

# **BLUE ANGEL**

**The German Ecolabel**



## **Low-Emission Thermal Insulation Material and Suspended Ceilings for Use in Buildings**

**DE-UZ 132**

**Basic Award Criteria**

**Edition October 2010**

**Version 4**

**The Environmental Label is supported by the following four institutions:**



The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety is the owner of the label. It regularly provides information on the decisions taken by the Environmental Label Jury.



The German Environmental Agency with its specialist department for "Ecodesign, Eco-Labeling and Environmentally friendly Procurement" acts as office of the Environmental Label Jury and develops the technical criteria of the Basic Criteria for Award of the Blue Angel.



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.



The 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 German 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 this requirement.

## **1.2 Background**

Thermal insulation material and suspended ceilings are an effective way to save energy and improve energy efficiency in buildings.

Indoor air pollution caused by thermal insulation material and suspended ceilings for use in buildings must be low in order to achieve – from the environmental and health point of view - the lowest possible emissions from these products. Here, the Blue Angel eco-label serves to identify low-emission products.

For the purpose of evaluating the emissions from thermal insulation material and suspended ceilings for use in buildings the concept of these Basic Award Criteria is based on the evaluation scheme (AgBB-Scheme) developed by the "Ausschuss zur gesundheitlichen Bewertung von Bauprodukten" (AgBB) (Committee for Health-related Evaluation of Building Products) - a joint state and federal government committee composed of experts from environmental and health authorities.

Thus, the requirements for the Blue Angel eco-label refer to both the substances and materials used in the manufacturing process as well as to the period of use and the disposal of packages and product remainders. Also of importance is the proper processing of the products to avoid, among other things, thermal or cold bridging.

## **1.3 Objectives of the Environmental Label**

The Blue Angel eco-label for „Low-emission thermal insulation material and suspended ceilings for use in buildings“ may be awarded to products which - beyond the legal provisions –

- are manufactured by using environmentally less harmful substances and materials,
- from the health point of view do not have an adverse impact on the living environment,
- do not contain any hazardous substances that might well impede waste disposal.

# **2 Scope**

These Basic Criteria apply to thermal insulation material according to DIN EN 13162 to 13171 and suspended ceilings according to DIN EN 13964 for use in buildings by fields of application (WI – interior insulation of the wall; WZ – insulation of double-leaf walls; WH – insulation of

timber frame and timber panel constructions; WTR – insulation of partition walls; DI – interior insulation of the ceiling (on the underside) or roof; DZ – intermediate rafter insulation; DEO – interior insulation of the ceiling or base plate (on the upper side) without sound-proofing requirements; DES – interior insulation of the ceiling or base plate (on the upper side) with sound-proofing requirements) according to DIN 4108-10<sup>1</sup> as well as insulation material and suspended ceilings approved by the building inspection authorities. All products are hereinafter referred to as „insulation material“.

### 3 Requirements

The Environmental Label shown on page 1 may be used for the marking of insulation material under para. 2, provided that it complies with the requirements hereinafter set forth.

#### 3.1 Manufacture

##### 3.1.1 General Substance Requirements

The components of the insulation material shall not contain or split off as constituent parts<sup>2</sup> any substances or preparations<sup>3</sup> that:

[1] are listed in EC Regulation 1272/2008<sup>4</sup>, Annex VI, Table 3.1, for “H” Phrases and/or Table 3.2 for “R” Phrases and/or exhibit the properties mentioned in Section 4, GefStoffV (Ordinance on Hazardous Substances)<sup>5</sup> as well as the following ones as specified in Annex VI to Directive 67/548/EEC or meet the classification criteria (self-classification)<sup>6</sup>:

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<sup>1</sup> At the suggestion of the Federal Environmental Agency the Environmental Label Jury may include additional thermal insulation material and suspended ceilings in the scope of the Basic Award Criteria

<sup>2</sup> Constituent parts are substances or preparations added to the product or intermediate product in order to achieve or influence certain product properties as well as those required as chemical decomposition products to achieve the product properties. They do not include, for example, residual monomers reduced to a minimum.

<sup>3</sup> Terms as defined in Section 3, paras. 1 - 4, Publication of the Revised Version of the German Chemicals Act of 2 July 2008, as amended (Federal Law Gazette I, No. 28, p. 1146).

<sup>4</sup> Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (short: GHS-Regulation), Annex VI on harmonized classification and labelling of hazardous substances and Regulation (EC) No. 790/2009 of 10 August 2009 amending Regulation (EC) No. 1272/2008 for adapting to technical and scientific progress, each as amended, The GHS Regulation (Globally Harmonised System of Classification and Labelling of Chemicals), cf. [http://www.reach-info.de/ghs\\_verordnung.htm](http://www.reach-info.de/ghs_verordnung.htm) that has come into force on January 20, 2009, replaces the old Directives 67/548/EEC and 1999/45/EC. According to the said regulation, substances are classified, labelled and packed until December 1, 2010 according to Directive 67/548/EEC (Dangerous Substances Directive) while mixtures (formerly: preparations) are classified, labelled and packed until June 1, 2015 according to Directive 1999/45/EC (Dangerous Preparations Directive). Notwithstanding this, the classification, labelling and packaging of substances and preparations may be performed according to the provisions of the GHS Regulation already before December 1, 2010 or June 1, 2015, respectively.

<sup>5</sup> Gefahrstoffverordnung (Ordinance on Hazardous Substances) dated 23 December 2004 (Federal Law Gazette I, page 3758) as amended, last amended by Article 2 of the Ordinance, dated December 18, 2008 (Federal Law Gazette I, page 2768).

<sup>6</sup> From December 1, 2010 the European Chemicals Agency (ECHA) keeps a classification and labelling system („C&L-Inventory“) according to Articles 113/114 of Regulation (EC) No. 1907/2006 of the European Parliament and of the Council of 18 December 2006 (REACH Regulation), cf. [http://echa.europa.eu/clp/c\\_l\\_inventory\\_de.asp](http://echa.europa.eu/clp/c_l_inventory_de.asp)

- ♦ very toxic (T+)
- ♦ toxic (T);

**[2]** are listed in EC regulation 1272/2008<sup>4</sup>, Annex VI, in Table 3.1 for “H” Phrases and / or in Table 3.2 for “R” Phrases and / or exhibit the properties mentioned in Section 4 GefStoffV<sup>5</sup> as well as the following ones specified in Annex VI to Directive 67/548/EEC or meet the classification criteria (self-classification)<sup>6</sup>:

- ♦ carcinogenic (Carc.Cat. 1, Carc.Cat. 2 or Karz. 1A, Karz. 1B)
- ♦ mutagenic (Mut.Cat. 1, Mut.Cat. 2 or Mutag. 1A, Mutag. 1B)
- ♦ reprotoxic (Repr.Cat. 1, Repr.Cat. 2 bzw. Repr. 1A, Repr. 1B)

**[3]** are classified in TRGS 905<sup>7</sup> as:

- ♦ carcinogenic (K1, K2)
- ♦ mutagenic (M1, M2)
- ♦ reprotoxic (R<sub>F</sub>1, R<sub>F</sub>2)
- ♦ teratogenic (R<sub>E</sub>1, R<sub>E</sub>2)

**[4]** are evaluated and classified in the MAK Value List<sup>8</sup> as:

- ♦ carcinogenic working materials, Category 1 or 2
- ♦ germ-cell-mutagenic working materials, Category 1 or 2.

#### **Compliance Verification:**

The applicant shall declare compliance with the requirements in Annex 2 to the Contract pursuant to DE-UZ 132.

#### **3.1.2 Halogens**

No halogenated organic compounds may be used in the manufacture of insulation material (e.g. as binders, flame retardants or dirt-repellent finishes).

#### **Compliance Verification:**

*The applicant shall declare compliance with the requirement in Annex 1 to the Contract pursuant to DE-UZ 132. In the case of detection, the contents of halogens, namely fluorine, chlorine and bromine, shall be determined by means of combustion analysis (total digestion). As a part of tolerable impurities their contents shall not exceed 1 g/kg.*

#### **3.1.3 Flame Retardants**

The insulation material may not contain any halogenated organic compounds as flame retardants.

#### **Compliance Verification:**

*The applicant shall declare compliance with the requirement in Annex 1 to the Contract pursuant to DE-UZ 132. In the case of detection, the contents of halogens, namely fluorine, chlorine and bromine, shall be determined by means of combustion analysis (total digestion). As a part of tolerable impurities their contents shall not exceed 1 g/kg.*

<sup>7</sup> TRGS 905, List of carcinogenic, mutagenic or reprotoxic substances, as amended, last amended in May 2008

<sup>8</sup> MAK and BAT Value List, Senate Commission for the Testing of Health-Endangering Working Materials, as amended, last amended by Communication No. 46 (2010)

### **3.1.4 Plasticizers**

No plasticizing substances from the class of phthalates may be used in the manufacture of insulation material for use in buildings.

#### ***Compliance Verification:***

*The applicant shall declare compliance with the requirement in Annex 1 to the Contract pursuant to DE-UZ 132. In the case of detection, the contents of phthalates shall be determined by means of extracting a material sample in a Soxhlet apparatus followed by an analysis using a GC/MS. The quantitative determination of the target substances shall be made by means of a substance-specific reference mixture. The content of phthalate impurities in the product shall not exceed 0.1 mass percent.*

### **3.1.5 Requirements for Insulation Material**

#### **3.1.5.1 Fibrous Insulation Material**

Mineral fibres may cause temporary short-term skin irritations. Therefore, the packages or instruction leaflets of insulation material manufactured from mineral wool must include processing information, as for example, in the form of pictograms or notes.

#### ***Compliance Verification:***

*The applicant shall submit the package imprint or the instruction leaflet.*

#### **3.1.5.2 Blowing Agents**

Halogenated organic compounds may not be used as blowing agents (for example, fluorinated greenhouse gases [HFCs] or partially halogenated chlorofluorocarbons (HCFCs) in the manufacture of insulation material.

#### ***Compliance Verification:***

*The applicant shall declare compliance with the requirement in Annex I to the Contract pursuant to DE-UZ 132 or submit a corresponding declaration from the pre-suppliers.*

#### **3.1.5.3 Biocides**

The insulation material may not contain any biocides<sup>9</sup>.

#### ***Compliance Verification:***

*The applicant shall declare compliance with the requirement in Annex I to the Contract pursuant to DE-UZ 132 or submit a corresponding declaration from the pre-suppliers.*

### **3.1.6 Requirements for Suspended Ceilings (coated insulation products)**

#### **3.1.6.1 Pigments**

The following additional requirements shall apply to preparations of dyes and pigments:

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<sup>9</sup> The definition of „biocide“ corresponds to the definition contained in the act transposing Directive 98/8/EC of the European Parliament and the Council of 16 February 1998 concerning the placing on the market of biocidal products (Biocidal Products Act) of 20 June 2002 (Official Law Gazette I, No. 40, of 27 June 2002)

**[1]** Dyes and pigments containing lead, cadmium or chromium VI compounds as constituent parts may not be used. Process-related and technically unavoidable (natural or production-related) impurities may be contained in the raw material up to a maximum of 100 ppm, or 200 ppm for lead.

**[2]** Products containing alkylphenol ethoxylates may not be used.

**[3]** Dyes and pigments containing plasticizers within the meaning of VdL Directive 01 may be added<sup>10</sup> in quantities so as not to exceed a maximum plasticizer content of 1 g/m<sup>2</sup> in finished products.

**Compliance Verification:**

*The applicant shall establish compliance with the requirement by submitting declarations from the manufacturers or distributors of the products used. In addition, the applicant shall name the trade names and suppliers of all individual intermediates (raw materials) of the coatings for the products made of insulation material.*

*The applicant shall submit*

- *a declaration from the dye / pigment manufacturer (Annex 3 to the Contract pursuant to DE-UZ 132) for compliance with para. 3.1.6.1, No. 1 – as well as*
- *an applicant declaration (Annex 4 to the Contract pursuant to DE-UZ 132) for compliance with para. 3.1.6.2, Nos. 2 and 3, and a declaration from the intermediate manufacturer (Annex 5 to the Contract pursuant to DE-UZ 132) for compliance with No. 2.*

**3.1.6.2 Preservation (contrary to para. 3.1.1, Nos. 1 and 2)**

The coatings of the suspended ceilings may not contain any biocides except for the micro-biocides used as in-can preservatives as listed in Appendix A to the Basic Award Criteria DE-UZ 102 with their respective contents.

**Compliance Verification:**

*The applicant shall declare compliance with the requirement in Annex 1 to the Contract pursuant to DE-UZ 132.*

**3.2 Use**

**3.2.1 Indoor Air Quality**

The products under para. 2 shall not exceed the emission values listed in Table 1 in the test chamber in conformity with the „Health risk assessment process for emissions of volatile organic compounds (VOC) from building products“ developed by the Committee for Health-related Evaluation of Building Products<sup>11</sup>.

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<sup>10</sup> Directive on the Declaration of Ingredients of House Paints and Varnishes and Related Products. VdL-RL 01/ 3. revised version of June 2004; published by: Verband der Lackindustrie e.V., Frankfurt/M., 2000

<sup>11</sup> Measurements shall be conducted with a volumetric load of 0.4m<sup>2</sup>/m<sup>3</sup> and an air change rate of 0.5/h for ceilings and floors as well as with a volumetric load of 1.0m<sup>2</sup>/m<sup>3</sup> and an air change rate of 0.5/h for walls. The volumetric load shall only take into account the room-side surface. All open edges and the back side (alternatively the test specimen can be placed against the test chamber wall) shall be sealed with an inert material, e.g. low-emitting adhesive tape or aluminium foil. The emissions of the edge covers used shall be determined and documented prior to testing. Thermal insulation materials in the form of loose material shall be tested with a minimum material height of 200 mm.



Table 1: Emission Values

| Substance  | Requirements<br>Final Value<br>28 Days |
|--|--|
| Total organic compounds within the retention range C <sub>6</sub> – C <sub>16</sub> (TVOC)     | < 100 µg/m <sup>3</sup>                |
| Total organic compounds within the retention range > C <sub>16</sub> – C <sub>22</sub> (TSVOC) | < 20 µg/m <sup>3</sup>                 |
| C substances <sup>12</sup>   | < 1 µg/m <sup>3</sup> per single value |
| Total VOC without LIC <sup>13,14</sup>   | < 50 µg/m <sup>3</sup>                 |
| R value  | < 1                                    |
| Formaldehyde   | < 0.05 ppm                             |

The test may be stopped from the 7th day after charging if the required final values of the twenty-eighth day have been reached.

#### **Compliance Verification:**

*The applicant shall submit for each product group<sup>15</sup> a test certificate according to the DIBt test method (Part II of the Guidelines for a health-related evaluation of building products in indoor areas – as of October 2008)<sup>16</sup> including assessment mask (ADAM), based on DIN EN ISO 16000-9 and 10<sup>17</sup> confirming compliance with this requirement. The test certificate shall be issued by a testing laboratory accredited for this test by BAM (Bundesanstalt für Materialforschung und Prüfung - Federal Institution for Material Research and Testing) (Appendix 3 to the Basic Award Criteria). The applicant shall present a test report as described in Annex 2 to the BAM Test Method<sup>18</sup>.*

<sup>12</sup> C substances are carcinogenic substances classified as Carc.Cat. 1 or Carc.Cat. 2 or as Karz. 1A or Karz. 1B in accordance with Regulation (EC) No 1272/2008 or Directive 67/548/EEC (see footnote 4) or which are evaluated and classified according to TRGS 905 (see footnote 7) as category K1 or K2.

<sup>13</sup> Including non-identifiable substances

<sup>14</sup> LCI = Lowest Concentration of Interest cf. "Health risk assessment process for emissions of volatile organic compounds (VOC) from building products", Homepage Umweltbundesamt (Federal Environmental Agency): <http://www.umweltbundesamt.de>, <http://www.umweltbundesamt.de/building-products/archive/AgBB-Evaluation-Scheme2010.pdf>

<sup>15</sup> A product group is a series of products within the limits of variability of the product parameters (set by the manufacturer or a technical specification) and, if applicable, of the use-related parameters with respect to which the specified safety-related properties remain unchanged (i.e. they do not deteriorate in terms of quality). With respect to the Blue Angel the safety-related properties include the emission behaviour. A product group according to DIN 13172 includes products of identical material composition.

<sup>16</sup> Guidelines for a health-related evaluation of building products in indoor areas, October 2008. Deutsches Institut für Bautechnik (DIBt) (German Institute for Building Technology), Berlin 2008; [http://www.dibt.de/de/data/Aktuelles\\_Ref\\_II\\_4\\_6.pdf](http://www.dibt.de/de/data/Aktuelles_Ref_II_4_6.pdf)

For further information on this matter: DIBt News 4/2004, p. 119, as well as DIBt News 1/2009, p. 27.

<sup>17</sup> DIN EN ISO 16000 – Indoor air pollution; Part 9: Determination of the emission of VOCs from building products and furnishing. Emission test chamber method.

<sup>18</sup> In conformity with the method used to determine the emissions of volatile organic compounds for award of the Blue Angel eco-label pursuant to DE-UZ 113; published in: Official Journal of BAM-Bundesanstalt für Materialforschung und -prüfung (Federal Institution for Material Research and Testing), vol. 33 (2/2003), p. 160 et seqq..

### **3.2.2 Serviceability**

The insulation material for use in buildings shall meet the usual quality standards for serviceability. Thus, the insulation material must meet the requirements of all relevant DIN and DIN EN standards effective at the time of application as well as general building inspection requirements for insulation material and suspended ceilings coeffective in particular cases.

#### **Compliance Verification:**

*The applicant shall declare compliance with the requirements in Annex 1 to the Contract pursuant to DE-UZ 132.*

### **3.3 Declaration and Consumer Information**

The manufacturer shall declare the products unequivocally, either on the packaging or on a tag providing the following information. Alternatively, the manufacturer may make the information available to the dealer who will pass it on to the customer at the latter's request:

- Identification of manufacturer or supplier company,
- Product name and material,
- Product details,
- Traceability data, e.g. batch number,
- Building inspection approval.

The product shall be accompanied by a short version of the following instructions and recommendations. The information may, alternatively, be made available at customer's request. Such information shall include a note on how a detailed version can be made available to the client, building owner or site manager (e.g. upon request to the manufacturer, reference to the manufacturer's website).

- Installation notes and instructions
- Disposal instructions for packages and product remainders (e.g. return and recycling options)
- Notes and information on sound insulation and possible improvements.

#### **Compliance Verification:**

*The applicant shall declare compliance with the requirement in Annex 1 to the Contract pursuant to DE-UZ 132 and submit the corresponding product information (e.g. technical data sheets).*

### **3.4 Advertising Statements**

Advertising statements may not include notes such as „tested for its biological living quality“ or those which would play down risks in terms of Article 23, para. 4 of Directive 67/548/EEC, as, for example, „non-toxic“, „non-hazardous to health“.

#### **Compliance Verification:**

*The applicant shall declare compliance with the requirement in Annex 1 to the Contract pursuant to DE-UZ 132 and submit the corresponding product information (e.g. technical data sheets).*

## **4 Applicants and Parties Involved**

Distributors of final products according to Paragraph 2 shall be eligible for application.

Parties involved in the award process are:

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

## **5 Use of the Environmental Label**

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

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

Contracts on the Use of the Environmental Label are concluded to fix the terms for the certification of products under Paragraph 2. Such contracts shall run until December 31, 2019. They shall be extended by periods of one year each, unless terminated in writing by March 31, 2019 or March 31 of the respective year of extension.

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

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

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

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

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