

BLUE ANGEL

The German Ecolabel



Recycled paper

DE-UZ 14a

Basic Award Criteria

Edition January 2018

Version 2

The environmental label is underpinned by the following institutions:



The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit) is the owner of the label. It regularly provides information on the decisions taken by the Environmental Label Jury.



The Federal Environmental Agency (Umweltbundesamt) in the specialist department "Ecodesign, Eco-Labeling and Environmentally friendly Procurement" acts as the office of the Environmental Label Jury and develops the specialist criteria in the form of the Basic Award Criteria for the Blue Angel environmental labels.



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, the media, churches, young people and the German federal states.



RAL gGmbH is the awarding body for the environmental label. It organises the process for developing the relevant award criteria in independent, expert hearings – which involve all relevant interest groups.

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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, Nature Conservation and Nuclear Safety, the Federal Environmental Agency and considering the results of the expert hearings conducted by RAL gGmbH, the Environmental Label Jury has set up these Basic Criteria for the Award of the Environmental Label. RAL gGmbH has been tasked with awarding the Environmental Label.

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 Environmental Label 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 for the production of graphic paper contributes to the preservation of resources, especially ecosystems such as forests, and to a reduction in waste, especially when using recovered paper from household and commercial collections.

The environmental pollution directly associated with the cellulose and pulp production is avoided. 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 the next revision of the Basic Award Criteria, the intention is to introduce an obligatory requirement for the restriction on the degree of whiteness. The “should” criterion about the degree of whiteness (Paragraph 3.6) is designed to reference the intended future development of the Basic Award Criteria.

1.3 Objectives of the environmental label

The criteria 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 following benefits for the environment and health are stated in the explanatory box:



2 Scope

These Basic Award Criteria apply to recycled paper (2.a) and finished products (2.b) made from recovered paper. These are:

- a) Recycled paper for the production of graphic paper according to the grade statistics for "Graphic Paper" from the German Pulp and Paper Association (Verband Deutscher Papierfabriken e.V.) (Appendix A to the Basic Criteria DE-UZ 14a),
- b) Masking paper (e.g. for use in painting and coating work)¹.

Printed matter comes under the scope of DE-UZ 195. Finished products made from recycled paper for office and school supplies, as well as colouring books and gift wrapping paper, come under the scope of DE-UZ 14b.

3 Requirements

3.1 Use of fibrous raw materials

The paper fibres in the products according to Paragraph 2 must have been sourced 100% from recovered paper.

Recovered paper is the umbrella term for paper and cardboard that is collected after use or processing. Refer to DIN EN 643² for specifications about the different types of recovered paper.

3.2 Grades of recovered paper

For the production of the products according to Paragraph 2, a maximum of 35% of the recovered paper – based on the total fibre content – may be sourced from the better grades (group 3 and individual grades 2.14 and 4.07) and at least 65% of the recovered paper – based on the total fibre content – must be sourced from the ordinary, medium and kraft paper grades and special grades (groups 1, 2, 4 and 5 – except for individual grades 2.05, 2.06, 2.14, 4.07 and 5.09).

Compliance verification

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 1, Overview A to the contract pursuant to DE-UZ 14a and declare compliance with the requirements in Paragraphs 3.1 to 3.3. The applicant shall also state the percentages of the individual grades 2.05, 2.06 and 5.09.

The correctness of the data provided in Annex 1a to the contract will be verified 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) 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 certifier or*

¹ It is possible for other products to be approved upon application and after consultation between RAL and the UBA.

² The valid version in each case.

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

3.3 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, 2.06 and 5.09 "carbonless copy paper".

Alternatively, grades of recovered paper containing DIPN (2.05, 2.06 and 5.09) 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

If the grades of recovered paper 2.05, 2.06 and 5.09 have been used, the applicant shall state the maximum DIPN content in the finished product in Annex 1a to the contract and submit a test report from an independent testing institution accredited according to ISO 17025 or a selected testing institution recognised by the UBA e.g. the department of paper technology at TU Darmstadt.

*The DIPN content shall be determined **once a year in accordance with DIN EN 14719** (DIPN in acetone extract).*

The applicant shall submit a product sample.

3.4 Bisphenol A

The content of bisphenol A must be determined in a cold water extract prepared according to EN 645 using HPLC and UV or fluorescence detection based on CEN/TS 13130-13 "Materials and articles in contact with foodstuffs - Plastics substances subject to limitation - Part 13: Determination of 2,2-bis(4-hydroxyphenyl)propane (Bisphenol A) in food simulants".

Compliance verification

The applicant shall submit a test report for statistical purposes once a year from an independent testing institution accredited according to ISO 1702 or a selected testing institution recognised by the UBA e.g. the department of paper technology at TU Darmstadt.

3.5 Process auxiliaries

It is only permitted to use those process auxiliaries listed in the XXXVI recommendation from the BfR³ (positive list). The maximum quantities and concentrations stated in this list must be observed. No process auxiliaries containing glyoxal may be used to manufacture the products according to Paragraph 2.

3.6 Optical brighteners

The products should not exceed a maximum grade of whiteness of 100% (including the UV proportion) according to DIN ISO 2470 and a maximum CIE whiteness of 135 according to ISO standard 11475.

³ http://bfr.zadi.de/SEARCH/BASIS/kse1/all/blob_dt/DDD/360DEUTSCH.pdf

It is not permitted to add any optical brighteners.

Compliance verification

The applicant shall declare compliance with the requirements 3.5 and 3.6 in Annex 1 to the contract and state the grade of whiteness according to DIN ISO 2470 and the CIE whiteness according to ISO standard 11475.

3.7 Azo dyes and pigments in colourants

No azo dyes or pigments that can cleave to any of the amines named in 2002/61/EC or TRGS 614⁴ may be added to the product as colourants.

3.8 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 requirements 3.7 and 3.8 by submitting a declaration from the colourant supplier in Annex 2 to the contract pursuant to DE-UZ 14a.

3.9 Added substances and mixtures

It is not permitted to add any colourants, surface finishing agents, auxiliaries and coating materials

- which according to the criteria of Regulation (EC) No 1272/2008⁵ (or Directive 67/548/EEC) are assigned the following H Phrases (R Phrases) named in the following table or which meet the criteria for such classification⁶.
- or which are classified as carcinogenic, mutagenic or reprotoxic substances in the currently valid version of TRGS 905⁷.

EC Regulation 1272/2008 (GHS Regulation)	Wording
H340	May cause genetic defects.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H350i	May cause cancer if inhaled.
H351	Suspected of causing cancer.
H360F	May damage fertility.

⁴ <https://www.baua.de/DE/Angebote/Rechtstexte-und-Technische-Regeln/Regelwerk/TRGS/TRGS-614.html>

⁵ Regulation (EC) No. 1272/2008 on classification, labelling and packaging of substances and mixtures (GHS Regulation).

⁶ The harmonized classifications and labellings of dangerous substances can be found in Part 3 of Annex VI to Regulation (EC) No 1272/2008 (GHS Regulation). The table lists classifications and labellings according to the new system using H Phrases; the GHS Regulation can be found, for example, at: <http://www.reach-info.de/ghs>

⁷ http://www.baua.de/nn_16812/de/Themen-von_-A-Z/Gefahrstoffe/TRGS/pdf/TRGS-905.pdf

EC Regulation 1272/2008 (GHS Regulation)	Wording
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 verify compliance with the requirement by submitting declarations from the suppliers of the chemical additives in accordance with Annex 3 to the contract pursuant to DE-UZ 14a. The declarations must be signed by the head of product development at the relevant company or a comparable technical department. If requested to do so by RAL gGmbH, the applicant shall submit the relevant safety data sheets.

3.10 Processing of the recovered paper

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 requirements in Annex 1 to the contract and also state the bleaching chemicals and complexing agents used in Overview B.

3.11 Biocides

In the production of the recycled paper, only those substances that have been approved in accordance with the Biocidal Products Regulation (EU) 528/2012 (EU list of approved substances; formerly included in Annex I of the Biocidal Products Directive 98/09 EC) or that have been notified for the relevant biocidal product type and are still being tested as part of the EU review programme for existing active substances may be used as biocides.

It is only permitted to use those biocidal products that have been approved for their respective type of use. Products containing existing active substances that are still part of the EU review programme may be used without approval until a decision has been reached.

In addition, it is not permitted for the products to contain any substances that have been considered as candidates for substitution according to Article 10 of the EU Biocidal Products Regulation 528/2012.

Until the approval requirements for the respective biocidal products come into force, only those substances that are also listed in the XXXVI recommendation from the BfR are permitted.

The following may not be used:

- **Tetramethylthiuram disulfide** (CAS no. 137-26-8) and
- **Nano silver** (CAS no. 7440-22-4).

Compliance verification

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

3.12 Mineral oil-based additives

No mineral oil-based additives that contain aromatic hydrocarbons (with ≥ 10 carbon atoms) as a component should 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. Plant-based substitutes for mineral oil should be free of genetic engineering and sourced from sustainable cultivation.

Compliance verification

The applicant shall provide a list of the additives used.

3.13 Emissions of volatile organic compounds in copying paper

Recycled paper designed for use with electrophotographic printers or copiers ("copying 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 B to the Basic Award Criteria DE-UZ 14a. The 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: 200 micrograms per gram of paper
- DIPN: 20 micrograms per gram of paper

Compliance verification

*The applicant shall submit a test report from a testing institution that has provided evidence of its qualifications for carrying out the tests to BAM (Federal Institute for Materials Research and Testing, Specialist Group "Environmentally-relevant material and product properties/emissions from materials) 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 Products for children

Products according to Paragraph 2 that are primarily produced for children must also comply with the requirements in DIN EN 71-3 "Safety of toys".

Compliance verification

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

3.15 Mineral oil-based colourants

No mineral oil-based colourants that contain aromatic hydrocarbons (with ≥ 10 carbon atoms) as a component may be added to colour (full-penetration dyes, etc.) the recycled paper according to Paragraph 2.

In the case of aliphatic hydrocarbons, only those substances with a chain length of C₁₀ to C₂₀ may be used.

Plant-based substitutes for mineral oil should be free of genetic engineering and sourced from sustainable cultivation.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1b to the contract and submit Annex 4 to the contract.

3.16 Fitness for use

The fitness for use of the products according to Paragraph 2 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: 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.

3.17 Resistance to ageing

Paper for copying purposes and paper used for the production of printed matter and press products must also additionally observe the service life requirements for class LDK 24-85 according to DIN 6738.

Compliance verification

The applicant shall verify compliance with the requirements by submitting a test report from an independent testing institution.

4 Applicants and parties involved

Manufacturers of 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, (Federal Environmental Agency) which after the signing of the contract receives all data and documents submitted in application for the Blue Angel in order to be able to further develop the Basic Award Criteria.

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 31/12/2021.

They shall be extended by periods of one year each, unless terminated in writing by 31/03/2021 or 31 March 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 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 organizations.

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

- Applicant (manufacturer)
- Brand/trade name, product description
- Distributor (Label User), i.e. the marketing organization.

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Appendix A Grade statistics for graphic paper

German Pulp and Paper Association (Verband Deutscher Papierfabriken e.V.), version 2009

Press and catalogue paper

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

Wood-free printing and writing paper

Wood-free printing and writing paper, machine glazed and super-calendered

- 01 60 05 05 Wood-free printing and writing paper, machine glazed and super-calendered, non-coated, in rolls
- 01 60 05 10 Wood-free printing and writing paper, machine glazed and super-calendered, non-coated, in formats
- 01 60 05 15 Wood-free printing and writing paper, machine glazed and super-calendered, non-coated, in small formats

Other non-coated, wood-free graphic paper

- 01 60 10 05 High-quality writing paper, watermark paper
- 01 60 10 10 Digital printing paper, inkjet paper
- 01 60 15 05 Decorative, printing and index card cardboard
- 01 60 20 05 Drawing paper, in rolls and formats, opaque and transparent
- 01 60 25 05 Thin print paper
- 01 60 30 05 Coating base paper, for SD paper, thermo paper, special office paper
- 01 60 35 05 Security and document paper
- 01 60 35 10 Other wood-free office and administration paper

Coated, wood-free graphic paper

- 01 70 05 05 Wood-free printing and writing paper, coated on two sides, in rolls, all weights
- 01 70 10 05 Wood-free printing and writing paper, coated on two sides, in formats, standard, special coating and art printing

Wood-containing printing and writing paper

Other wood-containing, non-coated paper

- 01 80 05 05 Wood-containing printing and writing paper, in rolls
- 01 80 10 05 Wood-containing printing and writing paper, in formats

Coated, wood-containing roll printing paper

- 01 85 05 06 Wood-containing printing and writing paper, coated on two sides, in rolls, LWC for rotogravure printing
- 01 85 05 07 Wood-containing printing and writing paper, coated on two sides, in rolls, LWC for offset
- 01 85 05 11 Wood-containing printing and writing paper, coated on two sides, in rolls, HWC for rotogravure printing
- 01 85 05 12 Wood-containing printing and writing paper, coated on two sides, in rolls, HWC for offset

Coated, wood-containing format paper

- 01 85 10 05 Wood-containing printing and writing paper, coated on two sides, in formats, consumption, standard and special coating

100% recycled printed and writing paper
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Non-coated recycled paper

01 90 05 05 100% recycled printing and writing paper, non-coated, in rolls
01 90 05 10 100% recycled printing and writing paper, non-coated, in formats

Coated recycled paper

01 90 10 05 100% recycled printing and writing paper, coated on two sides, in rolls
01 90 10 10 100% recycled printing and writing paper, coated on two sides, in formats

Recycled envelope paper

01 90 15 05 Envelope 100 % recycled

Appendix B Method for testing the emission potential of volatile organic compounds from copying paper for the award of the Blue Angel environmental label pursuant to DE-UZ 14a

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. Samples from three different batches per type of paper must be supplied for testing.

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.

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:

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 min, 30°C/min up to 300°C, maintain for 5 min / 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:

$$EP_{VOC} = R_T \times \frac{A_S}{m_P}$$

Formula 1

EP: Emission potential in µg/g (here: TE value)

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

m_P: Initial weight of the sample in mg

$$EP_{SVOC} = R_A \times \frac{A_S}{m_P}$$

Formula 2

EP: Emission potential in µg/g (here: TE value)

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

A_S: Peak areas SVOC

m_P: 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 µg/g = cumulative value of extracted VOCs as TVOC in toluene equivalents
- TE TVOC in µg/g = cumulative value of extracted SVOCs as TSVOC in alkane equivalents
- TE DIPN in µg/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 of the three batches.
- Signature of the tester.

6 Testing institutions

The emission test required for applying for the Blue Angel environmental label for recycled copying paper under DE-UZ 14 may only be performed by qualified laboratories.

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. Verification of compliance with these requirements must be submitted to the Bundesanstalt für Materialforschung und Prüfung (Federal Institution for Material Research and Testing), Division 4.2 "Materials and Air Pollutants".

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).