place (the filling period), and a period of composting (the composting period) during which time the toilet must not be loaded with compost raw materials. The test may last between 8 and 48 weeks in accordance with the instructions of the manufacturer.

The filling period must last for a minimum of 8 weeks, but may, if requested by the manufacturer, be extended to up to 22 weeks. The duration of the composting period is 0 - 52 weeks after completion of the filling period. The composting period is determined by the manufacturer.

5.1.2 Test climate

The temperature and relative humidity (RH) of the air in the laboratory must be as follows throughout the entire test period:

Loading period	18° C ± 2° C	50-60% RH
Composting period	9° C ± 2° C	50-60% RH

The temperature and RH in the room must be measured every other hour and logged. The requirements to temperature and relative humidity concern 24-hours mean value. That ten 24-hours mean values during a test period are not within the set limits are accepted, but then the week mean value must be within the limits.

Energy (through heating cables and fan) may be supplied during the entire test period in accordance with the instructions of the manufacturer.

5.1.3 Raw materials in compost

This manual defines the waste from a single person over a 24- hour period as one population equivalent (p.e.) corresponding to:

Defecation	200 g
Urine	1275 g
Toilet paper	25 g
TOTAL	1500 grams

The compost raw materials must be dosed wiith an accurasy of ± 3%. Pellets and any food waste must be added to the toilet in accordance with the instructions for use. The manufacturer must specify the quantity of pellets to be added, in terms of weight or volume and how frequently pellets need to be added. The same applies to food waste. The quantity of food waste (measured as wet weight) must not exceed the sludge quantity or 200 grams per p.e. As raw material for food waste a mixture of potatoes (80%), bread (15%) and feed concentrate (5%) complying with the following requirements must be used:

Food waste	Gram/p.e	Dry matter requirements	Other requirements
Potatos	160	20-22	Food potato quality
Bread	30	63-69	Brown bread, nonsweet bread
Feed concentrate	10	23-29	18% raw protein and an energy content of 11 MJ/Kilo
Total	200 gram		

Potatoes must be cut into pieces corresponding to "pommes frites" before being added. The bread must be chopped (e.g. in a compost mill) so that it crumbles. If the feed concentrate is pelleted, it must be ground up into a meal. Before filling mix all ingredients thoroughly. Food waste can be prosessed and kept in tightly closed plastic bags and be frozen. The food waste must be de-iced before use. (If applicable, see criteria and test manual for the ecolabelling of compost bins issued by Nordic ecolabelling.)

5.1.4 Raw material loading
Table showing loading during 8 - 22 weeks filling period. Grams of waste per populationequivalent. For example the figures in the table must be multiplied by four when testing toilets with a capacity of four persons.

Time/week		Weekdays							
	Mon	**Tue**	**Wed**	**Thur**	**Fri**	**Sat**	**Sun**	**Toral**	Remarks
1	1500	1500	1500	1500	1500	1500	1500	10500	
2	3000	1500	1500	1500	1500	1500	1500	12000	
3	3000	1500	1500	1500	1500	1500	1500	12000	
4	3000	**4050**	1500	1500	1500	1500	1500	14550	3 x urine
5	3000	1500	1500	1500	1500	1500	1500	12000	
6	3000	1500	1500	1500	1500	1500	1500	12000	
7	3000	1500	1500	1500	1500	1500	1500	12000	
8	3000	**3000**	1500	1500	1500	1500	1500	13500	2 x normal
								98,55	**kg**
9	3000	1500	1500	1500	1500	1500	1500	12000	
10	3000	1500	1500	1500	1500	1500	1500	12000	
11	3000	**3000**	**3000**	1500	1500	1500	1500	15000	2 x normal
12	3000	1500	1500	1500	1500	1500	1500	12000	
13	3000	1500	1500	1500	1500	1500	1500	12000	
14	3000	1500	1500	1500	1500	1500	1500	12000	
15	3000	**4050**	1500	1500	1500	1500	1500	14550	3 x urine
16	3000	1500	1500	1500	1500	1500	1500	12000	
17									"holiday"
18									"holiday"
19	3000	1500	1500	1500	1500	1500	1500	12000	
20	3000	1500	1500	1500	1500	1500	1500	12000	
21	3000	1500	1500	1500	1500	1500	1500	12000	
22	3000	1500	1500	1500	1500	1500	1500	12000	
								248,1	**kg**

5.1.5 Testing external containers

External compost containers must be loaded in accordance with the instructions for use. External containers must be tested in terms of capacity and end product in a corresponding way as for the main toilet.

5.2 Performance of the test

5.2.1 Composition and processing of raw materials

The choice of raw materials must take into account the composting process and the working environment.

Slurry
For reasons of hygiene and practicality fresh human faeces is not used. Dehydrated raw, fresh sewage slurry is used as a substitute material. The slurry must have an acidity of between 6 and 7.5. The slurry may be treated with aluminium-based sedimenting chemicals. Dry solid measurements must be performed on slurry that is introduced into the toilet. Three representative samples of dry solids must be taken from each batch of slurry used and the average of these measurement results will then be used. If the type of pellets used is changed during the course of the test, three new DS measurements must be taken of the new type of pellet. The dry solid must be measured using samples of at least 100 grams. The permitted dry solids content is 18-25%.

Slurry older than eight days must not be used. The slurry must be stored in a cooling chamber (see requirements for technical equipment). One population equivalent of slurry corresponds to 200 g wet weight/day.

When added the slurry shall contain $5*10^4$ TKB /g TS. Three representative samples must be taken to measure thermotolerant coliform bacteria in the final batch of slurry. The average of the measurement results will be utilized. Thermotolerant coliform bacteria are defined in accordance with Norwegian Standard 4714 and Table 2 in NS 4790, Part 1, with 10 test portions each of1 gram. If the slurry do not contain the recommended quantity of TKB the hygienization must be inspected by using 3 nylonbags with slurry added the set quantity of TKB. When slurry is added the last time, the bags shall be mixed into the garbage 5-10cm under the surface. The bag shall stay in the compost. The content of TKB in the bag shall be analysed when emptying the compost.

Urine
The daily quantity of urine produced by a person will vary depending on diet, activity, health, gender etc. Some uncertainty therefore attaches to the exact amount. The load on the toilets (i.e. the definition of one p.e.) is based on the same quantities as used previously and for which experiential figures are therefore available.

Artificial urine must be used. One litre of artificial urine comprises:

Urea	23,26	gram
Phosphorus	3,10	gram
Salt (sodium chloride)	12,40	gram
TOTAL	38,76	gram/litre
Water (Spring water quality)	1000	gram

The mixture used for testing might for example consist of 300 litres water to which is added 6978 grams of urea, 3721 grams of salt (NaCl) and 930 grams of phosphorus (KH_2P04). The mixture is dissolved in warm tap water, e.g. 10 litres. The warm mixture is then added without delay to the urine/liquid stock and mixed with water to achieve the correct mixture.

Toilet paper
The toilet paper used must be of ordinary retail quality without decoration. It may comprise of either virgin fibre or recycled fibre. The paper quantity required is 25 grams per person per day.

5.2.2 Procedure for filling

All materials introduced into and removed from the toilets must be quantified and recorded in a journal. If the instructions for use require the use of pellets as a starter, these must be moistened

with water until they achieve the texture of a squeezed out sponge. Pellets for ordinary use must not be moistened unless such a procedure is described in the instructions for use.

When filling the components sludge, paper and if applicable pellets and food waste must be divided into three portions which are then introduced into the toilet in alternate layers. The toilet paper rolls are divided up (e.g. sawn across) and the paper is added (by hand) in thin layers. Moisten the paper carefully with water so that approximately three-quarters of the paper quantity is wet.

Water that is added to the toilets must be of spring water quality. Under normal circumstances no other liquids but artificial urine and water may be added to the toilet. Artificial urine is dosed by means of a urinator/pump through the toilet seat once every hour over a course of 16 hours. For the sake of the nitrogen content of the liquid and for practical reasons the liquid should be introduced to the toilet at virtually the same temperature as prevails in the test premises.

When the toilet is emptied any external (outside) compost containers will be loaded with the removed mass in accordance with the instructions for use.

5.2.3 Capacity

The applicant will provide a written definition of the capacity to which the toilet is to be tested. The capacity of the toilet will be set as equal to the lower of the capacity limits for either solids or liquids. The test institution will assess the capacity of the toilet and any external compost containers based on the filling period (on the basis of inter alia the evaporation capacity of the toilet), and the composting period (on the basis of inter alia the reduction in mass).

5.2.4 Measurements

The quantity of surplus fluid drained off into the external fluid container must be measured when the filling period has been completed. This is used as the basis for calculating fluid quantity and the frequency of transfer to internal or external compost containers.

5.3 Preconditions for testing function in field tests

The precondition for the performance of a field test is that the toilet model in question has been sold to and installed by a minimum of 50 customers/users two years prior to the commencement of the test (for example in the case of type xx due for testing in 1995, 50 units must have been sold by 1993 at the latest). The toilets must be of the same type as those for which a licence is sought.

5.3.1 Period of use prior to evaluation

The toilet to be examined must have been in regular use for at least two years prior to evaluation, in other words at least 3 weeks continuous use during the summer or winter, as well as regular use during weekends in the spring and late summer/early autumn or winter.

5.3.2 Load

The load on the toilet must correspond to the maximum number of persons for which the toilet is marketed and used in accordance with the instructions of use issued by the manufacturer (e.g. as regards the addition of pellets).

5.3.3 Test climate

The toilets must be tested in two separate climatic zones. Climatic zones will be selected in accordance with the classification of the Nordic Council of Ministers (NU:B 1977:34, see Enclosure 1) which corresponds to:

a) D3 - Cold Climate
b) CT2 and/or D1 and/or D2 - Mild Climate

This requirement will not apply in the case of toilets with compost bin designed exclusively for installation in a heated room (> 15 C).

5.3.4 Location and assembly

The toilet must be assembled in accordance with the instructions for use. Assembly and location must be documented by means of photographs and/or drawings marked with dimensions that are simple to comprehend.

5.3.5 Raw materials for compost

If large quantities of food waste are used (more than half, i.e. > 200 g/pe), a different test item must be selected.

5.3.6 External container

If the instructions for use specify the use of an external container, the samples must be taken from this container.

5.4 Implementation of the field test

A competent and independent test institution must be responsible for implementation of the field test (see Section 7.2 of the criteria document). The test institution may elect to utilize local subcontractors for sampling, interviews and analyses of the end product. The test institution will have the responsibility for evaluating whether or not the toilet fulfils the criteria for ecolabelling.

5.4.1 Number of test items

A minimum of five toilets must be tested (i.e. three in the mild climatic zone and two in the cold climatic zone). If no definitive conclusions can be drawn after five toilets have been examined, the test institution, in consultation with the applicant, may decide that up to two further items may be tested in the climatic zone in which the criteria were not fulfilled. Accordingly, the maximum number of test items in each climatic zone will be five in the mild climatic zone and four in the cold climatic zone, making for a total of nine.

If it is still not possible to draw conclusions from the field examination, the toilet must be tested in a laboratory (see Sections 5.1 and 5.2).

5.4.2 Choice of test items

The applicant will submit proposals for 50 test items representing both climatic zones. The distribution should preferably be 50% in each zone. Potential test hosts must not be connected to the applicant in any way that might engender partiality. For example there must be no relationship of dependency of a financial or social nature (e.g. a family relationship).

The test institution is responsible for deciding which items are to be tested. The applicant must not be informed in advance of which items have been selected.

5.4.3 Interviews

The test institution is responsible for ensuring that an interview is conducted with the test hosts in accordance with the enclosed interview form (enclosure 2). The objective is to chart significant operating conditions, times of use, daily operations, problems etc. Interview must not be performed by the applicant.

The test institution will utilize the interview in an overall evaluation of the toilet system.

5.5 Sample taking and analyses of the end product

This section applies both to laboratory testing and to field testing.

Samples of the mass are taken at the emptying hatch at the time of emptying when the toilet or, if appropriate external compost container requires emptying, or upon conclusion of the test.

Five samples of 200 grams each are to be taken. These are mixed into a mass sample which is then homogenized. Samples are taken from the common sample and analyzed to ascertain the dry solids content and volatile solids, TCB, pH, C/N ratio and Kjeldahl Nitrogen.

5.5.1 Dry solids and volatile solids

Three samples of 100 grams each are extracted from the common sample and analyzed to ascertain the dry solids content and volatile solids in accordance with NS 4764. The average of the parallels is stated.

5.5.2 Thermo-tolerant coliform bacteria

The presence of TCB is ascertained in accordance with NS 4714. The chosen technique is described i NS 4790, Part 1 Table 2, "10 parallels with volume V each". The analysis is performed as follows:

10 test portions weighing 1 gram ± 0.1 gram each, are taken from the common sample. Each test portion is transferred to a tube at normal strength-bouillon consistency, and is treated as described in NS 4714. 9 out of 10 positive tubes results in an MPN index of 2.3 TCB/gram (and means that the required TCB/gram has not been fulfilled). The MPN index specified in Table 2 is recorded as the result of the analysis.

5.5.3 pH

Three parallel samples which are analyzed for pH are taken from the common sample. 1-2 g fresh sample is weighed in a beaker. 100 ml of distilled water is then added. The mixture is stirred/homogenized with a glass rod. Allow the slurry to sediment for 1 hour at room temperature. The sample is then measured with a pH-meter with a combination electrode while the sample is at rest.

5.5.4 Kjeldahl Nitrogen

Three parallel samples from the common sample are analyzed for Kjeldahl Nitrogen. If necessary, several parallel samples may be analyzed. The average of the parallels is recorded.

5.5.5 Odour

Smell in the toilet room (laboratory/test chamber) must be assessed and commented on if appropriate. Any smell of compost when the toilet is emptied and when external compost holders are emptied must be evaluated. Odour may be characterized subjectively as:

1 A smell of soil
2 Sharp smell of ammonia (smell of urine)
3 Decomposition (sulphide)
4 Acidic

5.5.6 Consistency

The consistency of the samples is evaluated on a scale from 1 (soft) to 5 (very firm).

1 Soft. Does not cohere.

2. Very brittle. Crumbles under very light pressure, but the mass coheres when pressed together again.

3. Brittle. Crumbles easily under light to moderate pressure between thumb and forefinger, but the mass coheres when pressed together again.

4. Firm. Crumbles under moderate pressure between thumb and forefinger, but resistance to crumbling is clearly noticeable.

5. Very firm. Crumbles under heavy pressure, but it is barely possible to crumbles into pieces between the thumb and forefinger.

(This classification is based on "Guidelines for description of soil profiles" by T.E. Sveistrup, page 53, of offprint of "Jord og Myr" No. 2, 1984)

6 Requirements as to function

6.1 Capacity

The total capacity is specified for one year's use and must be at least 4.0 p.e. The volume of the toilet and any external containers must be sufficient for the capacity defined pursuant to the test.

6.2 End products

The requirements apply to the time of emptying and may also apply to end product from outside containers.

6.2.1 Dry solids and volatile solids

The average dry solids content in end product in three parallel samples from the common sample product must be higher than 25% at the time of emptying.

6.2.2 Thermotolerant coliform bakteria

In three parallel samples from the common sample the average TCB content in the solid matter (indoor or external containers) and in the urine fraction, if any, must be less than two bacteria per gram wet weight/or ml at the time of emptying or at the conclusion of the test.

6.2.3 pH

In 3 parallel samples from the common sample the average pH value in the end product (solids) must be between 6 and 8 at the time of emptying or at the conclusion of the test.

6.2.4 Nitrogen content

The content of Kjeldahl Nitrogen in three parallel samples must total at least 1% in the solid matter. State the content of Kjeldahl Nitrogen in the urine fraction.

6.2.5 Odour

The compost odour when the toilet is emptied and when outside compost bins are emptied must be evaluated subjectively. Marked smell characteristics pursuant to Sections 2, 3 and 4 (see Section 5.2.5) will count against the test item. The compost should smell of "moist soil" and must not smell of ammonia.

6.2.6 Consistency

When used in practice the human source material must not be easily recognizable as such from its form, colour or consistency.

The quality of the compost must be such that it is practical to handle. The consistency of the samples must be 1-4 based on a scale from 1 (soft) to 5 (very firm).

6.3 Assessments

To satisfy the function requirements the toilet system must fulfil the requirements as to capacity, dry solids content (in the solid matter) and thermotolerant coliform bacteria in the end product. To be approved the toilet must fulfil each of these requirements.

Deviations from the requirements as regards the content of nitrogen, pH, odour and consistency are not individually sufficient for the toilet to fail the test. To achieve approval, the toilet must fulfil at least 3 of the requirements.

To pass the field test 4 out of 5 toilets must fulfil the requirements.

7 Requirements as to instructions for use

The applicant must submit written instructions for use, assembly and installation to the test laboratory. The instructions must be complete and more or less ready for printing.

The criteria governing written information accompanying the toilet will as a general rule be strict. Temporary instructions for use may be deemed acceptable provided that the applicant compiles complete instructions by the end of the test period. The instructions must be submitted to the test institution for evaluation before an assessment can be given.

7.1 Instructions for use

The instructions for use must cover the following subjects:
* Type designation
* Manufacturer/importer and supplier
* Type number and year
* Ecolabelling, including warranty and confirmation of fulfilment of requirement
* Capacity and energy consumption

* The principle on which the toilet functions
* The principle for composting
* The significance and use of pellets, food waste and composting substances
* Recommended composting time
* Day-to-day care, e.g. covering of compost and use of fan/heating element
* Maintenance, e.g. replacing filters etc., hosing down heating elements/bottom of toilet

* Emptying, with particular emphasis on hygienic emptying procedures
* Use of tools
* Use of compost and liquids, if any
* Special preconditions/comments on the toilet

Trouble-shooting

* Overview of the main types of incorrect installation
* Overview of the main types of faults that occur in the ventilation system and the method of repair
* Overview of the main types of problems affecting fluid capacity/excess fluid and methods of repair
* Overview of the main types of problems with compost quality and methods for repair
* Overview of the main types of problems with unpleasant odour indoors and outdoors and methods for rectifying such problems

7.2 Assembly instructions

The assembly instructions must show how the toilet (including the ventilation system) is to be put together. The assembly instructions must discuss the following subjects:

* Complete list of contents of package
* Overview of replaceable parts that experience has shown will have to be replaced before the warranty expires
* Overview of the tools necessary for assembly
* Overview of the method by which the individual parts are to be assembled

7.3 Installation instructions

The installation instructions must show how the toilet (including the ventilation system) is intended to be installed in buildings. The ventilation must be over the roof ridge or in a way that satisfies the requirement to working conditions and that do not lead to odour problems The installation instructions must discuss the following subjects:

* Area required around the toilet for use, maintenance and repairs
* Requirements as to ventilation, heating and if appropriate outlets in the toilet room
* Required insulation of compost container/tanks and ventilation ducts etc.
* Skilled craftsmen required, e.g. electrician

8 Documentation and conclusion

Written documentation of the test results must be provided in the form of a brief report. This must specify whether the test item has satisfied the requirements made as regards function testing. If the requirements could be satisfied by means of small changes to the test item, a note to this effect must be given. The report is to be sent to the principal.

Enclosure 1

Map over climatic zones in the Nordic countries

Available at the Nordic secretariates

Appendix 2

Interview Form for Field Test

A brief interview must be conducted with the host family by the test institution (not the applicant) with a view to ensuring the representativity of the test and to clarify significant operational conditions, deviations etc. such as times of use, daily operations, any problems encountered etc.

1 Identification

Date: (day/month/year)

Owners name	Address	Telephone	Fax	Comments
Applicant's company name				
Interviewer's name				

Location

Country	Iceland Norway Sweden Finland Denmark
County:	
Municipality:	
House/cabin No. Site.	
Map (M=1:50-100 000).	
Height above sea level.	

2 Installation

What type of toilet has been installed?
Manufacturer:
.....
Model:
.....
□With power connection (220/230 volt). □ The toilet has a heating element.

□□Without power connection, including 12/24 volt.

The toilet is installed in: Dwellinghouse □ Holiday home/cabin □

When was the toilet installed? .... (year).

Is the toilet used in combination with outdoor (external/outer) compost tanks ?
□ External uninsulated compost tanks. No. of tanks .....
□ External insulated compost tanks. No. of tanks .....
□ Large insulated home compost tanks. No. of tanks .....
□ Other .....

Were any particular problems encountered during installation or assembly
.....
.....
.....

Is part or all of the toilet located in an unheated room?

□ The toilet (including bowl, decomposition tank etc.) is located in a room that is heated at all times (>15C).

□ The toilet bowl is located in a room that is heated at all times, but where the decomposition tank(s) is located in a cold room and/or under the floor.

□ The toilet bowl is located in a room that is only heated during use and where the decomposition tank(s) is located in a cold room (<15C) and/or under the floor.

□ The toilet (with bowl, decomposition tank etc.) is located in a room that is cold at all times.

□ Other .....

How is the toilet ventilated?

□ The toilet is ventilated by means of an air duct from the decomposition tank. The air duct is mechanically ventilated by means of:
- □□ Electrical fan (220/230 V).
- □□ Electrical fan (12/24 V).
- □□ Other ..... (describe).

□□ Ventilation of the toilet is based on a draught through the vent from the decomposition tank.
□ The vent has one or more bends.
□ The vent extends over the roof ridge.
□□□ The vent is connected to some form of filter. Describe .....
.....
□□ The vent is insulated.
□□ The vent is partially insulated.
□□ The vent is not insulated.

Have there been any problems with odours ?

□ The toilet is virtually free of odour/has an acceptable odour.
□ Indoors.
□□ Outdoors.
□□ During emptying of the toilet.
□□ During emptying of external compost tanks.
Please describe the problem: .....

.....

3 Use and care

How many adults usually use the toilet ? ..... (number)

How many children usually use the toilet ? ..... (number)

Is the toilet used by everyone or do some people go elsewhere to urinate ?

□□□ The toilet is used by everyone and has sufficient fluid capacity.
□□ Sometimes some people go elsewhere to urinate.
□□ Some members of the family frequently go elsewhere to urinate because of the low fluid capacity of the toilet.

State the number of days (24-hour periods) that the toilet is in use during the year ?

□□ 1 to 30 days
□□ 30 to 60 days
□□ 60 to 90 days
□□ 90 to 180 days
□□ 365 days (the whole year).

At what times of the year is the toilet most in use ? .....

Is food waste put into the toilet ?

□ Food waste is not put in.
□ Food waste of the order of ..... litres or kg per week is put in.
□ Just as much food waste as other waste is put in.
□□ More food waste than other waste is put in.

Is water put into the toilet ?
□ Water is not put into the toilet or external tank.
□ Water is put into the toilet or external tank. Amounts? .... litres per week.

Is fluid drained off the toilet ?

□ Fluid is not drained off the toilet or external tank.
□ Fluid is drained off the toilet or external tank. Amounts? ..... litres per year.

How many times per day are pellets added to the toilet?
□ Every time the toilet is used.
□ Once per day.
□ Other .....(describe)

What quantity of pellets is added to the toilet per day ?

□ 1 to 5 dl
□ 0.5 to 5 litres
□ Other ..... (describe)

What type of material is used as pellets ?

- Turf.
- Bark.
- Woodshavings/sawdust.
- Grass/leaves etc.
- Other (describe) .....

Are any special composting materials used ?

- Composting materials are not used.
- Composting materials are used. Type/manufacturer: .....
  Quantity: .....

4 Emptying

When was the toilet and/or external compost tank last emptied ?

Date: .....

- Less than 4 weeks ago.
- 1 to 3 months ago.
- 3 to 6 months ago.
- 6 to 12 months ago.
- More than 1 year ago.
- More than 2 years ago.
- More than 3 years ago.

How frequently is the compost emptied from the toilet ?

- More than 12 times per year.
- 5 to 12 times per year.
- 2 to 4 times per year.
- Once per year.
- Every other year or less frequently.

Describe the condition of the compost at the time of emptying ?

- The compost is dry or relatively dry.
- The compost is dripping wet or relatively wet.

- The compost is porous and air-filled and easy to handle/empty.
- The compost is hard and solid. It is difficult to empty.
- The compost is wet or partially fluid and difficult or unpleasant to handle/empty.

- The smell of the compost is acceptable (smells of earth).
- The compost smells unpleasant (smell of ammonia, acid, faeces, etc.)

- The compost is dark brown to black in colour.
- The compost has more or less the same colour as faeces.

- There are few insects and/or larvae in the compost.
- There are a great many (i.e. >100) insects and/or larvae in the compost during emptying.

How much compost is emptied from the toilet ?

State approximate amount in litres .....

How is the compost used?

__ The compost is used to enrich the soil/fertilize our own garden/land.
__ The compost is buried in our own garden/land.

Any comments:

.....

.....

.....

.....
.....