BLUE ANGEL

The Environmental Label

Low-emission and low-pollutant paints and varnishes

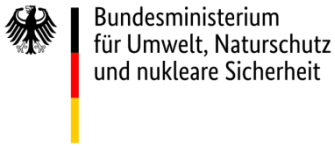
DE-UZ 12a

Basic Award Criteria

Edition January 2019

Version 6

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-Labelling 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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Version 3 (05/2019): Editorial changes in footnote 7
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Version 5 (11/2020): Changes in 3.1.1, Appendix B (footnotes) and Appendix D (addition)
Version 6 (05/2022): Changes in Appendix D (footnote 41)

Table of contents

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 water-based "low-emission and low-pollutant paints and varnishes" does not only help reduce the release of organic solvents into the atmosphere but also the pollution of indoor air.
In order to further reduce the solvents in certain fields of application, water-based coating systems have been subdivided into three groups with different maximum organic solvent contents (two to ten percent by mass). Water-based coating systems require the addition of further auxiliaries, such as e.g. preservatives and surfactants. Corresponding requirements are thus also part of the Basic Award Criteria for "low-emission and low-pollutant paints and varnishes".
In 1980, the environmental label for "low-pollutant paints and varnishes" was the first ecolabel for a complex compound product. The first revision of the Basic Award Criteria in 1986 lowered the maximum permissible content of organic solvents in "low-pollutant paints and varnishes" to ten percent by mass. This environmental label has helped increase the share accounted for by "low-pollutant paints and varnishes" from 1 to 30 % in recent years. If a differentiation is made between commercial and private users, the share accounted for by "low-pollutant paints and varnishes" amongst DIY users is as high as 70%.
In 2008, a comprehensive revision of the Basic Award Criteria placed a stronger focus on health aspects. The new environmental label for "low-emission and low-pollutant paints and varnishes" aims to keep the pollutant content of the paints and varnishes as low as possible and, from a health and environmental point of view, thus ensure the lowest possible emissions from these products. This is based on the results of a research project into the relationship between the solvent content or the content of **v**olatile **o**rganic **c**ompounds (VOC) and the solvent emissions from paints and varnishes during drying[1]. In addition to the requirements placed on the raw materials and primary products used in the manufacturing process and on the disposal of the products, the requirements for the environmental label thus place a greater focus on the period of use.

[1] "Machbarkeitsstudien für neue Umweltzeichen – Grundlagenarbeiten zur Überarbeitung des Umweltzeichens für Lacke" (Feasibility studies for new environmental labels – preliminary work for the revision of the environmental label for paints and varnishes); Project funding reference number: 205 95 357/02; http://www.umweltbundesamt.de/publikationen/grundlagenarbeiten-zur-ueberarbeitung-des

RAL gGmbH carries out a VOC formulation test on the basis of the formulations submitted by the applicants. Representative emissions tests are performed on paints and varnishes holding the Blue Angel environmental label during each term of the Basic Award Criteria (scheduled to take place every four years) to find out whether this evaluation is still appropriate or whether the Basic Award Criteria need not be revised. The tests are carried out by a testing institution accredited for the measurement; the costs of the test are borne by the applicant.[2] [3]
As an alternative to the formulation test, this edition of the Basic Award Criteria has introduced an evaluation of the indoor air quality based on an emissions test. In order to assess the VOC emissions from paints and varnishes, the Basic Award Criteria have been based on the evaluation procedure developed by the Committee for Health-Related Evaluation of Building Products (AgBB) ("Requirements for indoor air quality in buildings: Health-related Evaluation Procedure for Volatile Organic Compounds Emissions (VVOC, VOC and SVOC) from Building Products" - AgBB procedure).

1.3 Objectives of the environmental label

The environmental label for "low-emission and low-pollutant paints and varnishes" may be awarded to products that – above and beyond the legal regulations:

- are manufactured using substances and materials that place less burden on the environment,
- are low-emission during processing,
- do not contain any pollutants that may have a detrimental impact during the recycling and disposal of painted/varnished items.

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

1.4 Terms and Abbreviations

BIT Benzisothiazolinone

CIT Chlormethylisothiazolinone

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. This does not apply to residual monomers that have been reduced to a minimum.

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[2] This does not apply to contracts on the use of the environmental label that are based on the emissions test.
[3] According to Paragraph 3.1.2. Volatile organic compounds (VOC) according to DE-UZ 12a

MIT Methylisothiazolinone

Product-type (PT) 6 Preservatives for products during storage:
Products used for the preservation of manufactured products, other than foodstuffs, feeding stuffs, cosmetics or medicinal products or medical devices by the control of microbial deterioration to ensure their shelf life. Products used as preservatives for the storage or use of rodenticide, insecticide or other baits.

Product-type (PT) 7 Film preservatives:
Products used for the preservation of films or coatings by the control of microbial deterioration or algal growth in order to protect the initial properties of the surface of materials or objects such as paints, plastics, sealants, wall adhesives, binders, papers, art works.

Product-type (PT) 10 Construction material preservatives:
Products used for the preservation of masonry, composite materials, or other construction materials other than wood by the control of microbiological and algal attack.

SVOC Semi Volatile Organic Compound, retention range >C16-C22

TiO_2 Titanium dioxide

TVOCspez Sum of all individual substances found ≥ 5 µg/m³ in the retention range C6 – C16 (total volatile organic compounds)

TSVOC Sum of all individual substances ≥ 5 µg/m³ in the retention range > C16 – C22.

VOC Volatile Organic Compounds, retention range C6-C16

VVOC Very Volatile Organic Compounds, retention range <C6

WHC Water hazard class

2 Scope

These Basic Award Criteria apply to paints and varnishes and comparable coating substances with paint/varnishing properties for interior and exterior use as architectural paints[4] and as industrial coatings[5]. Criteria for determining the paint/varnishing properties include the labelling[6], formulation and processing of the products. This includes:

- Primers that are not designed for mineral subsurfaces and which do not fall under the scope of DE-UZ 102 "Low-Emission Interior Wall Paints" and are not intended for corresponding

[4] See the Decopaint Directive, Section 2, Definitions (1) in Appendix A.
[5] The Environmental Label Jury may include other coating materials within the scope of validity of the Basic Award Criteria on the recommendation of the Federal Environmental Agency (Umweltbundesamt)
[6] Information on the product category based on Annexes I and II of the Decopaint Directive (1) in Appendix A.

products according to DE-UZ 113 "Low-Emission Floor-Covering Adhesives and Other Covering Materials".
- Undercoats,
- Clear and coloured paints and varnishes,
- Thin and high-build glazes,
- Water-thinnable paints and varnishes,
- Ground sealing products,
- Radiator paints and varnishes,
- Window and door paints and varnishes,
- Exterior paints and varnishes,
- Furniture paints and varnishes.
- Wood oil[7]

The following are excluded:
- Wood preservatives
- Varnishes and glazes with film protection
- Pickling solutions,
- Fillers[8],
- Waxes,
- Wall paints[9],
- Printing inks,
- Other coating materials without paint/varnishing properties.

3 Requirements

The environmental label illustrated on the first page may be used for labelling products named under Paragraph 2 if they fulfil the following requirements according to 3.1 VOC formulation test and 3.4 to 3.7 **or** according to 3.2 Emissions test and 3.4 to 3.7 (3.3 is optional). The general substance requirements in Paragraph 3.1 differ from those in Paragraph 3.2. Paragraph 3.2 requires a comprehensive evaluation of the emissions based on an emissions test, the general substance requirements are based on the requirements in other Basic Award Criteria with an emissions test. The aim is to produce a comparable set of requirements in the emissions test and the formulation test, which is why the general substance requirements have been amended in each case.

3.1 Formulation test (alternative to 3.2)

3.1.1 General substance requirements

Observance of European and German chemical law, as well as standard rules for the sector, is a prerequisite (REACH Regulation Annex XVII, POP Regulation Annex I, the German Ordinance on Banned Chemicals (ChemVerbotsV), the Decopaint Directive and the German Directive for solvent-based paints and varnishes (ChemVOCFarbV), the German Ordinance on Hazardous

[7] For the care and protection of the wood (e.g. pearling effect) without any cleaning action
[8] Award of the Blue Angel possible in accordance with DE-UZ 113 "Low-Emission Floor-Covering Adhesives and Other Covering Materials".
[9] Award of the Blue Angel possible in accordance with DE-UZ 102 "Low-Emission Interior Wall Paints".

Substances (GefStoffV), VdL Guideline 01, Directive 92/112/EEC, the 25th German Federal Immission Protection Ordinance (BImSchV), the Biocidal Products Regulation (BPV) etc.).[10]
No substances and mixtures that meet the following criteria may be added to the ready-to-use product and the primary products[11]:

a) Substances of very high concern (SVHC)
Substances which are identified as particularly alarming under the European Chemicals Regulation REACH (1906/2006/EC) and which have been incorporated into the list drawn up in accordance with Article 59, Paragraph 1 of the REACH Regulation (so-called "list of candidates"). The version of the list of candidates at the time of application is valid[12].

b) Toxic substances and mixtures
Toxic substances and mixtures that according to the EC Regulation No. 1272/2008 have been classified in the following hazard categories or which meet the criteria for such classification[13]:
- acutely toxic (poisonous) in categories Acute Tox. 1, Acute Tox. 2 or Acute Tox. 3
- toxic to specific target organs in categories STOT SE 1, STOT SE 2, STOT RE 1 or STOT RE 2

c) Carcinogenic, mutagenic, reprotoxic and teratogenic substances and mixtures
Carcinogenic, mutagenic, reprotoxic and teratogenic substances and mixtures that according to the EC Regulation No. 1272/2008 have been classified in the following hazard categories or which meet the criteria for such classification[12]:
- carcinogenic in categories Carc. 1A, Carc. 1B or Carc. 2[14]
- germ cell mutagenic in categories Muta. 1A, Muta. 1B or Muta. 2
- reprotoxic (teratogenic) in categories Repr. 1A, Repr. 1B or Repr. 2.

d) TRGS 905[15]
Substances that are classified in TRGS 905 as:
- carcinogenic (K1A, K1B, K2),
- mutagenic M1A, M1B, M2),
- reprotoxic (R_F1A, R_F1B, R_F2, R_D1A, R_D1B, R_D2).

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[10] If substance restrictions from other regulations also apply to the specific product, these also need to be observed.
[11] as constituent components for the primary products
[12] The list of candidates in its relevant version can be found at: REACH list of candidates.
[13] The harmonized classifications and labellings of dangerous substances can be found in Annex VI, Part 3 of the CLP Regulation. Furthermore, a comprehensive classification and labelling inventory, which also includes all of the self-classifications of hazardous substances made by manufacturers, has been made available to the public on the website of the European Chemicals Agency: ECHA classification and labelling inventory and other substance lists, such as SIN; ETUC, EDCs, etc.
[14] Except titanium dioxide, if the product is sold as a liquid mixture because its classification only applies to inhalable powders.
[15] TRGS 905, directory of carcinogenic, mutagenic or teratogenic substances from the Committee for Hazardous Substances (AGS), as amended: TRGS 905. The TRGS lists such CMR substances that have not received harmonised classifications up to now or where the AGS has come to a different classification. The CMR complete list published by the Institute for Occupational Safety and Health of the German Social Accident Insurance can also be used as a reference tool: CMR complete list.

e) MAK list
Substances that are classified in the MAK list[16] as:
- carcinogenic (category 1, category 2, category 3A or 3B),
- germ cell mutagenic (category 1, category 2, category 3A or 3B),
- teratogenic in the "Pregnancy" column in group A or B.

In-can preservatives on the list of approved in-can preservatives are exempt from this rule.

The ready-to-use mixture must not fulfil the following criteria:

f) Substances and mixtures with other hazardous properties
Substances and mixtures with other hazardous properties in concentrations that result in classification and labelling of the end product with a CLP hazard pictogram for health and environmental hazards may not be added to the paint or varnish.

g) Environmentally hazardous substances and mixtures
Low-emission and low-pollutant paints and varnishes must not be labelled with H400. In addition, substances and mixtures in the paint/varnish that are classified as environmentally hazardous (H410, H411, H412) are restricted based on the following calculation formula:

$$M * 100 * H410 + 10 * H411 + H412 \leq 9.0\ \%$$

Whereby the following is valid:
H410 represents the concentration of those substances classified as H410 in %
H411 represents the concentration of those substances classified as H411 in %
H412 represents the concentration of those substances classified as H412 in %
M is the multiplication factor for H410 and is determined based on the toxicity value LC50, EC50 or the NOEC value and the biodegradability according to the classification rules in the CLP Regulation (2nd ATP of the CLP Regulation, Table 4.1.3).

In-can preservatives on the list of approved in-can preservatives are exempt from this rule.

h) Irritant substances and mixtures
Low-emission and low-pollutant paints and varnishes may not contain any irritant substances and mixtures in such quantities that would result in one of the following classifications according to the CLP Regulation[10]:
- A skin, eye and airway irritant assigned
  - the symbol GHS05 "Corrosive", the signal word "Danger" and the H-phrase H318.
  - the symbol GHS07 "thick exclamation mark", the signal word "Attention" and the H-phrases H315, H319 or H335 or H317.

i) Health hazards and corrosive substances and mixtures

[16] List of MAK and BAT values, Senate Commission for the investigation of health hazards of chemical compounds in the work area, as amended, (6) in Appendix A.

Low-emission and low-pollutant paints and varnishes may only contain other hazardous substances and mixtures up to a maximum concentration of 40 % by mass (< 40 % by mass), which result in one of the following classifications according to the CLP Regulation[10]:

- Health hazards assigned
  - the symbol GHS07 "thick exclamation mark", the signal word "Attention" and the H-phrases H302, H312 or H332,
  - the symbol GHS08 "health hazard (torso)", the signal words "Danger" or "Attention" and the H-phrases H304 or H334.
- Corrosive substances and mixtures assigned the symbol GHS05 "Corrosive", the signal word "Danger" and the H-phrase H314.

The hazard statements (H Phrases) that correspond to the hazard categories can be found in Appendix B.

Exceptions:

- Production-related/raw material-related impurities in substances according to section b) and sections c), d) and e) in categories 1A and 1B may not exceed 0.01 % by mass. Substances according to sections c), d) and e) in category 2 may not exceed 0.1 % by mass in the individual primary products.
- As an exception to sections a) to I), substances with a lower impact may be contained in the paint or varnish in exceptional cases if it can be verified that these substances are not released during the proper use of the products and do not emit from the completely dried out coating film[17].
- Paragraphs 3.4.1 and 3.1.4 are valid for preservatives and formaldehyde.
- Irrespective of the above, carcinogenic, mutagenic and reprotoxic substances and mixtures should be minimised in accordance with the current state of technology.

Compliance verification

The applicant shall submit the formulation for the paint/varnish and declare compliance with the requirements in Annex 1. In addition, the applicant shall state the brand names and suppliers of all individual primary products for the paint/varnish, as well as their proportions and function in the manufactured paint/varnish (Annex 2). The applicant specifies the non-volatile-matter content[18] in Annex 2. If the product consists of several basic formulations, Annex 2 shall be completed separately for each formulation. If the application includes multiple colour tones for the product, the formulations for each colour tone shall be submitted as Annex 2 or the formulations for the colour tones included in the application shall be enclosed as Annex 2a. Annex 2b must be enclosed for tinting systems. To comply with the requirements, declarations from the manufacturer or distributor of the primary products (Annex 3), as well as the corresponding safety data sheets[19] for the primary products used (Annex 5) and the product (paint/varnish) (Annex 6), must be submitted.

[17] Exceptional cases are evaluated by the Federal Environmental Agency (Umweltbundesamt).
[18] According ISO 3251
[19] In accordance with Annex II of Directive (EC) No. 1907/2006

3.1.2 Volatile organic compounds (VOC)

The following requirement applies to the maximum allowable content of volatile organic compounds in low-pollutant paints and varnishes as a function of the non-volatile-matter content:

	non-volatile-matter content	**Maximum VOC content**
Group I	< 20 %	2 percent by mass
Group II	≥ 20 % to < 30 %	8 percent by mass
Group III	≥ 30 %	10 percent by mass

The low-emission and low-pollutant paints and varnishes must not exceed the VOC and SVOC content limits[20] listed in the respective table (see Table 1 to Table 3). Compounds with a higher boiling point are required to meet more stringent requirements in order to avoid, above all, low-volatile substances that can emit over a long period of time. In addition, the individual compounds are toxicologically evaluated using the LCI values[21] based on the evaluation procedure developed by the Committee for Health-Related Evaluation of Building Products (AgBB).

The exclusion criterion for VOC (Groups A-D) is 100 ppm for all levels.

Table 1: Maximum contents in the formulation of Group I products

	Maximum contents in the formulation [% by mass]	
	VOC and SVOC	**of which VOC with LCI < 100 µg/m³ and substances without LCI**
VOC (boiling point up to 200°C)	2.0	1.0
VOC (boiling point above 200°C)	1.0	0.5
SVOC (measured)	0.1	-
Total of maximum contents	**2.0**	**1.0**

Table 2: Maximum contents in the formulation of Group II products

	Maximum contents in the formulation [% by mass]	
	VOC and SVOC	**of which VOC with LCI < 100 µg/m³ and substances without LCI**
VOC (boiling point up to 200°C)	8.0	1.0
VOC (boiling point above 200°C)	3.0	0.5
SVOC (measured)	0.2	-

[20] Definition of VOC and SVOC according to DIN ISO 16000-6: VOC in retention range C6 – C16 and SVOC > C16 – C22.

[21] LCI = Lowest Concentration of Interest; see "Health-related Evaluation Procedure for Volatile Organic Compounds Emissions (VOC) from Building Products", (8) in Appendix A.

Total of maximum contents	**8.0**	**1.0**

Table 3: Maximum contents in the formulation of Group III products

	Maximum contents in the formulation [% by mass]	
	VOC and SVOC	**of which VOC with LCI < 100 µg/m³ and substances without LCI**
VOC (boiling point up to 200°C)	10.0	1.0
VOC (boiling point above 200°C)	3.0	0.5
SVOC (measured)	0.3	-
Total of maximum contents	**10.0**	**1.0**

If, due to insufficient data, the product contains non-classifiable organic compounds or unidentifiable substances, these substances must be listed for precautionary reasons under "VOC with LCI < 100 µg/m³ and substances without LCI".
If the product contains compounds that sublimate (e.g. camphor), the sublimation point will be used as the boiling point for evaluation purposes.
An advisory board will assign the VOCs to the individual categories. This board will be composed of representatives from the UBA, RAL gGmbH, VdL and testing laboratories.
Emissions tests will be performed every four years on selected paints and varnishes by selected accredited testing laboratories in order to assess the extent to which the determined VOC contents correlate with low-emission products. To accompany these emissions tests, UBA and RAL gGmbH will set up an advisory board composed of representatives of those companies holding the environmental label, the German Paint and. Printing Ink Association (Verband der deutschen Lack- und Druckfarbenindustrie e. V.) and recognized testing laboratories. This board will establish the test criteria and the criteria for product selection. To cover the cost of these tests, each applicant will pay RAL gGmbH a fee of €500.00 for each of its basic contracts. This amount is due for the first time upon conclusion of the Contract for Use of the Environmental Label for the corresponding basic contracts. For subsequent 4-year periods, the fee will be paid on the basis of the existing Contracts on the Use of the Environmental Label for the basic contracts or, in the case of new applications for basic contracts, upon conclusion of the Contract on the Use of the Environmental Label.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1. In addition, the applicant shall ensure that the manufacturers or distributors of the primary products complete and submit Annex 3 and Annex 3a to RAL gGmbH. The following data must be stated in Annex 3a: Chemical names and CAS numbers for the chemicals containing VOCs used in the relevant primary product (according to the definition in footnote 14), their boiling point, aggregate state (e.g. solid, liquid, etc.) and the precise proportion of the primary product.

In addition, the applicant shall submit a test report from an accredited testing laboratory for the SVOC content[22] of the ready-to-use product using a slightly polar column according to the method described in ISO 11890-2 / CEPE guidance 2015-10-26 (Appendix)[23] (Annex 7).

3.1.3 Residual monomers

Unless specified, the content of residual monomers in the binding agent must not exceed 0.05 % by mass.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1 and submit declarations from the manufacturer or distributor of the primary products (Annex 3).

3.1.4 Formaldehyde

The in-can concentration of free formaldehyde must not exceed 100 mg/kg (in contrast to Paragraph 3.1.1). In the event of a change to the formulation, a new formaldehyde verification must be submitted. In applications that include multiple colour tones, verification must be provided for the "colourless" or "white" versions and also for two additional colour tones.

Two test methods are permitted:
a) according to the Guideline for the determination of the formaldehyde concentration in water-soluble paints and varnishes, and polymer dispersions ("VdL Guideline 03 on Formaldehyde Determination"),
b) the same as a), although the concentration of free formaldehyde in the product can be determined using high pressure liquid chromatography (HPLC) if the testing laboratory can establish the comparability with VdL Guideline 03.

Compliance verification

The applicant shall declare compliance with the requirement and submit corresponding test reports (Annex 4). The verification test must be performed twice (double determination).

3.2 Emission test (alternative to 3.1)

3.2.1 General substance requirements

Observance of European and German chemical law, as well as standard rules for the sector, is a prerequisite (REACH Regulation Annex XVII, POP Regulation Annex I, the German Ordinance on Banned Chemicals (ChemVerbotsV), the Decopaint Directive and the German Directive for solvent-based paints and varnishes (ChemVOCFarbV), the German Ordinance on Hazardous Substances (GefStoffV), VdL Guideline 01, Directive 92/112/EEC, the 25th German Federal Immission Protection Ordinance (BImSchV), the Biocidal Products Regulation (BPV) etc.).[10]

The ready-to-use product (paint/varnish) may not contain any substances and mixtures with the following properties as a constituent component[24]:

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[22] The lower limit for SVOC is C16.
[23] If ISO 11890-2 is subsequently adopted, the test must be carried out according to this standard.
[24] Constituent components are substances added to the wall paint 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

a) **S**ubstances of **v**ery **h**igh **c**oncern (SVHC)
Substances which are identified as particularly alarming under the European Chemicals Regulation REACH (1906/2006/EC) and which have been incorporated into the list drawn up in accordance with Article 59, Paragraph 1 of the REACH Regulation (so-called "list of candidates"). The version of the list of candidates at the time of application is valid.[12]

b) Toxic, carcinogenic, mutagenic, reprotoxic and teratogenic substances and mixtures
Substances and mixtures that according to the EC Regulation No. 1272/2008 have been classified in the following hazard categories or which meet the criteria for such classification[13]:
- acutely toxic (poisonous) in categories Acute Tox. 1 or Acute Tox. 2
- specific target organ toxicity in categories STOT SE 1 or STOT RE 1,
- carcinogenic in categories Carc. 1A or Carc. 1B[25],
- germ cell mutagenic in categories Muta. 1A or Muta. 1B,
- reprotoxic (teratogenic) in categories Repr. 1A or Repr. 1B

c) TRGS
Substances that are classified in TRGS 905[15] as:
- carcinogenic (K1A, K1B),
- mutagenic (M1A, M1B),
- reprotoxic (R_F1A, R_F1B, R_D1A, R_D1B).

d) MAK list
Substances that are classified in the MAK list[16] as:
- carcinogenic (category 1, category 2)
- germ cell mutagenic (category 1, category 2)
- teratogenic in the "Pregnancy" column in group A or B.

In-can preservatives on the list of approved in-can preservatives are exempt from this rule.

The hazard statements (H Phrases) that correspond to the hazard categories can be found in Appendix B.

The ready-to-use mixture must not fulfil the following criteria:

e) Substances and mixtures with other hazardous properties
Substances and mixtures with other hazardous properties in concentrations that result in classification and labelling of the end product with a GHS hazard pictogram for health and environmental hazards may not be added to the paint/varnish.

f) Environmentally hazardous substances and mixtures

achieving the product properties. This does not apply to residual monomers that have been reduced to a minimum.

[25] Substances with other hazardous properties (CMR substances in category 2) are restricted by the emissions evaluation according to the AgBB procedure (see Paragraph "Indoor air quality")

Low-emission and low-pollutant paints and varnishes must not be labelled with H400. In addition, substances and mixtures in the paint/varnish that are classified as environmentally hazardous (H410, H411, H412) are restricted based on the following calculation formula:

M * 100 * H410 + 10 * H411 + H412 ≤ 9.0 %

Whereby the following is valid:
H410 represents the concentration of those substances classified as H410 in %
H411 represents the concentration of those substances classified as H411 in %
H412 represents the concentration of those substances classified as H412 in %
M is the multiplication factor for H410 and is determined based on the toxicity value LC50, EC50 or the NOEC value and the biodegradability according to the classification rules in the CLP Regulation (2nd ATP of the CLP Regulation, Table 4.1.3).

In-can preservatives on the list of approved in-can preservatives are exempt from this rule.

Compliance verification

The applicant shall declare compliance with the requirements in Annex 1. In addition, the applicant shall state the brand names and suppliers of all individual primary products for the paint/varnish, as well as their proportions and function in the manufactured paint/varnish (Annex 2). If the product consists of several basic formulations, Annex 2 shall be completed separately for each formulation. If the application includes multiple colour tones for the product, the formulations for each colour tone shall be submitted as Annex 2 or the formulations for the colour tones included in the application shall be enclosed as Annex 2a. Annex 2b must be enclosed for tinting systems.
To comply with the requirements, declarations from the manufacturer or distributor of the primary products (Annex 3), as well as the corresponding safety data sheets[19] for the primary products used (Annex 5) and the product (paint/varnish) (Annex 6), must be submitted.

3.2.2 Indoor air quality

Based on the evaluation procedure[26] developed by the Committee for Health-Related Evaluation of Building Products (AgBB), the paints/varnishes may not exceed the following emissions values in the test chamber, whereby the declaration of compliance with Paragraph 3.2.1 General substance requirements must be submitted for every primary product. When determining the colour tone that is likely to have the highest emissions, the VOC and SVOC must be stated for the pigment pastes/pigments/colourants in %. If the application includes e.g. colourless and white basic formulations and various colour tones, it is necessary to test both the colourless base and the white base with the colour tone in which the highest VOC and SVOC content are expected. If the application includes both matt and gloss versions of the product, the glossy base[27] must be tested:

[26] "Requirements for indoor air quality in buildings: Health-related Evaluation Procedure for Volatile Organic Compounds Emissions (VVOC, VOC and SVOC) from Building Products" (AgBB procedure), http://www.umweltbundesamt.de/bauprodukte/agbb.htm
[27] For comparable formulations

Substance	3rd day	Final value (28th day)
Total organic compounds within the retention range C6 – C16 ($TVOC_{spez}$[28])	< 3 mg/m³	< 0.3 mg/m³
Total organic compounds within the retention range > C16 – C22 (TSVOC)	-	< 0.1 mg/m³
C-substances[29]	< 0.01 mg/m³ Total	< 0.001 mg/m³ Per individual substance
Total VOC without LCI [30,31]		< 0.04 mg/m³
R-value		≤ 1.0
Formaldehyde[32] (supplementary to its consideration for the R-value)		< 0.02 mg/m³

The emissions test is carried out in accordance with DIN EN 16402, which implements the DIN EN 16516 testing standard in a product-oriented manner. Loading is carried out according to the product categories in DIN EN 16402 (Table 3: no. 3.1, 4 or 5 - standard loading factor). In the case of an emissions test according to product category no. 3.1 (intended use on small surfaces) in Table 3, corresponding information must be provided on the container. The test can be terminated at an early stage, if the value on the 7th day is half of the permissible emission value for the 28th day.
The optional odour emission test according to Paragraph 3.3 should be carried out in combination with the test for indoor air quality.

Compliance verification

The applicant shall submit a test report from a testing institution recognised for this test by BAM (Bundesanstalt für Materialforschung und Prüfung (Federal Institution for Material Research and Testing)) as Annex 8 in which compliance with the requirements is confirmed.
The format of the test report must be based on DIN EN 16402, while the AgBB procedure should be carried out using the ADAM template. A new test report must be submitted to RAL gGmbH by the deadline defined in the Basic Award Criteria.

3.3 Odour test (optional)

It is permitted to advertise the characteristic "low odour" on the container. If this characteristic is advertised, however, a test of the odour emissions must be carried out in combination with

[28] The sum of all identified target compounds quantified using substance-specific calibration standards in accordance with the AgBB procedure and the alternative TVOC determination method according to DIN EN 16516, plus all of the non-target compounds identified and all of the unidentified compounds, quantified using the TIC response factor for toluene which elute in a certain section of the chromatogram, after they have been corrected for the blind values determined in the same manner.
[29] C-substance = carcinogenic substances; according to classifications Carc. 1A / K1A and classification Carc. 1B / K1B according to the EU classifications or TRGS 905
[30] Including non-identifiable substances
[31] LCI = Lowest Concentration of Interest.
[32] LCI values for formaldehyde and acetaldehyde are derived in the AgBB procedure (Edition August 2018). This means that formaldehyde is not attributed to the C-substances but is instead taken into account in the calculation of the R-value. Acetaldehyde and other VVOC values with an LCI value are also included in the calculation of the R-value.

the emissions test according to Paragraph 3.2.2 Indoor air quality. The paint/varnish must not display an odour intensity of more than 7 pi after 28 days if the product is advertised with the phrase ”low odour”.

Compliance verification

The applicant shall submit a test report in accordance with the DIN ISO 16000-28 standard in combination with VDI 4302 (Annex 8).

3.4 Special substance requirements (supplementary to the requirements according to 3.1 or 3.2)

3.4.1 Preservatives in the paint/varnish

Low-emission and low-pollutant paints and varnishes must not contain any biocides. Exempted are the micro-biocides used as in-can preservatives that are stated on the list of approved in-can preservatives and in the concentrations stated there (also contrary to Paragraphs 3.1.1 and 3.2.1, if applicable).
The quantities of the preservatives used in the primary products must ensure that the preservation of the paint/varnish corresponds to the list of approved in-can preservatives, this also applies to formaldehyde releasers.
The following rule is valid as an alternative to the concentration limits for the preservatives/combinations of preservatives stated on the list of approved in-can preservatives (the need for this rule will be examined at the end of the term of use for the Basic Award Criteria):
The required minimum quantity of the preservative preparation for the in-can preservative must be determined using the biotest according to Appendix C (Annexes 4a, 4b and 4c)[33]. This value may not be exceeded in the paint/varnish.

Compliance verification

The applicant shall declare compliance with the requirements. If the transitional rule is used, the applicant shall submit a biotest according to Appendix C completed by a testing institution accredited according to DIN EN ISO/IEC 17025 (Annex 9). The biotest must comprise tests carried out in accordance with Annex 4a, Annex 4b and Annex 4c. It should be noted here that only those substances or substance combinations stated in the list of approved in-can preservatives may be added to the product.

3.4.2 Plasticisers

Products that contain plasticising substances from the group of phthalates or group of organophosphates may not be added to the paint/varnish. In addition, other substance and mixtures considered as plasticisers in accordance with VdL Guideline 01[34] may not be added to the paint/varnish and the binding agents.

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[33] The biotest according to Appendix C was developed for interior wall paints but can also be utilised for the paint/varnishes product group according to the results of the research project FKZ 3717373210 “Further development of the product-based requirements for preservatives for products holding the Blue Angel for the protection of health” (Weiterentwicklung der produktbezogenen Anforderungen an Konservierungsmittel für Produkte mit dem Blauen Engel zum Schutz der Gesundheit).

[34] Guideline on the declaration of paints, lacquers, varnishes, renders, fillers, primers and related products (VdL Guideline 01), http://www.wirsindfarbe.de/service-publikationen/vdl-richtlinien/

Compliance verification

The applicant shall verify compliance with the requirements by submitting declarations from the manufacturer or distributor of the primary products (Annex 3), as well as the corresponding safety data sheets[19] for the paint/varnish and the primary products used (Annex 5 and 6).

3.4.3 Pigments and siccatives

Low-emission and low-pollutant paints and varnishes may not be dyed or siccativated using pigments and siccatives based on lead and its compounds. Exempted are natural or production-related impurities of up to 200 ppm which may be contained in the pigment.

Compliance verification

The applicant shall verify compliance with the requirements by submitting declarations from the manufacturer or distributor of the primary products (Annex 3), as well as the corresponding safety data sheets for the paint/varnish and the primary products used (Annex 5 and 6).

3.4.4 Alkylphenol ethoxylates

Products containing alkylphenol ethoxylates (APEO) and/or their derivatives may not be added to the paint/varnish and the raw materials.

Compliance verification

The applicant shall verify compliance with the requirements by submitting declarations from the manufacturer or distributor of the primary products (Annex 3), as well as the corresponding safety data sheets[19] for the paint/varnish and the primary products used (Annex 5 and 6).

3.4.5 Oximes

Oximes and primary products containing oximes may not be added to the paint/varnish and the raw materials.

Compliance verification

The applicant shall verify compliance with the requirements by submitting declarations from the manufacturer or distributor of the primary products (Annex 3), as well as the corresponding safety data sheets[19] for the paint/varnish and the primary products used (Annex 5 and 6).

3.4.6 Perfluorinated and polyfluorinated chemicals

It is not permitted for any perfluorinated or polyfluorinated chemicals (PFC), such as fluorocarbon resins and fluorocarbon emulsions, perfluorinated surfactants, perfluorinated sulfonic and carboxylic acids, and substances that could be broken down into these chemicals to be added to the product. This also applies to primary products treated with PFCs.

Compliance verification

The applicant shall verify compliance with the requirements by submitting declarations from the manufacturer or distributor of the primary products (Annex 3), as well as the corresponding safety data sheets[19] for the paint/varnish and the primary products used (Annex 5 and 6).

3.4.7 Titanium dioxide pigment

Emissions and waste resulting from the production of titanium dioxide pigments may not exceed the following values[35]:
For the sulphate process:

- SO_x calculated as SO_2: 7.0 kg/t of TiO_2 pigment
- Sulphate waste: 500 kg/t of TiO_2 pigment

For the chloride process:

- If natural rutile ore is used, 103 kg chloride waste/t of TiO_2 pigment
- If synthetic rutile ore is used: 179 kg chloride waste/t of TiO_2 pigment
- If slag ore is used: 329 kg chloride waste/t of TiO_2 pigment

If more than one type of ore is used, the values apply in proportion to the quantities of the individual types of ore used.

Note: SO_x emissions only apply to the sulphate process.

The definition of waste given in Article 3 of the Waste Framework Directive 2008/98/EC of the European Parliament and of the Council applies[36]. If the TiO_2 producer can satisfy Article 5 (by-product production) of the Waste Framework Directive for solid waste, this waste will be exempted.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1. In addition, the applicant shall state the trade names and suppliers for all titanium dioxide pigments (raw materials), as well as their percentage in the manufactured paint/varnish (Annex 2).
To verify compliance with this requirement, the applicant shall also submit declarations from the manufacturers or distributors of the titanium dioxide pigments (Annex T).

3.5 Fitness for use

Low-emission and low-pollutant paints and varnishes must fulfil the usual quality requirements with respect to fitness for use for the respective product group (e.g. adhesion, hardness, drying properties, light fastness, elasticity, and, where applicable, opacity and surface resistance to household chemicals according to existing DIN standards).

Compliance verification

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

3.6 Advertising claims

- The paint/varnishing system must be stated together with the product description on the container and the technical data sheets. The binder base must also be stated on the technical data sheet.
- If the product complies with the requirement for the odour test in Paragraph 3.3, it is permitted to advertise the paint/varnish with the claim "low odour".

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[35] Derived from the Best Available Techniques Reference Document for the Production of Large Volume Organic Chemicals (BREF) (August 2007).
[36] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312 from 22/11/2008, p. 3).

- Advertising claims that contain terms such as "Bio", "Eco", "Natural", "Façade", "Fungal" "Insect" or "Nano" etc. as part of the name or description are not permitted.
- Advertising claims must not include claims in the sense of Article 25 (4) of the CLP Regulation (EC) No. 1272/2008[11] that could play down the risks such as e.g. "non-toxic", "non-harmful to health" or similar claims. Exceptions are "free of preservatives"[37] and "free of solvents< 1.0 g/l"[38].

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 and submit the corresponding technical data sheet (Annex 10) and the container text (Annex 11).

3.7 Information on the container and the technical data sheet

In addition to the obligatory P-phrases in accordance with the CLP Regulation (EC) No. 1272/2008, the following information must also be stated on the container and the technical data sheet where applicable in an easy to read form (comparable wording / P-phrases are permitted):

- "Keep out of the reach of children."
- If the product can be applied by spraying: "Use an A2/P2 combination filter and protective goggles for spraying work."
- "Use a P2 dust filter for grinding work."
- "Ensure good ventilation during application and drying."
- "Do not eat, drink or smoke when handling the paint/varnish."
- "In case of contact with skin or eyes, rinse immediately with plenty of water."
- "Do not allow to enter drains, water bodies, ground or soil."
- "Clean tools with plenty of water and soap immediately after use."
- "Only pass on empty containers for recycling."
- The intended use according to the emissions test for the relevant product category must be advertised (only for the intended use on small areas)
- "Liquid residues should be returned to a collection point for old paint"
- Product contains …… (indication of the name of the preservatives according to the list of approved in-can preservatives); Information for persons with allergies is available on telephone number:…….[39]

The ingredients in the paint/varnish must be stated on the technical data sheet in accordance with the "Guideline on the declaration of paints, lacquers, varnishes, renders, fillers, primers and related products" (VdL Guideline 01)[34] . In addition, the container must contain a clear reference to the technical data sheet, information on where it can be found and a telephone number[39] for the manufacturer or distributor where the consumer can receive further information. The

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[37] All preservatives based on the individual substances, including formaldehyde < 2ppm, except CIT<0.5 and MIT<1.5ppm, in accordance with the manufacturer's declaration and analytical verification according to Annex 12.

[38] Based on the formulation test: All volatile organic compounds will be considered as solvents: TVOCs and SVOCs according to DIN ISO 16000-6, i.e. the total organic compounds within the retention range VOC C6 - C16 and SVOC >C16 - C22. Determined as part of the formulation test carried out by RAL gGmbH in accordance with Paragraph 3.1.2; Based on the emissions test: according to VdL Guideline 01 3.5 Solvents http://www.wirsindfarbe.de/service-publikationen/vdl-richtlinien/

[39] At fixed-line telephone costs

technical data sheet must be available on the Internet on the manufacturer's or distributor's website and/or under the product information on www.blauer.engel.de.

Compliance verification

The applicant shall declare compliance with the requirement in Annex 1 and submit the corresponding technical data sheet (Annex 10) and the container text (Annex 11).

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 31/12/2023.
They shall be extended by periods of one year each, unless terminated in writing by 31/03/2023 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/distributor)
- Brand/trade name, product description
- Distributor (Label User), i.e. the marketing organization.

Appendix A Quoted laws and standards, literature

[1] Decopaint Directive: Implemented in Germany in the "German chemical directive limiting VOC emissions by restricting the sale of paints and varnishes containing solvents (Directive for solvent-based paints and varnishes – ChemVOCFarbV) from 16 December 2004, as amended.

[2] 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), as amended.

[3] Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 concerning the classification, labelling and packaging of substances and mixtures, in short: CLP Regulation (Classification, Labelling and Packing), as amended. The CLP Regulation that came into force on 20/01/2009 gradually replaced the previous directives 67/548/EEC (Substance Directive) and 1999/45/EC (Dangerous Preparations Directive) up to 01/06/2015.

[4] From 1 December 2010, the European Chemicals Agency (ECHA) introduced a classification and labelling inventory ("C&L Inventory") according to Article 113 / 114 of Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 (REACH Regulation), see http://echa.europa.eu/clp/c_l_inventory_de.asp

[5] TRGS 905, directory of carcinogenic, mutagenic or teratogenic substances from the Committee for Hazardous Substances (AGS), as amended: TRGS 905.
The TRGS lists such CMR substances that have not received harmonised classifications up to now or where the AGS has come to a different classification. The CMR complete list published by the Institute for Occupational Safety and Health of the German Social Accident Insurance can also be used as a reference tool: CMR complete list.

[6] List of MAK and BAT values, Senate Commission for the investigation of health hazards of chemical compounds in the work area, as amended.

[7] AgBB "Requirements for indoor air quality in buildings: Health-related Evaluation Procedure for Volatile Organic Compounds Emissions (VVOC, VOC and SVOC) from Building Products" (currently valid version) see: http://www.umweltbundesamt.de/themen/gesundheit/kommissionen-arbeitsgruppen/ausschuss-zur-gesundheitlichen-bewertung-von

[8] Guideline on the declaration of paints, lacquers, varnishes, renders, fillers, primers and related products. VdL-RL 01, 6th revised version January 2018; publisher: German Paint and. Printing Ink Association (Verband der deutschen Lack- und Druckfarbenindustrie e. V.), Frankfurt am Main
http://www.lackindustrie.de/Publikationen_/VdL-Richtlinien/Seiten/VdL-Richtlinie-01.aspx

[9] Test method for wood-based materials (Federal Health Bulletin, 34, 10 (1991), 488-489)

[10] DIN ISO 16000-6 – Indoor air– Part 6: Determination of volatile organic compounds in indoor and test chamber air, as amended.

[11] DIN EN 16402 Paints and varnishes - Assessment of emissions of substances from coatings into indoor air - Sampling, conditioning and testing; German version EN 16402:2013

[12] DIN EN 16516 Construction products - Assessment of release of dangerous substances - Determination of emissions into indoor air; German version EN 16516:2017

[13] DIN ISO 16000-28 – Indoor air - Part 28: Determination of odour emissions from building products using test chambers (ISO 16000-28:2012)

[14] ISO 11890-2/CEPE guidance 2015-10-26

[15] ISO 3251: Paints, varnishes and plastics - Determination of non-volatile-matter content

Appendix B Assignment of hazard categories and H Phrases

1 Hazard categories and hazard statements from Paragraph 3.1 VOC formulation test

The following table assigns the hazard categories in Paragraph 3.1.1, sections b) and c) for the general exclusion of substances to the corresponding hazard statements (H Phrases).

CLP Regulation (EC) No. 1272/2008		
Hazard categories	**Hazard statements**	
	H Phrases	**Wording**
Carcinogenic substances		
Carc. 1A / 1B	H350	May cause cancer.
Carc. 1A / 1B	H350i	May cause cancer if inhaled.
Carc. 2	H351[14]	Suspected of causing cancer.
Germ cell mutagenic substances		
Muta. 1A / 1B	H340	May cause genetic defects.
Muta. 2	H341	Suspected of causing genetic defects.
Reprotoxic substances		
Repr. 1A / 1B	H360D	May damage the unborn child.
Repr. 1A / 1B	H360F	May damage fertility.
Repr. 1A / 1B	H360FD	May damage fertility. May damage the unborn child.
Repr. 1A / 1B	H360Df	May damage the unborn child. Suspected of damaging fertility.
Repr. 1A / 1B	H360Fd	May damage fertility. Suspected of damaging the unborn child.
Repr. 2	H361f	Suspected of damaging fertility.
Repr. 2	H361d	Suspected of damaging the unborn child.
Repr. 2	H361fd[40]	Suspected of damaging fertility. Suspected of damaging the unborn child.
Acute toxicity substances		
Acute Tox. 1 Acute Tox. 2	H300	Fatal if swallowed.
Acute Tox. 3	H301	Toxic if swallowed.
Acute Tox. 1 Acute Tox. 2	H310	Fatal in contact with skin.
Acute Tox. 3	H311	Toxic in contact with skin.
Acute Tox. 1 Acute Tox. 2	H330	Fatal if inhaled.
Acute Tox. 3	H331	Toxic if inhaled.
Substances with specific target organ toxicity		
STOT SE 1	H370	Causes damage to organs.
STOT RE 1*	H372	Causes damage to organs through prolonged or repeated exposure.
STOT SE 2	H371	May cause damage to organs.
STOT RE 2*	H373	May cause damage to organs through prolonged or repeated exposure.

[40] For up to max. 0.45% TMP (trimethylolpropane, CAS 77-99-6) in titanium dioxide the classification Repr. 2 does not represent an exclusion criterion according to number 3.1.1.

* If the classification and toxicological evaluation of the substance is based on the classification of the respirable fraction of the substance (dusts) and does not relate to the substance in general, classification as STOT RE 1 and STOT RE 2 does not represent a criterion for exclusion in accordance with Paragraph 3.1.1 (asbestos-containing dust is excluded).

The following table assigns the hazard categories in Paragraph 3.1.1, sections g), h) and i) for the general exclusion of substances to the corresponding hazard statements (H Phrases).

CLP Regulation (EC) No. 1272/2008		
Hazard categories	**Hazard statements**	
	H Phrases	**Wording**
Restriction in the paint/varnish – specific limit (3.1.1 section g)		
Aquatic Chronic 1	H410	Very toxic to aquatic life with long-lasting effects.
Aquatic Chronic 2	H411	Toxic to aquatic organisms with long-lasting effects.
Aquatic Chronic 3	H412	Harmful to aquatic organisms with long lasting effects.
Restriction in the paint/varnish – classification limit (3.1.1 section h)		
Eye Dam. 1	H318	Causes serious eye damage.
Skin Irrit. 2	H315	Causes skin irritation.
Eye Irrit. 2	H319	Causes serious eye irritation.
STOT SE 3	H335	May cause respiratory irritation.
Skin Sens. 1 (A/B)	H317	May cause an allergic skin reaction.
Restriction in the paint/varnish – 40% of the classification limit (3.1.1 section i)		
Acute Tox. 4	H302	Harmful if swallowed.
Acute Tox. 4	H312	Harmful in contact with skin.
Acute Tox. 4	H332	Harmful if inhaled.
Asp. Tox. 1	H304	May be fatal if swallowed and enters airways.
Resp. Sens. 1 (A/B)	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin Corr. 1 (A/B/C)	H314	Causes severe skin burns and eye damage.

2 Hazard categories and hazard statements from Paragraph 3.2 Emissions test

The following table assigns the hazard categories in Paragraph 3.2.1, section b) for the general exclusion of substances to the corresponding hazard statements (H Phrases).

CLP Regulation (EC) No. 1272/2008		
Hazard categories	**Hazard statements**	
	H Phrases	**Wording**
Carcinogenic substances		
Carc. 1A / 1B	H350	May cause cancer.
Carc. 1A / 1B	H350i	May cause cancer if inhaled.
Germ cell mutagenic substances		
Muta. 1A / 1B	H340	May cause genetic defects.
Reprotoxic substances		
Repr. 1A / 1B	H360D	May damage the unborn child.
Repr. 1A / 1B	H360F	May damage fertility.
Repr. 1A / 1B	H360FD	May damage fertility. May damage the unborn child.

CLP Regulation (EC) No. 1272/2008		
Repr. 1A / 1B	H360Df	May damage the unborn child. Suspected of damaging fertility.
Repr. 1A / 1B	H360Fd	May damage fertility. Suspected of damaging the unborn child.
Acute toxicity substances		
Acute Tox. 1 Acute Tox. 2	H300	Fatal if swallowed.
Acute Tox. 1 Acute Tox. 2	H310	Fatal in contact with skin.
Acute Tox. 1 Acute Tox. 2	H330	Fatal if inhaled.
Substances with specific target organ toxicity		
STOT SE 1	H370	Causes damage to organs.
STOT RE 1*	H372	Causes damage to organs through prolonged or repeated exposure.

* If the classification and toxicological evaluation of the substance is based on the classification of the respirable fraction of the substance (dusts) and does not relate to the substance in general, classification as STOT RE 1 and STOT RE 2 does not represent a criterion for exclusion in accordance with Paragraph 3.2.1 (asbestos-containing dust is excluded).

The following table assigns the hazard categories in Paragraph 3.2.1, section f) for the general exclusion of substances to the corresponding hazard statements (H Phrases).

CLP Regulation (EC) No. 1272/2008		
Hazard categories	**Hazard statements**	
	H Phrases	**Wording**
Restriction in the paint/varnish – specific limit (3.2.1 section f)		
Aquatic Chronic 1	H410	Very toxic to aquatic life with long-lasting effects.
Aquatic Chronic 2	H411	Toxic to aquatic organisms with long-lasting effects.
Aquatic Chronic 3	H412	Harmful to aquatic organisms with long lasting effects.

Appendix C Biotest

The biotest is published separately.

Appendix D List of approved in-can preservatives- NEW - valid from 01.12.2020

The following active substances or active substances combinations can alternatively be used in a total of ≤ 400 ppm from the individual active substances for in-can preservation in low-emission sealants for interior use. In addition, the preservation of the preliminary products must be dimensioned so that the preservation of the end product corresponds to Appendix D. Labeling the product with H317 is not permitted.

Allowed preservation	**CAS No.**	**Content [ppm]**
DBDCB	35691-65-7	400
BIT	2634-33-5	400
Bronopol	52-51-7	200
Sodium pyrithione	3811-73-2	200
Zinc pyrithione	13463-41-7	200
Combination CIT/MIT (3:1)	55965-84-9	Total < 15
CIT[41]	26172-55-4	
TiO_2 AgCl in relation to AgCl	7783-90-6	100
IPBC	55406-53-6	80
Not allowed active substances[42]		
Total from		< 15
BBIT	4299-07-4	
MIT	2682-20-4	
OIT	26530-20-1	
DTBMA	2527-58-4	

Only those substances (active substances or biocidal products) may be used as preservatives for which an active substance dossier on the assessment as in-can preservatives (product type 6) has been submitted within the scope of the Biocidal Products Regulation ((EU) No 528/2012). If following the assessment an inclusion of the active substance in the Union List of approved active substances for product type 6 is denied the use of these substances shall no longer be permitted. This also applies to formaldehyde-releasing agents.

Admission process for other substances

Other preservatives may be used if a MAK value is available and/or sufficient data regarding inhalation toxicology and analytics on the pure active substance and, if applicable, relevant degradation products, isomers and impurities, as well as other by-products of the substance and/or sufficient examinations relating to inhalative exposure are submitted to the Federal Environmental Agency for evaluation and setting of a maximum content.

[41] Provisional authorisation of the biocidal product ACTICIDE C1 until 16 March 2024.
[42] The active substances must not be actively added for in-can preservation of Blue Angel products.

Appendix D List of approved in-can preservatives - OLD - valid until 01.12.2020

Alternatively, the following active substances or active substance combinations may be used for in-can preservation:

Active Substances/Active Substances Combination	Content
a) Titanium dioxide/silver chloride	≤ 100 ppm in relation to silver chloride
b) 2-Methyl-2H-isothiazol-3-one (MIT) / 1,2-benzisothiazol-3(2H)-one (BIT) in a ratio of 1:1	≤ 200 ppm
c) 5-Chloro-2-methyl-4-isothiazolin-3-one (CIT) / 2-methyl-2H-isothiazolin-3-one (MIT) in a ratio of 3:1	≤ 15 ppm
d) 3-Jodo-2-propinyl butylcarbamate (IPBC)	≤ 80 ppm
e) 1,2- Benzisothiazol-3(2H)-one (BIT)	≤ 200 ppm
f) 2-Bromo-2-nitropropane-1,3-diol (BNPD)	≤ 200 ppm
g) BNPD[43] + CIT/MIT (3:1)[44]	≤ 130 ppm + ≤ 15 ppm
h) BNPD[43] + CIT/MIT (3:1)[44]	≤ 150 ppm + ≤ 10 ppm
i) BNPD[43] + CIT/MIT (3:1)[44]	≤ 170 ppm + ≤ 5 ppm
j) MIT/BIT[45] (1:1) + CIT/MIT (3:1)[44]	≤ 150 ppm + ≤ 12,5 ppm
k) MIT/BIT[45] (1:1) + CIT/MIT (3:1)[44]	≤ 125 ppm + ≤ 15 ppm
l) 1,2-Dibromo-2,4-dicyanobutane (DBDCB)	≤ 500 ppm
m) BIT[46] + CIT/MIT (3:1)[44]	≤ 150 ppm + ≤ 12,5 ppm
n) BNPD[43] + MIT/BIT[45] (1:1)	≤ 120 ppm + ≤ 75 ppm
o) Zinc pyrithione (ZNP) + BIT[46,47]	≤ 100 ppm + ≤ 100 ppm
p) Zinc pyrithione (ZNP) + MIT/BIT[45] (1:2 to 2:1)	≤ 50 ppm + ≤ 150 ppm
q) BNPD[43] + BIT[46]	≤ 100 ppm + ≤ 100 ppm
r) Sodium pyrithione (NaP) + BIT[46]	≤ 50 ppm + ≤ 150 ppm
s) N-(3-aminopropyl)-N-dodecylpropane-1,3-diamine (CAS 2372-82-9) + MIT/BIT[45] (1:1)	≤ 81 ppm + ≤ 150 ppm
t) MIT/BIT[45] (1:1) + silver chloride	≤ 185 ppm + ≤ 15 ppm

Only those substances (active substances or biocidal products) may be used as preservatives for which an active substance dossier on the assessment as in-can preservatives (product type 6) has been submitted within the scope of the Biocidal Products Regulation ((EU) No 528/2012). If following the assessment an inclusion of the active substance in the Union List of approved active substances for product type 6 is denied the use of these substances shall no longer be permitted. This also applies to formaldehyde-releasing agents.

[43] BNPD = see f)
[44] CIT/MIT = see c)
[45] MIT/BIT = see b)
[46] BIT = see e)
[47] Zinc oxide up to maximal 500 ppm is additional permitted as technical adjuvant

Admission process for other substances

Other preservatives may be used if a MAK value is available and/or sufficient data regarding inhalation toxicology and analytics on the pure active substance and, if applicable, relevant degradation products, isomers and impurities, as well as other by-products of the substance and/or sufficient examinations relating to inhalative exposure are submitted to the Federal Environmental Agency for evaluation and setting of a maximum content.