

The German Ecolabel

BLUE ANGEL



**Graphic paper and cardboard made from
100% recovered paper (recycled paper and
cardboard)**

DE-UZ 14a

Basic Award Criteria

Edition January 2026

Version 1

The Environmental Label is supported by the following four institutions:



Federal Ministry
for the Environment, Climate Action,
Nature Conservation and Nuclear Safety

The Federal Ministry for the Environment is the owner of the label, defines the fundamental guidelines for the award of the Blue Angel ecolabel and appoints the Environmental Label Jury.



The German Environment Agency with its specialist department for "Ecodesign, Eco-Labeling and Environmentally friendly Procurement" acts as the office of the Blue Angel ecolabel. It develops the technical criteria including the required compliance verifications in cooperation with relevant interest groups.



The Environmental Label Jury is the independent, decision-making body for the Blue Angel and includes representatives from environmental and consumer associations, trade unions, industry, the trade, crafts, local authorities, academia, churches, young people and the German federal states.



RAL gGmbH is the awarding body for the environmental label. It examines the applications submitted by companies for the use of the Blue Angel ecolabel and concludes the "Contracts on the Use of the Environmental Label". It also monitors correct use of the ecolabel.

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

1 Introduction

1.1 Preface

In cooperation with the Federal Ministry for the Environment, the German Environment Agency and considering the results of hearings held with relevant interest groups conducted by RAL gGmbH, the Environmental Label Jury has set up these criteria for the award of the ecolabel (Basic Award Criteria). RAL gGmbH has been tasked with awarding the ecolabel.

Upon application to RAL gGmbH and on the basis of a Contract on the Use of the Environmental Label to be concluded with RAL gGmbH, the permission to use the ecolabel may be granted to all products, provided that they comply with the requirements as specified hereinafter. The product must comply with all the legal requirements in the country in which it is to be marketed. The applicant shall declare that the product meets these conditions.

1.2 Background

The use of recovered paper in the production of graphic paper contributes to the preservation of resources, especially ecosystems such as forests, and thus helps to protect species and the climate. The use of recovered paper from household and commercial collections also reduces the amount of waste generated.

In a comparison of their impact on ecological systems, those paper products made from recovered paper perform significantly better in terms of their use of resources, waste water load and water and energy consumption than paper products made from virgin fibres that use wood as a source of fibrous raw materials – when the products have comparable performance characteristics.

In Germany, the average consumption of semi-finished paper products and finished paper products per capita after deducting export surpluses is approximately 190 kg of paper, paperboard and cardboard¹. This figure also includes consumption outside of the home, such as in commerce, media and administration. According to a recent study conducted by INTECUS GmbH in 2019 on behalf of the German Paper Industry Association (new name: DIE PAPIERINDUSTRIE e.V.), a total of between 95 and 105 kg of paper is consumed per person in German households.

The proportion of recovered paper used in the German paper industry is increasing continuously. It stood at 49% in 1990 but had already risen to 84% in 2024.² A significantly higher proportion of recovered paper is also being used for graphic paper. According to statistics from the German Paper Industry Association (DIE PAPIERINDUSTRIE e.V.), the proportion of recovered paper used for graphic paper had risen from 53% in 2016 to 60% in 2024. The collection and sorting of recovered paper are important prerequisites for making the recovered paper available to the paper industry. This process involves removing non-paper substances from the collected materials and then sorting the paper into defined grades of recovered paper (according to EN 643). The Blue Angel promotes the use of 100% recovered paper in its criteria. At least 50% of the recovered paper must be sourced from ordinary, medium and kraft paper grades and special grades (1, 2, 4 or 5). Ordinary paper grades are primarily recovered from household collections.

¹ Study 18-11-60 on paper consumption per capita in the Federal Republic of Germany, INTECUS GmbH Dresden, Jörg Wagner, commissioned by the German Paper Industry Association (Verband Deutscher Papierfabriken e.V.), May 2019

² DIE PAPIERINDUSTRIE e.V. 2025

By requiring the use of ordinary and kraft paper grades, the Blue Angel aims to ensure that almost all of the paper fibres recovered in the paper cycle are preserved and used for high quality applications such as for graphic paper. In the production of graphic paper, the use of especially high-quality recovered paper is also permitted, up to a maximum of 50% of the total recovered paper. However, only 35% (of the total recovered paper used) may be uncoated and adhesive-free recovered paper from group 3. This will make it possible to replace virgin fibre paper with recycled paper even for high-quality applications and thus contributes to the preservation of the forests. The use of recovered paper also contributes to the avoidance of waste.

The Blue Angel restricts the addition of critical production aids and paper refining agents in its criteria in order to, on the one hand, minimise the pollution of waste water and, on the other hand, reduce the pollutant load in the paper. For example, the use of optical brighteners and halogenated bleaching agents is prohibited except for in a few exceptional cases. The Basic Award Criteria have also set requirements on waste water emissions from paper production since 2020. In order to protect human health, recycled graphic paper designed for use with electro-photographic processes (e.g. copying paper) must be tested for its potential for the emission of volatile organic compounds (TVOC and TSVOC and DIPN). As part of the revision in 2025, further production-related requirements have now been placed on the emissions to air, energy consumption and waste management.

1.3 Objectives of the Environmental Label

The requirements in these Basic Award Criteria are intended, in particular, to promote the use of lower and medium grades of recovered paper and prevent the use of substances that are not required for technical reasons during production. The use of recycled paper that has been awarded the Blue Angel makes an important contribution to the preservation of resources and the protection of species and the climate.

Therefore, the following benefits for the environment and health are stated in the explanatory box:



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- made from 100% waste paper
- saves energy, water and wood
- low level of harmful materials

1.4 Definitions

Recovered paper according to DIN 6730 is the term used for paper, paperboard and cardboard, based on natural fibres, that is suitable for recycling and consists of:

- paper, paperboard and cardboard in any form,
- products primarily made of paper, paperboard and cardboard, which contain other components that cannot be separated using dry sorting, such as coatings and composite materials, spiral bindings etc.

Recovered paper is also used as the umbrella term for paper, cardboard and paperboard that is collected after use or processing. Refer to DIN EN 643 for specifications about the different grades of recovered paper.

Post-consumer recovered paper describes material generated by households or by commercial, industrial and institutional facilities in their role as end users of the goods or service which can no longer be used for its intended purpose. This includes returns of material from the distribution chain. It does not include the reuse of virgin fibre scraps that are generated during a process and then fed back into the same process from which they were generated (mill broke/paper machine scrap – either self-generated or purchased scraps). On the other hand, the use of scraps from production processes (either self-generated or purchased scraps) can be included when calculating the proportion of recycled fibres in the product if the company has a delivery note according to EN 643 for these scrap fibres.

Printing paper is paper used for the production of printed matter such as books, brochures, magazines, catalogues, prospectuses, posters and billboards. There is printing paper containing wood and also wood-free printing paper, as well as coated and uncoated versions, for e.g. offset, pot, flexo and digital printing. Printing paper according to DE-UZ 14a is exclusively made out of recycled paper, manufactured 100% using recovered paper. Digital printing paper must comply with the requirement according to Paragraph 3.13.

Graphic paper in the sense of these Basic Award Criteria includes sheets and rolls of unworked, unprinted (white or colour) paper or cardboard made out of recycled papers, manufactured 100% using recovered paper (secondary fibres), which is suitable for writing, printing or further processing.

HWC paper is high-quality roll printing paper, coated on both sides, containing either wood or recovered paper and with a basis weight of $> 75\text{g/m}^2$. HWC stands for high weight coated.

Constituent components: are substances added to the product as such or as part of a mixture in order to achieve or influence certain product properties and those required as chemical cleavage products for achieving the product properties.

Copying paper is a standard uncoated paper that is suitable for the production of copies of a template in physical and/or chemical processes and must meet the requirements according to Paragraph 3.13.

Multifunctional paper is suitable for use in printing devices and also as writing paper and must comply with the requirement according to Paragraph 3.13.

Office paper (copying and multifunctional paper) Office paper is coated or uncoated paper, either containing wood or wood-free, in white and coloured versions and in the formats DIN A4 and DIN A3. Office paper in the sense of these Basic Award Criteria is exclusively made out of recycled paper, manufactured 100% using recovered paper. It must meet the requirements according to Paragraph 3.13.

Recycled paper describes paper and cardboard produced using fibres sourced 100% from recovered paper (secondary fibres), whereby any scrap fibres used in the production process may only be sourced from a production plant for recycled paper.

SC paper is calendered paper that contains a filler, in versions containing wood or recovered paper: SC stands for supercalendered.

Writing paper is an uncoated paper, which is suitable for writing on with ink on both sides, made out of recycled paper, manufactured 100% using recovered paper.

VOC A "volatile organic compound" describes any organic compound having a vapour pressure of 0.01 kPa or more at 293.15 K, or having a corresponding volatility under the particular conditions of use. In the sense of Directive 2010/75/EU, the fraction of creosote that exceeds this vapour pressure at 293.15 K is considered a volatile organic compound.

2 Scope

These Basic Award Criteria apply to:

- a) Recycled graphic paper and cardboard. This includes:
 - ♦ Recycled paper for the production of graphic paper according to the grade statistics for "Graphic Paper" from the German Paper Industry Association (DIE PAPIERINDUSSTRIE e.V.) (Appendix B to these Basic Award Criteria). This includes, for example:
 - ♦ Paper for printed matter such as books, newspapers, magazines, brochures, catalogues, prospectuses, posters and billboards
 - ♦ Paper for printed matter primarily for use in offices and schools such as exercise books, envelopes and notebooks as well as gift paper and bags
 - ♦ Office paper (multifunctional and copying paper)
 - ♦ Writing paper
 - ♦ Continuous paper for IT applications
- b) Selected types of paper and paperboard for technical and special applications.

The grades of paper covered by the scope of these Basic Award Criteria are listed in Appendix B.

Printed matter comes under the scope of the Basic Award Criteria for DE-UZ 195. Finished products made from recycled paper and cardboard and gift paper come under the scope of DE-UZ 14b.

3 Requirements

3.1 Use of fibrous raw materials and grades of recovered paper

The paper fibres in the recycled graphic paper must have been sourced 100% from post-consumer recovered paper.

For the production of the product named in the application, at least 50% of the recovered paper – based on the total content of fibrous raw materials – must be sourced from the ordinary, medium and kraft paper grades and special grades (groups 1, 2, 4 and 5).

A maximum of 50% of the recovered paper may be sourced from group 3, of which only 70% may be uncoated and adhesive-free recovered paper from the grades listed in Appendix G (i.e. only 35% of the total recovered paper used in the product).

As an exception to this requirement, all paper designed for contact with foodstuffs or which will foreseeably come into contact with foodstuffs must be produced from 100% recovered paper, of which at least 50% must be sourced from the ordinary, medium and kraft paper grades and special grades (groups 1, 2, 4 and 5).

If the grades 2.05.00 ordinary sorted office paper, 2.05.01 sorted office paper, 2.06.00 ordinary sorted coloured letters, 2.06.01 sorted coloured letters and 5.09.00 carbonless copy paper (NCR) are used, the product must comply with the requirement according to Paragraph 3.2 (DIPN content).

Refer to DIN EN 643 for specifications about the different grades of recovered paper.

Compliance verification

The applicant shall characterise the paper in Annex 2 by stating the sort key, format, weight, surface treatment (coated or uncoated), whiteness, thickness and opacity (the opacity must only be provided for graphic paper, not for cardboard).

The applicant shall state the average percentage of the paper grades from groups 1, 2, 3, 4 and 5 used in the product in Annex 2 to the contract and declare compliance with the requirement in Paragraph 3.1 in Annex 1. The applicant shall also state the percentages of the individual grades 2.05.00 ordinary sorted office paper, 2.05.01 sorted office paper, 2.06.00 ordinary sorted coloured letters, 2.06.01 sorted coloured letters and 5.09.00 carbonless copy paper (NCR) in Annex 2.

The correctness of the data provided in Annex 2 to the contract shall be verified on request once a year in accordance with Annex 6 to the Basic Award Criteria by:

- *a certification body for ISO 14001 accredited by the German Accreditation Body (DAkkS) or an EA/IAF-recognised international accreditation body for the scope of paper manufacturers (NACE 17.12) or*
- *an environmental verifier approved for this scope (NACE 17.12) by the German Society for the Accreditation and Registration of Environmental Verifiers (DAU) in accordance with the Environmental Audit Act or*
- *an accredited FSC/PEFC certification body or an accredited FSC/PEFC certifier with valid accreditation or*

- *an expert recognised by the UBA in the areas of fibrous raw materials, grades of recovered paper and the recycling of recovered paper.*

3.2 Diisopropylnaphthalene (DIPN)

The content of diisopropylnaphthalene (DIPN) in paper and cardboard should be kept as low as technically possible. It is thus generally not permitted to use the grades of recovered paper 2.05.00 ordinary sorted office paper, 2.05.01 sorted office paper, 2.06.00 ordinary sorted coloured letters, 2.06.01 sorted coloured letters and 5.09.00 "carbonless copy paper (NCR)".

Alternatively, grades of recovered paper containing DIPN (2.05.00, 2.05.01, 2.06.00, 2.06.01 and 5.09.00) may be used if an efficient technical system (e.g. deinking) exists that largely removes the DIPN from the fibre cycle and the DIPN content in the finished paper does not exceed a maximum of 50 mg/kg.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract.

*If the grades of recovered paper 2.05.00, 2.05.01, 2.06.00, 2.06.01 and 5.09.00 have been used, the applicant shall state the maximum DIPN content in the finished product in Annex 2 to the contract and submit a test report from an independent testing institution accredited according to DIN EN ISO/IEC 17025 or a selected testing institution recognised by the UBA e.g. Chair of Paper Technology and Mechanical Process Engineering (PMV) at TU Darmstadt. The DIPN content shall be determined **once a year** in accordance with EN 14719 (DIPN in acetone extract). The applicant shall submit a product sample.*

3.3 Colour developers from thermal paper

The use of recovered paper could transfer colour developers from thermal paper to the finished paper. Therefore, the content of bisphenol A (BPA), bisphenol S (BOS) and N-(p-toluolsulfonyl)-N'-(3-(p-toluolsulfonyloxy)phenyl)urea³ in the finished paper must be determined in a cold water extract once a year.

Depending on the type of product, the content of BPA (CAS no. 80-05-7), BPS (CAS no. 80-09-1) and N-(p-toluolsulfonyl)-N'-(3-(p-toluolsulfonyloxy)phenyl)urea (CAS no. 232938-43-1) must be determined in a cold water extract prepared according to DIN EN 645 using liquid chromatography and UV/fluorescence detection or MS detection in accordance with CEN/TS 17497.

Compliance verification

The applicant shall confirm in Annex 1 to the contract that a test report from an independent testing institution accredited according to DIN EN ISO/IEC 17025 or a testing institution recognised by the UBA will be commissioned once a year for statistical purposes and shall state the measurement results in Annex 2. If multiple products are produced based on the same

³ N-(p-toluolsulfonyl)-N'-(3-(p-toluolsulfonyloxy)phenyl)urea (also commonly known under the trade name Pergafast 201) has not been proven to be an endocrine disrupter but is considered a not readily biodegradable substance with a high toxicity for water organisms.

composition of recovered paper (Annex 2), it is sufficient to submit an analysis of a sample of the paper **once a year**.

3.4 General exclusion of substances with certain properties

No substances or mixtures may be added as colourants, coating materials, production aids and paper refining agents that contain constituent components with the following properties:

- a) It is prohibited to add substances of very high concern (SVHC) that have been identified as being particularly alarming in accordance with Article 57, Paragraph 1 of Regulation (EC) No 1907/2006 (REACH) and added to the so-called "candidate list" according to Article 59, Paragraph 1 of the same regulation.
- b) No substances may be added to the product that
 - ♦ according to the criteria of Regulation (EC) No 1272/2008 (CLP) are classified with the following H Phrases named in Table 1 or which meet the criteria for such classification,
 - ♦ or which are classified as carcinogenic, mutagenic or reprotoxic substances in the currently valid version of TRGS 905⁴.

Table 1: H Phrases according to the CLP Regulation

H Phrases according to the CLP Regulation	Wording
H340	May cause genetic defects.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H350i	May cause cancer if inhaled.
H351 ⁵	Suspected of causing cancer.
H360F	May damage fertility.
H360D	May damage the unborn child.
H360FD	May damage fertility. May damage the unborn child.
H360Fd	May damage fertility. Suspected of damaging the unborn child.
H360Df	May damage the unborn child. Suspected of damaging fertility.
H361f	Suspected of damaging fertility.
H361d	Suspected of damaging the unborn child.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract.

The applicant shall verify compliance with the requirement by listing the colourants, coating materials, production aids and paper refining agents used and submitting declarations from the suppliers of the colourants, coating materials, production aids and paper refining agents in

⁴ http://www.baua.de/nn_16812/de/Themen-von_-A-Z/Gefahrstoffe/TRGS/pdf/TRGS-905.pdf

⁵ An exception is made for titanium dioxide because its classification is only based on the respirable dust.

accordance with Annex 3 to the contract pursuant to DE-UZ 14a. If requested to do so by RAL gGmbH, the applicant shall submit the relevant safety data sheets.

3.5 Further requirements for production aids and paper refining agents, exclusion of glyoxal

Only those production aids and paper refining agents that are listed in Recommendation XXXVI from the BfR for "Paper and board for food contact"⁶ (positive list) in sections B (production aids) and C (special paper refining agents) may be added to the product. The maximum quantities and concentrations stated in this list must be observed.

No production aids containing glyoxal may be used to manufacture the recycled paper.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 to the contract.

The applicant shall verify compliance with the requirement by listing the production aids and paper refining agents used and submitting declarations from the suppliers of the production aids and paper refining agents in accordance with Annex 3 to the contract pursuant to DE-UZ 14a.

If requested to do so by RAL gGmbH, the applicant shall submit the relevant safety data sheets.

3.6 Bleaching and complexing agents

The recovered paper must be processed without the use of chlorine, halogenated bleaching agents and not readily biodegradable complexing agents such as e.g. ethylenediaminetetraacetic acid (EDTA) and diethylenetriaminepentaacetic acid (DTPA).

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract and also state the bleaching chemicals and complexing agents used in Annex 2.

3.7 Biocides

In the production of the recycled paper, only those slimicides (substances in product type 12) and preservatives for fibres (substances in product type 9) that have been approved in accordance with the Biocidal Products Regulation (EU) No. 528/2012 (EU list of approved active substances) or are still being examined as a notified existing active substance for the relevant type of biocides as part of the EU work programme for the systematic examination of all existing active substances may be used.

Accordingly, it is only permitted to use those biocidal products classified in product types 9 and 12 that have been explicitly approved for the desired application.

For a transitional period, biocidal products that contain notified existing active substances of product types 9 and 12 that are still being examined as part of the EU examination process can

⁶ <http://bfr.ble.de/kse/faces/DBEmpfehlung.jsp>

also be used without approval if they have been registered in accordance with the German ordinance on the notification of biocidal products pursuant to the German Chemicals Act (Biocide Notification Ordinance – ChemBiozidMeldeV) and can thus be made available on the market. Until the approval requirements for the biocidal products containing notified existing active substances come into force, however, only those substances that are also listed in Recommendation XXXVI from the BfR are permitted.

In addition, the biocidal products used in the product must not contain any substances that have been considered as candidates for substitution according to Article 10 of the EU Biocidal Products Regulation 528/2012.

It is also possible that production aids and paper refining agents used for the production of the recycled paper contain biocidal products in product type 6 (preservatives for products during storage) that have been made available on the market. Residual content of these biocidal products will be accepted.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract and state which biocidal substances from which product type have been used with their IUPAC names and CAS numbers, as well as the quantities used per kilogram of dry pulp in Annex 2.

3.8 Whiteness

It is not permitted for any of the products to exceed a maximum grade of whiteness of 100% (including the UV proportion) according to ISO 2470 and a maximum CIE whiteness of 135 according to DIN ISO 11475. Coloured paper is excluded from this requirement.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract and state the grade of whiteness according to ISO 2470 and the CIE whiteness according to DIN ISO 11475 in Annex 2.

3.9 Optical brighteners

The use of optical brighteners is not permitted.

An exception applies for the production of:

- SC papers > 110 g/m² and
- HWC papers > 75g/m² (according to Appendix B)

The following optical brighteners may be added to these products:

- C.I.220, benzenesulfonic acid, 2,2'-(1,2-ethenediyl) bis[5[4-[bis(2-hydroxyethyl) amino]-6-[(4-sulfohenyl)amino]-1,3,5-triazin-2-yl]amino]-, tetra sodium salt (CAS no. 16470-24-9);

- C.I. 113 or C.I. 28 disodium salt 4,4'-bis[6-anilino-4-[bis(2-hydroxyethyl)amino]-1,3,5-triazin-2-yl]amino]stilbene-2,2'-disulphonate; sulfonated stilbene derivatives may be used up to a maximum level of 0.3%;
- Tetrasodium 4,4'-{ethene-1,2-diylbis[(3-sulfonato-4,1-phenylene)imino{6-[bis(2-hydroxyethyl)amino]-1,3,5-triazine-4,2-diyl}imino}]dibenzoate (CAS RN 32257-57-1) and isomeric mixtures of Tetrasodium 4,4'-{ethene-1,2-diylbis[(3-sulfonato-4,1-phenylene)-imino{6-[bis(2-hydroxyethyl)amino]-1,3,5-triazine-4,2-diyl}imino}]dibenzoate (CAS-RN 32257-57-1), Tetrasodium 2,2'-{ethene-1,2-diylbis[(3-sulfonatobenzene-4,1-diyl)imino{6-[bis(2-hydroxyethyl)amino]-1,3,5-triazine-4,2-diyl}imino}]dibenzoate (CAS RN 158256-89-4) and Tetrasodium 2-({4-[bis(2-hydroxyethyl)amino]-6-[(4-{2-[4-({4-[bis(2-hydroxyethyl)amino]-6-[(4-carboxylatophenyl)amino]-1,3,5-triazin-2-yl}amino)-2-sulfonatophenyl]-ethenyl}-3-sulfonatophenyl)amino]-1,3,5-triazin-2-yl}amino)benzoate (CAS no. 1271742-13-2);
- C.I.397 (benzenesulfonic acid, 2,2'-(1,2-ethenediyl)bis[5-amino-, reaction products with aniline, diethanolamine, ethanolamine and 2,4,6-trichloro-1,3,5-triazine, sodium salts, 2-(Dimethylamino) ethanol compounds (CAS no. 1627851-12-0).

Compliance verification

The applicant shall state the grade of manufactured paper based on the grade statistics (according to Appendix B) in Annex 2 to the contract and name the optical brighteners used.

In addition, the applicant shall verify compliance with the requirement by submitting a test report from an independent testing institute certifying compliance with the bleeding test according to DIN EN 648 or DIN EN 646 and achievement of valuation level 5.

Alternatively, the applicant shall submit a declaration from the manufacturer of the optical brightener as Annex 3 to the contract stating that at least 95% of the optical brighteners cling to the substrate to be brightened.

3.10 Azo dyes and pigments in colourants

No azo dyes or pigments may be added in colourants that can cleave into one of the amines stated in Regulation (EC) No. 1907/2006, Annex XVII, No. 43, Appendix 8 or 9, or in TRGS 614⁷ (see Appendix D).

Compliance verification

The applicant shall verify compliance with the requirement by submitting Annex 3 to the contract according to DE-UZ 14a.

⁷ <https://www.baua.de/DE/Angebote/Rechtstexte-und-Technische-Regeln/Regelwerk/TRGS/TRGS-614.html>

3.11 Mercury, lead, cadmium or chromium VI compounds in colourants

It is not permitted to add any colourants (pigments or dyes) containing mercury, lead, cadmium or chromium (VI) compounds as constituent ingredients.

Compliance verification

The applicant shall verify compliance with the requirement by submitting a declaration from the colourant supplier in Annex 3 to the contract pursuant to DE-UZ 14a.

3.12 Substitution of mineral oil-based additives and base oils

No mineral oil-based additives or base oils that contain aromatic hydrocarbons (with ≥ 10 carbon atoms) as a component may be added during the production of the recycled paper.

In the case of aliphatic hydrocarbons, only those substances with a chain length of C10 to C20 may be used as constituent components. In addition, the following high-molecular compounds without solvent properties may be used if they have a carbon number $C > 35$ and the proportion of those with a carbon number of C20 to C35 does not exceed a maximum of 5%: microcrystalline waxes, Vaseline, polyolefin waxes, paraffin waxes or Fischer-Tropsch waxes. Plant-based base oils designed for use as a foodstuff or as a material that comes into contact with foodstuffs are exempt from this requirement. Plant-based substitutes for mineral oil should be free of genetic engineering and sourced from sustainable cultivation⁸.

Compliance verification

The applicant shall state the additives or base oils used in the product in Annex 3.

The applicant shall declare compliance with the requirement in Annex 1 to the contract and submit Annex 3 to the contract.

If plant-based substitutes have been used, the applicant shall state in Annex 3 which substitutes (which plant-based raw material) are added and where they are sourced.

3.13 Emissions of volatile organic compounds in copying, multifunctional and digital printing paper

Recycled paper designed for use with electrophotographic printers or copiers (office paper/digital printing paper) must be tested for its emission potential for the emission of volatile organic compounds (TVOC and TSVOC and DIPN).

The test must be carried out using thermal extraction (TE) on a batch of the packaged paper in accordance with the test guidelines in Appendix C to the Basic Award Criteria DE-UZ 14a. The

⁸ The following certification systems are considered suitable for renewable raw materials: RSP (Roundtable on Sustainable Palmoil), ISCC+ (International Sustainable & Carbon Certification), RSB (Roundtable on Sustainable Biomaterial), Roundtable Responsible Soy (RTRS) or a comparable certification system whose scope and requirement standards are equivalent to one of the named certification systems.

TE values determined during the test indicate the emission potential and must not exceed the following values:

- TVOC: 60 micrograms per gram of paper ($\mu\text{g/g}$)
- TSVOC: 180 micrograms per gram of paper ($\mu\text{g/g}$)
- DIPN: 20 micrograms per gram of paper ($\mu\text{g/g}$)

Compliance verification

The applicant shall submit a test report from an independent testing institution accredited according to DIN EN ISO/IEC 17025 or a testing institution recognised by the UBA both at the time of application and subsequently **every two years**.

Three values shall be determined and stated for one batch during each test.

3.14 Waste water

The following requirements apply with respect to waste water:

3.14.1 Direct discharge

In the production of recycled paper, the emission limits for the waste water load that are listed by the EU Commission in the "Best Available Techniques (BAT) Reference Document for the Production of Pulp, Paper and Board PP BREF" must be complied with by **direct dischargers**. These limits have been implemented in Germany in Appendix 28 of the German Waste Water Ordinance⁹. The values stated in Table 2 go above and beyond the statutory requirements in some cases.

Table 2: Maximum limits for the average annual emission parameters (waste water) in the paper production process

Parameter	Maximum limit for waste water emissions (average annual value as a load or concentration)
Volumetric flow rate of waste water ¹⁰	15 m ³ /Adt
COD	3 kg/Adt
BSB5	0.15 kg/Adt or 25 mg/l
AOX	< 0.01 kg/Adt
Total N (inorganic + organic N) (TN _b)	0.07 kg/Adt or 15 mg/l
Total P	0.008 kg/Adt or 1.2 mg/l

Adt = air dried ton

TN_b = total nitrogen bound. This parameter defines the total pollution of water by nitrogen compounds, which can appear in the form of e.g. ammonia, nitrites, nitrates or organic nitrogen compounds. A suitable method for determining this parameter is DIN EN ISO 20236.

⁹ BREF (Best Available Techniques Reference Document) full version and BAT conclusions in German and English at <https://www.umweltbundesamt.de/themen/wirtschaft-konsum/beste-ver-fuegbare-techniken/sevilla-prozess/bvt-merkblaetter-durchfuehrungsbeschluesse>

Appendix 28 Production of paper and cardboard of the German Waste Water Ordinance: https://www.gesetze-im-internet.de/abwv/anhang_28.html

¹⁰ Exemption for factories with special circumstances (e.g.: frequent changing of the type of paper, annual average of ≥ 5 per day): When calculating the specific volume of waste water per day, any days without production and days with a production volume < 50% of normal production should not be included in the calculation of the annual average.

3.14.2 Indirect discharge

Indirect dischargers must declare compliance with the emission limits for the parameters stated in Table 2 after treatment.

Compliance verification

*If the manufacturer of the recycled paper is a **direct discharger**, he/she shall declare compliance with the emission limits according to Table 2 in Annex 1 to the contract and state the measured emission values in Annex 4 to the contract.*

*If the manufacturer of the recycled paper is an **indirect discharger**, he/she shall declare compliance with the limit values in Annex 1 to the contract pursuant to DE-UZ 14a.*

The volumetric flow rate of waste water and the AOX value at the mixing location must be stated in Annex 2.

The manufacturer shall submit a confirmation from the operator of the waste water treatment plant that provided the emission values for the other parameters in the downstream waste water treatment plant as Annex 5 to the contract (mixed values for all dischargers). If the operator of the waste water treatment plant refuses to submit a declaration in accordance with Annex 5, the applicant can submit Annex 5 based on their own calculations. If requested by RAL gmbH, the calculations must be submitted.

Direct and indirect dischargers:

The correctness of the data on the waste water provided in Annexes 2, 4 and 5 to the contract shall be verified for both direct dischargers and indirect dischargers at the time of application and then once a year in accordance with Annex 6 to the Basic Award Criteria by:

- *a certification body for ISO 14001 accredited by the German Accreditation Body (DAkkS) or an EA/IAF-recognised international accreditation body for the scope of paper manufacturers (NACE 17.12) or*
- *an environmental verifier approved for this scope (NACE 17.12) by the German Society for the Accreditation and Registration of Environmental Verifiers (DAU) in accordance with the Environmental Audit Act or*
- *an accredited FSC/PEFC certification body or an accredited FSC/PEFC certifier with valid accreditation or*
- *an expert recognised by the UBA in the areas of fibrous raw materials, grades of recovered paper, the recycling of recovered paper and waste water treatment.*

If there is a closed water circuit (no waste water), Annex 4 (direct discharger of waste water) and Annex 5 (operator of the waste water treatment plant) are not required.

3.15 Emissions to air

Requirements are placed on the emissions to air in the production of recycled paper. The emissions to air include both the emissions from the plants generating the steam needed for the production of the paper and also the emissions from the plants used to prepare the recovered paper as well as the paper machine. Emissions during production of the fibrous raw materials (DIP) also have to be taken into account. The limits listed here in Table 3 are based on the EU

criteria for the award of the EU Ecolabel for graphic paper (Annex I) in the Official Journal of the European Union of 17 January 2019.

The applicant must determine the levels of the following pollutants in the emissions to air at the paper factory and should¹¹ comply with the limits stated in Table 3 (measurement specifications, see Appendix E "Measurement of emissions to air"):

Table 3: Maximum limits for the average annual emission parameters (emissions to air) in the paper production process (average annual value (AAV) in kg/air dry tonne)

	Sulphur (S) as AAV	NO_x as AAV
Preparation of the recovered paper	0.20 kg/t	0.25 kg/t
Production of recycled paper	0.30 kg/t	0.50 kg/t

Compliance verification

*The applicant shall declare compliance with the requirement according to Table 3 in Annex 1 to the contract and submit test reports based on the specifications in Appendix E and supplementary documentation to the contract. The supplementary documentation comprises calculations of the emission points verifying compliance with this requirement. The test reports must comply with the requirements in the measurement specifications in Appendix E "Measurement of emissions to air" and a new test report must be submitted **every 3 years**. The submitted test reports must be produced by a testing laboratory accredited according to DIN EN ISO/IEC 17025 (general requirements for the competence of testing and calibration laboratories) or with official accreditation as a GLP laboratory¹². In-house laboratories are recognised as being of an equivalent standard when they have been accredited by an independent body as an SMT laboratory (supervised manufacturer testing laboratory). It is recommended that an auditor confirms the measurements of the emissions to air, as is the case for the verifications in Paragraphs 3.1 and 3.14.*

The measurements of the sulphur emissions in the air should include oxidised and reduced sulphur. The sulphur emissions associated with the generation of heating energy from gas, oil, coal and other external fuels with known sulphur contents can be calculated instead of measured and must also be taken into account.

3.16 Waste

To promote the avoidance of waste and in the spirit of a circular economy, the waste generated during the production process must be minimised. The following waste materials are generated during the production of paper from recovered paper: Sludge from the treatment of the process water, fibrous sludge, residues from the treatment of the recovered paper and deinking sludge. The remaining waste materials should be recycled using the highest possible recycling standards.

¹¹ This is considered a "should" requirement and not a "must" requirement, i.e. the measurements must be carried out but it is not necessary to comply with the limits.

¹² <http://www.oecd.org/chemicalsafety/testing/oecdseriesonprinciplesofgoodlaboratorypracticeglpandcompliancemonitoring.htm>

In the production of recycled paper, the following waste material limits, including sludge from the treatment of the process water, given as an annual average figure as a dry mass, must not be exceeded¹³:

Paper factory with deinking: 250 kg/t of product

Paper factory without deinking: 135 kg/t of product.

These limits were derived from the data collected for the BAT reference document for the paper and pulp industry (PP BREF, Section 6.2.1., Table 6.1).

Compliance verification

The manufacturer of the recycled paper shall declare compliance with the stated values and state the amount of waste recorded in Annex 2.

3.17 Energy consumption and origin of the electricity

The paper industry is one of the six most energy-intensive industries in Germany. The Blue Angel also sets incentives in its Basic Award Criteria for companies to further reduce the consumption of heat and electricity at the production sites. For the production of recycled paper, the limits for the consumption of electricity and process heat in the following table must not be exceeded as an annual average:

If deinked recovered paper (DIP) is purchased as a semi-finished product, the energy consumption for additional drying and transport processes must also be taken into account.

The sum of the process heat and electrical power is permitted to exceed the limit by a total of 10%.

In addition, the applicant must state the energy mix used at the plant based on the type and origin of the energy. The consumed electricity should be sourced from renewable energies or residual materials. The applicant must also state when he or she will stop using coal as an energy source, if this has not already occurred.

Table 4: Maximum limits for the consumption of process heat and electricity in the production of paper (annual average value in kWh/t)

	Process heat (including power-to-heat) in kWh/t	Electrical energy (excluding power-to-heat) in kWh/t
Paper factory with deinking	1550	900
Paper factory without deinking	1550	600

These limits were derived from the data collected for the BAT reference document for the paper and pulp industry (PP BREF, Section 6.2.1, Table 6.7) and for PTS Munich: Report No. 2 Use of energy saving techniques, for the revision of the BAT reference document for the pulp and paper industry 2009, Table 14).

¹³ This does not include waste generated in other areas of the company, such as in administration, waste generated during structural changes or any coarse contaminants removed during treatment of the recovered paper (e.g. stones or steel elements).

Compliance verification

The manufacturer of the recycled paper shall declare compliance with the energy values in Table 4 in Annex 1 to the contract pursuant to DE-UZ 14a and state the measured energy consumption values and the measurement period used in Annex 2. In addition, the manufacturer shall state all of the energy sources used in the treatment of the recovered paper and also in the production of the paper, their proportions and origins (own generation/third party generation) and the proportion of green electricity in the electricity consumed (notifications from the energy supply company) and, if relevant, the proportion of self-generated green electricity. If available, the applicant shall submit a transformation plan for the reduction of CO₂ emissions.

3.18 Fitness for use

The fitness for use of the recycled paper must be guaranteed. If relevant DIN standards include technical requirements for individual products, these must be observed in the versions valid at the time of application. This applies to e.g.

- Continuous paper: DIN EN 12858
- Envelope paper: DIN 6733
- Paper and board for office purposes: DIN 19307
- Paper for copying purposes: DIN EN 12281

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 to the contract and state the corresponding DIN standard.

3.19 Durability of the paper

Office paper and paper used for the production of printed matter and press products must comply with the durability requirements according to ISO 20494. Alternatively, verification of the durability of the paper used for the production of printed matter and press products can be provided by complying with the requirements pursuant to LDK 24-85 in accordance with DIN 6738. A classification of the paper grades is provided in Appendix F.

Compliance verification

The applicant shall verify compliance with the requirements by submitting a test report from an independent testing institution. Refer to Appendix F¹⁴ for information on which reports are required for which paper.

¹⁴ It is possible to adapt the reports required for each paper on a case-by-case basis in consultation with RAL gGmbH.

3.20 Outlook

Any future revision of the environmental label will require verifications that renewable raw materials, which are used e.g. for the production of mineral oil-free additives, are obtained from responsible, GMO-free sources that are located in the local region as far as possible and have been tested by a suitable certification system.

The extent to which transformation plans to reduce CO₂ emissions are being implemented in industry will also be examined in the next revision.

4 Applicants and Parties Involved

Manufacturers (paper mills) of final products according to Paragraph 2 shall be eligible for application.

Parties involved in the award process are:

- RAL gGmbH to award the Blue Angel Environmental Label,
- the federal state being home to the applicant's production site,
- Umweltbundesamt (German Environmental Agency) which after the signing of the contract receives all data and documents submitted in applications for the Blue Angel in order to be able to further develop the Basic Award Criteria.

The compliance verifications submitted by the applicant will be handled with complete confidentiality.

5 Use of the Environmental Label

The use of the Environmental Label by the applicant is governed by a contract on the use of the Environmental Label concluded with RAL gGmbH.

Within the scope of such contract, the applicant undertakes to comply with the requirements under Paragraph 3 while using the Environmental Label.

Contracts on the Use of the Environmental Label are concluded to fix the terms for the certification of products under Paragraph 2. Such contracts shall run until December 31, 2030.

They shall be extended by periods of one year each, unless terminated in writing by March 31, 2030 or March 31 of the respective year of extension.

After the expiry of the contract, the Environmental Label may neither be used for labelling nor for advertising purposes. This regulation shall not affect products being still in the market.

The applicant (manufacturer) shall be entitled to apply to RAL gGmbH for an extension of the right to use the ecolabel on the product entitled to the label if it is to be marketed under another brand/trade name and/or other marketing organisations.

The Contract on the Use of the Environmental Label shall specify:

- Applicant (manufacturer)
- Brand/trade name, product description
- Distributor (label user), i.e. the above-mentioned marketing organisations.

Appendix A Quoted laws and standards, literature

The currently valid versions of the relevant regulations and standards at the time of application apply, unless reference is made to a particular version of the regulation or standard in the criteria.

Directive (EU) 2024/1785 of the European Parliament and of the Council of 24 April 2024 amending Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) and Council Directive 1999/31/EC on the landfill of waste

Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC

Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, as well as amending Regulation (EC) No. 1907/2006

Regulation (EU) No. 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products

German ordinance on the notification of biocidal products pursuant to the German Chemicals Act (Biocide Notification Ordinance – ChemBiozidMeldeV) of 14 June 2011

DIN EN 643:2014-11 Paper and board - European list of standard grades of paper and board for recycling

ISO 14001:2015-11 Environmental management systems - Requirements with guidance for use

DIN EN ISO/IEC 17025:2018-03 General requirements for the competence of testing and calibration laboratories.

DIN EN 14719:2005-10 Pulp, paper and board - Determination of the Diisopropyl-naphthalene (DIPN) content by solvent extraction

DIN EN 645:1994-01 Paper and board intended to come into contact with foodstuffs; preparation of a cold water extract

DIN EN 646:2019-02 Paper and board intended to come into contact with foodstuffs - Determination of colour fastness of dyed paper and board

DIN EN 648:2019-02 Paper and board intended to come into contact with foodstuffs - Determination of the fastness of fluorescent whitened paper and board

DIN CEN/TS 13130-13:2005-05 Materials and articles in contact with foodstuffs - Plastic substances subject to limitation - Part 13: Determination of 2,2-bis(4-hydroxyphenyl)propane (Bisphenol A) in food simulants

TRGS 905 Directory of carcinogenic, mutagenic or teratogenic substances.

ISO 2470 Paper, board and pulps – Measurement of diffuse blue reflectance factor

DIN ISO 11475:2019-04 Paper and board - Determination of CIE whiteness, D65/10° (outdoor daylight)

TRGS 614 Restrictions on use for azo dyes, which may release aromatic amines classified as carcinogens

DIN EN 12260:2003-12 Water quality - Determination of nitrogen – Determination of bound nitrogen (TNb), following oxidation to nitrogen oxides

DIN EN 12858:1999-06 Paper - Printing and business paper - Requirements for continuous stationery

DIN 6733-2010-04 – Paper - Envelope paper - Requirements, test methods

DIN 19307:1997-06 Paper and board - Office paper, uncoated - Requirements, test methods

DIN EN 12281:2003-01 Printing and business paper - Requirements for copy paper for dry toner imaging processes

ISO 20494:2017-12 Paper - Requirements for stability for general graphic applications

Appendix B Grades of graphic paper DE-UZ 14a

The grades of graphic paper listed below are a selection from the grade statistics published by the German Paper Industry Association (DIE PAPIERINDUSTRIE e.V.), version 2025, that are made out of recycled paper and can be awarded the Blue Angel.

As paper made out of secondary fibres/recovered paper is by definition wood-containing paper (irrespective of the grade of recovered paper), any wood-free grades of paper are not listed here because they cannot be awarded the Blue Angel. The composition and the proportions of pulp and cellulose fibre may vary greatly between the different grades of recycled paper.

Graphic papers: Press and catalogue papers

Newsprint paper

- 01 05 05 05 Standard newsprint paper
- 01 05 10 05 Improved newsprint paper

Non-coated magazine paper (rolls)

- 01 10 05 05 SC-A rotogravure paper
- 01 10 10 05 SC-B rotogravure paper
- 01 10 15 05 SC-A Offset
- 01 10 20 05 SC-B Offset

Graphic paper: Wood-containing printing and writing papers

Other wood-containing natural papers

- 01 80 05 05 wood-containing printing and writing paper, in rolls
- 01 80 10 05 wood-containing printing and writing paper, in sheets

Coated wood-containing web printing papers

- 01 85 05 06 wood-containing printing and writing paper, coated on both sides, in rolls, LWC for gravure printing
- 01 85 05 07 wood-containing printing and writing paper, coated on both sides, in rolls, LWC for offset printing
- 01 85 05 11 wood-containing printing and writing paper, coated on both sides, in rolls, HWC for gravure printing
- 01 85 05 12 wood-containing printing and writing paper, coated on both sides, in rolls, HWC for offset printing

Coated wood-containing paper

- 01 85 10 05 Wood-containing printing and writing papers, coated on both sides in consumer, standard and special coated formats

Graphic paper: 100% recycled printing and writing paper

Uncoated recycled paper

- 01 90 05 05 100% recycled uncoated printing and writing paper, in rolls
- 01 90 05 10 100% recycled uncoated printing and writing paper, in sheets

Coated recycled paper

- 01 90 10 05 100% recycled printing and writing paper, coated on both sides, in rolls
- 01 90 10 10 100% recycled printing and writing paper, coated on both sides, in sheets

Recycled envelope paper

- 01 90 15 05 Envelope 100% recycled

Paper and cardboard for special purposes

Cover, wrapping, endpaper, envelope, binding paper and cardboard

06 45 05 05 Binding paper
06 45 10 05 Envelope paper and cardboard

Bookbinding cardboard

06 45 15 05 Wrapping cardboard
06 45 15 10 Machine cardboard

Other machine-made paperboard and paperboard for special purposes

06 55 10 05 Other

Other speciality papers and paperboards

06 60 05 05 Diagram and register base paper
06 60 10 05 Stencil and pattern paper
06 60 15 05 Printing auxiliary paper and cardboard
06 60 20 05 Gardening, floral and decorative crepe paper
06 60 25 05 Playing card cardboard
06 60 30 05 Album cardboard
06 60 35 05 Other

Appendix C Method for testing the emission potential of volatile organic compounds from copying, multifunctional and digital printing paper

1 Definitions

Test specimen

A part of the paper sample that has been prepared for the thermal extraction (TE) process to determine the emission potential of the paper.

VOC (Volatile Organic Compounds)

Organic compounds emitted from the test specimen and detected by thermal extraction. In the context of this test method, these are the identified and unidentified organic compounds eluting between and including n-hexane and n-hexadecane.

TVOC (Total Volatile Organic Compounds)

The sum of all concentrations ($\mu\text{g/g}$) of identified and unidentified volatile organic compounds eluting between and including n-hexane and n-hexadecane – quantified as toluene equivalent according to formula 1.

SVOC (Semi-Volatile Organic Compounds)

Semi-volatile organic compounds (identified and unidentified) eluting after n-hexadecane and up to n-docosane.

TSVOC (Total Semi-Volatile Organic Compounds)

The sum of all concentrations ($\mu\text{g/g}$) of identified and unidentified volatile organic compounds eluting after n-hexadecane up to n-docosane – quantified as alkane equivalent according to formula 2.

2 Testing equipment

- Scalpel or scissors to cut out a strip of paper from the middle of a sheet of paper
- A pair of tweezers to move the strip of paper to the TE glass tube
- Thermal extractor (TE) from the company Gerstel
- Gas chromatograph with thermal desorption unit, coupled to a mass spectrometer equipped with an analyser unit

3 Test material

3.1 Selection

Samples produced no longer than 4 weeks ago must be selected for the test. The client ordering the test is responsible for supplying fresh test material. In general, a sample is supplied in its original packaging (500 pages). The manufacturing date and the batch number must be stated.

3.2 Producing the specimen

Take care not to contaminate the test specimen while preparing it. The test specimen must not be touched with the hands but only with a clean pair of tweezers.

A sheet of paper from the middle of the original packaging is removed. This sheet is placed on an inert surface. Three strips of about 3 mm x 60 mm are then cut out of this sheet using a scalpel. A strip of paper should weigh around 13 ± 1 mg. The weight must be determined accurate to 0.1 mg.

The paper strips are moved to the TE glass tube using a pair of tweezers. Three test specimens must be produced from the test materials for the test.

4 Analysis method and evaluation

4.1 Principle

The thermal extraction analysis method is based on the principle of dynamic headspace analysis. The test specimen is heated from 40°C to 180°C in a stream of nitrogen and this temperature is maintained for 12 minutes. The substances extracted during this process are collected on a Tenax tube doped with an internal standard (ISTD) and then subsequently analysed using thermal desorption. The substances are separated here using gas chromatography and then identified and quantified by the mass spectrometer. The emission potential of the paper is then derived and given as a TE value.

4.2 Example of a proven analysis method

Thermal extraction: Nitrogen flow rate 80 ml/min splitless, start temperature 40°C, end temperature 180 °C, maintain end temperature for 12 minutes.

Gerstel TDS-2 / KAS-4 thermal desorption/cold injection system with a glass wool liner (temperature programme 40-180°C with 40°C/min, maintain at 180°C for 5 minutes / cryofocussing at -100 °C, heat up at a rate of 12°C/sec to 300°C / He flow rate: 51 ml/min) Agilent GC 7890 / MSD 7973 (column DB 5 1; 30 m; 0.25 mm; 1 µm; temperature programme 40°C for 6 minutes, 4°C/min up to 80°C for 0 minute, 10°C/min up to 110°C for 0 minutes, 30°C/min up to 300°C, maintain for 5 minutes / MSD: scan 35 - 550; 2 scans/sec; transfer line: 300°C; NIST02 – data base).

This method can also be used to detect semi-volatile compounds, such as, for example, diisopropylnaphthalene and dibutyl phthalate [1].

When using a thermal extractor from another manufacturer, the equivalence to the Gerstel TE must be guaranteed. Verification of the equivalence of the thermal extractor must be provided to BAM as described in Paragraph 6.

4.3 Evaluation

For all substances in the VOC range, the TVOC cumulative value is determined as a toluene equivalent in µg/g. For all substances in the SVOC range, the TSVOC cumulative value is determined as an alkane equivalent in µg/g. For diisopropylnaphthalene, the cumulative value of all isomers is determined by means of an external calibration using 2,6-diisopropylnaphthalene or a mixture of diisopropylnaphthalene isomers in µg/g.

Desorption tubes packed with Tenax TA are spiked with calibration solutions of ISTD, toluene, alkane and 2,6-diisopropylnaphthalene in methanol or ethanol for the calibrations. For this purpose, a microlitre of the solution is sprayed onto the glass wool plug or glass frit in front of the Tenax TA and 1 litre of VOC-free air is sucked through the tube to remove the solvent. The calibration standard is analysed following the thermal desorption of the Tenax using gas chromatography coupled with mass spectrometry.

To determine the TVOC and TSVOC cumulative parameters, the total area of all substance peaks extracted from the test specimen is determined, also see [2]. The course of the base line must be known by analysing the empty glass tubes (blanks).

The TE value – which is a measure of the emission potential of the paper – is calculated in micrograms per gram using the following formula:

$$EP_{VOC} = R_T \times \frac{A_S}{m_P} \quad \text{Formula 1}$$

EP: Emission potential in $\mu\text{g/g}$ (here: TE value)

RT: Toluene response factor = toluene mass in nanograms (ng) / toluene peak area AS:
Peak areas (VOC)

mP: Initial weight of the sample in mg

$$EP_{SVOC} = R_A \times \frac{A_S}{m_P} \quad \text{Formula 2}$$

EP: Emission potential in $\mu\text{g/g}$ (here: TE value)

RA: Toluene response factor = toluene mass in nanograms (ng) / alkane peak area

AS: Peak areas SVOC

mP: Initial weight of the sample in mg

5 Test report

The test report must include all test data and the full test evaluation for the product.

The following information must be provided as a minimum: Manufacturer

Precise product description (incl. batch number and manufacturing date)

Date of receipt, test date/test period

Production of the test specimens (dimensions, weight)

Testing and analysis conditions

TE TVOC in $\mu\text{g/g}$ = cumulative value of extracted VOCs as TVOC in toluene equivalents

TE TVOC in $\mu\text{g/g}$ = cumulative value of extracted SVOCs as TSVOC in alkane equivalents

TE DIPN in $\mu\text{g/g}$ = cumulative value of extracted diisopropylnaphthalene isomers quantified as 2,6-diisopropylnaphthalene or diisopropylnaphthalene isomers. The cumulative value is the average value from the three measurements for a batch.

6 Testing institutions

The emission test required for applying for the Blue Angel ecolabel for recycled copying paper under DE-UZ 14a may only be performed by suitable, qualified laboratories accredited according to DIN EN ISO/IEC 17025 or recognised by the UBA.

Testing institutions are considered to be qualified if they possess the necessary apparatus and a quality management system (or are accredited for these tests) and have demonstrated their qualifications to perform such tests by successfully participating in relevant round robin tests/in-laboratory comparisons.

7 Literature

- [1]** Jann, O., Wilke, O.: Möglichkeiten und Grenzen bei der Bestimmung von SVOC-Emissionen aus Materialien und Produkten (Methods and limits for determining SVOC emissions from materials and products). VDI Colloquium "Neuere Entwicklungen bei der Messung und Beurteilung der Luftqualität" (Recent developments in measuring and evaluating air quality), 11.-13.06.2002, Schwäbisch Gmünd, VDI Report 1656 p:357 -367, VDI-Verlag, 2002
- [2]** DIN ISO 16000-6: Indoor air. Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA® sorbent, thermal desorption and gas chromatography using MS or MS-FID (ISO/DIS 16000-6:2012).

Appendix D Dyes and pigments that are not permitted

In accordance with Paragraph 3.10, the azo dyes listed below may not be added.

Azo dyes that may cleave to one of the following aromatic amines (according to Directive (EC) No. 1907/2007, Annex XVII, No. 43)

4-aminobiphenyl	(92-67-1)
benzidine	(92-87-5)
4-chloro-o-toluidine	(95-69-2)
2-naphtylamine	(91-59-8)
o-amino-azotoluene	(97-56-3)
2-Amino-4-nitrotoluene	(99-55-8)
p-chloroaniline	(106-47-8)
2,4-diaminoanisol	(615-05-4)
4,4'-diaminodiphenylmethane	(101-77-9)
3,3'-dichlorobenzidine	(91-94-1)
3,3'-dimethoxybenzidine	(119-90-4)
3,3'-dimethylbenzidine	(119-93-7)
3,3'-dimethyl-4,4'-diaminodiphenylmethane	(838-88-0),
p-cresidine	(120-71-8)
4,4'-methylene-bis-(2-chloro-aniline)	(101-14-4)
4,4'-Oxydianiline	(101-80-4)
4,4'-Thiodianiline	(139-65-1)
o-toluidine	(95-53-4)
2,4-diaminotoluene	(95-80-7)
2,4,5-trimethylaniline	(137-17-7)
4-aminoazobenzene	(60-09-3)
o-anisidine	(90-04-0)
2,4-xylidine	(95-68-1)
2,6-xylidine	(87-62-7)

Appendix E Measurement of emissions to air in the production of the paper

Unless the regulatory requirements at the paper production site prohibit such measurements, measurements of the emissions to air must be completed at least **every three years** in addition to any measurements stipulated in the regulatory requirements. Written verification must be provided if the production site is exempt from this requirement for annual measurements. (The first measurements submitted should be based on the last official measurements by the regulatory authorities and then new measurements should be submitted every three years). Emissions associated with the generation of electrical energy do not need to be taken into account. The sulphur emissions associated with the generation of heating energy from oil, coal and other external fuels with known S-contents can be measured or calculated and must be taken into account. In the case of new or renovated production plants, the measurements used to calculate the specific emission data must have been carried out on at least 45 consecutive days. The measurements must be representative for the relevant periods.

The measurement points should be the plants for generating steam (boiler house).

Accepted test methods include:

1. Gaseous sulphur compounds: NS 4859, SFS 5265, SS 028421, EPA 8, EPA 16A, EN 14791
2. NO_x: ISO 11564, ISO 10849, EN 14792, SS 028425, EPA 7E
3. An equivalent test method whose scope and requirement standards is equivalent to one of the named national and international standards. The equivalence of the certification system must be confirmed by an independent environmental verifier.
4. Alternatively, individual verifications in accordance with the criteria and verification requirements of one of the named test methods may be presented if an equivalent level of protection can be achieved. The equivalence of the individual verifications must be confirmed by an independent environmental verifier.
5. ISO 10396:2007

Appendix F Reports required for the durability of the paper

Publication paper and newsprint paper:		Office paper (and paper used for the production of printed matter and press products, if they have <u>not</u> been tested according to DIN 6738):	Other types of paper:	
Report according to DIN 6738		Report according to ISO 20494	No report	
01 05 05 05	Standard newsprint paper	01 90 05 05	100% recycled printing and writing paper, non-coated, in rolls	
01 05 10 05	Improved newsprint paper	01 90 05 10	100% recycled printing and writing paper, non-coated, in formats	06 45 05 05 cover papers
01 10 05 05	SC-A rotogravure paper	01 90 10 05	100% recycled printing and writing paper, coated on two sides, in rolls	06 45 10 05 Envelope paper and cardboard
01 10 10 05	SC-B rotogravure paper	01 90 10 10	100% recycled printing and writing paper, coated on two sides, in formats	06 45 15 05 winding cardboard
01 10 15 05	SC-A offset	01 90 15 05	Envelope 100 % recycled	06 45 15 10 machine cardboard
01 10 20 05	SC-B offset			
01 80 05 05	Wood-containing printing and writing paper, in rolls			06 55 10 05 Other
01 80 10 05	Wood-containing printing and writing paper, in formats			06 60 05 05 Diagram and register base paper
01 85 05 06	Wood-containing printing and writing paper, coated on two sides, in rolls, LWC for rotogravure printing			06 60 10 05 Template and pattern paper
01 85 05 07	Wood-containing printing and writing paper, coated on two sides, in rolls, LWC for offset			06 60 15 05 Auxiliary paper and paper-board for printing works
01 85 05 11	Wood-containing printing and writing paper, coated on two sides, in rolls, HWC for rotogravure printing			06 60 20 05 Garden, flower and decorative crêpe paper
01 85 05 12	Wood-containing printing and writing paper, coated on two sides, in rolls, HWC for offset			06 60 25 05 Playing card
01 85 10 05	Wood-containing printing and writing paper, coated on two sides, in formats, consumption, standard and special coating			06 60 30 05 Album card
				06 60 35 05 Other

Appendix G Grades of paper in group 3

Grades of paper in group 3, which may only account for a maximum of 35% of the total recovered paper used in the product:

- 3.05.01 white, wood-free, letters, unprinted
- 3.13.00 white, unprinted multiply board
- 3.14.00 white newsprint
- 3.15.00 white, mechanical pulp-based paper
- 3.15.01 white, coated, mechanical pulp-based paper
- 3.16.00 white, coated, wood-free paper
- 3.16.01 white, wood-free paper
- 3.18.00 white, wood-free shavings
- 3.18.01 white, wood-free, uncoated shavings
- 3.18.02 white envelope cuttings
- 3.19.00 unprinted, bleached sulphate board

Appendix H Version history

The following changes were made to ecolabel DE-UZ 14a “[Graphic paper and cardboard made from 100% recovered paper (recycled paper and cardboard), Edition January 2026, Version 1]” and required the issuing of an updated version in each case. The version at the time of application is valid. If the changes were required for the implementation of new legal regulations, they apply to all certified products.