Nordic Ecolabelling of

Paper Products – Basic Module



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Nordic Ecolabelling

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

Addresses

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

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

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The Nordic Ecolabel modular system for paper products

Nordic Ecolabelled paper products may be made of wood fibre, fibres from other plants and recycled fibre. The criteria for Nordic Ecolabelling of paper products encompass a wide range of requirements, most of which relate to pulp and paper production.

The Basic Module (this document) contains general requirements concerning forestry management, emissions, energy use and waste disposal in regard to pulp and paper production.

The Chemical Module contains general requirements in regard to the uses of chemicals in the manufacture of pulp and paper.

Supplementary Modules contain those requirements in regard to specific paper products which must be fulfilled in order that a licence to carry the Nordic Ecolabel may be granted. The requirements levels in a supplementary module may be more stringent or more lenient than those of the basic or chemical module. If the standards required in the modules differ, the requirement levels specified in the applicable supplementary module are to be applied.

For a product to be granted a licence to carry the Nordic Ecolabel, the relevant requirements in the Basic Module and Chemical Module, in addition to the requirements in the applicable supplementary module, must be fulfilled.

Version 2 of the modular system includes the following documents:

- Basic Module (Nordic Ecolabelling of Paper Products – Basic Module)
- Chemical Module (Nordic Ecolabelling of Paper Products – Chemical Module)

Other Nordic Ecolabel criteria may refer to the modular system, such as the revised Criteria for Copying and Printing Paper (version 4), the revised Criteria for Tissue Paper (version 5) and the Criteria for Sanitary Products.

What is Nordic Ecolabelled paper?

The Nordic Ecolabel is an official eco-label with absolute requirements. Nordic Ecolabelled papers have less impact on the environment than most other papers in their product groups and the Nordic Ecolabel signifies that the product fulfils strict environmental requirements.

This means that the paper has minimum environmental impact with regard to production, use and waste. This is achieved by using certified raw materials, by limiting the use of environmentally harmful chemicals, by producing low emissions to air and water and by reducing energy consumption.

Nordic Ecolabelling environmental requirements provide individual manufacturers guidance on how they can contribute to the development of a sustainable, ecological society.

The Nordic Ecolabel on a paper product confirms that resources have been used efficiently and that environmentally suitable production methods have been employed. The raw

materials used in the product have been evaluated by Nordic Ecolabelling and only raw materials of the highest quality in environmental terms may be used in Nordic Ecolabelled products.

Why choose the Nordic Ecolabel?

- The Nordic Ecolabel is a performance standard with absolute requirements.
- The Nordic Ecolabel is a cost-effective and simple means of communicating environmental work and commitment.
- The Nordic Ecolabel enjoys high credibility and familiarity in the Nordic countries. Recognition of the Nordic Ecolabel in 2010 was 98% in Sweden, 95% in Norway, 88% in Finland, 93% in Denmark and 73% in Iceland.
- Environmental issues are complex. It can take a long time and extensive resources to gain an understanding of a specific area. Nordic Ecolabelling facilitates this work.
- The Nordic Ecolabel also sets requirements on quality and recyclability. This means that a Nordic Ecolabel licence can also be seen as a mark of quality.
- A Nordic Ecolabel allows manufacturers to communicate to purchasers in the public and private sector that the manufacturer is environmentally conscious.

How to apply

Each requirement is marked with the letter R (requirement) and a number. All requirements must be fulfilled to be awarded a licence. Applications are to be submitted with the aid of the web-based application aid My Swan Account. My Swan Account can be accessed via the internet addresses shown on page 2 of this document or via http://www.nordic-ecolabel.org/portals/paper/my-swan-account1/

Pulps used in the paper must be inspected and listed at the Nordic Ecolabelling's website or in My Swan Account. The pulp producer is responsible for the application fee and annual listing fee for the pulp.

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 documentation

Instructions on how to apply for a Nordic Ecolabel licence are provided in the supplementary module relating to the paper type in question. Copies of all documents must be kept readily available by the applicant. Some requirements have associated appendices that can be used for documentation. These appendices can be found at the end of this document.

All information submitted to Nordic Ecolabelling will be treated confidentially. This also applies to the names of the applicant and products during the application procedure.

On-site inspection

During the application process, Nordic Ecolabelling normally performs an on-site inspection to ensure adherence to the requirements. For the purposes of this 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.

1 Information on production

This Basic Module imposes requirements on pulp and paper production.

a) The following requirements must be fulfilled by paper manufacturers:
R1-R6, R7 (certain sections), R8-R10, R12, R17-R18 and R11

b) The following requirements must be fulfilled by pulp manufacturers:
R1-R6, R7 (certain sections), R8-R10, R12, R17-R18 and R13-R16

Note that some requirements, such as those on CO_2 emissions from transportation (R11) require the paper manufacturer to collect information from the pulp manufacturer.

Note also that in addition to fulfilling these requirements, a Nordic Ecolabelled paper product must fulfil the requirements in the Chemical Module and the applicable supplementary module.

R1 General comments on documentation

The pulp/paper manufacturer must submit documentation that demonstrates fulfilment of all the pertinent requirements of this Basic Module. If the manufacturer is not the applicant, the manufacturer must sign the section entitled "manufacturer" on the applicant's application form.

A calculation sheet in respect of energy and emission has been developed by Nordic Ecolabelling to simplify the application process.

The paper manufacturer is not required to submit new documentation for market pulp that has already been evaluated by Nordic Ecolabelling.

The documentation required are to be submitted with the aid of the web-based application aid My Swan Account.

If the paper manufacturer operates other reporting systems, such as EMAS, ISO 14 000 or reports to the authorities, this information may be approved if it is sufficiently specific to the product and if the basis for calculation is the same as that used by Nordic Ecolabelling. Documentation from other audit systems must provide clear reference to the applicable requirements.

✉ Overview of the above points.

R2 Type of pulp and paper

The pulp/paper manufacturer shall provide information regarding the type of pulp and paper.

Paper manufacturer. A technical description of the paper, its intended use and its composition shall be submitted. The description must include the name and production site of ingoing pulp, the proportion of the ingoing pulps (90% pulp/tonne paper) and the grades in which the paper is available. The documentation must specify whether the paper is coated or uncoated and the surface weight in which the paper is available. Information about the fibre in the pulp shall also be provided, see R7.

Pulp manufacturer. Information on the type of pulp. Specific requirements may apply to individual pulp types.

✉ Description of the above points.

R3 Production technology

The pulp/paper manufacturer shall submit information on the production method and technology used for the Nordic Ecolabelled/inspected paper. Specify whether the pulp comes from integrated production.

Paper manufacturer. A description of the production technology used in the papermaking shall include all stages of the process, from the purchasing of the pulp raw material/recycled paper to winding the paper onto rolls, for example slushing, grinding, the addition of chemicals, drying, coating, conversion, a description of the water circulation system, method of intern and extern water treatment, including sampling sites for emissions, both to water and air, a description of energy system, type of fuels used in each production phase of the production of Nordic Ecolabelled/inspected paper.

Pulp manufacturer. A description of the production technology. This description includes all ingoing sub-processes, from the point at which the fibre raw material/recycled paper passes the plant gates to the point at which the pulp leaves the pulp mill. A description of the water circulation system, method of intern and extern water treatment, including sampling sites for emissions, both to water and air have to be enclosed. A description of energy system, type of fuels used at each production phase of the pulp that is used in production of the Nordic Ecolabelled/inspected paper has to be also enclosed. The deinking of recycled fibre is also considered a pulp process.

✉ Description of the above points.

2 Regulatory requirements

R4 Regulatory requirements

The pulp/paper manufacturer is responsible for ensuring that the production of pulp/paper for ecolabelled products complies with all requirements as to safety, working conditions, working environment legislation, environmental legislation and conditions/licences relating to the specific production facility in the individual country in which ecolabelled products are produced.

No documentation is required but the licence can be revoked if the requirement is not fulfilled.

3 Quality and environmental assurance

R5 Quality and environmental assurance

The pulp manufacturer and **paper manufacturer** respectively are responsible for ensuring that the quality of the pulp or paper in the Nordic Ecolabelled product is maintained throughout the period of validity of the licence or as long as the pulp constitutes a part of the ecolabelled product.

The pulp/paper manufacturer shall ensure that:

- All requirements in the ecolabelling criteria that are relevant to the pulp/paper manufacturer are fulfilled and that they are verifiable during the validity period of the licence or as long as the pulp/paper constitutes a part of the Nordic Ecolabelled product.

- The Nordic Ecolabelled paper can be traced throughout the entire production process from raw material to finished product.
- Unforeseen non-conformities or planned changes in production, which may affect the product's ability to fulfil the ecolabelling requirements, are reported to Nordic Ecolabelling without delay.
- A person within the organization is assigned the responsibility and authority to guarantee that the requirements of the ecolabelling criteria are fulfilled.
- A contact person, responsible for reporting to Nordic Ecolabelling, is appointed.

The paper manufacturer shall have written permission from Nordic Ecolabelling before carrying out any changes that may be of relevance for the fulfilment of the ecolabelling requirements. Examples of such changes are a change of recipe (pulp mixture), exchanging raw materials, and new production methods.

☒ The pulp/paper producer shall provide confirmation of the above by completing Appendix 5.

R6 Quality manual

The pulp/paper manufacturer must follow written procedures from the company's quality manual for the production of paper for ecolabelled paper products. These are:

- Procedures for securing the traceability of Nordic Ecolabelled products through the entire production process.
- Procedures for handling non-conformities and changes in the production of the Nordic Ecolabelled product, and reporting these to the contact person and Nordic Ecolabelling.
- Procedure for logs and annual reports.

☒ The pulp/paper producer shall provide confirmation of the above by completing Appendix 5. On initial application, the applicant shall also submit a copy of procedures to Nordic Ecolabelling. The following documents must be kept available in the event of an inspection visit:

- Copy of the application, including documentation.
- Background data to the documentation that is submitted along with the application.
- Journals of unforeseen deviations and planned production changes in the production of the ecolabelled product.
- Quality manual with procedures for the production of the pulp/paper in ecolabelled products.
- Complaints and claims relating to the paper in ecolabelled products.

4 Fibre raw material

This requirement applies to wood fibre, bamboo, cotton linters, hemp and linen. Fibres other than those stated may not be included in the fibre raw material. Nordic Ecolabelling determines which new types of fibre may be included in the product group.

Requirements for fibre raw material (R7a-c) were implemented in the generation 2.0 of the Basic Module in 2011. In the Appendix 1E the Nordic Ecolabelling's new forestry requirements are introduced. These requirements were adopted by the Nordic Ecolabelling board in November 2015. Pulp and paper manufacturer may choose whether to comply with and verify the requirements for fibre raw material according to the requirements R7 a-c or the new requirements presented in Appendix 1E. The new and the old requirements for fibre cannot be mixed.

R7 a) Certified traceability and control of wood raw material

The pulp/paper manufacturer must have a certified Chain of Custody (CoC) complying with a forest certification system that fulfils the guidelines of Appendix 1C. This requirement applies also to integrated pulp and paper mills.

✉ Copy of pertinent and valid chain of custody certificate.

b) Traceability and control of wood and fibre raw material

This requirement applies to both certified and uncertified wood and fibre raw material.

The pulp/paper manufacturer shall:

1. Specify the name (in Latin and one Nordic language), quantity and geographic origin (country/state and region/province) of the wood and fibre raw material that is used. Appendix 1A may be used.
2. Ensure the traceability of all wood and fibre raw materials.
3. Have a documented procedure regarding sustainable wood and fibre raw material.
4. Ensure that all wood and fibre raw materials come from legal sources. Wood and fibre raw material must not be derived from:

- Protected areas or areas that are under investigation as to their protection status
- Areas where ownership or rights of exploitation are unclear Illegally felled wood
- Genetically modified trees or plants

In addition, the forest management must not harm:

- Natural woodland, biodiversity, special ecosystems and important ecological functions
- Social and cultural preservation values.

A Chain of Custody certificate may be used to document item 2.

✉ Name (in Latin and one Nordic language), quantity and geographic origin (country/state and region/province) of the wood and fibre raw material that is used. Appendix 1A may be used.

✉ Traceability system for all wood and fibre raw materials.

✉ A documented procedure from the pulp/paper manufacturer that describes how the requirement is fulfilled. The procedure shall contain up-to-date lists of all suppliers of fibre raw material that the ecolabelled paper contains. Appendix 1B can be used.

c) Certification of wood and fibre raw material

On an annual basis/during the last 12 months, at least:

1. 30% of fibre raw material in the paper shall be certified to one of the forestry standards or certification systems specified in Appendix 1C. Alternatively, cultivation of the fibre raw material must be certified organic or converting to organic production,

or

2. 75% of the fibre raw material in the paper must be recycled fibre, wood shavings or sawdust,

or

3. a combination of 1 and 2. If the paper contains less than 75% recycled fibre, the content of certified fibre shall be calculated using the following formula.

   Requirement as to the proportion of certified fibre raw material in the paper (Y)

   Y (%) ≥ 30 – 0.4x

   where x = the proportion of recycled fibre, wood shavings or sawdust.

The proportion of certified fibre in the paper shall be updated and reported annually during the licence period and figures from the previous year sent to Nordic Ecolabelling by 1 April. See R18.

The proportion of fibre raw material in the paper taken from certified sources and the proportion of recycled fibre, wood shavings and sawdust, is calculated as a weighted total of the proportion in each constituent pulp.

✉ **The pulp manufacturer** must document the proportion of fibre raw material from certified forestry and cultivation and the proportion of recycled fibre, wood shavings and sawdust in each constituent pulp as specified in Appendix 1D.

✉ **The paper manufacturer** shall enclose calculations demonstrating that the fibre requirement is fulfilled at the time of application. Alternatively, a third party controlled balance sheet from CoC credit account system for the last 12 months can used by the paper manufacturer to verify the share of certified wood in the purchased pulp/pulps. The paper manufacturer shall also submit an up-to-date report of the previous year's proportion of certified raw material in the paper annually by 1 April during the validity period of the Basic Module.

✉ Copy of pertinent forestry certificate fulfilling the requirements in Appendix 1C on forest certification and organic production.

Nordic Ecolabelling may request further documents to examine whether the requirements of the forestry standard and certification system in question can be approved. Such documentation can, for example, comprise copies of the certification body's final report, a copy of the forestry standard (including the name, address and phone number of the organisation that established the standard) as well as references to individuals representing parties and interest groups who have been involved in the standard.

5 Chemicals

R8 Chemicals

The chemicals used in the production of the pulp and paper must fulfil the requirements in the Chemical Module, version 2.

✉ **The pulp/paper manufacturer** shall submit a list of the chemical products used in the pulp/paper and documentation showing that they fulfil the requirements in the Chemical Module. This list shall contain the supplier of the product and its function.

✉ **The pulp and paper manufacturer** must verify that the requirements R4 and R6 in the Chemical Module are met by duly completing and signing Annex 4 in the Chemical Module.

6 Energy and CO_2

Energy consumption is regulated through requirements on fuel, electricity and CO_2 emissions. The requirement is based on information on actual energy use in production in relation to a specified reference value. The ratio between actual energy consumption and the reference value translates to an energy score.

The energy calculation encompasses the entire production process – both paper manufacturing and the constituent pulp. The calculation for paper does not include filler. Energy calculations do not include energy consumed in transporting raw materials or in converting and packaging. The requirement of CO_2 emissions originating from transport (R11) is only applied to Nordic Ecolabelled paper products. Paper manufacturer shall

document the requirement. Pulp manufacturers shall, however, provide calculations with details of CO_2 emissions from the transport of the wood or waste paper to the pulp mill.

R9 Total energy score

The following requirement must be fulfilled for paper unless specified otherwise in the supplementary module for the specific paper product.

$P_{electricity(total)} < 1.25$

$P_{fuel(total)} < 1.25$

$P_{electricity(total)}$ and $P_{fuel(total)}$ include the energy scores from **paper production and the pulps** that are used.

✉ **The pulp/paper manufacturer** shall submit calculations in accordance with Appendix 2 to demonstrate fulfilment of the requirement. Worst case calculations shall be enclosed to demonstrate that each pulp recipe meets the requirements in case pulp mixture specific calculations are not documented for each pulp mix. Nordic Ecolabelling also provides a worksheet that is to be used for these calculations.

R10 Emissions of CO_2

The emission of CO_2 from purchased electricity* and fossil fuel used for heating and electricity must not exceed the following limit values:

- 1,000 kg CO_2 /tonne paper for paper made from 100 % DIP/recycled pulp
- 900 kg CO_2 /tonne paper for paper made from 100 % chemical pulp
- 1,600 kg CO_2 /tonne paper for paper made from 100 % mechanical pulp

For paper comprising a mixture of cellulose pulp, recycled fibre and mechanical pulp, a weighted limit value is calculated, based on the proportion of each pulp type.

**CO_2 emissions from purchased electricity shall be calculated on a basis of 385 g CO_2/kWh.*

✉ **The pulp/paper manufacturer** shall submit calculations in accordance with Appendix 2 to demonstrate fulfilment of the requirement. Nordic Ecolabelling also provides a worksheet that is to be used for these calculations.

R11 Transport and distribution

The paper manufacturer shall supply calculations of the total CO_2 impact of all forms of transport from the forest to the paper mill. The calculation shall contain:

- Transport of raw material
- Transport of felled timber from the forest (loading area) to the pulp mill.
- Transport of felled timber to the saw/chip plant (average figures).
- Transport of wood chips to the pulp mill (average figures).
- Transport of purchased market pulp.
- Transport of the following raw materials from the supplier: filler, pigment and starch (if the quantities exceed 10 kg/tonne produced pulp/paper).
- Transport of recycled fibre from a central depot to the pulp factory.

✉ Calculation of annual carbon dioxide emissions given in kg CO_2 per tonne paper grade or kg CO_2 per tonne of the mill's total annual production. Details of how the CO_2 values are calculated with reference to any assumption, the use of databases and suchlike.

Transports from paper mill to conversion plant are not considered in calculations.

7 Emissions to water and air

The requirements on emissions to water and air are structured in such a way that the paper manufacturer calculates total emissions from pulp and paper production. To do this, the paper manufacturer will need information on the specific emissions from pulp production. The calculation for paper does not include filler.

The emission value that is reported is primarily based on measured emissions. Instructions for measuring emissions are found in Appendix 3 on the subject of analyses. Requirements are imposed as to the laboratory, method of measurement and frequency of measurement.

The criteria as to emissions to water and air are structured as follows:

Measured emissions are compared with the reference values for emissions. The reference values can be found in Appendix 3, Table 3.1. Reference is made to these in the calculation of emission scores for individual emission parameters. The emission values for chemical oxygen demand (COD), phosphorus (P), sulphur (S) and nitrogen oxides (NO_X) are aggregated to a total score.

R12 Emissions of COD, P, S and NO_X to water/air

Emissions to air and/or water from the production of pulp and finished paper must be specified in terms of emissions points scores for each of four parameters (P_{COD}, P_P, P_S, P_{NOx}) according to the following. The measured emissions shall be compared to reference values relating to specific production methods (Appendix 3, Table 3.1).

The individual point score for P_{COD}, P_P, P_S, and P_{NOx} must not exceed 1.5.

The total emissions score, $P_{emissions\ total}$:

$P_{emissions\ total} = P_{COD} + P_P + P_S + P_{NOx}$ may not exceed 4.0.

Refer also to the example calculation in Appendix 3.

✉ **The paper manufacturer** shall submit calculations in accordance with Appendix 3 to demonstrate fulfilment of the requirement. Nordic Ecolabelling also provides a worksheet that is to be used for these calculations.

R13 AOX

The weighted average value of AOX released from the pulps used in the Nordic Ecolabelled paper product must not exceed 0.17 kg/tonne paper. AOX emissions from each individual pulp used in the paper must not exceed 0.25 kg/tonne.

✉ AOX emissions from each pulp documented by **the pulp manufacturer**. The paper manufacturer shall use the worksheet provided by Nordic Ecolabelling these calculations.

R14 Chlorine gas bleaching

Pulps used in Nordic Ecolabelled paper must not be bleached using chlorine gas. The residual quantities created during the production of chlorine dioxide from chlorate are not defined as a component of chlorine gas bleaching.

✉ **The pulp manufacturer** shall certify that chlorine gas is not used for bleaching the pulp.

R15 Emissions of chelating agents

The pulp manufacturer must account for:

- Quantity of complexing agents per tonne 90% pulp.

- Emissions of DTPA/EDTA to the recipient environment, if ≥ 1.0 kg DTPA/EDTA (active substance) per tonne of 90% pulp is used
- A plan for reducing the use of EDTA/DTPA and a report (e.g. test results) regarding potential replacement of DTPA by products less hazardous to the environment.

✉ State the use and emissions of DTPA/EDTA from pulp production, measurement result, method of analysis, frequency of measurement, laboratory name and laboratory compliance (see Appendix 3).

✉ If DTPA/EDTA is used, a plan for reducing usage and report regarding potential replacement of DTPA shall also be submitted.

R16 Emissions of chlorate

Chlorate emissions from chemical pulp production must be measured and reported to Nordic Ecolabelling annually.

Measurements are not required if the chlorine dioxide is not produced at the pulp mill or if the waste water from chlorine dioxide production is purified (chlorate reduced).

✉ **The pulp manufacturer** shall display results of measurements or declarations/certificates supporting the two latter points.

8 Waste

R17 Waste

The pulp/paper manufacturer must specify that all waste types generated in the factory area are sorted at source and the various waste fractions shall be recycled or reused to as great extent as possible. The waste fractions and the way in which they are processed shall be reported.

The applicant must state if the waste is classified as environmentally harmful in accordance with national legislation.

Combustible waste containing wood with a positive thermal value must not be sent to landfill.

If the pulp/paper mill is certified according to ISO 14001, no documentation is necessary.

✉ The pulp /paper manufacturer must account for the following:

- How sorting at source is carried out.
- Sorting fractions
- How the individual fractions are handled (internal or external reuse, energy source, dumping or other).
- Annual quantity of the different fractions. The quantities can be calculated for a shorter period and converted to annual figures.

9 Annual reporting

R18 Annual reporting

The pulp/paper manufacturer shall on an annual basis report the specific emissions for production, energy consumption and proportion of wood and fibre raw material from certified sources. Further, the manufacturer shall submit an updated list of production chemicals to Nordic Ecolabelling. This information shall be submitted by 1 April at the latest during the licence period or so long as the pulp/paper is used in Nordic Ecolabelled products.

Changes affecting the ecolabelling requirements must be reported over and above the annual follow-up. Refer to the section on environmental and quality assurance.

☒ Annual reporting according to above. Appendix 4 may be used for this purpose. Annual reports submitted to regulatory authorities may be accepted if the documentation contains the details required by Nordic Ecolabelling. Nordic Ecolabelling maintains the right at any time to request further information, such as details of energy consumption.

Follow-up inspections

Products for which an ecolabelling licence has been granted may be checked by an impartial test institution at the request of Nordic Ecolabelling. A check of this type may take one of many forms. For example, a sample may be extracted for analyses in the form of a random sample from products on sale, after which the sample will be analysed by an impartial test body. In this case the licence holder will be liable for the cost of the process if the products do not comply with the information supplied in the application.

Validity of the Basic Module

This Basic Module, version 2, was adopted by the Nordic Ecolabelling Board on 22 June 2011. The module is revised regularly, roughly every 5 years. Nordic Ecolabelling informs all clients of any amendments, changes or revisions to the Basic Module, version 2.

On 15 May 2013 the Secretariat Manager´s meeting decided to prolong the criteria document until 30 June 2016. The new version is called 2.1.

On 19 June 2013 the Secretariat Manager´s meeting decided to adopt a change in requirement R15 (Emissions of chelating agents). The pulp manufacturer must account for report (e.g. test results) regarding potential replacement of DTPA by products less hazardous to the environment. The new version is called 2.1.

On 5 November 2015 the Nordic Ecolabelling board decided to prolong the validity of the Basic Module with three years. Some minor editorial changes were also introduced. The new version is called 2.2 and is valid until 30 June 2019.

On 9 November 2016 the Nordic Ecolabelling board decided to implement the Nordic Ecolabelling's new forestry requirements as an alternative method in the Basic Module. The new requirements are found in Appendix 1E. Information of pulp fees was also introduced. The new version is called 2.3 and is valid until 30 June 2019.

Nordic Ecolabelling’s Criteria Group decided on 14 December 2017 to prolong the criteria with 18 months to the 31 December 2020. The new version is called 2.4.

Nordic Ecolabelling’s Criteria Group decided on 12 November 2019 to prolong the criteria with 12 months to the 31 December 2021. The new version is called 2.5.

Future Basic Module

The following issues should be actively considered for the next revision:

- Levels stipulated in requirements on energy and CO_2.
- Requirements on quantities of certified fibres
- Requirement limits for emissions to water and air
- Requirements on transport (CO_2)

Terms and definitions

Term	Explanation or definition
AOX	Absorbable organic halogens. A measurement of the quantity of chlorine (and other halogens) associated with organic compounds.
COD	Chemical oxygen demand. A measurement of the quantity of oxygen that is consumed during the chemical breakdown of organic material.
EDTA/DTPA	Chelating agents used to bind metals present in the raw material and process water.
NO_X	Collective chemical symbol for nitrogen oxides (NO, N_2O and NO_2). In this document, NO_X refers to the total of NO and NO_2, expressed as NO_2.
P	The chemical symbol for phosphorus. In this document, P refers to emissions of phosphorous compounds to water.
S	The chemical symbol for the element sulphur. In this document, S refers to all forms of sulphur compounds emitted in gaseous form to air.
Certified forestry	A certified forestry operation is managed in accordance with standards that fulfil Nordic Ecolabelling's requirements as to sustainable forestry, see Appendix 1C.
Certified wood raw material	Fibre from trees felled in a forest that at the time of harvesting was certified by a forestry administration, i.e. a certificate fulfilling Nordic Ecolabelling's requirements as to sustainable forestry, see Appendix 1C.
Non-certified wood raw material	Fibre from trees felled in a forest that at the time of harvesting was not certified by a forestry administration, i.e. lacking a certificate fulfilling Nordic Ecolabelling's requirements as to sustainable forestry, see Appendix 1C.
Legally sourced	Legally sourced means in this context timber that meets the requirements for "Legally harvested timber" in the (upcoming) EU timber regulation, i.e. timber harvested in accordance with the applicable legislation in the country of harvest. Applicable legislation means [cf. upcoming regulation]: "The legislation in the country of harvest covering the following matters: - rights to harvest timber within legally gazetted boundries; - payments for harvest rights and timber including duties related to timber harvesting, including environmental and forest legislation including forest management and biodiversity conservation, where directly related to timber harvesting; and - third parties' legal rights concerning use and tenure that is affected by timber harvesting; and - trade and customs legislation, in so far as the forest sector is concerned."

Certified organic production	Vegetable raw materials must be produced and checked in accordance with Council Regulation (EEC) No 2092/91 or 834/2007, or produced and checked in an equivalent way according to an equivalent regulatory system such as KRAV, SKAL, IMO or OCIA. See Appendix 1C.
Recycled fibre	Fibre collected from converter and post-consumer stages. Purchased broke, and broke generated within the mill is defined as new fibre if the fibre raw material is new fibre, and as recycled fibre if the raw material is recycled fibre. The deinking of recycled fibre is also considered a pulp process in this document.
Surfactants	Active substance in detergents.
Broke	Waste from production (scrap, strips, etc.).
Wood fibre	Wood fibre may consist of virgin fibre from timber or sawmill chippings. Sawmill chippings can be subdivided into cuttings and by-products. By-products are wood shavings and sawdust.

Appendix 1A Specification of fibre raw material

Supplier:
Product:
Manufacturer/supplier:

For the documentation of fibre raw material:

- Type of wood/plant and geographical origin (country/state and region/province).
- Quantity (annual) of fibre raw material used in pulp and paper production.
- Copy of certificate for certified forestry or organic production.
- Quantity (%) of timber from certified forests / quantity (%) of natural plant fibre from certified organic production used in the product.

The following table can be used if a supplier supplies more than one product:

Wood raw material/natural plant fibre	Type of wood/plant	Geographical origin	Forestry standard/ Ecology standard	Quantity (%) of timber/ natural plant fibre from certified forest/organic production used in the product.

Signature (pulp/paper manufacturer)

Date	Company name
Administrated by, signature	Phone

Appendix 1B Declaration on procedures for the controlled origin of raw materials

Pulp/paper manufacturer

The pulp/paper manufacturer must specify how requirement R7 b) on legal, sustainable forestry and fibre raw material supply is assured.

Procedures or agreements with suppliers can be submitted.

Description:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Signature (pulp/paper manufacturer)

Date	Company name	
Administrated by	Telephone	E-mail

Appendix 1C Guidelines for forest certification, CoC certification and organic production

Requirements on forestry standards

Nordic Ecolabelling sets requirements on the standards to which forestry is certified. These requirements are described below. Each individual national forestry standard and each certification system is reviewed by Nordic Ecolabelling as to fulfilment of the requirements. When a forestry standard is revised, it is re-reviewed.

Requirements on forestry standards

- The standard must balance economic, ecological and social interests and comply with the Rio Declaration's forestry principles, Agenda 21 and the Forest Principles, and respect relevant international conventions and agreements.
- The standard must contain absolute requirements and promote and contribute towards sustainable forestry. Nordic Ecolabelling places special emphasis on the standard including effective requirements to protect the forest from illegal felling and that the requirements protect the biodiversity of the forest.
- The standard must be available to the general public. The standard must have been developed in an open process in which stakeholders with ecological, economic and social interests have been invited to participate.

The requirements related to forestry standards are formulated as process requirements. The basis is that if stakeholders agree on the economic, social and environmental aspects of the forestry standard, this safeguards an acceptable requirement level.

If a forestry standard is developed or approved by stakeholders with ecological, economic and social interests, the standard may maintain an acceptable standard. Accordingly, Nordic Ecolabelling requires that the standard balances these three interests and that representatives from all three areas are invited to participate in development of the forestry standard.

The standard must set absolute requirements that must be fulfilled for the certification of the forestry. This ensures that the forest management fulfils an acceptable level regards the environment. When Nordic Ecolabelling requires that the standard shall "promote and contribute towards sustainable forestry", the standard must be assessed and revised regularly to initiate process improvement and successively reduce environmental impact.

Requirements on certification system

- The certification system must be open, have significant national or international credibility and be able to verify that the requirements in the forestry standard are fulfilled.

Requirements on certification body

- The certification body must be independent, credible and capable of verifying that the requirements of the standard have been fulfilled. The certification body must also be able to communicate the results and to facilitate the effective implementation of the standard.

The purpose of certification is to ensure that the requirements regarding forestry standards are fulfilled.

The certification system must be designed to verify that the requirements of the forest standard are fulfilled. The method used for certification must be repeatable and applicable to forestry. Certification must be in respect to a specific forestry standard. The forest must be inspected prior to certification.

Requirements on Chain of Custody (CoC) certification

- Chain of Custody certification must be issued by an accredited, competent third party (as for forest certification).
- The system shall stipulate requirements regarding the chain of custody that assure traceability, documentation and controls throughout the production chain.
- If recycled fibre, wood shavings or sawdust are used, the pulp manufacturer must verify that this originates from recycled materials.

Requirements on organic production

With regard to certified organic fibre raw material or production that is in the transition to organic production, the vegetable raw materials must be produced and checked in accordance with Council Regulation (EEC) No 2092/91 or 834/2007, or produced and checked in an equivalent way according to an equivalent regulatory system such as KRAV, SKAL, IMO or OCIA.

NB! Bamboo may either be certified according to a sustainable forestry standard or organic production.

Documentation

Copy of forestry/ fiber raw material standard, name, address and telephone number to the organization who has worked out the standard and audit rapports.

References to persons who represents stakeholders with ecological, economic and social interests who have been invited to participate.

Nordic Ecolabelling may request further documents to examine whether the requirements of the forestry standard and certification system in question can be approved.

Appendix 1D Summary of certified wood and fibre raw material

The proportion of certified wood or fibre raw material shall be calculated using one of the following three methods:

1. Using the total proportion of certified fibre raw material purchased annually by the factory, assuming that certified fibre raw material is present in all pulp types. In this case the proportion will be the same for all pulps produced by the mill. Alternatively, a third party controlled balance sheet from CoC credit account system for the last 12 months can used by the pulp manufacturer to verify the share of certified wood in the purchased fibre raw material.
2. Calculation of the input in each individual pulp type on an annual basis. Here, documentation must be submitted on the system used for tracing certified fibre raw materials within the mill. In the case of pulps containing several wood/plant fibre types, the proportion of certified fibre raw material is calculated as the total of the weighted proportion of each wood type based on an annual average. (The proportion of certified fibre raw material is multiplied by the proportion of the wood/plant type in question in the pulp. The figures for all wood/plant types are then added up.)
3. Using the total proportion of certified fibre raw material purchased annually by the trade company (company or group) in the country in question, assuming that certified fibre raw material is present in the applicable pulp type. It must be possible for an independent third party to verify the traceability of the fibre raw material from the felling site to the trade company. Alternatively, a third party controlled balance sheet from CoC credit account system for the last 12 months can used by the pulp manufacturer to verify the share of certified wood in the purchased fibre raw material.

Appendix 1C provides guidelines that the Nordic Ecolabelling Board uses as a basis for the evaluation of certification standards, systems and bodies.

Appendix 1E Alternative requirement for fibre raw material (R7)

In the Appendix, the Nordic Ecolabelling's new forestry requirements are introduced (R7d-e). Pulp and paper manufacturer may choose whether to comply with and verify the requirements for fibre raw material according to the requirements R7 a-c or the new requirements presented in Appendix 1E. The new and the old requirements for fibre cannot be mixed.

R7 d) Prohibited tree species

Tree species listed on Nordic Ecolabelling's list of prohibited tree species* are not permitted to be used in pulp/paper.

* The list of prohibited tree species is located on the website: www.nordic-ecolabel.org/wood/

✉ Declaration from the pulp manufacturer that the requirement to tree species not permitted to be used are met. Annex 1F shall be used.

R7 e) Wood raw material

The pulp manufacturer must state the name (species name) of the wood raw material used in pulp.

Chain of Custody certification

The pulp/paper manufacturer must be Chain of Custody certified by the FSC/PEFC schemes.

Certified wood raw material

On an annual basis/during the last 12 months, a minimum of

1. 50% by weight of all wood raw material (virgin) used in the paper, must origin from forestry certified under the FSC or PEFC schemes or

2. 75% of the fibre raw material in the paper must be recycled material*,

or

3. a combination of certified and recycled material. If the paper contains less than 75% recycled material, the content of certified fibre shall be calculated using the following formula.

Requirement as to the proportion of certified fibre raw material in the paper (Y)

$Y (\%) \geq 50 - 0{,}67 * x$

where x = the proportion of recycled material.

The proportion of fibre raw material in the paper taken from certified sources and the proportion of recycled material, is calculated as a weighted total of the proportion in each constituent pulp.

The remaining proportion of wood raw material must be covered by the FSC/PEFC control schemes.

Certified wood raw material must be accounted/recorded to the paper/ production line.

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

Pre-consumer material: Material diverted from the waste stream during a manufacturing process. Excluded is reuse of materials such as broke generated in a process and capable of being reused within the same process that generated it.

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

☒ Pulp manufacturer shall describe name (species name) on the wood raw material used in the pulp.

☒ Pulp/paper manufacturer must present a valid FSC/PEFC Chain of Custody certificate covering all wood raw material and recycled material used in the pulp/paper.

☒ Paper manufacturer shall enclose documentation e.g. a third party controlled balance sheet from CoC credit account system or a rolling average of the certification percentage on a production line showing that the quantity of certified wood raw material and recycled material in inspected/Nordic Ecolabelled paper is met. Nordic Ecolabelling may request further documents to examine whether the requirements are fullfilled.

Appendix 1F Declaration of prohibited tree species

Producer of pulp:
Name of the pulp:

Prohibited tree species

Are tree species listed in the list of prohibited tree species (Nordic Ecolabelling - Prohibited Wood) used in the pulp? ☐ Yes ☐ No

The list of prohibited tree species is located on the website: www.nordic-ecolabel.org/wood/

Version and date of the list of prohibited tree species used:

Nordic Ecolabelling may request further information if in doubt about specific tree species.

Producer of pulp's signature:

Date:	Company Name:
Responsible person:	Telephone and email address

Appendix 2 Energy and CO_2

2.1 Guidelines to energy calculations

Requirements govern the use of energy in the form of fuel and electricity. The requirement is based on information on actual energy use in production in relation to a specified reference value. The ratio between the two represents the energy score.

The energy calculation encompasses the entire production process – both paper manufacturing and the constituent pulp. The calculation for paper does not include filler. Energy calculations do not include energy consumed in transporting raw materials or in converting and packaging. Transport within the mill is not either included in calculations.

Energy consumption:
State the total energy consumption in processes used in pulp or paper production per tonne of product, specified as fuel and electricity.

Fuel:
Purchased fuel, fuel produced within the plant and waste products must all be specified. This means, for example, that lye, bark and woodchips must be included in the calculations to the extent that their thermal values contribute to the energy supplied to the process. The fuel used to produce both heat and electricity on-site must be stated. Fuel consumption calculations are based on the effective thermal value of the dry matter. Calculations may be based either on measured thermal values or the values specified in Appendix 2.5. If the fuel contains water, the calculation method specified in Appendix 2.6 can be used.

If fuel is used for internal electricity generation, the equivalent quantity of fuel must be subtracted from the actual fuel consumption (= 1.25 * internally generated electricity). This will ensure that energy information relating to fuel used in internal electricity generation is not counted twice.

Pulp manufacturer shall report to the paper manufacturer entire fuel consumption including fuel consumption in internal electricity generation. Paper manufacturer subtracts the fuel consumption originating from internal electricity generation in his own energy calculation.

Electricity:
Purchased electricity and internally generated electricity must both be reported.

- ✉ The consumption of electricity and fuel shall be based on bills and electricity meter readings. The calculated points must be passed on by the pulp manufacturer to the paper manufacturer and to Nordic Ecolabelling. The paper manufacturer can then perform a calculation of the total energy score for the finished paper. The calculation includes energy scores for all pulps used and energy scores for the paper production. If measured thermal values are used the values and their origin shall be specified.
- ✉ Internally produced electricity can be documented on the basis of readings of the mill's own electricity meters. In the case of purchased fuel the purchased quantity must be reconciled in relation to the quantity at the start and end of the year in question. Internal consumption of residual products such as liquor, bark, chippings

etc. is calculated on the basis of the estimated thermal value of the fuel used (see Table 2.3 in Section 2.5). Accordingly reporting encompasses the total (purchased) electricity consumption and consumption of fuel.

Steam:
If excess energy from other production (for example from other industrial sources) is used, the energy content of the steam must be used in the calculation. The steam table in Appendix 2.5 should be used for this purpose. If steam from electric boilers is used, the energy content must be converted to fuel in the same way but the energy content of electricity must be multiplied by 2.5.

Allocation:
Allocation is required if the pulp or paper manufacturer produces products that will not be ecolabelled as well as those that are to be Nordic Ecolabelled/inspected by Nordic Ecolabelling and cannot distinguish the energy requirements of the process types. Energy consumption must be allocated to the Nordic Ecolabelled/inspected product.

Tables 2.1 and 2.2 contain reference values for the process types not used for the Nordic Ecolabelled product. It is assumed that contribution from these process types to the total energy requirement is equal to the total reference value for energy. Which process lines are not used for Nordic Ecolabelled/inspected paper must be clearly stated.

In exceptional cases the average value for ecolabelled/inspected products and non-ecolabelled products may be applied. However, the products must be of equivalent quality and be produced with equivalent processes within the same production unit.

Integrated production:
The reference energy values for both pulp and paper mills shall be used for integrated production (Table 2.1 and 2.2). In the case of integrated mills that function both as suppliers of market pulp and pump pulp for Nordic Ecolabelled products, the reference value for drying market pulp (but not pump pulp) must be used.

The energy from fuels generated in pulp production will primarily be assigned to pulp production. The surplus can be transferred to paper production.

Surplus energy:
Surplus energy sold off in the form of electricity, steam or heat, is subtracted from total consumption. The quantity of fuel used to generate heat that is sold off is calculated by dividing by 0.8 and is subtracted from the total fuel consumption. For the electricity sold see equation in section 2.2.1.

The coefficient of 0.8 is equivalent to the average energy efficiency for total production of heat. As an alternative the actual energy efficiency of the plant in converting fuel to thermal energy may be used, provided that this is documented to Nordic Ecolabelling.

2.2. Energy calculation, paper manufacturer

2.2.1 Energy scores for paper production

Energy scores $P_{paper(electricity)}$ and $P_{paper(fuel)}$ for paper production in paper machines are calculated using the following formula:

$$P_{paper(electricity)} = \frac{Electricity_{consumed}}{Electricity_{reference}}$$

and

$$P_{paper(fuel)} = \frac{(Fuel_{consumed} - 1.25 \cdot in - house\ generated\ electricity)}{Fuel_{reference}}$$

Values for $Electricity_{reference}$ and $Fuel_{reference}$ can be found in Table 2.1.

Table 2.1 Energy for paper manufacturing

Process	Fuel kWh/t Ref. value	Electricity kWh/t Ref. value
Folding box board (FBB)* Solid bleached sulphate (SBS)*/ Solid bleached board (SBB)* Solid Unbleached Board (SUB)* White lined chipboard (WLC)*	1700	800
News	1700	750
LWC	1700	800
SC	1700	750
Uncoated fine paper	1700	750
Coated fine paper	1700	800

** Use only one of the marked processes*

☒ Calculation of point score using the worksheet provided by Nordic Ecolabelling.

2.2.2 Energy scores for a mixture of different pulp types

In the case of mixtures of different pulp types the following formulae are used to calculate energy scores $P_{pulp(electricity)}$ and $P_{pulp(fuel)}$:

$$P_{pulp(electricity)} = \sum_{i=1}^{n} P_{pulp(electricity)i} \cdot pulp_i$$

and

$$P_{pulp(fuel)} = \sum_{i=1}^{n} P_{pulp(fuel)i} \cdot pulp_i$$

where $pulp_i$ is the proportion by mass of the individual pulp relative to the total pulp mix. Due to spillage and differences in water content, the sum of pulpi may be greater than 1. $P_{pulp(electricity)i}$ is the energy score for electricity for pulp i. $P_{pulp(fuel)i}$ is the energy score for fuel for pulp i.

A more detailed description of the energy scores (e.g. regarding integrated production) is provided in Section 2.1 of the guidelines to the energy calculations.

✉ Calculation of point score using the worksheet provided by Nordic Ecolabelling.

2.2.3 Total energy score for paper and pulp production

The total score for both electricity and fuel consumption is based on the weighted scores for the pulp and paper mills (X = weight of the reference value from the pulp or paper production):

$$P_{electricity} = X_{electricity,pulp} \cdot P_{electricity,pulp} + X_{electricity,paper} \cdot P_{electricity,paper}$$

Where

$$X_{electricity,pulp} = \frac{Electricity_{reference,pulp}}{(Electricity_{reference,pulp} + Electricity_{reference,paper})}$$

$$X_{electricity,paper} = \frac{Electricity_{reference,paper}}{(Electricity_{reference,pulp} + Electricity_{reference,paper})}$$

$$P_{fuel} = X_{fuel,pulp} \cdot P_{fuel,pulp} + X_{fuel,paper} \cdot P_{fuel,paper}$$

Where

$$X_{fuel,pulp} = \frac{Fuel_{reference,pulp}}{(Fuel_{reference,pulp} + Fuel_{reference,paper})}$$

$$X_{fuel,paper} = \frac{Fuel_{reference,paper}}{(Fuel_{reference,pulp} + Fuel_{reference,paper})}$$

In the case of mixtures of pulps, the reference value for electricity and fuel must be weighted using the proportion of pulp, $pulp_i$, in the formula for X.

✉ Documentation shall include calculations with sub-totals. It shall be clear which base values are used for consumed fuel and electricity. Worst case calculation shall be included to demonstrate that each pulp recipe meets the requirements in case pulp mixture specific calculations are not documented for each pulp mix. Nordic Ecolabelling also provides a worksheet that is to be used for these calculations.

2.3 Energy calculation, pulp manufacturer

Energy scores $P_{pulp(electricity)i}$ and $P_{pulp(electricity)i}$ for producing a pulp, i, is calculated with the aid of the following formulas:

$$P_{pulp(electricity)i} = \frac{Electricity_{consumed}}{Electricity_{reference}}$$

and

$$P_{pulp(fuel)i} = \frac{(Fuel_{consumed} - 1.25 \cdot in - house\ generated\ \ electricity)}{Fuel_{reference}}$$

Values for $Electricity_{reference}$ and $Fuel_{reference}$ can be found in Table 2.2.

Table 2.2 Energy for pulp manufacturing

Process	Fuel kWh/t Ref. value	Electricity kWh/t Ref. value
Bleached chemical pulp	3750	750
Dried bleached chemical pulp	4750	750
Unbleached chemical pulp	3200	550
Dried unbleached chemical pulp	4500	550
CTMP	N/A	2000
Dried CTMP	1000	2000
DIP	350	500
Dried DIP	1350	600
TMP	N/A	2200
Dried TMP	1000	2200
Groundwood pulp	N/A	2000
Dried groundwood pulp	1000	2000

✉ Calculation of point score using the worksheet provided by Nordic Ecolabelling.

2.4 CO_2 emissions

The emission of CO_2 from paper production is based on purchased electricity and fossil fuel used for heating and electricity.

Paper manufacturer. The emission of CO_2 from purchased electricity and fossil fuel used for heating and electricity must not exceed: 1,000 kg CO_2/tonne paper for paper made of 100% DIP/recycled fibre; 900 kg CO_2/tonne paper for paper made of 100% cellulose pulp; and 1,600 kg CO_2 /tonne for paper made of 100% mechanical pulp. For paper comprising a mixture of cellulose pulp, recycled fibre and mechanical pulp, a weighted limit value is calculated, based on the proportion of each pulp type. Fillers are excluded from this calculation.

The calculations shall include the weighted average of the CO_2 emissions of all pulps in the pulp mix. This average shall be totalled with the CO_2 emissions from paper production.

The paper manufacturer shall specify the quantities of fossil fuel used for heat production and electricity generation. The paper manufacturer shall calculate CO_2 emissions for pulp and paper using the values provided in Section 2.5, Table 2.5. CO_2 from surplus energy that is sold off in the form of electricity, steam or heat, is subtracted from total emissions.

CO_2 emissions from purchased electricity are calculated by multiplying the actual figure for purchased electricity, kWh/tonne paper, (as specified in the energy requirement), by 385 g CO_2/kWh. Regarding CO_2 emissions from purchased heat energy, information shall be attained from the heat supplier.

CO_2 emissions from purchased electricity are added to the CO_2 emissions from consumed fossil fuels for in-house/purchased heat and in-house electricity generation.

The CO_2 emissions of individual pulps shall be gathered from the pulp manufacturers.

Pulp manufacturer. The CO_2 emissions from fossil fuels used for heat and in-house generated electricity shall be calculated using the values specified in Section 2.5, Table 2.5.

CO_2 emissions from purchased electricity are calculated by multiplying the actual figure for purchased electricity, kWh/tonne pulp, by 385 g CO_2/kWh. Regarding CO_2 emissions from purchased heat energy, information shall be attained from the heat supplier.

CO_2 emissions from purchased electricity are added to the CO_2 emissions from consumed fossil fuels for in-house/purchased heat and in-house electricity generation.

The pulp manufacturer can calculate CO_2 emissions using the values in Section 2.5, Table 2.5.

The pulp manufacturer shall send information on total CO_2 emissions specified as kg per tonne of 90% pulp to the paper manufacturer and directly to Nordic Ecolabelling.

2.5 Heat values, steam table, CO2-table

Table 2.3. Effective (lower) heat values for fuel dry substance

Fuel	Heat value (Lower)	Unit
Wood briquettes	10.0	GJ/m³ loose
Wood pellets	10.0	GJ/m³ loose
Wood powder	3.80	GJ/m³ loose
Wood chips	3.55	GJ/m³ loose
Sawdust	2.90	GJ/m³ loose
Bark	2.22	GJ/m³ loose

Piece peat	4.50	GJ/m³ loose
Milled peat	3.75	GJ/m³ loose
Sulphate black liquor	12.7	GJ/kg dry matter
Sulphite liquor	14.7	GJ/kg dry matter
Tall oil pitch	36.8	GJ/m³
Natural gas	38.9	MJ/m³
Light fuel oil	36.0	GJ/m³
Heavy fuel oil	38.7	GJ/m³
LPG	46.1	MJ/kg
Coal	26.5	MJ/kg

The heat values in Table are guidelines. Manufacturers may use their own measured values if so desired.

Table 2.4 Steam table

Enthalpy in gauged steam, h´´, as a function of absolute pressure, p or temperature, t. Enthalpy is divided by an efficiency of 0.9 and added to the heat consumption.

p Bar	t 0C	h´´ KJ/kg	p bar	t 0C	h´´ KJ/kg
0.50	81.3	2646.0	16.0	201.4	2791.7
0.60	86.0	2653.6	17.0	204.3	2793.4
0.80	93.5	2665.8	18.0	207.1	2794.8
1.00	99.6	2675.4	19.0	209.8	2796.1
1.20	104.8	2683.4	20.0	212.4	2797.2
1.40	109.3	2690.3	22.0	217.2	2799.1
1.60	113.3	2696.2	24.0	221.8	2800.4
1.80	116.9	2701.5	26.0	226.0	2801.4
2.00	120.2	2706.3	28.0	230.1	2802.0
2.50	127.4	2716.4	30.0	233.0	2802.3
3.00	133.5	2724.7	32.0	237.5	2802.3
3.50	138.9	2731.6	34.0	240.9	2802.1
4.00	143.6	2737.6	36.0	244.1	2801.7
4.50	147.9	2742.9	38.0	247.3	2801.1
5.00	151.8	2717.5	40.0	250.3	2800.3
6.00	158.8	2755.5	45.0	257.4	2797.7
7.00	165.0	2762.0	50.0	263.9	2794.2
8.00	170.4	2767.5	55.0	269.9	2789.9
9.00	175.4	2772.1	60.0	275.6	2785.0
10.00	179.9	2776.2	65.0	280.8	2779.5
11.00	184.0	2779.7	70.0	285.8	2773.5
12.00	188.0	2782.7	80.0	295.0	2759.9
13.00	191.6	2785.4	90.0	303.3	2744.6
14.00	195.0	2787.8	100.0	311.0	2727.7
15.00	198.3	2789.9	110.0	318.1	2709.3

Source: Thermal Engineering Data, which refers to Schmidt, E.: Properties of water and Steam in SI.Units, 1969. Springer-Verlag and R. Oldenbourg 1969.

Table 2.5 Theoretical CO_2 content of fuel

Fuel	Specific weight [1)]	Tonnes CO_2 per tonne fuel	Tonnes CO_2 per m^3 [2)]
Coal (anthracite)	-	2.42	-
Coke (from coal)	-	3.19	-
Crude oil	0.85	3.2	2.72
Natural gas	0.85	2.75	2.34
LPG	0.51	3	1.53
Petrol/gasoline	0.74	3.13	2.32
Paraffin	0.79	3.15	2.49
Light fuel oil	0.84	3.17	2.66
Diesel	0.84	3.17	2.66
Marine gas oil	0.84	3.17	2.66
Heavy oil	0.97	3.2	3.10

1) All values are given in tonnes with the exception of natural gas, which is given in kg per Normal cubic metre (kg/Nm^3).

2) Natural gas in kg/Nm^3.

Sources: Statistics Sweden; 1995 energy statistics. SFT report 9513; Combustion plant. Project manager guidance. SFT: Emission coefficients (Audun Rosland, 1997)

2.6 Energy content of damp fuel

Formula for calculating the energy content of damp fuel:

The effective thermal value of damp fuel can be calculated using the following formula:

$$Q_{iw} = Q_{ik} * (100 - w)/100 - 2.45 * w/100$$

Where

Q_{iw} = lower calorific value of moist fuel in unit kJ/kg

Q_{ik} = lower calorific value of dry fuel in unit kJ/kg

w = water content of fuel in %

Calculation of the energy content of wood chippings

The energy content of wood chippings depends primarily upon their water content. The following example shows how this is calculated.

The energy content (lower calorific value) of dry wood is specified as 19 MJ/kg.

Energy is required to evaporate the water normally found in wood. This reduces the calorific value of the wood. The formula for calculating the relationship of the energy content to the water content can be arranged as follows:

19 MJ * (100-water %)/100 - 2.45 * water %/100 = xx MJ/kg

A precondition for this calculation is that the water content of the wood is known.

When a tree is felled, the water content may be as high as 55%. The water gradually evaporates from the wood, initially during transportation and subsequently when it is cut and seasoned for use in for example pulp production. At this point the water content will depend on precipitation during the period in question. Normally it will have dropped to 20-40%.

With a water content of 40%, the energy content is calculated as follows:

19 MJ * (100-40 %) / 100 - 2.45 * 40 / 100 = 10.4 MJ/kg

With a water content of 20%, the energy content is calculated as follows:

19 MJ *(100-20 %) / 100 - 2.45 * 20 / 100 = 14.7 MJ/kg

Appendix 3 Emissions to water and air

3.1 Emission requirements

Emissions to air and/or water from the production of pulp and finished paper must be specified in terms of emissions points scores for each of four parameters (P_{COD}, P_P, P_S, P_{NOx}) according to the following. The measured emissions shall be compared to reference values relating to specific production methods (Table 3.1). Refer also to the example calculation in Appendix 3.4.

The individual point score for P_{COD}, P_P, P_S, and P_{NOx} must not exceed 1.5.

The total emissions score, $P_{emissions\ total}$:

$P_{emissions\ total} = P_{COD} + P_P + P_S + P_{NOx}$ may not exceed 4.0.

P_{COD} shall be calculated in the following way (P_P, P_S and P_{NOx} are calculated in the same way):

$$P_{COD} = \frac{COD_{total}}{COD_{eftotal}} = \frac{\sum_{i=1}^{n}\left[pulp_i * \left(COD_{pulp(i)}\right)\right] + COD_{papermachine}}{\sum_{i=1}^{n}\left[pulp_i * \left(COD_{efpulp(i)}\right)\right] + COD_{efpapermachine}}$$

Where

COD_{total}	Total emissions from the production of Nordic Ecolabelled paper.
$COD_{reftotal}$	The weighted sum of reference values for pulps and reference value for the paper machine.
$COD_{pulp(i)}$	COD emissions from pulp i.
$COD_{papermachine}$	COD emissions from paper machine.
$COD_{refpulp(i)}$	Reference value for pulp i (see table below).
$COD_{refpapermachine}$	Reference value for the paper machine and paper type (see table below). Select coated or uncoated.
$pulp_i$	Proportion of the pulp type expressed as “tonne 90% pulp per tonne total pulp mix” following the elimination of filler.
n	Number of constituent pulps.
i	Index of each individual pulp and runs from 1 to n.

Table 3.1 Reference emission values for pulp types and paper manufacture.

Pulp type ($pulp_i$) or paper	COD_{ref}	P_{ref}	S_{ref}	NO_{Xref}
Bleached chemical pulp (sulphate and other pulps except sulphite pulp)	18.0	0.03	0.6	1.5
Bleached chemical pulp (sulphite pulp)	25.0	0.03	0.6	1.5
Unbleached chemical pulp	10.0	0.02	0.6	1.5
CTMP pulp	15.0	0.01	0.2	0.25
TMP/Groundwood	3.0	0.01	0.2	0.25
Recycled fibre pulp	3.0	0.01	0.2	0.25
Paper machine, uncoated	2.0	0.01	0.3	0.7
Paper machine, coated	2.5	0.01	0.3	0.7
Paper machine, special paper	3.8	0.02	0.5	0.7

Section 3.2 describes the rules for allocation if the mill produces both Nordic Ecolabelled and non-ecolabelled paper, for integrated pulp and paper production and for the co-generation of heat and electricity.

✉ **Paper manufacturer.** For each emission parameter in the requirement on paper production, test results, method of analysis, test frequency and the compliance of laboratories with laboratory requirements (see also Section 3.3, Analyses) shall be supplied.

✉ Calculation of point score using the worksheet provided by Nordic Ecolabelling.

Pulp manufacturer. The specific emissions (kg/tonne pulp) of COD, P, S and NO_X during the production of pulp must be specified. The pulp mill shall send information on emissions measured as kg/tonne 90% pulp to the paper manufacturer and directly to Nordic Ecolabelling.

✉ Information must be supplied for each emission from pulp production regarding test results, method of analysis, test frequency and the compliance of laboratories with laboratory requirements (see Section 3.3, Analyses).

✉ State the number of the appendix containing all the results or the number of the appropriate appendix for each result in the application.

The weighted average value of AOX released from the pulps used in the Nordic Ecolabelled paper product must not exceed 0.17 kg/tonne paper. AOX emission from an individual pulp must not exceed 0.25 kg/tonne 90% pulp. The pulp mill shall send information on emissions measured as kg/tonne 90% pulp to the paper manufacturer and directly to Nordic Ecolabelling.

✉ AOX emissions from each pulp documented by the pulp suppliers

✉ **Paper manufacturer.** Calculation of point score using the worksheet provided by Nordic Ecolabelling.

3.2 Allocation of emissions

Mixed production of both Nordic Ecolabelled and non-ecolabelled paper

If a mill produces both Nordic Ecolabelled and non-ecolabelled paper and/or pulp for both ecolabelled and non-ecolabelled paper, but only total emission figures are available, the total emissions shall be allocated as follows:

Table 3.1 contains reference values for the process types not used for the Nordic Ecolabelled product. It is assumed that contributions from these process types to the total emissions are equal to the total reference emissions value. Which process lines are not used for Nordic Ecolabelled paper must be clearly stated.

If COD is used as an example, this means that:

$$COD_{swanprocess} = \frac{COD_{efswanprocessi}}{COD_{efemissionstotal}} * COD_{totalemission}$$

where $COD_{refemissionstotal}$ are emissions measured as kg COD/year that would be released by the plant if all sub-processes had emissions that equalled the reference values.

Integrated pulp and paper production

If the only information available is total emissions from the integrated plant, this can be used as the numerator in the formula in Section 3.1. If the manufacturer of chemical pulp also sells off part of the pulp, the manufacturer must demonstrate the way in which emission values need to be reduced on the basis of the measurement of emissions.

If purchased pulp is used as well as the pulp produced at the integrated mill, the emissions from the purchased pulp must be added to the denominator after it has been multiplied by the proportion in which this pulp is present in paper in which the effect of filler is excluded.

An example of an allocation calculation is provided in Section 3.4.

Allocation for the co-generation of heat and electricity

The requirement on emissions to air (S and NO_X) does not include emissions from electricity generation. In case of a co-generation of heat and electricity, emissions shall be allocated and calculated according to the following equation:

The share of emissions to air allocated to electricity generation =

2 * (MWh(electricity)) / [2 * MWh(electricity) + MWh(heat)]

Net energy (net production of heating and net production of electricity) is referred to in the above formula. The definition of net energy used is the same as the definition contained in the proposed EU Ecolabel criteria for printing paper from December 2009: "The electricity in this calculation is the net electricity, where the part of the working electricity that is used at the power plant to generate the energy is excluded i.e. the net electricity is the part that is delivered from the power plant to the pulp/paper production. The heat in this calculation is the net heat, where the part of the working heat is that used at the power plant".

The same allocation principle shall be used for the division of CO_2 in a co-generation of heat and electricity.

Emissions of surplus energy

Emissions from surplus energy that is sold off in the form of electricity, steam or heat, is subtracted from total emissions.

3.3 Analyses

Documentation

Documentation requirements for analyses can be found in this document and in the Chemical Module or the Supplementary Module and encompasses:

- Sampling programme for waste water and emissions to air, including: sketches of emission points, emission figures for the last 12 months (monthly or annual reports), frequency of measurement and methods of analyses of AOX, COD, P, S, NO_X, chlorate and chelating agents. Annual reports containing emission figures must be submitted to Nordic Ecolabelling annually.
- Documentation showing that the laboratories and test institutions used perform the analyses in an impartial and competent way. For example, a copy of the valid certificate for accreditation including the scope of the accreditation of external and internal laboratory used has to be enclosed if the laboratory is accredited.

In case of production conditions that give rise to increased emissions or if required by Nordic Ecolabelling, new test results shall be submitted.

Analysis laboratories and test institutions

The analysis laboratory/test institution used must be impartial and competent. Raw data must be available for inspection by Nordic Ecolabelling during the period of validity of the licence or as long as the paper constitutes a part of ecolabelled products. The licence applicant is liable for costs in connection with documentation and analyses.

The laboratory must fulfil the general requirements contained in the standard EN 45001/DS/EN/ISO/IEC 17025 or have official GLP approval. The manufacturer's laboratory may be approved for performance of analyses and tests if the authorities monitor the sampling and analyses process or if the manufacturer has a quality system in place encompassing sampling and analyses and the laboratory is certified to ISO 9001/9002/14001 or is EMAS registered. Testing and analysis of function may be performed by the producer in an uncertified laboratory, subject to assessment by Nordic Ecolabelling.

Methods of analysis, sampling, frequency of analysis and calculation of emissions

Sampling and analysis must be performed in a competent manner. The methods of analysis described in Table 3.2 are approved by Nordic Ecolabelling. As an alternative, methods of analysis considered to be equivalent by an independent and competent body will be accepted.

A copy of the standard and a declaration from the third part verifying that the standard/method used is equivalent to any of the standards listed in the Table 3.2 have to be enclosed.

Emissions to water

Water samples must be taken after treatment of the waste water in a treatment plant and the water flow at the time of sampling must be stated. If the waste water is treated together

with other waste water, or if campaigns are run, samples must be taken before the treatment plant and before being mixed with other water. The results of the analysis are then reduced by the efficiency of the treatment plant, which must be documented. Analyses must be performed on unfiltered and unsedimented samples using the methods of analysis specified in Table 3.2.

In the case of continuous pulp and paper production, the annual average value based on at least one representative 24 hour sample per week for COD and P must be used.

In the case of pulp manufacturers using chlorine dioxide for bleaching, AOX must also be measured on the basis of at least one representative 24 hour sample per week.

In the event of the introduction of new processes or internal improvements, the level of emissions must be determined on the basis of at least 40 consecutive daily samples. In the case of pulp and paper types produced on a campaign basis, the numerical values must be based on 40 consecutive 24 hour samples. In the case of shorter campaigns, representative daily samples can be accepted for each campaign subject to an assessment by Nordic Ecolabelling, the minimum being 40 samples in total.

Chelating agents must be subject to at least two representative samples per year, separated by approximately six months.

Chlorates must be subject to at least two representative samples per year, separated by at least four months.

The values of the raw water can be subtracted when calculating the result. Raw water is water that is taken into the factory from the outside environment and not from some other process. Analyses must be performed on unfiltered and unsedimented samples once a year using the methods of analysis specified in Table 3.2.

The results must be reported as:

COD: kg O_2/tonne 90% pulp or paper

P: kg P/tonne 90% pulp or paper

AOX kg AOX/tonne 90% pulp or paper

Emissions to air

Emissions to air of sulphur, S, and nitrogen oxides, NO_X must be measured at all emission points. Diffuse emissions of sulphur must be reported, e.g. emissions of sulphur during the production of pulp using chemicals containing sulphur.

NO_X is primarily released during combustion processes and accordingly diffuse emissions of NO_X are not expected. The emission values for nitrogen oxides and sulphur in gas form, both in reduced and oxidized form, should encompass all emissions from the production of pulp and paper, including any steam and condensate generated outside the production site. Total emissions must encompass the result of measurements relating to process equipment, for example recycling boilers, lime kilns, tall oil digesters, steam boilers, other boilers, kilns for combusting malodorous gases and the production of electricity generated for internal consumption with the exception of back pressure generated electricity.

In the case of emissions of sulphur to air from various fuels, calculations will also be accepted. These calculations must be based on the sulphur content of the various fuels. Emissions of sulphur from black liquor shall be measured. In the case of oil, the sulphur content is calculated on the basis of one of the methods of analysis provided in Table 3.2. In the case of natural gas, sulphur emissions may be set as equal to zero. Analyses performed by the fuel supplier will be accepted.

Frequency of measurement

The emission figures must be expressed as an annual average value based on the charting of emissions with the aid of representative sampling, measurements and calculations.

Reduced frequency of measurement of NO_X from natural gas:

Where natural gas is used, less frequent measurements of NO_X will be accepted. One measurement every third year will be acceptable subject to the following conditions:

- Measurement results exist from two series of measurements separated by at least six months, showing that emission levels are stable (the relative difference is so small that the total of the highest measured result + the relative difference does not exceed the required value).
- The boiler and burner are inspected at least once a year and found to be in order.
- No changes are made to the boiler and burner such as the installation of a new burner, changes to the combustion air conditions or the like.

For the exception to apply, the manufacturer must provide details of the above information on NO_X together with the annual reporting.

The results must be reported as:

NO_X: number of kg NO_2/tonne 90% pulp or paper

Overview of analysis methods

Table 3.2. Methods of analysis approved by Nordic Ecolabelling.

Emission parameter	Method	Frequency of analysis	Other comments
Water samples		At least one representative 24-hour sample per week for COD, P and AOX in the case of continuous production.	
AOX	ISO 9562 (1989), Scan W9:89 or SS 028104 or DIN 38409 part 14. EN 1485.		
COD	ISO 6060 2.nd ed. 1989. NS 4748 or SFS 3020, SFS 5504, SS 028142, DIN 38409 part 41, NFT 90101, ASTM D 1252 83, or by means of a photometric method (using potassium dichromate as the oxidization agent and silver sulphate as the catalyst) approved by the appropriate authority, e.g. Dr. Lange, Hack, WTW or DS217, 1991		Alternatively, TOC can be analysed since the TOC method does not include mercury, see below.
TOC	ISO 8245, ISO/CEN pr EN 1484, ASTM D4839, ASTM D2579, DIN 38409.		TOC may be used in place of COD if the applicant demonstrates how these two methods of analysis correlate with each other. The correlation coefficient must be based on a statistically significant number of measurements and be assessed by an independent party.
Phosphorous	SS 028102, SFS 3026, NS 4725 or pr.EN 1189:1993 SS 02 81 27 SS 02 81 27-2: (NS-EN 1189), DS292, 1985, SCAN-W8:73 or Dr Lange LCK 349		
Complexing agents, e.g. EDTA/DTPA	Methods described in 1) L. Rudling: "Simultaneous Determination of Nitrilotriacetic Acid, Ethylenediaminetetraacetic Acid and Diethylenetriamine-pentaacetic Acid as their Methyl Ester Derivatives by GLC", Water Research Pergamon Press 1972. Vol. 6, pp. 871-876, or 2) J. Virtapohja: "Determination of Chelating Agents (EDTA and DTPA) in Bleach Liquor", Pulp Pap. Can. 99 (10) (1998): T330- 332.	Analyses must take the form of at least two representative samples each year separated by approx. 6 months.	The water sample must be acidified before analysis so that the chelating agents bound to metals are released.

Air samples		Emissions to air expressed as annual average value on basis of representative sampling and measurement.	In the case of atmospheric emissions of nitrogen oxides and sulphur continuous measurements will also be accepted if the measurements are calibrated in accordance with measurement methods described in this table or if approved by the authorities. In the case of measurements of emission from boilers, the boiler must be operated at full loading. Oxygen levels during measurement shall be specified. The measurement must be repeated at least three times.
Sulphur emissions	Sulphur emissions must normally be measured at all emission points both as reduced and oxidized sulphur. Exceptions may be granted following an assessment of process conditions by an independent body. In the case of incineration plants, sulphur may be calculated on the basis of fuel.		
Sulphur content of oil	ISO 8754:1992, ASTM D4294–98 SS 150216.		
Sulphur emissions (ox)	NS 4859, SFS 5265, SS 028421, EPA method no.8, NBN T95-201 or T95-202. ISO 7934: 1989, ISO 7935: 1992, (cont. measurements) ISO 11632: 98 (cont. measurements) or DS/ISO 7534		EPA 6 and 8 NEN-EN-ISO 10304-2
Sulphur emissions (red)	EPA no. 16A or SFS 5727, 1992 or IP 336:1995, SFS 3865		
NO_X	ISO-CD10849, 1996; SS 028425 or EPA no.7 ISO-11564: 1998 1983, DS/ISO 10849	An exemption is granted in the case of frequencies of measurements of NOx from natural gas firing.	
Pulps			
ISO brightness	ISO 2469		
Kappa number	ISO R302 or SCAN-C 1:77		
Chemicals	Analysis of		
Biodegrada-bility	OECD guidelines for testing of chemicals (ISBN 92-64-1222144) no. 301 (A to F) and 302 (A-C) and 303 or equivalent tests specified in EU Directive 84/499 EEC and 88/302 EEC.		
Bioaccu-mulation potential	OECD guideline for testing of chemicals (ISBN 92-64-1222144) no. 107, 117 or 305 A-E or equivalent tests specified in EU Directive 84/499 EEC and 88/302 EEC. Test method no. 107, 117, 305 (A-E) or 301 E in accordance with OECD guidelines (ISBN 92-64-1222144).		

Ecotoxicity	Test method no. 201, 202 or 203 in accordance with OECD guidelines (ISBN 92-64-1222144) or equivalent tests specified in EU Directive 84/499 EEC and 88/302 EEC.		
Product safety		Shall be measured in order for the product to be approved and in case of changes in the production process that might affect the analysis, if it is not specified otherwise.	
Formaldehyde	EPA 8315A In grease proof paper, Extraction in accordance with EN 645 and/or EN 647, and determined in accordance with Pr. EN 1541.		
Glyoxal	EPA 8315A		
PCB	EPA 8270		
Anti-slime agents and anti-microbial substances	SS-EN 1104		
”Bleeding” of dyes and optical whiteners	SS-EN 646 and 648: most recent editions		
Wet strength	Soaking in accordance with SCAN P 20:67, alternative B, and testing of tensile strength in accordance with SCAN P 38:80.		
ISO brightness	ISO 2469		

3.4 Example of emissions score calculation

A paper mill, which is integrated with a pulp mill producing mechanical pulp, manufactures a coated paper product that is to be ecolabelled. The paper product also contains 40% purchased pulp (see figure).

To produce 100 tonnes of paper with 95% dry matter requires the following quantities of pulp and filler:

- 15 tonnes of filler and coatings, 100% dry matter.
- 44.4 tonnes of TMP, 90% dry matter (which gives 40 tonnes of fibre dry matter) from the pulp mill producing mechanical pulp, and which is integrated with the paper machine.
- 44.4 tonnes of chemical market pulp, 90% dry matter (which gives 40 tonnes of fibre dry matter).

The measured and thus established levels of COD emissions for the various products are:

- Market kraft pulp: b = 24 kg/ADT
- The total level of emissions after the processing facilities in the integrated mill: x = a+c = 4.0 kg/tonne of paper
- The values a and c are not known independently in this case.

Since

$$P_{COD} = \frac{COD_{total}}{COD_{ref\ total}}$$

and

$$COD_{total} = b \cdot m + (a + c)$$

$$COD_{total} = 24\,kg/\,t\ cellulose\ pulp,90\%\ dry\ matter \cdot \frac{444\ kg\ cellulose\ pulp,90\%\ dry\ matter}{(1038 - 150)\,kg/\,t\ paper} + 4\,kg/\,t\ paper = 16\ kg\ COD/\,t\ paper$$

Where

m = Proportion of the individual pulp type, expressed as "tonne 90% pulp/tonne paper" excluding filler.

and

$$COD_{ref\ total} = m_1 \cdot COD_{ref\ cellulose\ pulp} + m_2 \cdot COD_{ref\ TMP pulp} + COD_{ref\ papermachine\ coated}$$

$$COD_{ref\ total} = 18 \cdot \frac{444}{(1038 - 150)} + 3 \cdot \frac{444}{(1038 - 150)} + 2.5 = 13\ kg\ COD/\,t\ paper$$

using the following reference values from Table 3.1:

$COD_{ref\ cellulose\ pulp}$ = 18 kg/tonne 90 % pulp

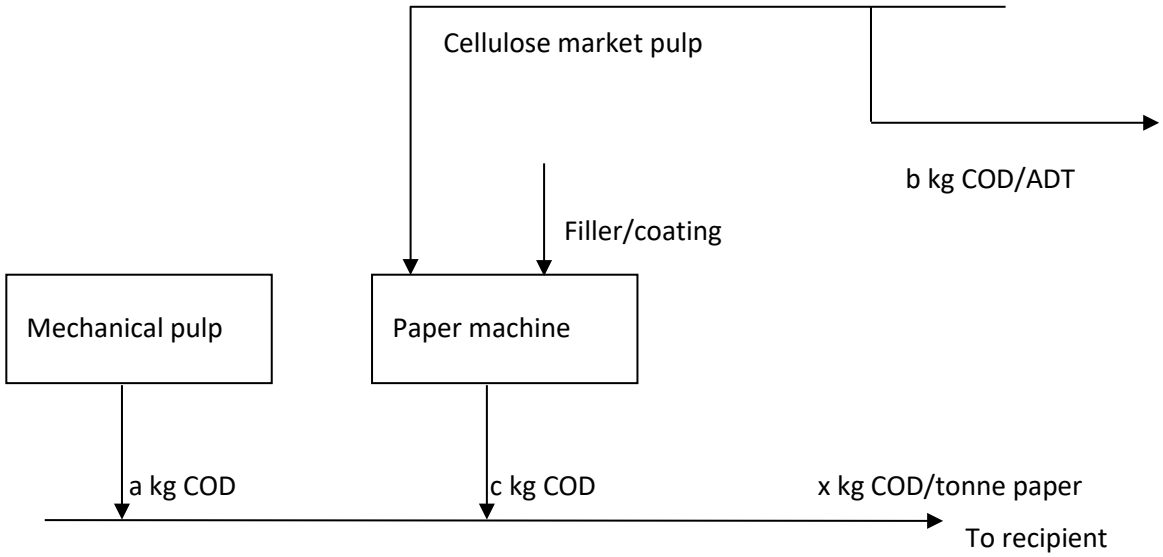
$COD_{ref\ TMP}$ = 3 kg/tonne 90% pulp

$COD_{ref\ papermachine,coated}$ = 2.5 kg/tonne paper

This enables the following calculation

$$P_{COD} = \frac{COD_{total}}{COD_{ref\ total}} = \frac{16}{13} = 1.23$$

The maximum limit for the calculated value is 1.5. The figures for the remaining emissions are calculated in a similar way using the actual emission values and reference values. The results are then added. The total emission figure must not exceed 4.0.



a = COD emissions from production of mechanical pulp, kg/year

b= COD emissions for purchased market pulp, kg/ADT

c = COD emissions from paper manufacturing, kg/year

x = (a+c)/amount paper produced per year, kg/tonne paper

Appendix 4 Annual reporting

Form for annual update regarding Nordic Ecolabelled pulp and paper.

Form for paper producer Year: _____

Name of mill:	
Name of paper:	
Amount produced*	tonne paper
Emissions from paper machine:	
COD	kg/tonne paper
P	kg/tonne paper
S	kg/tonne paper
NO_X	kg/tonne paper
CO_2 from paper production	kg/tonne paper
Energy use from paper machine:	
Internally produced electricity	kWh/tonne paper
Electricity consumption of the paper	kWh/tonne paper
Fuel consumption of the paper	kWh/tonne paper

**Quantity produced is the amount of paper to which the annual emissions figure refers.*

Update a list of production chemicals used by using My Swan Account.

Form for annual update regarding Nordic Ecolabelled pulp and paper.

Form for pulp producer:

Year: _____

Name of mill:	
Name of pulp:	
Quantity produced*:	tonne pulp
% wood from certified forestry**	%
Emissions from pulp production:	
COD	kg/tonne 90% pulp
P	kg/tonne 90% pulp
S	kg/tonne 90% pulp
NO_X	kg/tonne 90% pulp
AOX	kg/tonne 90% pulp
Chlorate	kg/tonne 90% pulp
EDTA/DTPA	kg/tonne 90% pulp
CO_2 from production	kg/tonne 90% pulp
Energy consumption from pulp production:	
Internally produced electricity	kWh/ tonne 90% pulp
Electricity consumption of the pulp	kWh/ tonne 90% pulp
Fuel consumption of the pulp	kWh/ tonne 90% pulp

**Quantity produced is the amount of pulp to which the annual emissions figure refers.*

***Only wood certified according to standards approved by Nordic Ecolabelling may be included.*

Update a list of production chemicals used by using My Swan Account.

Appendix 5 Declaration on environmental and quality assurance

Declaration applies to:

Licence applicant	Subcontractor for
Paper manufacturer	Pulp manufacturer
Trade name (if applicable)	Trade name (if applicable)

We hereby confirm that we are acquainted with the pertinent criteria for the ecolabelling of paper products.

We hereby confirm the correctness of the documentation specified in our application dated: _____.

We approve of Nordic Ecolabelling controlling the fulfilment of the requirements during the validity period of the criteria or so long as the pulp or paper is found in Nordic Ecolabelled products.

We undertake to acquire written permission from Nordic Ecolabelling before carrying out any changes that may be of relevance for the fulfilment of the ecolabelling requirements.

We undertake to notify, without delay, Nordic Ecolabelling of any unforeseen non-conformities which may affect the product's ability to fulfil the ecolabelling requirements.

We undertake to perform an annual reporting in accordance with the ecolabelling criteria and submit this report to Nordic Ecolabelling.

Our quality manual shall contain written procedures for the following (submit the procedures on initial application):

- Procedures for securing the traceability of raw materials /products going into the Nordic Ecolabelled products through the entire production process.
- Procedures for handling non-conformities and changes in the production of the Nordic Ecolabelled product, and reporting these to the contact person and Nordic Ecolabelling.
- procedures for logs and annual reports

Place/date	Company name
Responsible for ecolabelling, signature	
Responsible for ecolabelling (name, printed)	Title and phone number
Contact person, signature	
Contact person (name, printed)	Title and phone number

Nordic Ecolabelling must be notified in the event of changes in the above personnel information.