Nordic Ecolabelling for

Printing Companies and Printed Matter

Version **6.0** • date – date

Consultation proposal

Nordic Ecolabelling

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041 Printing Companies and Printed Matter, 6.0, Date

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

Addresses

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

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Denmark
Ecolabelling Denmark
Fonden Dansk Standard
Göteborg Plads 1, DK-2150 Nordhavn
Fischersgade 56, DK-9670 Løgstør
Tel: +45 72 300 450
info@ecolabel.dk
www.ecolabel.dk

Iceland
Ecolabelling Iceland
Norræn Umhverfismerking
á Íslandi
Suðurlandsbraut 24
IS-108 Reykjavik
Tel: +354 591 20 00
ust@ust.is
www.svanurinn.is

Finland
Ecolabelling Finland
Urho Kekkosen katu 4-6 E
FI-00100 Helsingfors
Tel: +358 9 61 22 50 00
joutsen@ecolabel.fi
www.ecolabel.fi

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

Sweden
Ecolabelling Sweden
Box 38114
SE-100 64 Stockholm
Tel: +46 8 55 55 24 00
info@svanen.se
www.svanen.se

What is a Nordic Swan Ecolabelled printing company and printed matter?

A Nordic Swan Ecolabelled printing company is a company that fulfils strict environmental requirements and has been granted a Nordic Swan Ecolabel licence to produce printed matter. Nordic Swan Ecolabelled printed matter is printed matter, such as brochure, books, stationery and office supplies, packaging, banners and signs.

A Nordic Swan Ecolabelled printing company has reduced environmental impact throughout the lifecycle through procurement of sustainably produced paper and other types of substrates, reduced energy consumption, and the use of chemicals with low environmental toxicity that do not hinder the recycling process of the printed matter.

The Nordic Swan Ecolabel requirements provide printing companies with guidelines on how to contribute to sustainable development.

Why choose the Nordic Swan Ecolabel?

- The printing company may use the Nordic Swan Ecolabel trademark for marketing. The Nordic Swan Ecolabel is a very well-known and well-reputed trademark in the Nordic region.
- The Nordic Swan Ecolabel is a simple way of communicating environmental work and commitment to customers.
- The Nordic Swan Ecolabel clarifies the most important environmental impacts and thus shows how a company can cut emissions, resource consumption and waste management.
- Environmentally adapted operations prepare the printing company for future environmental legislation.
- Nordic Ecolabelling can be seen as providing a business with guidance on the work of environmental improvements.
- The Nordic Swan Ecolabel not only covers environmental issues but also quality requirements, since the environment and quality often go hand in hand. This means that a Nordic Swan Ecolabel licence can also be seen as a mark of quality.

What can carry the Nordic Swan Ecolabel?

The Nordic Swan Ecolabel applies to a **printing company's*** production of **printed matter.** Printing material used by the printing company must comprise **paper/paper-based substrates** or **substrates other than paper** in accordance with requirement O1. The **printing methods** must be one or several of the following: Conventional offset (sheet fed offset, heatset, coldset) water less offset, gravure printing, flexographic printing and digital printing (incl. **digital wide format printing**).

Nordic Ecolabelling also includes the production process used by manufacturers of envelopes to produce paper envelopes. Envelopes with flexographic printing on the inside are covered by the printing method envelope flexography in this document. Envelopes with printing on the outside are encompassed by e.g. offset printing of envelopes or digital printing. Other printed matter without printing (e.g. Post-it notes or note pads without printing) is encompassed by the same printing method as that used for printing the cover or another part of the printed matter.

Subject to agreement with Nordic Ecolabelling, printing companies may exempt the production of certain types of printed matter involving a specially demanding production process (e.g. security printing and questionnaires of pharmaceutical industry).

The following printing methods and types of printed and converted products are not eligible for a Nordic Ecolabelling licence according to criteria for "Printing Companies and Printed Matter":

- Printing companies using film/film production (Computer to Film, CTF) - repro.
- Printing companies using the following printing methods; letterpress printing, non-digital screen printing and 3D printing.
- Packaging printed on other substrates than paper.
- Printing companies printing on textiles produced for clothing and accessories or furnishing fabrics, i.e. textiles produced for use and interior decoration in the home or in cars/boats, such as towels, bedding, curtains, tablecloths, rugs, cushions, duvets and upholstery (both for private and public use). Separate Ecolabelling criteria exist for these.

  Printing on textile for advertising such as banners, roll ups and Point of Sale (POS) is however part of these criteria.
- Printing companies printing on tissue paper (serviettes, kitchen rolls, toilet paper and similar products). Separate ecolabelling criteria exist for these.
- Printing companies printing on packaging for liquid foods. Separate ecolabelling criteria exist for these.
- Printing companies printing on disposables for food. Separate ecolabelling criteria exist for these.

* **Bold** highlighting indicates that the term is explained in the section Terms and definitions.

Who may apply for a licence?

Printing companies of all types may apply for a licence if printing makes up a substantial part of the business. In this document, the concept of printing also covers manufacturers of envelopes. Other businesses which are not printing companies, and which want to obtain The Nordic Swan Ecolabel for their printed matter may apply for a licence for specific types of printed matter. This may be a newspaper, book, magazine, catalogue, envelope series or pads and booklets with a specific trademark. Even if the licence only applies to a specific item of printed matter, it must be printed at a Nordic Swan Ecolabelled printing company in accordance with requirement O29. Only these printing companies may market themselves as Nordic Swan Ecolabelled printing companies.

How to apply

Application and costs

For information about the application process and fees for this product group, please refer to the respective national web site. For addresses see in the beginning of document.

What is required?

The criteria for printing companies comprise a combination of obligatory requirements and point score requirements. The letter "O" and a number indicate obligatory requirements. These requirements must always be fulfilled. The letter "P" and a number distinguish point score requirements. Each requirement of this type gives a point score. These scores are then totalled. A minimum total score must be achieved to fulfil the licence constraints.

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

Upload

State data in electronic application

Requirement checked on site

To be awarded a Nordic Swan Ecolabel licence:

- All obligatory requirements must be fulfilled.
- A minimum of points scores of 19 must be achieved. Use table 15 to calculate the points score.
- An on-site inspection must be performed by Nordic Ecolabelling.

All information submitted to Nordic Ecolabelling is treated confidentially. Suppliers can send documentation directly to Nordic Ecolabelling, and this will also be treated confidentially.

Licence validity

The Nordic Swan 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.

On-site inspection

In connection with handling of the application, Nordic Ecolabelling normally 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.

Queries

Please contact Nordic Ecolabelling if you have any queries or require further information. See addresses in the beginning of the document. Further information and assistance (such as calculation sheets or electronic application help) may be available. Visit the relevant national website for further information.

Terms and definitions

Terms	Definition
Advanced energy threshold value	The Energy threshold values is based on data from Nordic Swan Ecolabelling licensees. The advanced energy threshold value represents a value which is approx. 25% below the average energy data for total energy consumption for each printing method (kWh/tonne).
Basic energy threshold value	The Energy threshold values is based on data from Nordic Swan Ecolabelling licensees. The basic energy threshold value represents a value which is approx. 25% above the average energy data for total energy consumption for each printing method (kWh/tonne).
Brokers	Companies that primarily sell printed matter opposite to publishing houses and advertising agencies that usually do not provide printing services as a substantial part of their business.
Chemical products used in the finishing of substrates other than paper	Finishing means surface treatment of the substrate (e.g. coating, printing, varnishing or adding adhesives). Requirements for chemical products used in finishing are set in requirement O6. The requirement does not apply to chemical products used in the actual manufacturing of substrates such as additives used in the manufacturing of foils or laminates or boards.
Converted printed matter	Converted printed matter means paper, board or non-paper substrates, either printed or unprinted, used, for example, to protect, handle or store items and/or notes, for which the converting process is an essential part of the production process, e.g. envelopes, stationery paper products, packaging containers or marketing displays, see also converting process.
Converting process	A process whereby a material is processed into a converted paper product. Conversion is a post-press activity that involves making a flat printed press sheet into a three-dimensional object, see also converted printed matter.
Corona treatment	Corona treatment (sometimes referred to as air plasma) is a surface modification technique that uses a low temperature plasma to impart changes in the properties of a surface. A corona treating system is designed to increase the surface energy of plastic films, foils and paper in order to allow improved wettability and adhesion of inks, coatings and adhesives. As a result, the materials treated will demonstrate improved printing and coating quality, and stronger lamination strength.
Digital wide format printing	Wide format printers (large format printers) are generally accepted to be any computer-controlled printing machines (printers) that support a maximum print roll width of between 18" (inches) and 100". Printers with capacities over 100" wide are considered super wide or grand format. Wide format printers are used to print banners, posters, trade show graphics, wallpaper, murals, backlit film, vehicle image wraps, electronic circuit schematics, architectural drawings, construction plans, backdrops for theatrical and media sets, and any other large format artwork or signage. Wide format printers usually employ some variant of inkjet or toner-based technology to produce the printed image.
EDTA	Ethylenediaminetetraacetic acid
Energy consumption	Energy encompasses all the printing company’s purchases of electricity, district heating, fuel for stationary combustion plants etc., calculated as kWh of purchased energy on an annual basis per tonne of purchased substrate.

	This encompasses the entire production process in the form of pre-press, printing and finishing, as well as other subprocesses/functions at the printing company, such as chemical stores, paper and product stores, ventilation, lighting, internal treatment of water and emissions as well as support functions, such as offices, toilets, changing rooms and other common areas. This parameter does not include fuel, if any, used for the printer's own vehicles. Energy produced in-house from e.g. sun, wind and thermal heating will not be included, since it has not been purchased.
Energy Management Systems	An energy management system (EnMS) defines energy policy, objectives, energy targets, action plans and processes. The EnMS supports the achievement of a company's overall goals providing an organisational basis for improved energy and carbon efficiency through the measurement, monitoring, control, and improvement activities.
Foil printing	Foil printing is a speciality printing process which uses heat, pressure and metallic paper (foil). The technique is an application of metallic or pigmented foil on to a solid surface by applying a heated die on to the foil.
Functional unit	The functional unit is defined as one tonne purchased/used substrate.
Inspected paper	Inspected printing paper is paper without a Nordic Swan Ecolabelled licence that has been approved for use in Nordic Swan Ecolabelled printing company and used in printing of Nordic Swan Ecolabelled printed matter.
Laminating	Lamination means adhering a layer of plastic (polyethylene, polymerized acrylics, vinyls, styrenes, among others) to a paper material mainly to increase product durability (i.e. barrier properties or mechanical resistance).
Mesh	A polyester material that allows the air to blow through. There are crisscrossed fibres that can been seen through to some extent, but it still has a printable surface. They are commonly displayed on construction fences or sports fences. Mesh can be coated with vinyl or PVC.
Mono substrate	Mono substrate (other than paper) consist of the same material such as PE- or PP foil, PC or PS board or polyester. Substrates containing adhesives (outer layer of adhesives) such as films/laminating films or substrates coated with another material (such as PVC) are not considered to be a mono substrate. Mono substrates coated with ink are how ever considered to be a mono substrate.
Orders produced	A production order is an order issued within a company to produce a specific quantity of material within a certain timeframe.
Paper	A printing material assessed by Nordic Ecolabelling and the EU Ecolabel's criteria for graphic paper, e.g. printing paper, copying paper, newspaper, cardboard, paper board etc.
PC	Polycarbonate
Practising company	The business that performs the actual printing operation.
Printed matter	Printed matter is the result of the processing of a printing material. Printing includes pre-press, press, and postpress operations. The processing consists of an image, picture, pattern, text or the like being printed on paper or some other printing material. In addition to printing, the processing may include finishing, consisting of various forms of mechanical processing, such as folding, stamping and cutting or various forms of assembling, using glue, staples, stitches and the like. In the case of some printed matter, the processing is confined to finishing, i.e. it does not undergo a printing process (for example, some notepads and envelopes). Printed matter includes: - Newspapers, advertising matter, journals, catalogues, books, leaflets, brochures, pads, posters, loose-leafs, business cards, folders, ring binders with paper contents, labels and the like - Envelopes and other converted printed matter. - Stationery and office supplies, such as notebooks, exercise books, notepads, etc. that are sold by wholesalers or via the retail trade, are also classed as printed matter. - Paper-based packaging made of paper/cardboard (wood pulp). - Banners, billboards, signs, posters, roll-ups, window/vehicle graphics and other point of sale (POS) material typically produced using wide-format digital printing techniques. In case of roll-up stands, printed canvas on a wooden frame and other similar products, only the material carrying the information is regarded as printed matter. Other parts such as the metal stand or wooden frame are not covered by requirements in the criteria.
Printing company/ Printing house/Printers	A business providing printing services, where printing constitutes a substantial part of its business.

	Printing is done by traditional printing companies, but also by photocopying centres and other businesses carrying out printing. There may also be printing companies that do not do the actual printing themselves (**brokers**). Typical printing companies are sheet fed offset printers, rotary printers, heatset printers, newspaper printers, magazine printers, packaging printers, envelope printers, board printers, label printers, flexographic printers and digital printers (including wide format printers), but also manufacturers of envelopes and packaging as well as manufacturers of other products encompassed by the term printed matter in this document. Printing may also include finishing. Publishing houses and advertising agencies are not regarded as printing companies as they do not provide printing services as a substantial part of their business.
Printing methods	Conventional offset (sheet fed offset, heatset, coldset), water less offset, gravure printing, flexographic printing and digital printing. Digital printing refers to printing where the complete workflow is managed using a computer. Examples of types of digital printers: - Laser printers (electrophotography). This includes monochrome copier/printers along with colour copier/printers from multiple sources, and some digital presses. - Inkjet printers. This includes desktop printers, addressing printers in-line with finishing operations, wide format printers and high-quality proofing printers, as well as some digital presses. - Thermal transfer and hot melt ink printers. This includes thermal wax and hot stick printers. - Dye sublimation printers. This includes some colour proofing devices and 'photo quality' continuous tone printers. - Nanography: new technology being developed by Landa, uses WB nanonink of 10nm (less pigment, better resolution)
Production chemical	Collective term for chemical products used during production. It can refer to chemical additives, auxiliary chemicals and process chemicals. Production chemicals apply to the following chemical categories: - Chemicals for form production (repro) - Printing ink, toners and inks - Vanishes - Adhesives - Washing agents, incl. washing agents used for ordinary cleaning of printing machines - Damping solutions additives (e.g. alcohol, IPA); - Algicides and - Foil for foil printing and laminates applicable to printed paper used in production to printed matter.
PS	Polystyrene
Purchased substrates/ Consumption of substrates	The number of tonnes of substrates purchased by the printing company per year. Quantities of substrates not purchased by the practising company, but used in production, must be added. The printer may, by arrangement with Nordic Ecolabelling, omit substrates supplied by the customer where special circumstances apply. If consumption of substrates is assessed on an annual basis, storage differences must be corrected for.
Recycled material	Recycled material is defined in accordance with ISO 14021.
Release papers/-liners	Release papers/-liners are papers or films coated with a release agent (silicone) and are used in a wide range of applications such as for protection of adhesive surfaces of various adhesive products and protecting of printing surface.
Rules of Rounding	General rule of rounding e.g. 0.5 go up, so 4.5 rounds up to 5.
Substrate	Any surface or material on which printing is done.
Substrates other than paper	Substrates other than paper are often divided into flexible and rigid substrates. Flexible substrates such as foils and laminates often consist of plastic such as PVC, vinyl, PP, PE and PET, while textiles and canvas most often are used for banners and posters. Typical rigid substrates are thick plastic, board, wood, metal or glass which is often used for signs. Rigid substrates may consist of one material but are often composed of several types of material forming a composite.
Supplier	Enterprise that supplies products (goods or services) to the printing company. The definition is based on the definition in ISO 9000:2000.
Total consumption of substrates	See Purchased substrates.

VOC	Volatile organic compounds (VOC) are defined in accordance with European Commission's Directive 1999/13/EC on the limitation of emissions of volatile organic compounds with vapor pressure > 0.01 kPa at 20°C. See also VOC consumption.
VOC consumption	Number of kilograms of VOC used on an annual basis based on the quantities purchased/received. Washing agents, dampening solution additives, printing inks and other chemicals may contain VOC. Some washing agents consist entirely of VOC. Storage differences can be corrected for. The electronic application aid shows how much VOC is present in the various chemicals. When calculating VOC emissions, printing companies disposing of this under controlled conditions may deduct the VOC disposed of from their VOC consumption in accordance with Appendix 5. This, for instance, applies to printing companies that clean outgoing air for VOC (typically heatset printers). In the case of heatset the correction must take account of the result of measurements of point releases of VOC.
Wood-based panels/boards	Typical wood-based panels/boards are chipboard, fibreboard (including MDF and HDF panels), OSB (Oriented Strand Board), veneer plywood and veneer boards. The requirements also include corresponding products made of bamboo. Wood-based panels/boards does not include boards made of wood pulp (paper).

1 Description of the product/service

O1 Type of printing company

- The printing company must give a brief account of the number of printing machines, the type of machine or model (e.g. heat set press, flexography machine, flatbed), size (e.g. number of ink and varnish units), format (e.g. 48 pages) and machines for prepress and potential finishing services.
- At least 50% of the printing company's turnover must originate from **paper printed matter**, Nordic Swan- or EU Ecolabelled textile or Nordic Swan Ecolabelled construction and facade panels manufactured using **printing methods** encompassed by the criteria.

✉ A brief description of the number of printing machines, the type of machine or model (e.g. heat set press, flexography machine), size (e.g. number of ink and varnish units), format (e.g. 48 pages), machines for pre-press and potential finishing services.

✉ Information on the printing company´s total turnover as well as turnover from paper printed matter, Nordic Swan- or EU Ecolabelled textile or Nordic Swan Ecolabelled construction and facade panels.

1.1 Suppliers

The applicant must document the supplier requirements for the printing company, i.e. not for each individual printing method.

O2 Suppliers of printing services

At least 95% by weight of all printing on substrates in-house by the **printing company** and printing of the printing company's printed matter externally by **suppliers**, must be by Nordic Swan Ecolabelled printing companies.

The percentages must be calculated based on **total consumption of substrates** (tonnes) in-house and consumption of substrates (tonnes) by suppliers on an annual basis or based on an assessment using financial figures. The documentation must consist of a calculation in accordance with the requirement outlined above.

✉ List of external suppliers of printing services and a specification of the quantities (tonnes of paper annually) sent to print suppliers.

✉ Calculation showing compliance with the requirement.

O3 Chemical finishing services (book binding)

At least 95% by weight of the chemical finishing, in-house at the printing company as well as out-of-house by suppliers, must be inspected (calculated as a total as all categories receive finishing treatment). Chemical finishing involves adhesives, varnishing, **foil printing** or laminating, as well as washing agents used for ordinary manual cleaning of print finishing machines. An "inspected supplier" of finishing services is inspected by Nordic Ecolabelling and complies with the requirements of Appendix 3.

The percentage share is calculated based on the number of tonnes of substrates for in-house chemical finishing and tonnes of substrates for externally inspected finishing.

The printing company need not secure inspection of out-of-house finishes if only 5% or less of all orders undergo chemical finishing, calculated as substrates used in relation to total substrates consumption. However, see requirements regarding out-of-house finishing of Nordic Swan Ecolabelled printed matter in requirement O29.

Suppliers of mechanical finishing services are not encompassed by this requirement.

For a supplier with finishing services to be registered in the electronic application aid, the supplier must complete and submit the declaration in Appendix 3.

The documentation must consist of a calculation in accordance with the requirement outlined above.

✉ Complete the electronic application aid by selecting inspected finishers from a list and specifying quantities.

1.2 Printing substrates

The requirements O4 to O8 apply to all printing substrates purchased annually by the printing company. The requirements for substrates are divided into requirements which include substrates of paper and requirements for substrates other than paper.

Table 1: Overview on printing substrates and specific requirements

O4 Printing Substrates - Applies to all annually purchased substrates		
P1 Printing substrates - The printing company can earn up to 5 points in P1 depending on the quantity of purchased paper		
O5 Inspected and Ecolabelled paper		**O6 Other substrates than paper** - Applies to all substrates other than paper
The printing company can earn up to 8 points in P2, depending on the quantity of Inspected/ Ecolabelled paper used		
P2 Inspected and Ecolabelled paper		**O7 Textiles** - only applies if printing on textiles
		O8 Panels/boards made of wood - only applies if printing on panels/boards of wood
		The printing company can earn up to 10 points for P3, P4 and P5, based on the types of substrate used
		P3 Content of recycled materials
		P4 Mono materials
		P5 Recycled material and mono substrates

For a paper grade to be inspected and available for the printing company, the paper mill must document compliance with the requirements set for paper in the Appendix 1 in Paper Products - Basic Module. More information can be found from http://www.nordic-ecolabel.org/certification/paper-pulp-printing/

For a printing substrate other than paper to be inspected and available for the printing company, the manufacturer/supplier must document compliance with the requirements using Appendix 2.

O4 Printing substrates

The printing company must state all printing substrates purchased annually including trade name, supplier, quantities and grades.

The description shall include calculation of:

- the total number of tonnes of substrates purchased annually
- the total number of purchased tonnes of substrates of paper and substrates other than paper respectively
- the total consumption of tonnes of substrate for each individual printing method.

If relevant, provide a description how potential adjustment of stock difference is carried out.

If a printing company uses a certain paper grade in several printing methods, the volumes for paper, may be estimated in relation to printing methods respectively.

If envelopes are printed on offset machines, envelopes shall be included as part of the sheet offset method (and not calculated as a separate method). If packaging is printed, then the packaging must be included as part of the printing method used.

✉ Documentation that the requirement is met. Select substrates from a list, specifying quantities and upload reports/lists from suppliers of substrates detailing the quantities and grades purchased annually.

P1 Printing substrates

The printing company may be awarded points depending on the proportion of purchased paper in relation to the total purchase of tons substrates annually.

*Example: If the printing company purchase 40 tons of paper and 5 tons of substrates other than paper annually (total of 45 tons), the company achieves (40/45) * 100 = 89% = 3 points.*

Table 2: P1 Example of points.

Proportion of purchased paper in relation to the total purchase of tons substrates annually	Points
0 - 50%	0
51 - 60%	1
61 - 70%	2
71 - 90%	3
91 - 99%	4
100%	5

✉ See O4.

1.2.1 Paper

O5 Inspected and Ecolabelled paper

At least 70% of the printing company's total annual consumption of paper must be inspected or ecolabelled. In this calculation, Nordic Swan Ecolabelled paper has a weight of 1, inspected paper 0.9 and EU Ecolabelled paper 0.8.

Example: If 70% inspected paper is used in addition to 10% Nordic Swan Ecolabelled paper and 5% EU Ecolabelled paper, the calculation will be as follows: 70*0.9 + 10*1.0 + 5*0.8 = 77%

If only a single type of paper is used, 70% Nordic Swan Ecolabelled paper or 78% inspected paper or about 87.5% EU Ecolabelled paper will be required for the requirement to be fulfilled.

✉ Complete the electronic application aid by selecting paper from a list, specifying quantities and uploading reports/lists from paper suppliers detailing the quantities and grades purchased during the course of the year. Also upload valid licence documentation for EU Ecolabelled paper if the paper is not already available in the list for selection. Valid licence documentation consists of the annex to the contract including trade names or a valid certificate including trade names.

✉ See P2

P2 Inspected/ecolabelled paper

The printing company may be awarded points depending on the quantity of inspected/ecolabelled paper purchased/used annually.

Use the formula below to calculate points for inspected/ecolabelled paper on an annual basis. The quantity of inspected/ecolabelled paper is weighted in such a way that Nordic Swan Ecolabelled paper has a weight of 1, inspected paper 0.9 and EU Ecolabelled paper 0.8.

A paper quality can only count once (the highest weighting applies if, for instance, the paper is both Nordic Swan Ecolabelled and EU Ecolabelled at the same time). The weighting is based on differences between the stringency of the requirements.

Use the following formula to calculate the percentage of the total paper consumption that is approved/ecolabelled paper on an annual basis:

Score = (proportion of Nordic Swan Ecolabelled paper * 1) + (proportion of inspected paper * 0,9) + (proportion of EU Ecolabelled paper * 0,8)

*Example: If 70% inspected paper is used in addition to 10% Nordic Swan Ecolabelled paper and 5% EU Ecolabelled paper, the calculation will be as follows: (70*0.9+10*1.0+5*0.8) = 77% = 2p*

Table 3: P2 Examples of points.

Proportion of inspected/ecolabelled paper	Points
71 - 74	0
75 - 80	2
81 - 90	4
91 - 99	6
100	8

The documentation must consist of a calculation in accordance with the above option for scoring points and reports/lists from the paper suppliers stating quantities purchased and grades during the year. Please follow the instructions below regarding the electronic application aid when preparing the application.

✉ Select paper from a list, specifying quantities and uploading reports/lists from paper suppliers detailing the quantities and grades purchased during the course of the year. Also upload valid licence documentation for EU Ecolabelled paper if the paper is not already available in the list for selection. Valid licence documentation consists of the annex to the contract including trade names or a valid certificate including trade names.

1.2.2 Other substrates than paper

The requirement includes all **substrates other than paper**. Requirement O6 applies to all substrates other than paper, while requirements O7 to O8 are additional requirements to specific types of substrates.

O6 Other substrates than paper

This requirement includes the printing company's total annual consumption of substrates other than paper.

The following complies to all substrates other than paper:

a) All **chemical products used in the finishing of the substrate** must document compliance with the requirement in Appendix 2.

Finishing means surface treatment of the substrate and involves adding coating, printing, varnishing or adhesives to the substrate.

b) Substrates, including **release paper/liner**, must not contain halogenated organic compounds (includes chlorinated polymers). For example: PVC/PVC coating, organic chloroparaffins, fluorine compounds and flame-retardants*.

** Flame retardants: Exceptions are made for textile substrates certified class B1 according to DIN4102-1, M1 according to NFP 92503 or EN13501-1.*

Trivial limits:

Up to 10% of the printing company's total annual consumption of substrates other than paper is exempted from the requirement.

*Example of how to calculate the trivial limit: If a printing company's annual consumption of substrates other than paper is 50 tonnes, the calculation will be as follows: (50 * 10%) = 5 tonnes.*

For the printing substrate other than paper to be inspected and recorded in the electronic application aid, the manufacturer/supplier must document compliance with the requirements using Appendix 2.

The documentation must consist of a calculation in accordance with the requirement above and reports/lists from the suppliers of substrates stating type/material/quantities purchased during the year.

✉ Complete the electronic application aid by selecting substrates from a list, specifying quantities and uploading reports/lists from suppliers detailing the quantities purchased during the course of the year.

1.2.3 Fabrics/textiles

The requirement only applies to printing on fabrics/textiles used for advertising such as roll-ups, banners or signs. Printing on textiles produced for clothing and accessories or furnishing fabrics is not part of this ecolabelling criteria. See section 4.1, Product definition.

O7 Fabrics/textiles (e.g. polyester, canvas)

At least 50% of the printing company's total annual consumption of fabrics /textile substrates (e.g. polyester, canvas) must be Nordic Swan- or EU-Ecolabelled, Oeko-TEX 100 (class IV) or GOTS certified.

✉ Complete the electronic application aid by selecting textile from a list, specifying quantities and uploading reports/lists from suppliers detailing the quantities purchased during the course of the year.

✉ Valid certificate from Nordic Swan Ecolabel textile, EU-Ecolabel or Certificate from Oeko-Tex 100 (class IV) or GOTS.

1.2.4 Panels/boards made of wood

The requirement applies to **wood-based panels/boards** such as chipboard, fibreboard (including MDF and HDF panels), OSB (Oriented Strand Board) and veneer boards. The requirements also include corresponding products made of bamboo.

Nordic Ecolabelled panels/boards made of wood fulfil the requirement automatically. Only the manufacturer, licence number and product name must be stated.

O8 Panels/boards made of wood

At least 50% of the printing company's total annual consumption of panels/boards must be;

- Nordic Swan Ecolabelled or
- FSC- or PEFC certified.

The FSC or PEFC certified panels/boards must not contain tree species listed on Nordic Ecolabelling's list of prohibited tree species*.

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

The documentation must consist of a calculation in accordance with the requirement above and reports/lists from the suppliers of substrates stating type/material/quantities purchased during the year.

✉ Valid certificates from Nordic Swan Ecolabel or licence number and product name.

✉ Complete the electronic application aid by selecting panels/board of wood from a list, specifying quantities and uploading reports/lists/invoices from suppliers detailing the quantities purchased during the course of the year.

✉ Declaration from the manufacturer/supplier of FSC or PEFC certified panels/boards that the requirement regarding tree species not permitted to be used in wood-based panels/boards is met. Appendix 2 shall be used.

1.2.5 Points for types of substrates other than paper

The printing company can earn up to 10 points for P3, P4 or P5, based on the types of substrate used. A substrate can only obtain points from either P3 or P4 or alternative P5.

P3 Content of recycled materials

The printing company may be awarded points depending on the annual consumption of substrates other than paper containing **recycled material**.

Substrates that can be awarded points must contain minimum 50 w% recycled material*.

Substrates containing recycled PVC cannot be awarded points.

** Recycled material is defined in accordance with ISO 14021:*

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

Nordic Ecolabelling considers rework, regrind or scrap, which cannot be reused directly in the same process, but requires a reprocess (e.g. in the form of sorting, re-melting and granulation) before it can be reused, to be pre-consumer material. This is regardless of whether it is done in-house or externally.

"Post-consumer/commercial" is defined as material created by households or commercial, industrial or institutional facilities in the role of end users of a product which can no longer be used for the intended purpose. This includes return of material from the distribution chain.

*Example: If the printing company purchase 50 tonnes of substrates other than paper a year and 3 tonnes of the substrates meets requirements for recycled material, the company achieves (3/50) *100 = 6% = 1 point.*

Table 4: P3 Example of points.

Proportion of substrates containing recycled material / Substrates other than paper on an annual basis	Points
0 - 4%	0
5 - 10%	1
11 - 25%	2
26 - 50%	3
51 - 99%	4
100%	5

The manufacturer of the substrate must document the composition of the substrate according to the requirement.

☒ The manufacturer of the substrate shall demonstrate compliance with the requirement by duly completing the declaration in Appendix 2.

☒ The manufacturer of the substrate shall enclose product data sheets or other documentation for content of pre- and post-consumer recycled material in the product.

☒ The documentation must consist of a calculation in accordance with the requirement above and reports/lists from the suppliers of substrates stating type/material/quantities purchased during the year.

P4 Mono substrates

The printing company may be awarded points depending on the annual consumption of substrates other than paper consisting of only the same type of material (**mono substrate**).

Mono substrates made of PVC cannot be awarded points.

*Example: If the printing company purchases 50 tonnes of substrates other than paper a year and 3 tonnes of the substrates meet requirements for mono substrate, the company achieves (3/50) *100 = 6% = 1 point.*

Table 5: P4 Example of points.

Proportion of substrates that consist of the same type of material on an annual basis	Points
0 - 4%	0
5 - 10%	1
11 - 25%	2
26 - 50%	3
51 - 99%	4
100%	5

The manufacturer of the substrate must document the composition of the substrate according to the requirement.

☒ The manufacturer of the substrate shall demonstrate compliance with the requirement by duly completing the declaration in Appendix 2.
☒ The manufacturer of the substrate shall enclose product data sheets.
☒ The documentation must consist of a calculation in accordance with the requirement above and reports/lists from the suppliers of substrates stating type/material/quantities purchased during the year.

P5 Recycled material and mono substrates

The printing company may be awarded points depending on the annual consumption of mono substrates other than paper containing recycled material e.g. a PE foil containing minimum 50 w% recycled material.

Definition of substrates containing recycled material, see P3.

Table 6: P5 Example of points.

Proportion of substrates that consist of both recycled material and consist of the same type of material	Points
0 - 4%	0
5 - 10%	2
11 - 25%	4
26 - 50%	6
51 - 99%	8
100%	10

The manufacturer of the substrate must document the composition of the substrate according to the requirement.

☒ The manufacturer of the substrate shall demonstrate compliance with the requirement by duly completing the declaration in Appendix 2.
☒ The manufacturer of the substrate shall enclose product data sheets.
☒ The documentation must consist of a calculation in accordance with the requirement above and reports/lists from the suppliers of substrates stating type/material/quantities purchased during the year.

1.3 Requirement for paper-based packaging

The requirement only applies to paper-based packaging manufactured (as a whole) in the printing company.

O9 Requirement for paper-based packaging

The following applies to paper-based packaging manufactured (as a whole) in the printing company:

- The non-paper product parts of paper-based packaging such as metal clips, tape or plastic covers, shall be easily removable to ensure that those components will not hinder the recycling process.

- Avoid plastic labels if possible and use direct print or paper labels. If a window is needed, then provide clear instructions for consumers to remove window film before recycling.
- PVC or plastic based on other types of halogenated plastics, including tape, must not be used.
- Paper or board laminated on both sides must not be used.
- Wax or latex coatings must not be used.

✉ The printing company shall demonstrate compliance with the requirement by duly completing the declaration in Appendix 4.

1.4 Chemical requirements

The chemical requirements apply to the following categories of production chemicals:

- Chemicals for form production (repro),
- Printing inks, toners, inks*,
- Varnishes,
- Adhesives,
- Washing agents, including washing agents used for ordinary cleaning of printing machines.
- Dampening solution additives (e.g. alcohol),
- Algicides and
- Foils for foil printing and laminates applicable to printed paper used in the production of printed matter.

Production chemicals used by the printing company must be assessed by Nordic Ecolabelling and must fulfil the requirements in Appendix 1. The requirements are applied regardless of the type of printing method.

For a chemical to be assessed by Nordic Ecolabelling **the chemical manufacturer or supplier** must demonstrate compliance with the chemical requirements in Appendix 1.

O10 Chemicals

The printing company must report all **production chemicals** used annually in the production of printed matter, providing documentation regarding the product's tradename, function, supplier and the quantities purchased in kg.

All production chemicals used by the printing company must be assessed by Nordic Ecolabelling and must fulfil the requirements in Appendix 1.

Production chemicals that are purchased separately and added to production chemicals at the printers must also be included.

If a production chemical is used in relation to more than one printing method, the printing company may add up the quantities in the relevant category across the printing methods and on this basis calculate fulfilment of the triviality limits (e.g. adhesives).

Adjustments can be made for chemicals purchased/received during the course of the year, but which has not been used, by uploading stocktake figures at the end of the year for the individual chemical.

* Addressing with ink is exempted from the requirement. For addressing ink, a safety data sheet complying with the standards set out in Annex II of REACH (Regulation 1907/2006/EC) or other technical data sheet must be enclosed.

Trivial limits:

Up to 5% by weight of the quantity of production chemicals in each category purchased during the year can be exempted from the chemical requirements in Appendix 1. For printing inks, adhesives and varnishes an alternative triviality limit of 10 kg per annum and per category applies for which the requirements do not have to be met.

The trivial limits do however not apply to;

- washing agents classified as Aquatic Acute 1 H400, Aquatic Chronic 1-4 H410, H411, H412 or H413.
- printing inks, toners, ink, varnishes and adhesives used in printed matter that will bear the Nordic Ecolabel logo, see requirement O26 and O30.

✉ Complete list of production chemicals, specifying tradename, function, supplier and the quantities purchased in kg.

✉ Enter quantities and upload reports/lists from suppliers detailing trade names and the quantities purchased during the course of the year. Upload calculations to explain any adjustments based on stock counts.

✉ For addressing ink. enclose safety data sheet/product specification must comply with the standards set out in Annex II of REACH (Regulation 1907/2006/EC).

1.5 Emissions to air

The requirement for emissions to air only applies to emissions **of volatile organic compounds (VOC)** at the printing company. The requirement is based on the consumption of chemicals encompassed by O10 (washing agents, printing inks, alcohol, other dampening solution additives, etc.) depending on the content of VOC and depending on whether there are systems for the collection/destruction of VOC.

If the printing company sells recycled VOC or removes VOC from outgoing air with the aid of, for example, incineration (e.g. heatset) or removes or sells VOC by some other controlled means (e.g. condensation in connection with certain digital printing facilities with wet toner), these quantities may be deducted from the quantities purchased/received.

See Appendix 5 for guidelines and examples on how to calculate emission of VOC.

O11 Consumption of VOC

The printing company's annual **VOC consumption** (kg VOC/tonne purchased substrate) must be less than or equal to the threshold value listed in table 7 below. The permitted VOC consumption varies depending on the **printing method**.

If the printing company uses multiple methods of printing, the threshold values is calculated as a weighted value which is defined according to the consumption of substrate in different printing methods.

*Example of calculation of the threshold value using multiple methods of printing. If a printing company is using 500 tons of substrate (sheet fed offset) and 300 tons of substrate (digital printing) the weighted threshold values are calculated as: Calculated threshold value: (500/800) * 7 + (300/800) * 5 = 6.25 kg/ton purchased substrate per year.*

Table 7: Threshold values - VOC consumption (kg/purchased substrate) for different printing methods

Printing method	Threshold value - VOC consumption (Kg/purchased substrate)
Sheet fed offset	7
Digital printing	5
Coldset, newspapers	1
Coldset, forms	3.5
Coldset rotation (except newspaper and form printing)	1.5
Heatset rotation	3
Flexographic printing	1
Envelope production with flexography	1

See the special instructions for calculating VOC emissions for inter alia heatset printing in Appendix 5.

✉ Calculation showing that the requirement is met and reports/lists from the suppliers of substrates stating type/material/quantities purchased during the year.

P6 Consumption of VOC

The printing company may be awarded points depending on the annual VOC consumption (kg VOC/tonne purchased substrate). The threshold values for each printing method are listed in O11.

If the printing company uses multiple methods of printing, the threshold values is calculated as a weighted value which is defined according to the consumption of substrate in different printing methods, see O11.

Calculate points = 1 - (VOC used/threshold value) *100

Example of calculation (sheet fed offset printing company): If the printing company uses 4 kg VOC/purchased substrate, the calculation will be as follows:

*1 - (4/7) *100 = 42% = 4 points*

Table 8: P6 Example of points.

Proportion (%) of VOC consumption in relation to total annual VOC consumption (VOC/tonne purchased substrate)	Points
0 - 9%	0
10% - 24%	2
25% - 49%	4
50% - 74%	6
75% - 99%	8
100% (no use of VOC)	10

✉ The documentation must consist of a calculation in accordance with the option for scoring points outlined above and reports/lists from the suppliers of substrates stating type/material/quantities purchased during the year.

1.6 Energy

The requirement for **energy consumption** includes all the printing company's purchased energy in kWh per **tonne of purchased substrate per year**. The printing company must report purchased fuels for stationary combustion plant and purchased energy in the form of electricity, district heating/cooling etc.

The requirement for energy use is divided in two, part A and part B. All applicants must report the printing company´s total energy use per tonne purchased substrate per year according to part A. If the printing company does not comply with the energy requirement using the **advanced threshold value** in part A, but meets the requirement using the **basic threshold value** in part A, the printing company must comply with the requirement in part B, and thus meet the requirement for energy use.

O12 Energy use

The applicant shall state the printing company´s annual total energy consumption per tonne of purchased substrate.

Part A

The amount of energy consumed at the printing company must be less than or equal to the threshold value for the printing company's total energy use per tonne of purchased substrate. The permitted energy use varies depending on the printing method, and the use of either the advanced- or basic threshold value, see table 9 below. The printing company´s total energy use must be calculated on an annual basis.

Energy consumption is calculated using information in invoices received from suppliers of electricity, fuel and heating to the practising company in relation to purchased substrate on an annual basis.

Printing companies that sell surplus energy, e.g. in the form of district heating, may deduct the quantity sold.

For heating of printing companies in Iceland, geothermal energy is not included in the energy consumed.

If the printing company uses multiple methods of printing, the threshold value is calculated as a weighted value which is defined according to the consumption of substrate in different printing methods. The calculation is done by using only the advanced- or basic threshold values.

Example of calculation of the threshold values using multiple methods of printing. If a printing company is using 500 tons of substrate (sheet fed offset) and 300 tons of substrate (digital printing) the weighted threshold value is calculated as:

*Calculated advanced threshold value: (500/800) * 900 + (300/800) * 2100 = 1350 kWh/ton purchased substrate per year.*

*Calculated basic threshold value: (500/800) * 1500 + (300/800) * 3500 = 2250 kWh/ton purchased substrate per year.*

If the printing company is unable to document their electricity consumption based on direct settlement with an electricity supplier (e.g. an in-house printing company), the printing company shall either;

a) install electricity meters and read off the total annual consumption or

b) use an independent third party to calculate/estimate/verify the printing company’s annual consumption of electricity.

If the printing company is unable to document their heating/cooling use on the basis of direct settlement with a supplier (e.g. an in-house printing plant), and the printing company does not use electricity for heating, the printing company must calculate their total energy consumption by calculating heat consumption on the basis of the heat consumption of the building and adding this to electricity consumption. The printing company's proportion of the total heat consumption of the building is calculated based on the floor space of the printing company relative to the heated area in the building.

Any floor space that is to be excluded from this calculation must be approved in advance by Nordic Ecolabelling.

*Example of calculation of heat consumption for an in-house printing company: If the printing company has a floor space of 2 000 m² and is located in a 50 000 m² building with a total heat consumption of 500 000 kWh per year, the heat consumption of the printer will be 500 000*2 000/50 000 =20 000 kWh per year.*

Table 9:Threshold values - average energy consumption (kWh/purchased substrate) for different printing methods

Printing method	Threshold value - Average energy consumption (kWh/purchased substrate)
Sheet fed offset	Advanced: 900 Basic: 1500
Digital printing	Advanced: 2100 Basic: 3500
Coldset, newspapers	Advanced: 350 Basic: 650
Coldset, forms	Advanced: 700 Basic: 1200
Coldset rotation (except newspaper)	Advanced: 500 Basic: 850
Heatset rotation	Advanced: 600 Basic: 1000
Flexographic printing (except envelope production)	Advanced: 200 Basic: 350
Envelope production with flexography	Advanced: 500 Basic: 800

The energy content of various fuels and district heating is specified in Appendix 5.

Part B

The printing company must comply with a minimum of the following activities:

- Certified according to ISO 50001.
- Has undergone an energy screening according to EN 16247-1 within the last 3 years. The energy screening/analysis is to contain proposals for measures that include potential savings and costs. The printing company must have a written policy containing goals and action plans for complying with the energy requirement, part A, using the advanced threshold value, during the period of validity of the licence.
- Has undergone an energy screening within the last 3 years conducted by an independent third party focusing on potential energy savings within the areas of e.g. lighting, compressed air, ventilation or space heating. The printing company must have a written policy containing goals and action plans for complying with the energy requirement, part A, using the advanced threshold value, during the period of validity of the licence.
- Certified according to a system that sets requirement for the company's annual energy use such as ClimateCalc[1]. The printing company must have a written policy containing goals and action plans for complying with the energy requirement, part A, using the advanced threshold value, during the period of validity of the licence.

Companies using part B (energy screening according to EN 16247-1, limited energy screening or ClimateCalc) is subjected to the requirement; O22 annual follow-up of licence.

[1] https://eu.climatecalc.eu/ (visited 7/6-2019)

✉ Part A: Calculation and documentation (invoices from suppliers of electricity, fuel and heating) showing compliance with the requirement.

✉ Part A: In case of no individual energy measurement (e.g. an in-house printing plant): Calculation and documentation from an independent third party verifying the printing companies' annual consumption of electricity.

✉ Part B:

- Valid ISO 50001 certificate or
- Copy of the energy screening report conducted by an independent third party according to EN 16247-1 (not older than 3 years). Written policy containing goals and action plans for complying with the energy requirement, part A, using the advanced threshold value, during the period of validity of the licence or
- Copy of the light-energy screening report conducted by an independent third party (not older than 3 years). Written policy containing goals and action plans for complying with the energy requirement, part A, using the advanced threshold value, during the period of validity of the licence.
- Valid certificate such as Climate Calc certificate. Written policy containing goals and action plans for complying with the energy requirement, part A, using the advanced threshold value, during the period of validity of the licence.

1.7 Plastic packaging

O13 Plastic packaging

Plastic packaging must not contain PVC.

By plastic packaging is meant packaging that is used for protection and collation of individual/units of printed matter during storage, transport and distribution.

✉ Declaration from the printing company that the requirement is met. Appendix 4 may be used.

1.8 Waste

The requirement for waste applies to the printing company. The requirement consists of a mandatory requirement for a waste management system and the possibilities for the printing company to be awarded points depending on amount of waste paper and waste sorting.

O14 Waste management system

The printing company shall have in place a system for handling waste which addresses and documents the measures taken to reduce the amount of solid and liquid waste, including waste paper, waste from substrates other than paper, ink waste, cleaning agent solution and dampening solution waste as defined by local or national regulatory authorities.

The system shall be documented and shall include information on at least the following procedures:

- handling, collection, separation and use of recyclable materials from the waste stream.
- handling, collection, separation and disposal of hazardous waste, as defined by the relevant local and national regulatory authorities.

- how the individual fractions are handled (internal or external reuse, recycling, energy use, landfilling or other).

☒ The printing company shall provide a waste minimization and management plan. If the printer is environmentally certified (ISO 14001, EMAS) or has an environmental licence from the authorities, it will be sufficient for the waste plan to be uploaded from the system together with the environmental management certificate/environmental licence.

☒ Documentation of waste disposal, e.g. invoices or an annual statement from the waste disposal operator.

P7 Waste paper

The printing company may be awarded up to 10 points depending on the quantity of waste paper. The threshold values for each individual printing method are listed in table 10 below.

Calculate the wastepaper percentage for the printing method based on the weight specified on the invoice from the recipient of waste paper, or by weighing the waste paper at the printing company in relation to paper consumption on an annual basis. Waste paper generated in connection with external finishing must also be included in the calculation.

Waste paper from external finishing covers waste paper from finishers encompassed by O3 as well as wastepaper from finishers that only perform mechanical finishing treatment.

If all finishing is performed externally, the waste paper of the printing company must be multiplied by 2 in order to produce a figure for total waste paper, unless the printer can show that some other figure applies for waste paper generated by external bookbinders.

If the printing company uses multiple methods of printing the threshold values is calculated as a weighted value which is defined according to quantity of waste paper.

*Example of calculation of the threshold value using multiple methods of printing. If a printing company is using 500 tons of substrate (sheet fed offset) and 300 tons of substrate (digital printing) the weighted threshold value is calculated as: Calculated threshold value: (500/800) * 23 + (300/800) * 20 = 21.9%.*

Table 10: Threshold values - Average waste paper %

Printing method	Threshold value - waste paper (%)
Sheet fed offset	23
Digital printing	20
Coldset, newspapers	10
Coldset, forms	18
Coldset rotation (except newspaper and form printing)	19
Heatset rotation	21
Flexographic printing	11
Envelope production with flexography	15

Calculate points = 1 - (quantity of waste paper / threshold value) * 100

Example of point calculation (sheet fed offset printing company): If the printing company´s quantity of waste paper is calculated at 18%, the calculation will be as follows:

*1 - (18/23) *100 = 22 % = 6 points*

Table 11: P7 example of points

Proportion of waste paper (%) in relation to threshold value for waste paper (%)	Points
0	0
1 - 10%	2
11 - 20%	4
21 - 40%	6
41 - 60%	8
61 - 100%	10

✉ The printing company shall provide a description of the calculation in accordance with the option for scoring points outlined above as well as an annual specification or the like from the recipient documenting the quantity of waste paper disposed of, or details of how the waste paper was weighed.

✉ A copy of invoices or annual report from the recipient documenting the quantity of waste paper disposed, or details on how the waste paper was weighed.

P8 Unsorted waste

The printing company may be awarded up to 5 points depending on the quantity of mixed waste in kg per tonne substrate (unsorted/unsuitable for recycling solid waste that is incinerated or goes to land fill).

If household waste can be separated, it can be excluded from the calculation.

Table 12: P8 example of points

Mixed waste (kg/tonne purchased substrates)	Points
0	5
1 - 5	4
6 - 10	3
11 - 15	2
16 - 20	1
Above 20	0

✉ The printing company shall provide a description of the calculation in accordance with the option for scoring points outlined above as well as an annual specification or the like from the recipient documenting the quantity of mixed waste (kg).

1.9 Ecolabelled products and services

The requirement rewards the printing company's purchase of ecolabelled products and services This requirement has been included in order to increase awareness of green purchasing policies.

P9 Purchase of ecolabelled products and services

The printing company may be awarded up to 2 points depending on the annual use of ecolabelled products and services. The products or services are listed in table 13 below:

Table 13: P9 example of possible points

Ecolabelled products or services	Points
100% by weight of used rags or 90% by weight of used work clothes is cleaned/laundered at a Nordic Swan Ecolabelled textile service	1
At least 90% by weight of the work clothes used in production are Nordic Swan Ecolabelled or EU Ecolabelled	1
100% use of Nordic Swan Ecolabelled cleaning service	1
100% by weight of industrial tissue paper used in the printing process (does not include for example hand drying in toilets and the like) is Nordic Swan- or EU Ecolabelled	1

✉ The printing company shall provide a description of the calculation in accordance with the option for scoring points outlined above.

1.10 Use of Nordic Swan logo on printed matter

The requirement rewards the printing company's use of the Nordic Swan logo on printed matter. This requirement has been included in order to increase awareness at the printing company, and among the printing industry's customers of using, the logo on printed matter.

P10 Use of Nordic Swan logo on printed matter

The printing company may be awarded up to 5 points depending on the annual number of **orders produced** using the Nordic Swan logo on printed matter:

*Example: If the printing company manufactures 150 production orders a year and 12 of the production orders are Nordic Swan Ecolabelled printed matter, the printing company is awarded: (12/150) * 100 =8% = 2 points.*

Table 14: P10 Example of points

Annual number of manufactured Nordic Ecolabelled orders in relation to the total number of orders produced (which can be labelled).	Points
0 - 4%	0
5 - 10%	1
11 - 15%	2
16 - 25%	3
26 - 49%	4
Above 50%	5

✉ The printing company shall provide a description of the calculation in accordance with the option for scoring points outlined above as well as an annual specification of orders produced.

2 Quality and regulatory requirements

To ensure that the Nordic Ecolabelling requirements are met, a documented management system must be in place, and it must include the following implemented procedures.

If printing company has a quality system that is certified to ISO 9001, or an environmental management system certified under ISO 14 001 or EMAS, and the following procedures are applied, it is sufficient for the certification body's auditor to certify compliance with the requirements.

O15 Organisation and responsibility

An organizational chart shall be drawn up. Responsibility and authority for central environmental functions shall be defined. Responsibility for the Nordic Swan Ecolabel licence, marketing, training and purchasing shall be specified, and the contact person for Nordic Ecolabelling named.

✉ Copy of organizational chart.

O16 Documentation

The licensee must archive the documentation that is sent in with the application, or in a similar way maintain information in the Nordic Ecolabelling data system, as long as the Nordic Swan Ecolabel licence remains valid. All the documents regarding the licence must be easily available at the premises of the licensee. This includes documents on internal checks and measurement reports, for example. The contact person for communication with Nordic Ecolabelling is responsible for ensuring that the documentation is updated and available.

🔑 This is checked on site as necessary.

O17 Procedures in the event of changes, self-assessment and non-conformities

The printing company must ensure via procedures or instructions that:

- In the event of planned changes that affect the requirements of the Nordic Swan Ecolabel, the contact person must notify Nordic Ecolabelling before the changes are implemented. This may relate, for example, to a change of chemicals or printing technologies. The printing company may only use chemicals assessed by Nordic Ecolabelling.
- In the event of unforeseen non-conformities that affect how the ecolabelling requirements are fulfilled, the contact person must immediately notify Nordic Ecolabelling in writing.
- There is a system for handling claims and complaints

✉ Copy of procedures in the event of planned changes, self-assessment, unforeseen non-conformities and claims.

O18 Training

All employees and contractors that are part of daily operations must have the know-how to ensure fulfilment of the Nordic Ecolabelling requirements.

Employees must receive regular training in general environmental matters and environmental issues specific to their field of work that have a bearing on the fulfilling of Nordic Ecolabelling requirements.

Participation in training shall be documented. Subcontractors participating in the daily business shall participate in the printing company's training or certify that they have received equivalent training.

🔑 Lists of participants after completion of training.

O19 Customer information

Customers must be informed that they are using a Nordic Swan Ecolabelled printing company and what this means.

✉ Copy of the customer information procedure.

O20 Legislation and regulations

The business must ensure compliance with the applicable legislation regarding the working environment, the external environment, finances, hygiene and health.

The business must not have any form of negative criticism from an authority or agency which has not been rectified within the deadline set by the supervisory authority or agency. If this requirement is not met, Nordic Ecolabelling may revoke the licence.

✉ Duly signed application form.

O21 Strategic goals to reduce environmental impact

The printing company shall have procedures showing how it works with strategic goals to reduce environmental impact in the production of printed matter such as; mapping energy efficiency measures, focus on production chemicals (content of VOC, reduction of VOC), design of printed matter in order to minimize waste or dialogue with suppliers regarding use/selection of substrates with low environmental impact.

The goals shall be quantitative and time-based, and they shall be determined by the management. The strategic goals must be assessed at least once a year by management.

✉ Enclose procedures for policy or equivalent documentation of the manufacturer's work with environmental goals, showing fulfilment of the requirement. Minutes from the management's annual assessment on complying with strategic goals.

O22 Follow-up of licence

The printing company shall ensure that the requirements of the criteria are met during the validity period of the licence. At least once a year (within 6 months of closing the books) a review of operations shall be made covering at least the following areas:

- Substrates, requirements O4, O5, O6, O7 and O8.
- Chemicals, requirement O10.
- VOC, requirements O11.
- Follow up on strategic goals to;
  a) complying with the energy requirement O12 (if using part B; energy screening according to EN 16247-1, limited energy screening or ClimateCalc).
  b) reduce environmental impact O21.

Nordic Ecolabelling may request reports from the internal review and examine a selection, or all, of the requirements. Information on a compliance check is given in advance.

✉ Routine for monitoring licence.

3 Summary of points

O23 Obligatory requirement points scored

The printing company must score at least 19 points.

The table below summarises the point score requirements and how many points can be earned for each requirement.

Table 15: Points total

Point score requirements	Points achieved	Maximum number of points
P1 Printing substrates		5
P2 Controlled and Ecolabelled paper		8
P3 Content of recycled material		5
P4 Mono substrates		5
P5 Recycled material and mono substrates		10
P6 VOC		10
P7 Waste paper		10
P8 Unsorted waste		5
P9 Ecolabelled products and services		2
P10 Use of the Nordic Swan Ecolabel logo on printed matter		5
Total		65

✉ Summary of points in line with the table above.

4 Special requirements concerning the use of the Nordic Swan Ecolabel logo on printed matter

The following requirements apply to printed matter that will bear the ecolabel. Inserts in magazines and daily papers, for example, need only meet the requirements if the Nordic Swan Ecolabel logo also appears on the insert.

O24 Paper

A minimum of 90% of the total weight of the Nordic Swan Ecolabelled printed matter must consist of inspected or Nordic Swan Ecolabelled paper.

In the case of stationery and office supplies such as books, folders, ring binders, notepads and forms, the requirement is 80%.

The non-paper product parts of stationary paper product such as metal bars or plastic covers shall be easily removable to ensure that those components will not hinder the recycling process.

Inserts that are fixed are considered part of the printed matter.

✉ Upload a copy of the duly completed and signed Appendix 4.

O25 Textile and panels

A minimum of 90% of the total weight of the Nordic Swan Ecolabelled printed matter must consist of Nordic Swan- or EU-Ecolabelled textiles or Nordic Swan Ecolabelled construction and facade panels.

If case of printing on Nordic Swan Ecolabelled acoustic panels, or if the acoustic panels is used as a basis for a printed textile matter, the printing must not have a negative effect on the primary function of absorbing sound waves.

In case of roll-up stands, printed canvas on a wooden frame and other similar products, only the material carrying the information is regarded as printed matter.

✉ Upload a copy of the duly completed and signed Appendix 4, see O24.

O26 Printing inks, toners, inks, varnishes and adhesives

All printing inks, toners, inks, varnishes and adhesives used in the Nordic Swan Ecolabelled printed matter must be assessed by Nordic Ecolabelling and must fulfil the requirements in Appendix 1.

The printing company must ensure that any printing inks, toners, inks, varnishes and adhesives which are exempt from requirement O10 are not used in the Nordic Swan Ecolabelled printed matter.

✉ Upload a copy of the duly completed and signed Appendix 4, see O24.

O27 Lamination and PVC

Nordic Swan Ecolabelled printed matter must not contain PVC.

Lamination shall only be used to increase the durability of products with a life span of at least 1 year, for example, books, binders, folders, exercise books, calendars, notebooks and diaries.

Lamination shall not be used in magazines.

Double lamination shall not be used in any product.

✉ Upload a copy of the duly completed and signed Appendix 4, see O24.

O28 Fragrance

Fragrance/scent must not be added to Nordic Swan Ecolabelled printed matter (e.g. scented varnish). Packaged product samples with fragrance, attached to an item of printed matter, or removable scratch samples, are not encompassed by this.

✉ Upload a copy of the duly completed and signed Appendix 4, see O24.

O29 Printing suppliers and finishers (book binders)

All printer suppliers used in the production of printed matter that is to bear the Nordic Swan Ecolabel must be licensed to use the Nordic Swan Ecolabel. All external finishers encompassed by O3 must have been inspected.

✉ Upload a copy of the duly completed and signed Appendix 4, see O24.

O30 Traceability

If only part of the output of the printing company is Nordic Swan Ecolabelled, orders bearing the Nordic Swan Ecolabel must be marked clearly to enable them to be separated from other orders. Information must also be displayed disclosing:

- name of paper and paper grades, textile or panels;
- names on printing inks, toners, inks, varnishes or adhesives;
- subcontractors used;
- how the Nordic Swan Ecolabel logo is reproduced on the items of printed matter (e.g. with the aid of order notes or order bags).

✉ Upload a copy of the duly completed and signed Appendix 4, see O24.

Regulations for the Nordic Ecolabelling of services

To easily identify Nordic Swan Ecolabelled services, the licence number and a descriptive sub text shall always accompany the Nordic Swan Ecolabel.

The descriptive sub text for 041 Printing companies and printed matter is as follows:

- For a printing house as a whole: **Printing house**
- For ecolabelled printed matter produced at an ecolabelled printing house: **Printed matter**

More information on graphical guidelines, regulations and fees can be found at http://www.nordic-ecolabel.org/certification/graphical-guidelines/

Nordic Swan Ecolabelled printed matter

If the printing company or the printing company's customers want to indicate that the printed matter is Nordic Swan Ecolabelled, the ecolabel must appear on the printed matter. Alternatively, it may be indicated that the printed matter is Nordic Swan Ecolabelled without use of the logo, provided that the licence number is stated.

Please note that special requirements apply to all printed matter that is to be ecolabelled (see section 4). The explanatory text must be one or more of the following:

Danish: Tryksag

Swedish: Trycksak

Finnish: Painotuote

Norwegian: Tryksak

Icelandic: Prentgripur

English: Printed matter

In the case of envelopes, the explanatory text must be "Envelope" in English and the equivalent of this in the other languages.

If the licence holder wishes to use a different designation than printed matter as explanatory test, or a different language than the ones mentioned, this is subject to prior approval by Nordic Ecolabelling.

The Nordic Swan Ecolabel logo must not be placed on produced packaging since confusion may arise about what the Nordic Swan ecolabel applies to.

Envelopes and other printed matter that are marketed by several printing companies/producers, may be marketed as Nordic Swan Ecolabelled if all printing companies/producers involved are Nordic Swan Ecolabelled. Correspondingly, same printing matter with exact same trade name cannot be marketed in the Nordic countries with the use of logo and without the logo.

Follow-up inspections

Nordic Ecolabelling may decide to check whether printing companies fulfils Nordic Ecolabelling 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 printing company does not meet the requirements.

Criteria version history

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

New criteria

As part of any future evaluation of the criteria, it will be relevant to consider the following:

- Product definition - new types of printing technologies and types of printed matter such as packaging.
- Printing substrates - further analysis of the environmental impact of substrates other than paper.
- Energy use - energy savings at the printing company.
- Use of chemicals
- Recyclability of the printed matter

Appendix 1 Chemicals and foils for foil printing and laminates

This form is for use by suppliers of chemical, foils for foil printing and laminate for documenting Nordic Ecolabelling's requirements. The form must be completed electronically in electronic application aid. All documentation sent directly to Nordic Ecolabelling will be treated confidentially.

Products assessed and approved by Nordic Ecolabelling will be published in the electronic application aid for printing companies holding or applying for an ecolabel licence. Only information saying that the product is approved, the content of VOC together with product name and distributor/supplier is published for printing companies.

In special cases, Nordic Ecolabelling may conceal inspected chemicals and materials in the database. Where applicable, please contact Nordic Ecolabelling.

Please complete the form for identification of the material(s)/chemical(s):

This declaration is based on the knowledge we have at the time of the application, based on tests and/or declarations from raw material manufacturers, bearing in mind new advances and new knowledge may emerge. Should such new knowledge arise that affects Nordic Ecolabelling's requirements, the undersigned is obliged to submit an updated declaration to Nordic Ecolabelling.

Nordic Ecolabelling is entitled to seek information on the full chemical composition of the product from the chemical manufacturer/supplier in order, where necessary, to check the content of the product.

Country	Distributor/supplier	Trade name*	Product number, where applicable
Internationally			
Sweden			
Norway			
Iceland			
Finland			
Denmark			

***** *The trade name may, for example, be a series of inks or some other designation comprising a number of trade names. For example, "Printing ink series xxxx", where xxxx represents a number of variants in the series of printing inks. Information about toner and ink must – in addition to the name of the toner/ink – include details of the machine for which it is used, e.g. Toner xxx for yyy (where yyy is the name of the printing machine).*

☒ Enclose safety data sheets in accordance with the current statutory requirement in the country of application, e.g. Annex II to REACH (Council Regulation (EC) no. 1907/2006) for all chemical products.

Type of product:

- ☐ Printing ink and additives
- ☐ Ink
- ☐ Dampening solution additive
- ☐ Adhesive
- ☐ Washing agent
- ☐ Foil for foil printing
- ☐ Toner
- ☐ Varnish
- ☐ Algicide
- ☐ Repro-chemical
- ☐ Laminate applicable for printed paper

Printing method in which the product is used:

- ☐ Sheet fed offset (not envelopes/packaging)
- ☐ Heatset rotation
- ☐ Flexographic printing (not envelopes)
- ☐ Digital printing/photocopying
- ☐ Coldset, newspapers
- ☐ Offset, packaging
- ☐ Coldset rotation (not forms/newspapers)
- ☐ Gravure printing
- ☐ Offset, envelopes
- ☐ Envelope production with flexographic printing
- ☐ Coldset, forms

1 General requirements for chemicals

According to Nordic Ecolabelling's overall principles, the Nordic Swan Ecolabel must be a powerful tool that works to phase out substances that are hazardous for the environment and health. Official regulations (classification, labelling, official lists and regulation) are used to exclude substances and products that are hazardous for the environment and health. As the Nordic Swan Ecolabel is an ecolabel, the requirements in the criteria are more stringent than legislation. This entails that the chemical may be prohibited from Nordic Swan Ecolabelled services and products, even though it is permitted under the authorities' regulations. The precautionary principle is the starting point when substances are suspected of having serious environmental and health impacts.

Requirements in the Nordic Ecolabelling criteria are set e.g. for the classification of chemical products as well as ingoing substances in the chemical product.

Ingoing substances and impurities are defined below, unless stated otherwise in the requirements.

- **Ingoing substances:** All substances in the chemical product, including additives (e.g. preservatives and stabilisers) in the raw materials. Substances known to be released from ingoing substances (e.g. formaldehyde and arylamine) are also regarded as ingoing substances.
- **Impurities:** Residuals, pollutants, contaminants etc. from production, including production of raw materials that remain in the chemical product in concentrations less than 100 ppm (0.0100 w-%, 100 mg/kg).

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

1.1 Classification of production chemicals

Production chemicals classified according to the risk phrases indicated in the table below must not be used in the production of printed matter.

Classification under CLP Regulation (EC) No 1272/2008		
Classification	**Hazard Class and Category Code**	**Hazard statement**
Hazardous to the aquatic environment	Aquatic Acute 1 Aquatic Chronic 1-4	H400 H410, H411, H412, H413
Hazardous to the ozone layer	Ozone	H420
Acute toxicity	Acute Tox. 1, 2 Acute Tox. 3	H330, H310, H300 H331, H301, H311
Specific target organ toxicity	STOT SE 1 STOT RE 1	H370 H372
Respiratory or skin sensitisation	Resp. Sens. 1 Skin Sens 1	H334 H317
Carcinogenic*	Carc. 1A/1B Carc. 2	H350 H351
Germ cell mutagenicity*	Muta. 1A/B Muta. 2	H340 H341
Reproductive toxicity*	Repr. 1A/1B Repr. 2	H360, H361 H362

** The classifications concern all classification variants. For example, H350 also covers classification H350i.*

Note that the manufacturer of the chemical product is responsible for its classification.

Exemptions:

- Chemicals (repro) for form production classified as Aquatic Chronic 2-3 H411 or H412 or Skin Sens 1 H317.
- UV-curing printing inks, UV inkjet inks, UV inkjet varnishes, UV varnishes and UV primers classified as: Aquatic Acute 1 H400, Aquatic Chronic 1-4 H410, H411, H412 or H413 or Resp. Sens 1 H334 or Skin Sens 1 H317.
- Algicides classified as Aquatic Acute 1 H400, Aquatic Chronic 1-4 H410, H411, H412 or H413.
- 2-component adhesives, as well as algaecides and dampening solution additives classified as Resp. Sens 1 H334 or Skin Sens 1 H317.

Demonstrate compliance with the requirement by duly completing the declaration in the web-based application tool.

Enclose safety data sheets in accordance with the current statutory requirement in the country of application, e.g. Annex II to REACH (Council Regulation (EC) no. 1907/2006) for all chemical products.

1.2 Prohibited substances

The following substances must not be ingoing substances in chemical products used in the production of printed matter:

- EDTA (Ethylenediaminetetraacetic acid) and its salts
- Sodium and calcium hypochlorite
- Perfluorinated and polyfluorinated alkylated compounds
- Halogenated solvents
- APEO – alkylphenol ethoxylates and alkylphenol derivatives (substances that release alkylphenols on degradation)
- BHT - butylhydroxytoluene
- Substances on the Candidate List*
- CMR substances - Carcinogenic, Germ cell mutagenicity, Reproductive toxicity category 1 A/B or category 2
- Substances that have been judged in the EU to be PBT (Persistent, Bioaccumulative and Toxic) or vPvB (very Persistent and very Bioaccumulative)**
- Substances that are considered to be potential endocrine disruptors in category 1 or 2, according to official lists within the EU*** and substances that have been identified as endocrine disruptors according to the Biocidal Products Regulation (EU 528/2012) or Plant Protection Products Regulation (EC 1107/2009).

** The Candidate List can be found on the ECHA website: http://echa.europa.eu/candidate-list-table*
*** PBT and vPvB in accordance with the criteria in Annex XIII of REACH*
**** The EU's report on endocrine disruptors can be read in full at http://ec.europa.eu/environment/chemicals/endocrine/pdf/final_report_2007.pdf Appendix L, page 238 onwards)*

Exemptions:

- Isocyanates in adhesives.
- EDTA and its salts in chemicals for form production (repro) can be used if the proportion of EDTA and its salts does not exceed 1% (percentage by weight) in the chemical product.
- BHT in UV-curing printing inks, UV inkjet inks, UV inkjet varnishes, UV varnishes and UV primers can be used if the proportion of BHT does not exceed 0.3 % (3000 ppm) in the chemical product. If BHT is given a harmonized classification which means that the substance does not meet the requirements of the criteria document, the exception will be waived.

1.3 Volatile organic compounds VOC

The printing company is awarded points depending on the purchased quantity of chemicals consisting of or containing volatile organic compounds (VOC).

The term organic compounds should be understood to mean organic compounds with a vapour pressure > 0.01 kPa (at 20ºC) or with equivalent volatility stated and verified from the safety data sheet from the manufacturer.

If a chemical only partially contains VOC, the weight percentage of the VOC components is indicated as the VOC content. For example, if a washing agent contains two VOC components, A and B, and the rest is water: 20% A and 45% B, the VOC content will be 65%.

For printing machines with e.g. wet toner, printing inks, inkjet inks or other chemicals containing VOC, weight information can be used, e.g. based on invoices on sold VOC. The quantity documented by means of e.g. invoices may be deducted and this applies to all production chemicals excluding wet toner. For wet toner, two values (VOC) are used. The lower value (15%) is applied to digital printing machines with condensation followed by recycling. The higher value (30%) is applied when the equivalent recycling technique is missing.

In the case of heatset inks, the manufacturer or supplier must as standard assume that the heatset ink contains 0% VOCs due to heating kiln treatment at the printing company or external incineration under controlled conditions. In the case of other production chemicals, information verified from safety data sheets must be used (highest value if a range is shown).

Does the chemical contain VOC? Yes_____ No _____

If yes, specify percentage by weight of VOC in the chemical:_____

2 Specific requirements

Requirements applicable to specific chemicals are set with respect to the following chemical products:

- Biocidal products and slimicides
- Printing inks, toners, inks, varnishes, foil for foil printing and laminated applicable for printed paper

2.1 Biocides/slimicides

Active organic substances in algicides and dampening solution additives must be approved or under evaluation according to Regulation (EU) No 528/2012 and they may not be bioaccumulative.

Biocides/slimicides are deemed not to be bioaccumulative if their BCF is < 500 or logKow is < 4. If both values are available, the value for the highest measured BCF is to be used, see Analyses.

✉ Report the composition of the product regarding biocides, stating their complete name and CAS no.

✉ Test results on the bioaccumulation potential of the active substances must be reported e.g. in product safety data sheets.

2.2 Printing inks, toners, inks, varnishes, foil for foil printing and laminates

2.2.1 Residues of heavy metals

Dyes or pigments based on antimony, arsenic, barium, cadmium, chromium VI, cobalt, copper, lead, mercury, nickel or selenium shall not be used in printing inks, toners, inks, varnishes, foils for foil printing and laminates applicable to printed matter.

Copper in phthalocyanine pigment is exempted from this requirement.

The levels of ionic impurities in the dyes or pigments used must not exceed the following limits:

- Antimony: 50 ppm
- Arsenic: 50 ppm
- Barium: 100 ppm
- Cadmium: 20 ppm
- Chromium VI: 100 ppm
- Cobalt: 500 ppm
- Copper: 100 ppm
- Lead: 100 ppm
- Mercury: 4 ppm
- Nickel: 100 ppm
- Selenium: 20 ppm

2.2.2 Dye products, Amines

Azo dyes, which by reductive cleavage of one or more azo groups may release one or more of the aromatic amines listed in Regulation (EC) No 1907/2006 Annex XVII, Appendix 8, must not be used.

2.2.3 Laminates used to enhance and protect the printed paper matter

Laminates/film lamination used to enhance and protect the printed matter must not contain PVC.

2.2.4 Recyclability - Printing inks, toners, inks, varnishes and adhesives

Printing inks, toners, inks, varnishes and adhesives must not hinder the recycling process.

Printing inks, -toners, -ink and varnishes:

Oil/solvent based (hydrophobic) printing inks, -toners, -inks and varnishes (e.g. standard offset inks, inks for rotogravure and dry toners) must be tested in accordance with INGEDE's test method no. 11, and obtain a result of least 51 points in accordance with ERPC's points system for all tested paper types. This corresponds to "Fair to good deinkability" deinking.

Water based (hydrophilic) and crosslinked printing inks, -toners , -inks and -varnishes (e.g. flexo, ink-jet, liquid toner, UV curable, HP Indigo) must be tested in accordance with INGEDE's test method no. 11, and obtain a result of above 0 points in accordance with ERPC's points system for all tested paper types. This corresponds to "Tolerable deinkability".

Adhesives:

Water-based adhesives are exempted from this requirement.

Adhesives must be tested in accordance with INGEDE's test method no. 12 and obtain a result of least 51 points in accordance with ERPC's points system for all tested paper types. This corresponds to "Good" or "Fair" deinking.

Pressure sensitive adhesive (PVAs) must be tested in accordance with INGEDE's test method no. 12 and obtain a result of above 0 points in accordance with ERPC's points system for all tested paper types. This corresponds to "Tolerable deinkability".

The requirements concerning test laboratories and test instructions, INGEDE testing, are stated in section 3 below.

☒ Oil/solvent (hydrophobic), water based (hydrophilic) and crosslinked printing inks printing inks, toners, inks and varnishes: The chemical manufacturer/supplier shall provide the test result of INGEDE test method no. 11 and the point score in accordance with ERPC's points system for all tested paper types.

☒ Adhesives: The chemical manufacturer/supplier shall provide the test result of the INGEDE test method no. 12 and point score in accordance with ERPC's points system for all tested paper types.

☒ For water-based adhesives, a declaration of the water-based nature of the adhesive shall be provided by the adhesive manufacturer.

3 Analyses and test methods

Testing of quality specifications must be performed by laboratories, which are accredited to the current standard and fulfil the general requirements in the standard EN ISO/IEC 17025 or have official GLP status. A non-accredited laboratory may perform tests if the laboratory has applied for accreditation according to the current testing method, but has not yet been granted approval, or if accreditation is not available for the technical specification or proposed standard. In such cases, the laboratory must prove that it is an independent, competent laboratory.

The chemical manufacturer's analysis laboratory/test procedure may be approved for analysis and testing if:

- Sampling and analysis are monitored by the authorities; or
- The manufacturer's quality assurance system covers analyses and sampling and is certified to ISO 9001; or
- The manufacturer can demonstrate agreement between a first-time test conducted at the manufacturer's own laboratory, and testing carried out in parallel at an independent test institute, and the manufacturer takes samples in accordance with a fixed sampling schedule

3.1 Bioaccumulation

A substance is considered to be bioaccumulating if tested for bioaccumulation on fish according to method OECD 305 A-E and its bioconcentration factor (BCF) is <500. If no BCF value has been determined, a substance is considered to be bioaccumulating if its logKow value is ≥ 4.0 according to method 107, 117 or 123 in the OECD Guidelines for the Testing of Chemicals (ISBN 92-64-1222144) or equivalent method, unless proven otherwise. If the maximum measured BCF is ≤ 500, the substance is not considered bioaccumulating even if logKow is ≥ 4.0.

OECDs test method 107 cannot be used for surface-active substances, which are both fat and water soluble. Based on current knowledge, for such substances it must be shown to a high degree of certainty that the substance itself and its decomposition products do not pose a long-term hazard to aquatic organisms.

Data models (such as BIOWIN) are permitted but if the results of an approximation are close to the set limit values or if Nordic Ecolabelling holds contradictory information, more reliable information is required.

3.2 Test methods for recyclability

Printing inks, -toners, -inks and varnishes:

Oil/solvent based (hydrophobic) printing inks, -toners, -inks and varnishes (e.g. standard offset inks, inks for rotogravure and dry toners) must be tested in accordance with INGEDE's test method no. 11, and obtain a result of least 51 points in accordance with ERPC's points system for all tested paper types. This corresponds to "Fair to good deinkability".

Water based (hydrophilic) and crosslinked printing inks, -toners , -inks and -varnishes (e.g. flexo, ink-jet, liquid toner, UV curable, HP Indigo) must be tested in accordance with INGEDE's test method no. 11, and obtain a result of above 0 points in accordance with ERPC's points system for all tested paper types. This corresponds to "Tolerable deinkability".

Testing must be performed on three types of paper: uncoated, coated and surface-sized paper. If a type of printing ink is only sold for one or two specific types of paper, it is be sufficient to only test the paper type(s) in question.

Adhesives:

Adhesives must be tested in accordance with INGEDE's test method no. 12 and obtain a result of least 51 points in accordance with ERPC's points system for all tested paper types. This corresponds to "Good" or "Fair" deinking.

Pressure sensitive adhesive (PVAs) must be tested in accordance with INGEDE's test method no. 12 and obtain a result of above 0 points in accordance with ERPC's points system for all tested paper types. This corresponds to "Tolerable deinkability".

Testing must be performed on a type of printed matter that is representative of the adhesive in question.

Signature

We declare that the requirements have been met and that the information provided is correct.

We understand that Nordic Ecolabelling will not be responsible for any data that is incorrectly recorded in the Nordic print database as a result of our failure to provide correct information:

Company name:	
Address:	
Telephone:	Date:
E-mail:	
Signature:	
Name in block letters:	

Please note that the signatory company will appear in the electronic application aid unless otherwise stated under distributor/supplier at the top of the form.

E-mail:

Ecolabelling Denmark	info@ecolabel.dk
Ympäristömerkintä Suomi Oy (Finland)	joutsen@ecolabel.fi
Norræn Umhverfísmerking (Iceland)	ust@ust.is
Stiftelsen Miljømerking (Norway)	info@svanenmerket.no
Miljömärkning Sverige AB (Sweden)	info@svanen.se

Appendix 2 Substrates other than paper

This form is for use by manufactures/suppliers of substrates other than paper for documenting Nordic Ecolabelling's requirements. The form must be completed electronically in electronic application aid. All documentation sent directly to Nordic Ecolabelling will be treated confidentially.

Products assessed and approved by Nordic Ecolabelling will be published in the electronic application aid for printing companies holding or applying for an ecolabel licence. Only information saying that the product is approved, together with product name and distributor/supplier is published for printing companies.

In special cases, Nordic Ecolabelling may conceal inspected chemicals and materials in the database. Where applicable, please contact Nordic Ecolabelling.

Definition of substrates other than paper:

Substrates other than paper are often divided into flexible and rigid substrates. Flexible substrates such as foils and laminates often consist of plastic such as PVC, vinyl, PP, PE and PET, while textiles and canvas most often are used for banners and posters. Typical rigid substrates are thick plastic, board, wood, metal or glass which are often used for signs or Point of Sale (POS) material. Rigid substrates may consist of one material but are often composed of several types of material forming a composite.

Definition of paper/paper board substrates:

A printing paper assessed by Nordic Ecolabelling and the EU Ecolabel's criteria for graphic paper. Paper grades are defined as the following:

- Wood containing and wood-free unconverted printing paper produced fromchemical and/or mechanical pulp and/or recycled fibre, for, printing.
- The following boards produced from chemical and/or mechanical pulpand/or recycled fibre:
    - Homogeneous board SBB (Solid Bleached Board), SBS (Solid Bleachedsulphate) and SUB (Solid Unbleached Board)
    - FBB (Folding Boxboard)
    - Board based on recycled fibre WLC (White Lined Chipboard)
    - Kraft-liner, test-liner, wellenstoff, semichemical fluting made from NSSC (neutral sulphite semi-chemical pulp)

More information can be found from http://www.nordic-ecolabel.org/certification/paper-pulp-printing/

Complete the form for identification of the substrate:

This declaration is based on the knowledge we have at the time of the application, based on declarations from raw material manufacturers or safety data sheet, with reservations for new advances and new knowledge. Should such new knowledge arise that affects Nordic Ecolabelling's requirements, the undersigned is obliged to submit an updated declaration to Nordic Ecolabelling.

Country	Distributor/supplier	Trade name	Product number, where applicable
Internationally			
Sweden			
Norway			
Iceland			
Finland			
Denmark			

⇪ Enclose product data sheet.

Specify the type of product:

☐ Film/foil ☐ Laminate

☐ Board/panel ☐ Textile

☐ Mesh ☐ Other

If other type of product, specify the product:

_____

1 Description of the substrate

Describe type of substrate (e.g. material, composition of materials including any release paper/liner):

_____
_____
_____
_____
_____

Are chemical products used in the finishing of substrates?

Yes_____ No _____

If yes, see also section 4 below.

By finishing means surface treatment of the substrate and involves adding coating, printing, varnishing or adhesives to the substrate. Adding an adhesive and a release paper/liner to the substrate is also regarded as surface treatment. Corona treatment is not regarded as surface treatment.

1.1 Halogenated organic compounds (O6)

Substrate, including release paper/liner, must not contain halogenated organic compounds such as PVC/PVC coating, organic chloroparaffins, fluorine compounds or flame-retardants*.

Does the substrate, including release paper/liner, contain halogenated organic compounds?

** Flame retardants: Exceptions are given to textile substrates certified class B1 according to DIN4102-1, M1 according to NFP 92503 or EN13501-1.*

Yes_____ No _____

Textile substrate: see section 3 below.

⇪ Textile substrates; Valid certificate class B1 according to DIN4102-1, M1 according to NFP 92503 or EN13501-1.

2 Recycled material and mono substrates

The printing company may be awarded points based on the types of substrate used (substrate containing recycled material (P3), mono substrates (P4) or mono substrates containing recycled material (P5)).

2.1 Recycled material (P3)

Does the substrate contain minimum 50 w% recycled material*?

Substrates containing recycled PVC cannot be awarded points.

**Recycled material is defined in accordance with ISO 14021:*

"Pre-consumer": Material diverted from the waste stream during a manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it. Nordic Ecolabelling considers rework, regrind or scrap, which cannot be reused directly in the same process, but requires a reprocess (e.g. in the form of sorting, re-melting and granulation) before it can be reused, to be pre-consumer material. This is regardless of whether it is done in-house or externally.

"Post-consumer/commercial" is defined as material created by households or commercial, industrial or institutional facilities in the role of end users of a product that can no longer be used for the intended purpose. This includes return of material from the distribution chain.

Yes_____ No _____

Description and quantity of the recycled material:

_____

_____

_____

⇪ Metal:

1. The percentage of recycled metal in the metal part shall be indicated.
2. Declaration from the smelter about the proportion of recycled metal in production (on an annual basis)
3. The traceability of the supply chain must be documented, e.g. in the form of a flow chart. The proportion of recycled metal in the supply chain must be documented, e.g. by information on invoice or declaration from supplier. For aluminium (Al), the percentage recovered can be documented with the Hydro Circal certification.

⇪ Plastic:

1. The percentage of recycled plastic in the plastic part shall be indicated
2. Manufacturer of recycled raw materials shall be stated
3. Documentation from the manufacturer of recycled raw material showing that the plastic has been recycled according to the ISO 14021.
   or
4. Certificates in accordance with the Global Recycled Standard, EuCertPlast or other equivalent certification approved by Nordic Ecolabelling which shows that the raw material has been recycled.

⇪ Other recycled materials:

1. Documentation of that recycled material is in accordance with ISO 14021.

2.2 Mono substrate (P4)

Does the substrate only consist of the same material (mono substrate)?

Mono substrates made of PVC cannot be awarded points.

A mono substrate consists of the same material. Substrates containing adhesives (outer layer of adhesives) such as self-adhesives digital printing material or substrates coated with another material (such as PVC) are not considered as a mono substrate. Mono substrates coated with ink are, however, considered as a mono substrate.

Yes_____ No _____

2.3 Mono substrates containing recycled material (P5)

Does the mono substrate contain minimum 50 w% recycled material?

(Comply with the two above paragraphs for Recycled material (P3) and Mono substrates (P4).

Yes_____ No _____

3 Fabric/textile and panels/boards made of wood

Applies to substrates of fabric/textile and to substrates of wood-based panels/boards such as chipboard, fibreboard (including MDF and HDF panels), OSB (Oriented Strand Board) and veneer boards. Wood-based also includes corresponding products made of bamboo.

3.1 Substrates of fabrics/textiles

Is the substrate of fabric/textile certified with one of the following label schemes?

- Nordic Swan Ecolabel
- EU ecolabel
- GOTS
- Oeko-Tex 100 (class IV)

Yes_____ No _____

If yes, please specify:

_____

_____

⇪ Valid Nordic Swan Ecolabel, -EU Ecolabel, GOTS or Oeko-Tex 100 (class IV) certificate or license number and product name.

3.2 Panels/boards made of wood

Applies to **wood-based panels/boards** such as chipboard, fibreboard (including MDF and HDF panels), OSB (Oriented Strand Board) and veneer boards. Wood-based also includes corresponding products made of bamboo.

Name/tradename and type of panel/board:

_____

_____

_____

Is the panel/board certified with Nordic Swan Ecolabel?

Yes_____ No _____

⇪ Valid certificate or license number and product name.

Is the panel/board FSC- or PEFC certified?

Yes_____ No _____

Does the FSC- or PEFC certified panel/board contain tree species listed on Nordic Ecolabelling's list of prohibited tree-species*.

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

Yes_____ No _____

⇪ Enclose valid FSC- or PEFC certificate, license number or alternative FSC/PEFC logo on the product/ unbroken packaging.

4 Chemical products used in the finishing of substrates

Has the substrate undergone a surface treatment in the finishing of the substrate?

By finishing means surface treatment of the substrate and involves adding coating, printing, varnishing or adhesives to the front material/surfaces. Adding an adhesive and release paper/liner to the substrate is also regarded as surface treatment. Corona treatment is not regarded as surface treatment.

Yes_____ No _____

Name/tradename of chemical(s) (printing ink, dye or toner used for coating, varnish or adhesive) used in the surface treatment in the finishing of the substrate: -

_____

_____

Chemicals classified according to the risk phrases indicated in the table below must not be used in the surface treatment in the finishing of the substrate.

Classification under CLP Regulation (EC) No 1272/2008		
Classification	**Hazard Class and Category Code**	**Hazard statement**
Hazardous to the aquatic environment	Aquatic Acute 1 Aquatic Chronic 1-4	H400 H410, H411, H412, H413
Hazardous to the ozone layer	Ozone	H420
Acute toxicity	Acute Tox. 1, 2 Acute Tox. 3	H330, H310, H300 H331, H301, H311
Specific target organ toxicity	STOT SE 1 STOT RE 1	H370 H372
Respiratory or skin sensitisation	Resp. Sens. 1 Skin Sens 1	H334 H317
Carcinogenic*	Carc. 1A/1B Carc. 2	H350 H351
Germ cell mutagenicity*	Muta. 1A/B Muta. 2	H340 H341
Reproductive toxicity*	Repr. 1A/1B Repr. 2	H360, H361 H362

**The classifications concern all classification variants. For example, H350 also covers classification H350i.*

Note that the manufacturer of the chemical product is responsible for its' classification.

⇪ Enclose safety data sheets in accordance with the current statutory requirement in the country of application, e.g. Annex II to REACH (Council Regulation (EC) no. 1907/2006) for all chemical products.

Signature

We declare that the requirements have been met and that the information provided is correct.

We understand that Nordic Ecolabelling will not be responsible for any data that is incorrectly recorded in the Nordic print database as a result of our failure to provide correct information:

Company name:	
Address:	
Telephone:	Date:
E-mail:	
Signature:	
Name in block letters:	

Please note that the signatory company will appear in the electronic application aid unless otherwise stated under distributor/supplier at the head of the form.

E-mail

Ecolabelling Denmark	info@ecolabel.dk
Ympäristömerkintä Suomi Oy (Finland)	joutsen@ecolabel.fi
Norræn Umhverfísmerking (Iceland)	ust@ust.is
Stiftelsen Miljømerking (Norway)	info@svanenmerket.no
Miljömärkning Sverige AB (Sweden)	info@svanen.se

Appendix 3 Declaration from finishing suppliers (O3)

This form is for use by finishing suppliers of gluing, varnishing, foil printing and laminating services to document Nordic Ecolabelling's requirement for the main external finishers to be inspected. The form must be completed electronically in electronic application aid. All documentation sent directly to Nordic Ecolabelling will be treated confidentially.

Finishing suppliers assessed and approved by Nordic Ecolabelling will be published in the electronic application aid for printing companies holding or applying for an ecolabel licence.

Suppliers of mechanical finishing services are not encompassed by this requirement.

Company name:	
Address:	
Tel:	E-mail:
Name of contact person:	

Chemicals and materials

The finishing supplier must maintain a list of varnishes, adhesives, foils for foil printing and laminates, as well as washing agents used for ordinary manual cleaning of print finishing machines, used by the supplier. All chemicals (adhesives, varnishing, foil blocking or laminating, as well as washing agents used for ordinary manual cleaning of print finishing machines) and materials must be checked by Nordic Ecolabelling and must fulfil the requirements provided for in O10 and Appendix 1 of the current Criteria document for printing companies.

Addressing with ink is exempted from the requirement. For addressing ink, a safety data sheet complying with the standards set out in Annex II of REACH (Regulation 1907/2006/EC) or other technical data sheet must be enclosed.

Requirement O10 contains information on triviality limits, which also apply to suppliers of finishing services.

> **Trivial limits**:
>
> Up to 5% by weight of the quantity of production chemicals in each category purchased during the year can be exempted from the chemical requirements in Appendix 1. For printing inks, adhesives and varnishes an alternative triviality limit of 10 kg per annum and per category applies for which the requirements do not have to be met.
>
> The trivial limits do however not apply to;
>
> - washing agents classified as Aquatic Acute 1 H400, Aquatic Chronic 1-4 H410, H411, H412 or H413.

- printing inks, toners, ink, varnishes and adhesives used in printed matter that will bear the Nordic Ecolabel logo, see requirement O26 and O30.

The electronic application aid contains details of inspected chemicals and materials. For a chemical or material to be recorded in the database, the supplier/producer must fill in information in the electronic application aid.

⇪ Please attach a list of used varnishes, adhesives, foils for foil printing and laminates, as well as washing agents used for ordinary manual cleaning of print finishing machines. Amounts must also be stated if the chemicals/materials within a category do not fulfil the requirements. For addressing ink, a safety data sheet complying with the standards set out in Annex II of REACH (Regulation 1907/2006/EC) or other technical data sheet must be enclosed. We confirm that the business operates in compliance with the regulations of the authorities.

We also confirm that the attached list of chemicals and materials are those used in the business and that we will notify Nordic Ecolabelling in the event of any changes. We confirm that materials containing PVC are not used in paper-based packaging (O9), plastic packaging (013) and that PVC materials (requirement 027) are not used for printed matter to be labelled with The Nordic Swan Ecolabel.

Signature

We declare that the requirements have been met and that the information provided is correct.

We understand that Nordic Ecolabelling will not be responsible for any data that is incorrectly recorded in the Nordic print database as a result of our failure to provide correct information:

Company name:	
Address:	
Tel:	Date:
E-mail:	
Signature:	
Name in block letters:	

Please note that the signatory company will appear in the electronic application aid unless otherwise stated under distributor/supplier at the top of the form.

E-mail

Ecolabelling Denmark	info@ecolabel.dk
Ympäristömerkintä Suomi Oy (Finland)	joutsen@ecolabel.fi
Norræn Umhverfísmerking (Iceland)	ust@ust.is
Stiftelsen Miljømerking (Norway)	info@svanenmerket.no
Miljömärkning Sverige AB (Sweden)	info@svanen.se

Appendix 4 Declaration by the printing company

We hereby confirm that we are in compliance with the following requirements:

Requirement as to paper-based packaging manufactured (as a whole) in the printing company (O9):

- The non-paper product parts of paper-based packaging such as metal clips, tape or plastic covers, shall be easily removable to ensure that those components will not hinder the recycling process.
- Avoid plastic labels if possible and use direct print or paper labels. If a window is needed, then provide clear instructions for consumers to remove window film before recycling.
- PVC or plastic based on other types of halogenated plastics, including tape, must not be used.
- Paper or board laminated on both sides must not be used.
- Wax or latex coatings must not be used.

Requirement as to plastic packaging (O13):

- Plastic packaging must not contain PVC.

By plastic packaging is meant packaging that is used for protection and collation of individual/units of printed matter during storage, transport and distribution.

Requirements as to the use of the Nordic Swan Ecolabel logo on printed matter (O24 - O30):

Print on paper:

- A minimum of 90% of the total weight of the Nordic Swan Ecolabelled printed matter must consist of inspected or Nordic Swan Ecolabelled paper.
- In the case of stationery and office supplies such as books, folders, ring binders, notepads and forms, the requirement is 80%.
- The non-paper product parts of stationary paper product such as metal bars or plastic covers shall be easily removable to ensure that those components will not hinder the recycling process.

Inserts that are fixed are considered part of the printed matter.

Print on textile or board/panels:

- A minimum of 90% of the total weight of the Nordic Swan Ecolabelled printed matter must consist of Nordic Swan- or EU-Ecolabelled textiles or Nordic Swan Ecolabelled construction and facade panels.
- If case of printing on Nordic Swan Ecolabelled acoustic panels, or if the acoustic panels is used as a basis for a printed textile matter, the printing must not have a negative effect on the primary function of absorbing sound waves.

In case of roll-up stands, printed canvas on a wooden frame and other similar products, only the material carrying the information is regarded as printed matter.

Printing inks, toners, inks, varnishes and adhesives:

- All printing inks, toners, inks, varnishes and adhesives used in the Nordic Swan Ecolabelled printed matter must be assessed by Nordic Ecolabelling and must fulfil the requirements in Appendix 1.

  The printing company must ensure that any printing inks, toners, inks, varnishes and adhesives which are exempt from requirement O10 are not used in the Nordic Swan Ecolabelled printed matter.

Lamination and PVC:

- Nordic Swan Ecolabelled printed matter must not contain PVC.
- Lamination shall only be used to increase the durability of products with a life span of at least 1 year, for example, books, binders, folders, exercise books, calendars, notebooks and diaries.
- Lamination shall not be used in magazines.
- Double lamination shall not be used in any product.

Fragrance:

- Fragrance/scent must not be added to Nordic Swan Ecolabelled printed matter (e.g. scented varnish). Packaged product samples with fragrance, attached to an item of printed matter, or removable scratch samples, are not encompassed by this.

Printing suppliers and finishers (book binders):

- All printer suppliers used in the production of printed matter that is to bear the Nordic Swan Ecolabel must be licensed to use the Nordic Swan Ecolabel O2. All external finishers encompassed by O3 must have been inspected.

Traceability:

- If only part of the output of the printing company is Nordic Swan Ecolabelled, orders bearing the Nordic Swan Ecolabel must be marked clearly to enable them to be separated from other orders. Information must also be displayed disclosing:

  - name of paper and paper grades, textile or panels;
  - names on printing inks, toners, inks, varnishes or adhesives;
  - subcontractors used;
  - how the Nordic Swan Ecolabel logo is reproduced on the items of printed matter (e.g. with the aid of order notes or order bags).

Requirements as to use of The Nordic Swan Ecolabel logo on packaging:

The Nordic Ecolabel logo must not be placed on produced packaging since confusion may arise about what the Nordic Swan Ecolabel applies to.

Signature

We declare that the requirements have been met and that the information provided is correct.

Company name:	
Address:	
Contact person:	
Tel:	Date:
E-mail:	
Signature:	
Person in charge of marketing:	
Tel:	Date:
E-mail:	
Signature:	

In the event of personnel changes, a new confirmation must be submitted to the ecolabelling organisation.

Appendix 5 VOC and energy factors

1 Calculation of volatile organic compound (VOC) emissions:

If the printing company sells recycled VOC or removes VOC from outgoing air with the aid of, for example, incineration (e.g. heatset) or removes or sells VOC by some other controlled means (e.g. condensation in connection with certain digital printing facilities with wet toner or inkjet inks), these quantities may be deducted from the quantities purchased/received.

Below is a general specification of the calculation method for selected printing techniques, but other printing techniques may also be deducted on the said assumption. As an example, certain heatset printing companies collect ink waste and send it for incineration under controlled conditions. Consequently, the quantity of VOC in the ink waste may be deducted if this quantity can be documented. Heatset printing companies must measure emissions of VOC.

Measurements of VOC at heatset printing companies
Measurements of VOC quantities at local emission points must be based on:

- measurements of Non-Methane Volatile Organic Compounds (NMVOV) in mg C/Nm^3 flue-gas after each treatment unit - as required by the authorities for heatset printing companies of a certain size.

- information on annual gas flow with the gas flow during operations (in Nm^3/h) and the annual number of hours of operations for each treatment unit.

If measurements of NMVOC are not performed, the European threshold value of 20 mg C/Nm^3 may be used as a standard value. To simplify conversion to VOC the printing company must assume that it is oil consisting of hydrocarbons with a typical chain length of C9 - C20. This means that 1 g of VOC will on average correspond to 0.85 g of C.

Heatset with afterburning or flue gas treatment
If a heatset printing company has an integrated afterburner or flue gas treatment, the company may assume as a standard value that 100% of the substances in the printing inks are converted to VOC. Other production chemicals containing VOC must be calculated in accordance with the instructions found here and the results must be added to the VOC consumption.

Digital printing machines and recycling
For digital printing machines with e.g. wet toner or inkjet inks, can weight information be used on the basis of e.g. invoices for sold VOC. The quantity documented by means of e.g. invoices, may be deducted and this applies to all product chemicals excluding wet toner.

For wet toner, two values (VOC) are used in calculation in the electronic application aid. The lower value (15%) is applied to digital printing machines having condensation followed by recycling. The higher value (30%) is applied when the equivalent recycling technique is missing.

Example on how to calculate VOC (kg VOC/ton substrate)

Description of parameters (A-G) applicable for the calculation of VOC:

A) Total VOC consumption (**Kg**)	Value calculated automatically in the electronic application tool from consumption of chemicals. Production chemicals (VOC) related to the printing method applicable. Calculation is based on the consumption of production chemical and related to the weight-% VOC in each chemical. Example: 1200 Kg VOC calculated consumption in total from printing method.
B) Total weight (Kg) of chemical waste fraction containing VOC (Kg)	Total amount (Kg) chemical waste related to VOC and printing method if applicable. If not applicable with waste fraction see parameter F (consumption of substrate). Total weight could have components containing 0 weight-% VOC. Example: 40 Kg (Total chemical waste related to printing method).
C) Weight of waste component/ components not containing VOC (Kg)	Example: 10 Kg (waste-) water consumption for printing method.
D) Calculation of VOC remaining in waste fraction	Example: 40 Kg (B) – 10 Kg (C) = 30 Kg (D).
E) Sum VOC (Kg)	VOC waste withdrawn from total VOC. Calculation example: 1200 Kg (A) – 30 Kg (D) = (E) 1170 Kg VOC.
F) Consumption of substrate for printing method (Ton)	Example: Printing method has 400 Ton (F) consumption of substrate.
G) Calculation of VOC value for the printing method (Kg VOC/Ton substrate)	Example: 1170 Kg VOC (A or E applicable) / 400 Ton (F) = 2,93 Kg VOC/Ton substrate (G).

2 Energy content of fuels and district heating

The table below shows the values for the energy content that must be applied when calculating energy consumption based on purchased/received fuels and district heating. In the case of fuels not included in the table, data provided by the supplier may be used (lower calorific value).

Fuel	**Energy content**	**Unit**
Light heating oil	36.0	GJ/m3
Heavy heating oil	38.7	GJ/m3
LPG (gasol)	46.1	MJ/kg
Natural gas	38.9	MJ/m3
Biogas	6.4	kWh/m3
Pellets	10.0	GJ/m3
Woodchips	3.5	GJ/m3
Briquettes	10.0	GJ/m3
Coal	26.5	MJ/kg
District heating		
Water based, 35°C cooling	40.8	kWh/m3
Steam based, condensate at 100°C and normal air pressure	627	kWh/m3

If more specific values are available from the supplier of fuel, e.g. own measured values, these values may be applied instead. The following values may be used as standard values for density if the supplier has not provided the data:

Natural gas: 0.85 kg/m3N

Light heating oil: 0.89 kg/liter

Heavy heating oil: 0.98 kg/liter

District heating water: 1.00 kg/liter