

BLUE ANGEL

The German Ecolabel



Mattresses

DE-UZ 119

Basic Award Criteria

Edition April 2010

Version 1

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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	on the Award of the Environmental Label	Fehler! Textmarke nicht definiert.

1 Introduction

1.1 In co-operation with the Federal Minister for the Environment, Nature Conservation and Nuclear Safety, the Federal Environmental Agency and considering the results of expert hearings conducted by RAL the Environmental Label Jury has set up these Basic Criteria for Award of the Environmental Label. RAL, reg. assoc., has been entrusted with the award of the Environmental Label.

Upon application to RAL and on the basis of a Contract on the Use of the Environmental Label to be concluded with RAL the permission to use the Environmental Label may be granted for all products, provided that they comply with the requirements as specified hereinafter.

1.2 Mattresses may cause environmental impacts throughout their entire life-cycles. That is why the requirements for award of the eco-label refer to manufacture and the materials and substances used during manufacture as well as to the period of actual use and the disposal of used mattresses.

In addition to this, mattresses are large objects used in indoor environments and, when lying, the user is in close proximity to the product. Therefore, for reasons of environment and health, lowest-possible emissions from these products are desirable in the interest of the user. Here, the eco-label is a good means to distinguish low-emission products.

To allow the evaluation of emissions from mattresses these Award Criteria are set up by analogy with the evaluation scheme developed by the Committee for Health-related Evaluation of Building Products (Ausschuss zur gesundheitlichen Bewertung von Bauprodukten) - a federal and länder committee of experts from German environmental and health authorities.

This Environmental Label may be awarded to mattresses which - beyond the legal provisions –

- distinguish themselves by an environmentally compatible manufacture - this particularly applies to textiles and upholstery materials,
- from the health point of view do not have an adverse impact on the living environment and
- do not contain any hazardous substances that might well impede recycling.

2 Scope

These Award Criteria apply to ready-to-use mattresses for indoor use. The term „mattresses“ (bed mattresses) means products providing a surface to sleep or rest upon, consisting of a strong cloth cover filled with filling material that can be placed

on a bed frame. This also includes all types of mattresses with an integrated frame, i.e. upholstered bed bases with a flexible core surrounded by filling material which may be put on a bed frame or designed for free standing, including a specifically designed mattress. Included are head rest pillows forming part of mattress which are made of the same material.

Excluded are Inflatable mattresses and water mattresses.

3 Requirements

The Environmental Label shown on page 1 may be used for the marking of products under paragraph 2, provided that they comply with the following requirements :

3.1 Manufacture

3.1.1 Origin of the Wood

Solid wood, laminated wood, wood slats, veneer and the wood used for the production of plywood shall not be taken from primeval forests (boreal and tropical primary forests). When buying wood the applicant undertakes to give priority to wood from sustainable forestry.

Compliance Verification:

The applicant shall indicate type and geographic origin of the wood used or present certificates according to FSC Criteria (FSC = Forest Stewardship Council) or equivalent certification systems.

3.1.2 Formaldehyde in Wood-based Materials

Products under paragraph 2 may be manufactured by use of wood-based materials marked with the RAL-UZ 76 Environmental Label. Wood-based materials not marked with the Environmental Label according to RAL-UZ 76 must not exceed in their raw state, i.e. prior to machining or coating, a formaldehyde steady state concentration of 0.1 ppm in the test chamber.

Compliance Verification:

The applicant shall name the manufacturer and the product name of wood-based materials carrying the Environmental Label according to RAL-UZ 76. For wood-based materials which do not yet carry the RAL-UZ 76 eco-label the applicant shall present a test certificate according to the test method for wood-based materials¹.

¹ Test Method for Wood-Based Materials, Federal Health Bulletin 10/91 p. 488-489

3.1.3 General Substance Requirements

The materials used for the manufacture of a mattress (textiles, upholstery materials, adhesives) must not contain as integral elements any substances or preparations² which:

1. are listed in Annex I to Directive 67/548/EEC³ and show the properties listed in Section 4, GefStoffV (Ordinance on Hazardous Substances)⁴ as well as the following properties determined more specifically in Annex VI to Directive 67/548/EEC:
 - very toxic (T+)
 - toxic (T);
2. are listed in Annex I to Directive 67/548/EEC and show the properties listed in Section 4, GefStoffV (Ordinance on Hazardous Substances) as well as the following properties determined more specifically in Annex VI to Directive 67/548/EEC:
 - carcinogenic (Carc.Cat. 1, Carc.Cat. 2)
 - mutagenic (Mut.Cat. 1, Mut.Cat. 2)
 - toxic to reproduction (Repr.Cat 1, Repr.Cat. 2);
3. are classified in TRGS 905⁵ as:
 - carcinogenic (K1, K2)
 - mutagenic (M1, M2)
 - toxic to reproduction (R_F1, R_F2)
 - teratogenic (R_E1, R_E2);
4. are classified in the MAK-Value List⁶ as:
 - carcinogenic working materials, Category 1 or Category 2
 - germ-cell mutagenic working materials Category 1 or Category 2.

² Terms as defined in Section 3, Para. 1, Publication of the Revised Version of the German Chemicals Act of 20 June 2002, last amended on 13 May 2004 (German Federal Law Gazette I page 934)

³ Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances; Official Journal of the European Communities (continuous publication) and published in: Series of documents of the Federal Institute for Occupational Safety and Health - Regulations RW 23, „List of Hazardous Substances and Preparations under Annex 1 to Directive 67/548/EEC” as well as Regulations Rw 28: „Classification and Labelling Collection“ (www.baua.de), as amended

⁴ Gefahrstoffverordnung (Ordinance on Hazardous Substances) of 23 December 2004 (Federal Law Gazette I page 3758), last amended on 23 December 2004 (Federal Law Gazette I, page 3855)

⁵ TRGS 905, List of carcinogenic, mutagenic or reprotoxic substances, as amended

⁶ MAK and BAT Value List, Senate Commission for the Testing of Health-Endangering Working Materials, Current Communication No. 40 (2004).

Compliance Verification:

The applicant shall declare compliance with the requirements of para. 3.1.3 by presentation of a statement of the suppliers under Annex 2 to the Contract pursuant to RAL-UZ 119 and submit suppliers' product information in German or English.

3.1.4 3.1.4 Textiles

3.1.4.1 Dyes and Pigments

The dyes or pigments listed in Annex 1 may not be used.

Compliance Verification:

The applicant shall present declarations of his/her textile suppliers in accordance with Annex 3 stating that these substances have not been used or submit evidence according to a test method mentioned in "Öko-Tex Standard 200"⁷.

3.1.4.2 Biocides

The requirements for pesticides of „Öko-Tex Standard 100"⁸, product category II, must be observed for cover fabrics made of vegetable natural fibres, wool and other animal fibres.

Compliance Verification:

The applicant presents the measurement results according to a test method mentioned in „Öko-Tex Standard 200“ for a representative sample of cover fabrics selected in consultation with the testing institute.

3.1.4.3 Alternative Compliance Verification

The requirements of paras. 3.1.4.1 and 3.1.4.2 will also be considered met if the textiles are marked with one of the following eco-labels or quality marks: Öko-Tex Standard 100⁸, Product category II, EU eco-label for Textiles⁹, Quality mark for Natural Textiles¹⁰.

Compliance Verification:

The applicant presents a corresponding certificate or contract which proves that the textiles are allowed to bear the named eco-labels or quality marks.

3.1.4.4 Mothproofing

No mothproofing agents may be used for the protection of cover fabrics and the underlying upholstery made of natural textiles (wool and other animal fibres).

⁷ Öko-Tex Standard 200, Test method, Edition of January 2004

⁸ Öko-Tex Standard 100, General and Special Conditions, Edition of January 2005

⁹ Commission Decision 2002/371/EC of 15 May 2002, Official Journal of the European Communities L 133 of 18 May 2002, p. 29.

¹⁰ International Natural Textile Association, reg. Assoc., Directive as of 20 January 2000

Compliance Verification:

The applicant submits declarations of his/her textiles suppliers according to Annex 3 stating that mothproofing agents have not been used. This requirement shall also be considered met if the textiles bear the quality mark for Natural Textiles.

3.1.5 Upholstery Materials

3.1.5.1 Latex Foam

Chlorophenol, butadiene, nitrosamines and carbon disulphide must be below the following substance-specific limits in the latex foam or as emissions:

- Chlorophenols (including salts and esters) < 1 mg/kg

Compliance Verification:

The applicant shall provide a test report on a test carried out in accordance with the following procedure: Comminution of a 5 gram sample, extraction of chlorophenol or sodium/potassium salt and subsequent derivatization using acetic anhydride. Analysis by means of gas chromatography (GC), detection by use of a mass spectrometer or ECD.

- Butadiene < 1 mg/kg

Compliance Verification:

The applicant shall present a test report on a test carried out in accordance with the following procedure: Comminution and weighing of the sample. Sampling by use of a headspace sampler. Analysis by means of gas chromatography, detection by use of a flame ionization detector.

- N-nitrosamines (test chamber measurement) < 1 µg/m³

Compliance Verification:

The applicant shall submit a test report on a test chamber measurement according to paragraph 3.2.1. The analysis of the N-nitrosamines shall be carried out according to the BGI 505-23 method (formerly: ZH 1/120.23) acknowledged by the German Federation of Institutions for Statutory Accident Insurance and Prevention (Hauptverband der Berufsgenossenschaften - HVBG). Testing shall be done on day 7 after filling.

- Carbon disulphide (test chamber measurement) < 20 µg/m³

Compliance Verification:

The applicant shall present a test report on a test chamber measurement according to para. 3.2.1. Testing shall be done on day 7 after filling. The analysis should take care that there are no inferior findings caused by a breakdown.

3.1.5.2 Polyurethane Foam (PUR)

The following requirements apply to organic tin and physical blowing agents containing polyurethane foam:

- Tin in organic form (tin bonded to a carbon atom) shall not be used.

Compliance Verification:

The applicant shall provide a corresponding declaration from his/her pre-suppliers.

- partially fluorinated hydrocarbons (HFCs), perfluorinated hydrocarbons (PFCs), partially halogenated chlorofluorocarbons (H-CFC), chlorofluorocarbons (CFCs) or methylene chloride shall not be used as physical blowing agent or auxiliary blowing agent.

Compliance Verification:

The applicant shall provide a corresponding declaration from his/her pre-suppliers.

3.1.5.3 Coconut Fibres

The criteria applying to latex foam must be observed for rubber coated fibres.

Compliance Verification:

The applicant either declares that no rubber-coated coconut fibres have been used or submits the test reports listed above under the criteria for latex foam.

3.1.5.4 Wires and Elastic Springs

- a) **Degreasing:** A closed cleaning/degreasing system shall be used for cleaning and/or degreasing wires and/or elastic springs with organic solvents.

Compliance Verification:

The applicant shall declare compliance with the requirement.

- b) **Electroplating:** No electroplated coating shall be applied to the elastic springs.

Compliance Verification:

The applicant shall declare compliance with the requirement.

3.2 Use

3.2.1 Indoor Air Quality

The products under para. 2 must not exceed the following emission values in the test chamber by analogy 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 Products¹¹:

¹¹ The requirements for VOC emissions are aimed at limiting the contribution of mattresses to the VOC content of the indoor air to 200 µg/m³ after 28 days in an average-sized living room with an air change of 0.5/h.

Table 1: Emission Values

Substance	Requirements		
	3 rd Day	Final Value ¹² 7th Day	Final Value 28th Day
Formaldehyde	-	≤ 60 µg/m ³ (≤ 0.05 ppm)	≤ 60 µg/m ³ (≤ 0.05 ppm)
Other aldehydes ¹³ (total)	-	≤ 60 µg/m ³ (≤ 0.05 ppm)	≤ 60 µg/m ³ (≤ 0.05 ppm)
Total organic compounds within the retention range C ₆ – C ₁₆ (TVOC)	-	≤ 500 µg/m ³	≤ 200 µg/m ³
Total organic compounds within the retention range > C ₁₆ – C ₂₂ (TSVOC)	-	≤ 100 µg/m ³	≤ 40 µg/m ³
C-substances ¹⁴	≤ 10 µg/m ³ total	≤ 1 µg/m ³ per single value	≤ 1 µg/m ³ per single value
Total VOC without LCI ^{15 16}	-	≤ 100 µg/m ³ ¹⁷	≤ 40 µg/m ³ ¹⁷
R-Value ¹⁶	-	≤ 1 ¹⁷	≤ 1 ¹⁷

The test may be stopped on the 7th day after loading if the required final values of day 7 are reached and if, compared with the measurement of day 3, no rise in the concentration of one of the detected substances can be observed.

Compliance Verification:

The applicant shall submit a test certificate pursuant to the BAM Test Method¹⁸ (Method for the detection of emissions of formaldehyde and other volatile compounds) based on the two Standards ENV 13419-1 and ENV 13419-2¹⁹ issued by a testing institute recognized for this test by BAM (Bundesanstalt für Materialforschung und Prüfung (Federal Institution for Material Research and Testing) (Annex 2 to the Award Criteria RAL-UZ 119) which confirms compliance with this requirement.

¹² Testing shall be done with a volumetric load of 1-5 m²/m³ and an area-specific flow rate of q = 0.5 m³/m² h.

¹³ Other aldehydes which may be determined by using a BAM test method (Method for the measurement of emissions of formaldehyde and other volatile compounds). Aldehydes can also be determined by use of the DNPH method (dinitrophenylhydrazine = DNPH) (DIN ISO 16000-3).

¹⁴ C-Substances are carcinogenic substances which are classified according to Directive 67/548/EEC or TRGS 905, each as amended, pursuant to Cat. K1 or K2.

¹⁵ including non-identifiable substances.

¹⁶ LCI = Lowest Concentration of Interest cf. "Health risk assessment process for emissions of volatile organic compounds (VOC) from building products", Homepage of Umweltbundesamt (Federal Environmental Agency): <http://www.umweltbundesamt.de>, <http://www.umweltdaten.de/daten/bauprodukte/agbb.pdf>

¹⁷ During the first term of these Award Criteria the total VOC without LCI and the R-value are determined by the testing laboratories and indicated in the test report but even if the limits are exceeded this will not result in a refusal. The hearing on the revision of these Award Criteria will decide on the adoption of these data taking the results into consideration.

¹⁸ Official Journal of BAM - Bundesanstalt für Materialforschung und -prüfung (Federal Institution for Material Research and Testing), vol. 29, 1999, p.234-250

¹⁹ ENV 13419- Determination of the emission of volatile organic compounds (VOC); Part 1: Emission Test Chamber Method and Part 2: Emission Test Cell Method.

Notwithstanding the above-cited BAM Test method, the testing of mattresses is done by use of one complete or one half mattress with a corresponding covering of the edges of the cut.

3.2.2 Serviceability

The mattresses must meet the usual quality standards for serviceability taking into account the standards DIN EN 1334 (Beds and mattresses - Methods of measurement and recommended tolerances), DIN EN 1725 (Beds and mattresses – Safety requirements and test methods) as well as DIN EN 1957 (Beds and mattresses – Test methods for the determination of functional characteristics).

Compliance Verification:

The applicant declares compliance with requirement.

In addition to this, the following strength and durability criteria shall apply:

- a) **Loss of Height:** The loss of height must be less than 15 mm.
- b) **Loss of Firmness:** The loss of firmness must be less than 20%.

Compliance Verification:

The applicant shall provide a test report according to EN 1957. The losses of height and firmness refer to the difference between the initially made measurements (after 100 cycles) and the measurements made upon completion of the durability test (after 30000 cycles).

With respect to product quality and durability, the ash content of the base material is to be determined. For polyurethane foam the ash content must be < 1%. For latex foam it must be < 6%.

Compliance Verification:

The applicant shall submit a test certificate of his/her pre-supplier.

3.3 Recycling and Disposal

With regard to recycling and disposal neither material protection agents (fungicides, insecticides, flame-retardants) nor halogenated organic compounds (e.g. chloro-organic carriers in textiles) may be added to mattresses, including the materials used for the manufacture (textiles, foams, wood-based materials, adhesives etc). Exempted are fungicides exclusively used for pot preservation of aqueous adhesives as well as adhesives based on aqueous dispersions.

Compliance Verification:

The applicant shall declare compliance with the requirement and submit corresponding declarations of his/her pre-suppliers.

3.4 Consumer Information

The mattresses must be accompanied by the following consumer information providing at least the following basic information, possibly in conjunction with other information:

- Manufacturer
- Model name
- Product description, including information on material structure
- Hardness value
- Suitability for adjustable spring bases
- Information on the overall durability (loss of height and firmness)
- Information on the product's wearing resistance (fields of use and, if applicable, material test results, product-specific properties, change caused by product use)
- Cleaning and care instructions.

Compliance Verification:

The applicant presents the consumer information.

3.5 Advertisement Messages

Advertisement messages may not include any information, such as „tested for its biological living quality“ or those which play down risks in terms of Article 23, para. 4 of Directive 67/548/EEC, as, for example, „non-toxic“, „non-harmful“.

The use of product names containing the element “bio” shall not be permitted. The same applies to designations such as „health mattresses“, „mattresses for persons with intervertebral disc problems“, „mattresses for allergic persons“ and the like.

Compliance Verification:

The applicant shall declare compliance with the requirement.

4 Applicants and Parties Involved

4.1 Manufacturers and distributors of products according to para. 2 shall be eligible for application.

4.2 The following parties are involved in the award procedure:

RAL and the Federal State where the production plant is located that manufactures the products to be marked with the Environmental Label.

4.3 The compliance verifications submitted by the applicant will be treated confidentially.

5 Use of the Environmental Label

- 5.1** The terms governing the use of the Environmental Label by the applicant are stipulated by a Contract on the Use of the Environmental Label to be concluded with RAL.
- 5.2** Within the scope of such contract the applicant undertakes to comply with the requirements under paragraph 3 as long as he/she makes use of the Environmental Label.
- 5.3** Contracts on the Use of the Environmental Label are concluded to fix the terms for the labelling of products under paragraph 2. Such contracts shall run until December 31, 2018. They shall be extended by periods of one year each, unless terminated in writing by March 31, 2018 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.
- 5.4** The Contract on the Use of the Environmental Label shall give the following particulars:
- 5.4.1** Applicant (Manufacturer and Distributor)
- 5.4.2** Brand/trade name

Annex 1 to the Award Criteria RAL-UZ 119

Dyes and Pigments the use of which is not permitted under para. 3.1.4.1:

Azo dyes, which potentially cleave one of the aromatic amines listed below (according to Directive 2002/61/EC):

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

Dyes that are carcinogenic, teratogenic or toxic to reproduction (according to Commission Decision 2002/371/EC (EU eco-label for textile products) and Öko-Tex Standard 100):

C.I. Basic Red 9	C.I. 42 500,
C.I. Disperse Blue 1	C.I. 64 500,
C.I. Acid Red 26	C.I. 16 150,
C.I. Basic Violet 14	C.I. 42 510,
C.I. Disperse Orange 11	C.I. 60 700,
C.I. Direct Black 38	C.I. 30 235,
C.I. Direct Blue 6	C.I. 22 610,
C.I. Direct Red 28	C.I. 22 120,
C.I. Disperse Yellow 3	C.I. 11 855.

Potentially sensitizing dyes (according to Commission Decision 2002/371/EC and Öko-Tex Standard 100):

C.I. Disperse Blue 3	C.I. 61 505,
C.I. Disperse Blue 7	C.I. 62 500,
C.I. Disperse Blue 26	C.I. 63 305,
C.I. Disperse Blue 35,	
C.I. Disperse Blue 102,	
C.I. Disperse Blue 106,	
C.I. Disperse Blue 124,	
C.I. Disperse Brown 1,	
C.I. Disperse Orange 1	C.I. 11 080,
C.I. Disperse Orange 3	C.I. 11 005,
C.I. Disperse Orange 37,	
C.I. Disperse Orange 76 (formerly „Orange 37“).	
C.I. Disperse Red 1	C.I. 11 110,
C.I. Disperse Red 11	C.I. 62 015,
C.I. Disperse Red 17	C.I. 11 210,
C.I. Disperse Yellow 1	C.I. 10 345,
C.I. Disperse Yellow 3	C.I. 11 855,
C.I. Disperse Yellow 9	C.I. 10 375,
C.I. Disperse Yellow 39,	
C.I. Disperse Yellow 49.	

Heavy Metal-Containing Dyes

Dyes and pigments that contain cadmium, mercury, lead or nickel.