

**The German Ecolabel**

**BLUE ANGEL**



**Leather**

**DE-UZ 148**

**Basic Award Criteria**  
**Edition March 2015**  
**Version 5**

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



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

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



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



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



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

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## Table of contents

|        |  |    |
|--------|--|----|
| 1      | Introduction.....  | 5  |
| 1.1    | Preface .....  | 5  |
| 1.2    | Background .....   | 5  |
| 1.3    | Objectives of the Blue Angel Eco-Label.....              | 6  |
| 2      | Scope .....  | 6  |
| 3      | Requirements .....                                       | 6  |
| 3.1    | Testing Laboratories .....                               | 6  |
| 3.2    | Origin of Raw Hides and Skins .....                      | 7  |
| 3.3    | Requirements for the Leather Manufacturing Process ..... | 7  |
| 3.3.1  | Water Consumption .....                                  | 7  |
| 3.3.2  | Requirements for Wastewater Treatment .....              | 8  |
| 3.4    | General Substance Requirements .....                     | 9  |
| 3.4.1  | Exclusion of Substances .....                            | 9  |
| 3.5    | Leather .....  | 11 |
| 3.5.1  | Preservatives .....                                      | 11 |
| 3.5.2  | Hexavalent Chromium .....                                | 11 |
| 3.5.3  | Indoor Air Quality .....                                 | 11 |
| 3.5.4  | Extractable Heavy Metals .....                           | 13 |
| 3.5.5  | Organotin Compounds .....                                | 13 |
| 3.5.6  | Dyes and Pigments.....                                   | 13 |
| 3.5.7  | Chloroparaffins/Chloralkanes .....                       | 13 |
| 3.5.8  | Perfluorinated and Polyfluorinated Chemicals .....       | 14 |
| 3.5.9  | Alkylphenol Ethoxylates and Alkylphenols.....            | 14 |
| 3.5.10 | Flame Retardants .....                                   | 14 |
| 3.5.11 | Nanomaterials .....                                      | 14 |
| 3.6    | Odour Test .....   | 14 |
| 3.7    | Fitness for Use .....                                    | 15 |
| 3.8    | Social Standards .....                                   | 15 |
| 3.9    | Packaging.....   | 15 |
| 3.10   | Consumer Information .....                               | 15 |

|   |    |
|---|----|
| 3.11 Advertising Statements .....   | 15 |
| 4 Applicants and Parties Involved .....   | 16 |
| 5 Use of the Environmental Label .....  | 16 |
| Appendix A Biocidal conservatives for Leather .....   | 17 |
| Appendix B Assignment of Hazard Categories and Hazard Statements .....                                      | 20 |
| Appendix C Dyes and Pigments the use of which is not permitted under para. 3.5.6:.....                      | 22 |
| Appendix D Calculation of Chromium and Sulfide in the Partial Stream of the Sewage<br>Treatment Plant ..... | 26 |
| Appendix E Version history.....   | 27 |

**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**

The German leather industry has about 35 industrial companies employing some 2,500 people – making Germany Europe's third-largest leather producing country, behind only Italy and Spain. In 2012, 8 million square meters of area-measured leather were produced in Germany, 75 percent of which were processed by manufacturers in the car and furniture industries. 15 percent were used by the footwear sector and 10 percent were used in the manufacture of high-quality leather goods and equestrian sports gear. The German leather industry's sales amount to 500 million Euros, 70% of which are generated abroad (#VDL). The European leather industry has about 3000 companies employing some 50000 people with sales of nearly 8 billion euros. In 2009, 130 million sq. m. of bovine leather and 43 million sq.m. of sheep and goat leather were produced. (Euroleather,#). With a share of 50 percent, footwear accounts for the largest share in the EU tanneries' production. The clothing industry represent 20% of Europe's total leather production. Leather for furniture and automotive leather account for 17 percent while other leather goods account for 13%. This ratio may vary widely in the individual member states (#BREF, 2013).

Leather production is a complex and complicated finishing process. A skin or hide must pass through roughly 40 processing stages until the organic raw material has been processed into the natural product leather (VDL#). Processing of leather involves the use of numerous chemicals that might have an impact on environment and health. The production of leather entails emissions of substances to air, water or land. Leather is mostly a by-product of meat production. Tanning by the use of chromium(III) salts is, by far, the most widely used method of tanning. The presence of hexavalent chromium compounds is highly problematic for health reasons – especially because of their strong allergenic effect. That is why hexavalent chromium should not be detectable in leather goods. Yet, there are other chemicals, too, which the leather industry cannot fully do without - e.g. preservatives, which are considered problematic.

The environmental and health standards in production, distribution and in the products themselves can only be improved if origin and production conditions as well as the materials used in manufacturing and processing are documented as fully as possible. That is why applicants and suppliers are recommended to introduce an environmental management system and to document the system for the public within the scope of an environmental or sustainability report.

### 1.3 Objectives of the Blue Angel Eco-Label

Improving consumer awareness of the efforts for responsible production requires transparent and credible product information and product labelling. Hence, the aim of the Blue Angel eco-label is to identify and distinguish products that meet high environmental standards during production, minimise the use of health-endangering chemicals, offer good serviceability and the manufacture of which complies with high social standards. Thus, the aim of the Blue Angel eco-label is to provide guidance for the use of sustainable products:

- high environmental standards in the manufacturing process,
- avoidance of harmful chemicals in the product as well as
- good serviceability.

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



## 2 Scope

These Basic Criteria apply to leather according to DIN EN 15987.

### **Compliance Verification**

*The applicant shall specify in Annex 1 the type of leather (e.g. tanning, finishing, use) for which the application for the Blue Angel eco-label is filed.*

## 3 Requirements

The Blue Angel eco-label, illustrated on page 1, may be used for the labelling of products under para. 2, provided they meet the requirements listed below.

### 3.1 Testing Laboratories

The applicant shall submit various test reports prepared by testing laboratories confirming compliance with the requirements.

The testing laboratory shall verify

- that the testing laboratory is accredited or notified in accordance with DIN EN ISO 17025 and that the tests forming the basis of the test results form part of this accreditation with respect to testing fields, methods, and specifications.
- that the testing laboratory is qualified to perform the emission tests according to para. 3.5.3: Indoor Air Quality.

The testing laboratory shall - in coordination with the applicant - select representative test samples that ensure compliance with the requirements for the respective series. A worst-case test shall be performed at the discretion of the testing laboratory using the respective tanning

methods. Testing of dyed leathers shall be done on samples exhibiting dyestuff preparations with the highest solvent content.

If testing identifies substances that do not meet the criteria of these Basic Criteria this shall be recorded in the test report.

### **Compliance Verification**

*Compliance shall be verified by presentation of the accreditation certificates issued by Deutscher Akkreditierungsrat (DAKKS) (German national accreditation body) or another national accreditation body that is a signatory to the Multilateral Recognition Agreement (MLA). The testing laboratory shall substantiate the representative selection and hence compliance with the requirements for the respective series.*

## **3.2 Origin of Raw Hides and Skins**

Raw hides and skins shall be obtained from farm animals (i.e. cattle, calve, goat, sheep, pig)<sup>1</sup> which are primarily kept for milk and/or meat production. Endangered species shall be explicitly excluded. In addition, attention shall be paid to an ethical origin and aspects of animal protection in accordance with Protocol 6.0 of the Leather Working Group<sup>2</sup>.

### **Compliance Verification**

*The applicant shall declare compliance with the requirement in Annex 1 and submit a corresponding declaration stating that no hides and skins of wildlife and endangered species are used and that a verification procedure with respect to the raw material used is performed following Regulation (EC) No 853/2004.*

*Also, the applicant shall submit at RAL gGmbH's request the accompanying documents according to Commission Regulation (EC) No 1243/2007 of 24 October 2007 amending Annex III to Regulation (EC) No 853/2004 as well as Commission Implementing Regulation (EU) No 1097/2012. As regards semi-finished goods (wet blue, among others), verification/traceability shall be in accordance with Protocol 6.0 of the Leather Working Group (effective from January 2015), Section 4, "Raw Material traceability"<sup>2</sup>*

## **3.3 Requirements for the Leather Manufacturing Process**

### **3.3.1 Water Consumption**

The following water consumption limits shall not be exceeded:

- $\leq 25 \text{ m}^3/\text{t}$  altogether for raw hides of cattle - with the following limits for the different sub-processes:
  - ♦  $\leq 18 \text{ m}^3/\text{t}$  for raw hides of cattle to the processing stage "wet blue/wet white"
  - ♦  $\leq 10 \text{ m}^3/\text{t}$  for raw hides of cattle from the wet blue/wet white processing state to the finished leather
- $\leq 45 \text{ m}^3/\text{t}$  for calf and goat skins
- $\leq 80 \text{ m}^3/\text{t}$  for pigs skins and
- $\leq 120 \text{ m}^3/\text{t}$  altogether for sheep skins, with the following limits for the different sub-processes:
  - ♦  $\leq 80 \text{ m}^3/\text{t}$  for sheep skins from raw skin to pickling

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<sup>1</sup> The German Umweltbundesamt shall be entitled to include additional farm animals.

<sup>2</sup> [www.leatherworkinggroup.com](http://www.leatherworkinggroup.com)

- ♦ ≤ 55 m<sup>3</sup>/t for sheep skins from pickling to wet blue
- ♦ ≤ 45 m<sup>3</sup>/t for sheep skins from wet blue to finished leather.

### **Compliance Verification**

*The applicant shall declare compliance with the requirements in Annex 1. The application documents shall include a documentation of the annual production and water consumption figures. (Upon filing the application, the applicant shall present the annual production and water consumption figures for the previous year). These data shall cover the entire leather process. If semi-finished products are processed (wet blue, among others) the pre-supplier shall additionally submit a declaration documenting the annual production and water consumption figures (Annex 2).*

### **3.3.2 Requirements for Wastewater Treatment**

Wastewater from leather production processes shall not exceed the following limits for direct discharge into a water body:

- COD of 200 mg/l or at least a 95% reduction compared with the monthly average inflow
- 10 mg/l of ammonia nitrogen
- 0.5 mg/l of AOX
- value of 2 for toxicity to fish eggs (G<sub>EI</sub>)
- BOD < 25 mg/l
- 2 mg/l of sulfide in the sulfide-containing sub-stream (wastewater from soaking, liming and deliming processes, each including rinsing) and
- 1 mg/l of total chromium in the chromium-containing sub-stream (wastewater from tanning, including samming, as well as from post-tanning operations).

Wastewater from leather production processes shall not exceed the following limits for indirect discharge (prior to the discharge into a municipal or central wastewater treatment plant):

- 2 mg/l of sulfide in the sulfide-containing sub-stream (wastewater from soaking, liming and deliming processes, each including rinsing) and
- 1 mg/l of chromium altogether in the chromium-containing sub-stream (wastewater from tanning, including samming, as well as from post-tanning operations).

### **Compliance Verification**

*The applicant shall declare compliance with the requirements and submit a confirmation by the supervising authority to verify compliance with the requirements in Annex 1. Also, the applicant shall present test reports in accordance with Appendix B5 to the German Wastewater Ordinance or equivalent international test reports.*

*The concentration measurement of sulfide and chromium can be made in the full stream before discharge into a body of water (direct discharge) or into a municipal or central wastewater treatment plant (indirect discharge). If so, the applicant shall report the mixing ratio of the sub-streams in order to allow a back calculation. A retrograde calculation taking into account the degradation rate of the sewage treatment plant in accordance with Appendix D shall also be admissible.*

*The following test methods shall be used:*

- Chemical oxygen demand (COD): ISO 6060 or DIN 38409-41 or DIN-ISO 15705
- AOX (chloride content < 5 g/l): DIN EN ISO 9562 or
- AOX (chloride content > 5 g/l): DIN 38409-22



- *Biological oxygen demand (BOD): DIN EN 1899*
- *Sulfide: DIN 38405-27 or ISO 10530*
- *Chromium: ISO 9174 or DIN EN 1233 or EN ISO 11885*
- *Ammonia nitrogen: DIN EN ISO 11732*
- *Toxicity to fish eggs: DIN EN ISO 15088.*

*In addition, the applicant shall submit a declaration stating that the discharge values of the wastewater treatment plant are checked at least every six months (Annex 1). If the wastewater is discharged into municipal or central wastewater treatment plants (indirect discharge) the applicant shall additionally submit the permit (if discharged to municipal wastewater treatment plants) or the contract terms (if discharged to central wastewater treatment plants) verifying that discharge is permitted and the municipal wastewater treatment plant meets at least the requirements of Directive 91/271/EEC.*

*If semi-finished products are processed (e.g. wet blue) all compliance verifications shall be additionally submitted by the pre-supplier too (Annex 2).*

### **3.4 General Substance Requirements**

#### **3.4.1 Exclusion of Substances**

Compliance with the relevant substance restrictions of the European and German chemicals law as well as with the trade-specific regulations is a prerequisite. With regard to leather these rules are, above all, the following: REACH Regulation (especially Annexes XIV and XVII)<sup>3</sup>, Persistent Organic Pollutant (POP) Regulation<sup>4</sup>, Biocidal Products Regulation<sup>5</sup> and the German Banned Chemicals Ordinance<sup>6</sup>.

Also, the leather product must not contain, as constituent components, any substances with the following characteristics<sup>7</sup>:

- [1]** Substances that have been identified as substances of very high concern according to Regulation (EC) No 1907/2006 (REACH) and have been included in the list (so-called Candidate List) set up in accordance with REACH, Article 59(1).<sup>8</sup>

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<sup>3</sup> Regulation (EC) No. 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

<sup>4</sup> Regulation (EC) No 850/2004 on persistent organic pollutants

<sup>5</sup> Regulation (EU) No 528/2012 concerning the making available on the market and use of biocidal products

<sup>6</sup> German Chemikalien-Verbotsverordnung (ChemVerbV) - Banned Chemicals Ordinance

<sup>7</sup> Constituent components are substances which are added to the product as such or as an ingredient of mixtures and continue to be there unchanged, in order to achieve or influence certain product properties as well as those which are required as chemical decomposition products to achieve the product properties. They do not include, for example, minimized residual monomers.

<sup>8</sup> The Candidate List as amended at the time of application shall be applicable. It can be found at: [REACH-Kandidatenliste](#).

**[2]** Substances that have been classified according to the CLP Regulation<sup>9</sup> in the following hazard categories or meet the criteria for such classification<sup>10,11</sup>:

- ♦ carcinogenic of category Carc. 1A, Carc. 1B
- ♦ mutagenic of category Muta. 1A, Muta. 1B
- ♦ reprotoxic of category Repr. 1A, Repr. 1B
- ♦ acutely toxic of category Acute Tox. 1, Acute Tox. 2
- ♦ toxic to specific target organs of category STOT SE1, STOT SE 2, STOT RE 1 or STOT RE 2
- ♦ sensitizing to the respiratory tract of category Resp. Sens. 1, Resp. Sens. 1 A or Resp. Sens. 1B
- ♦ hazardous to the aquatic environment of category Aquatic Chronic 1, Aquatic chronic 2 or Aquatic Acute 1
- ♦ hazardous to the ozone layer of category Ozone 1

The H-Statements corresponding to the hazard categories can be seen from Appendix B.

**[3]** Substances classified in TRGS 905<sup>12</sup> as:

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

### **Compliance Verification**

*The applicant and the suppliers of semi-finished leather products (e.g. wet-blue) shall declare compliance with the requirements in Annex 1 or Annex 2, respectively, and submit a list of all process chemicals and their manufacturers according to Annex 3. Current Material Safety Data Sheets according to Regulation (EC) 1907/2006 shall be presented in English and German for all process chemicals. Changes in the process chemicals (elimination/addition/modification of composition) shall be reported to RAL gGmbH immediately by submission of the Material Safety Data Sheets.*

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<sup>9</sup> Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures (short: CLP), replacing the old Directives 67/548/EEC (dangerous substance directive) and 1999/45/EC (dangerous preparations directive).

<sup>10</sup> The list of harmonised classification and labelling of hazardous substances is included in Part 3 of Annex VI to the CLP Regulation. Moreover, a comprehensive classification and labelling inventory is publicly accessible via the website of the European Chemicals Agency ECHA which also includes all manufacturer-provided self-classifications of hazardous substances: [ECHA Einstufungs- und Kennzeichnungsverzeichnis](#).

<sup>11</sup> Substances with additional hazardous properties (among others: CMR substances of category 2) are not excluded here but are reduced by the emission evaluation according to the AgBB-Bewertungsschema (Evaluation Scheme of the Committee for Health-Related Evaluation of Building Products) (see para. 3.5.3 Indoor Air Quality”).

<sup>12</sup> TRGS 905 (Technical Rules for Hazardous Substances 905) – List of carcinogenic, mutagenic or reprotoxic substances of the Committee on Hazardous Substances (AGS): TRGS 905. The TRGS 905 list, as amended at the time of application, shall be applicable. TRGS lists those CMR substances where no harmonised classification exists so far or where the Committee on Hazardous Substances arrives at a different classification. The combined CMR list of the statutory accident insurance may also be used as a tool: [CMR-Gesamtliste](#) (Combined list of CMR substances according to CLP Regulation and TRGS 905)

## **3.5 Leather**

### **3.5.1 Preservatives**

Notwithstanding paragraph 3.4 (General Substance Requirements) preservatives shall fall under Appendix A to DE-UZ 148 (edition of March 2015). Chemical preservation for the transportation and storage of raw hides as well as tanned semi-finished products (wet blue, wet white) shall be avoided to the greatest extent possible. A chemical preservation of the finished leather, including the coatings, shall not be permitted<sup>13</sup>.

Testing shall be performed on the finished leather with a moisture content of about 10 percent. It shall be repeated at least every six months and the results shall be presented to RAL gGmbH upon request. If testing reveals preservatives at levels exceeding the maximum values set RAL gGmbH shall be informed immediately.

#### **Compliance Verification**

*The applicant shall declare in Annex 1 that the leather is manufactured without the use of preservatives (complete survey from slaughter to the finished leather) or name the preservatives used. Also, the applicant shall submit to RAL gGmbH first upon filing the application a test report according to DIN EN ISO 13365 listing the preservatives listed in Appendix A along with the test methods described therein. Sampling shall be done in accordance with DIN EN ISO 2418.*

### **3.5.2 Hexavalent Chromium**

Leather requires a determination of hexavalent chromium - with and without a stress test - where hexavalent chromium may not be detectable (detection limit: 3 mg/kg). The test shall be repeated at least every six months and the results shall be submitted to RAL gGmbH upon request. If the test shows that hexavalent chromium is present in concentrations above the detection limit of 3 mg/kg RAL gGmbH shall be informed immediately.

#### **Compliance Verification**

*The applicant shall submit to RAL gGmbH - upon filing the application and, also, each time the composition is changed, a test report according to DIN EN ISO 17075 (February 2008) showing that hexavalent chromium has not been detected (detection limit: 3 mg/kg). Sampling shall be done in accordance with EN ISO 2418. The ground/cut leather sample shall be examined with and without the aid of a stress test (aging test). To perform a stress test, the ground/cut leather sample (single piece approx. 0.5 x 0.5 cm) shall be first stored for 24 hours at a temperature of 80°C in a drying chamber without convection at a humidity of < 5%. After 24 hours the sample shall be taken out of the drying chamber, cooled in an exsiccator for at least 30 minutes and examined in accordance with DIN EN ISO 17075 within 2 hours after taking it out of the drying chamber. If there are variations in the test condition the general conditions shall be specified.*

### **3.5.3 Indoor Air Quality**

The products under paragraph 2 shall not exceed the below-listed emission values in the test chamber following the „health risk assessment process for emissions of volatile organic

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<sup>13</sup> In-can preservatives of product type 6 according to DE-UZ 102 will not be surveyed.

compounds (VOCs) from building products” developed by the Ausschuss zur gesundheitlichen Bewertung von Bauprodukten (Committee for Health-Related Evaluation of Building Products)<sup>14</sup>:

| Substance  | 3 <sup>rd</sup> day                    | Final value (28 <sup>th</sup> day)               |
|--|--|--|
| Formaldehyde   |  | 60 µg/m <sup>3</sup> (0,05 ppm)                  |
| Other aldehydes <sup>15</sup> (total)  |  | 60 µg/m <sup>3</sup>                             |
| Total organic compounds within the retention range C <sub>6</sub> – C <sub>16</sub> (TVOC)   | -                                      | ≤ 450 µg/m <sup>3</sup>                          |
| Total organic compounds within the retention range C <sub>16</sub> – C <sub>22</sub> (TSVOC) | -                                      | ≤ 80 µg/m <sup>3</sup>                           |
| C-substances <sup>16, 17</sup>   | ≤ 10 µg/m <sup>3</sup><br><b>total</b> | ≤ 1 µg/m <sup>3</sup><br><b>per single value</b> |
| Total VOC without LCI <sup>18, 19</sup>  |  | ≤ 60 µg/m <sup>3</sup>                           |
| R-value  | -                                      | ≤ 1  |

The test may be stopped 7 days after charging the test chamber at the earliest if the values determined are less than half the values required in the 28-day test and no significant increases in the concentration of individual substances are observed – in comparison to the levels observed on day 3.

The indoor-air quality tests shall be repeated at two-year intervals in conjunction with the odour test under para. 3.6. The results of such repeat testing shall be reported to RAL gGmbH without further demand.

### **Compliance Verification**

*The applicant shall submit a test report in accordance with the BAM Test method<sup>20</sup> (Method for the detection of emissions of formaldehyde and other volatile compounds) based on the standards DIN ISO 16000-9 and DIN EN ISO 16000-10<sup>21</sup> prepared by a testing laboratory accredited for this test by BAM Bundesanstalt für Materialforschung und -prüfung (Federal Institution for Material Research and Testing), Division 4.2 „Materials and Air Pollutants“ (List of recognized testing laboratories in line with the requirements set out in the respective Basic*

<sup>14</sup> The requirements for VOC emissions are aimed at limiting the contribution of semi-finished leather products to the VOC content of the indoor air to 300 µg/m<sup>3</sup> after 28 days in an average-sized living room with an air change rate of 0.5/h.

<sup>15</sup> Other aldehydes that can be determined 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 (DNPH - dinitrophenylhydrazine) (DIN ISO 16000-3).

<sup>16</sup> C-Substances = carcinogenic substances, pursuant to EU Classification Cat. K1 and K2 as well as TRGS 905 List of carcinogenic, mutagenic or reprotoxic substances, each as amended.

<sup>17</sup> The formaldehyde value shall be ruled out.

<sup>18</sup> including non-identifiable substances.

<sup>19</sup> LCI - Lowest Concentration of Interest cf. "Health risk assessment process for emissions of volatile organic compounds (VOC) from building products", Homepage of the Umweltbundesamt (Federal Environmental Agency" [http://www.umweltbundesamt.de/sites/default/files/medien/355/dokumente/agbb-bewertungsschema\\_2015.pdf](http://www.umweltbundesamt.de/sites/default/files/medien/355/dokumente/agbb-bewertungsschema_2015.pdf) (as amended)

<sup>20</sup> corresponds to Appendix B to the 2013 edition of DE-UZ 38 Basic Criteria

<sup>21</sup> DIN EN ISO 16000 – Indoor Air – Part 9: Determination of the emission of volatile organic compounds from building products and furnishing - Emission test chamber method, as well as Part 10: Determination of the emission of volatile organic compounds from building products and furnishing - Emission test cell method, each as amended.

Criteria for Award of the Eco-Label) that confirms compliance with this requirement. The other parameters (temperature, air humidity, air velocity) shall comply with the BAM method<sup>20</sup>. Testing and sampling conditions can be seen from para. 3.1 (testing laboratories). Testing of leather can be performed best in small test chambers (e.g. 20 litres) or emission test cells. The leather shall be tested back to back when tested in a test chamber. In doing so, it shall be ensured that the area-specific flow rate of 1.5 m<sup>3</sup>/m<sup>2</sup>h is maintained throughout the entire testing period (28 days).

### 3.5.4 Extractable Heavy Metals

The concentrations of the heavy metals listed in the table below shall not exceed the respective detection limits.

| Extractable Heavy Metal             | Limit Value |
|-------------------------------------|-------------|
| Chromium in chromium-tanned leather | 200 mg/kg   |
| Cobalt                              | 4 mg/kg     |
| Copper                              | 50 mg/kg    |

#### Compliance Verification

The applicant shall declare compliance with the requirements in Annex 1 and submit a test report according to DIN EN ISO 17072-1. Test samples shall be prepared in accordance with EN ISO 4044, the samples shall be fully ground up.

### 3.5.5 Organotin Compounds

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

#### Compliance Verification

The applicant shall submit the declarations from all chemicals suppliers confirming compliance with this requirement (Annex 4).

### 3.5.6 Dyes and Pigments

The dyes and pigments listed in Appendix C shall not be used.

#### Compliance Verification

The applicant shall declare in Annex 1 that the substances listed in Appendix C are not used or present compliance verifications in accordance with DIN EN 17234-1. Also, the applicant shall submit the test results obtained – with respect to leather – using the test method described in DIN EN ISO 17234-1 and - with respect to 4-aminobenzene – those obtained using the test method described in DIN EN ISO 17234-2: 2011. The maximum concentration shall be 20 mg/kg each.

### 3.5.7 Chloroparaffins/Chloralkanes

Chloroalkanes shall not be used.

#### Compliance Verification

The applicant shall submit the declarations from all chemicals suppliers confirming compliance with this requirement (Annex 4). Also, the applicant shall submit a test report following DIN EN

ISO 18219:2012 (Leather - Determination of chlorinated hydrocarbons in leather - Chromatographic method for short-chain chlorinated paraffins) on the content of short-chain chloroalkanes. The detection limit for short-chain chloroalkanes shall be 100 mg/kg. This limit must not be exceeded.

### **3.5.8 Perfluorinated and Polyfluorinated Chemicals**

Neither perfluorinated nor polyfluorinated chemicals (PFCs), as for example, fluorocarbon resins and fluorocarbon emulsions, perfluorinated sulfonic and carboxylic acids nor substances that might be broken down into these chemicals shall be used.

#### **Compliance Verification**

*The applicant shall submit the declarations from all chemicals suppliers confirming compliance with this requirement (Annex 4).*

### **3.5.9 Alkylphenol Ethoxylates and Alkylphenols**

Alkylphenol ethoxylates (APEOs) and their derivatives shall not be used.

#### **Compliance Verification**

*The applicant shall submit the declarations from all chemicals suppliers confirming compliance with this requirement (Annex 4).*

*Alternatively, testing may be performed by means of solvent extraction and GC-MS determination or LC-MS determination according to DIN EN ISO 18218, Parts 1 und 2. The content of alkylphenols and alkylphenol ethoxylates shall not exceed 100 mg/kg each.*

### **3.5.10 Flame Retardants**

Flame retardants shall not be used.

#### **Compliance Verification**

*The applicant shall declare compliance with this requirement in Annex 1.*

### **3.5.11 Nanomaterials**

Synthetic nanomaterials<sup>22</sup> shall not be used in processing or finishing.

#### **Compliance Verification**

*The applicant shall submit the declarations from all chemicals suppliers confirming compliance with this requirement (Annex 4).*

## **3.6 Odour Test**

The testing of odour characteristics shall be repeated at two-year intervals in conjunction with emission test under paragraph 3.5.3 (Indoor Air Quality).<sup>23</sup> The results of such repeat testing shall be reported to RAL gGmbH without further demand.

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<sup>22</sup> Definitions following DIN CEN ISO/TS 27687:2010-02 or in accordance with Commission Recommendation 2011/696/EU:  
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:275:0038:0040:DE:PDF>

<sup>23</sup> For guidance on interpreting the test results reference is made to the research report: "Texte 35/2011".

### **Compliance Verification**

*The applicant shall submit a test report according to DIN ISO 16000-28.*

### **3.7 Fitness for Use**

The leather shall meet the usual quality requirements for fitness for use (e.g. tear strength, light fastness, fastness to rubbing in accordance with existing and effective ISO/EN/DIN standards).

### **Compliance Verification**

*The applicant shall declare compliance with this requirement in Annex 1.*

### **3.8 Social Standards**

The applicant undertakes to comply with the Code of Conduct for the Leather Industry<sup>24</sup>.

### **Compliance Verification**

*The applicant shall declare compliance with this requirement in Annex 1.*

### **3.9 Packaging**

Plastics used in packaging shall not contain any halogenated polymers. If the leather is packed in paperboard these cardboard containers shall be made of 80 percent recycled materials. The goods shall be packed so as to allow the outgassing of volatile substances.

### **Compliance Verification**

*The applicant shall declare compliance with this requirement in Annex 1 and, where applicable, present a sample of the product packaging (photo) to RAL gGmbH.*

### **3.10 Consumer Information**

The leather product shall be accompanied by information on further processing providing at least the following information, possibly in conjunction with other information:

**[1]**Information on the type of leather (pursuant to para. 2)

**[2]**Information on the tanning process/tanning agent, including retanning (z. B. chrome tanning, vegetable tanning)

**[3]**Information on the durability (fields of use and, if the occasion arises, results of material tests, product-specific properties, changes due to use).

### **Compliance Verification**

*The applicant shall submit the relevant pages of the consumer information to RAL gGmbH.*

### **3.11 Advertising Statements**

Advertising statements shall not include any notes that would downplay possible risks, such as „tested for its biological living quality“ or those that would play down risks in terms of Article 23, para. 4 of Directive 67/548/EEC, as, for example, „non-toxic“, „non-harmful“.

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<sup>24</sup> <http://www.euroleather.com/index.php/cotance/code-of-conduct>

## **Compliance Verification**

*The applicant shall declare compliance with this requirement in Annex 1.*

## **4 Applicants and Parties Involved**

Manufacturers 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, 2027. They shall be extended by periods of one year each, unless terminated in writing by March 31, 2027 or March 31 of the respective year of extension.

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

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

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

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



## Appendix A Biocidal conservatives for Leather

### 1 Preservation

#### 1.1 Admissible Biocidal Active Substances

The following biocidal active substances may be used in accordance with the DE-UZ 148 Basic Criteria to protect raw hides and tanned semi-finished products (wet blue, wet white) during storage and transportation. In doing so, the limit values listed in the table below shall be observed in the final product "leather".

Table 1

| Biocide                                 | Alternative designation                           | EC Number | CAS Number | Limit Value I |
|---|---|-----------|------------|---------------|
| 4-chloro-3-methylphenol                 | p-chlorocresol, PCMC                              | 200-431-6 | 59-50-7    | < 300 mg/kg   |
| 2-octyl-4-isothiazolin-3-one            | N-octyl-isothiazolinone, OIT                      | 247-761-7 | 26530-20-1 | < 100 mg/kg   |
| 2-phenylphenol                          | o-phenylphenol                                    | 201-993-5 | 90-43-7    | < 500 mg/kg   |
| 2-(thiocyanato-methylthio)benzothiazole | (benzothiazole-2-ylthio)methylthiocyanate (TCMTB) | 244-445-0 | 21564-17-0 | sh. 1.2       |

If Limit Value I is exceeded an additional emission test shall be conducted. The following limit values (Limit Value II) shall apply if the emission test shows that the specified test chamber concentrations<sup>25</sup> are not reached:

|                                | Limit Value II | Test Chamber Concentration |
|--------------------------------|----------------|----------------------------|
| • 4-chloro-3-methylphenol      | < 600 mg/kg    | < 12 µg/m <sup>3</sup>     |
| • 2-octyl-4-isothiazolin-3-one | < 250 mg/kg    | < 1 µg/m <sup>3</sup>      |
| • 2-phenylphenol               | < 1000 mg/kg   | < 23 µg/m <sup>3</sup>     |

#### 1.2 2-(Thiocyanato-methylthio)benzothiazole (TCMTB)

The cumulative parameter with benzothiazole-2-thiol (MBT) as decomposition product of TCMTB shall be determined as limit value. This cumulative parameter shall not exceed the following limit value in the final product "leather":

$$\text{CTCMTB} + (1.43 \times \text{CMBT}) < 500 \text{ mg/kg}$$

<sup>25</sup> The same test parameters as those described under para. 3.3.1 of the Basic Criteria shall apply. Notwithstanding this, the test shall not be stopped (emissions shall be measured on the 28th day).

Table 2

| Substance                               | Alternative Designation                           | EC Number | CAS Number |
|---|---|-----------|------------|
| 2-(Thiocyanato-methylthio)benzothiazole | (Benzothiazole-2-ylthio)methylthio-cyanate, TCMTB | 244-445-0 | 21564-17-0 |
| Benzothiazole-2-thiol                   | 2-Mercapto-benzothiazole, MBT                     | 205-736-8 | 149-30-4   |

### 1.3 Non-Approved Biocidal Active Substances"

According to DE-UZ 148, all other biocidal active substances of PT 9 may not be used to protect raw hides and tanned semi-finished products (wet blue, wet white) during storage and transportation. Analytical verifications shall be provided for the active substances listed in Table 3.

Starting out from the analysis method and from the detection limit of these substances the criterion shall be considered met if the following limit values are not exceeded in the final product "leather":

Table 3

| Biocide   | Alternative Designation         | EC Number       | CAS Number      | Limit Value             |
|---|---------------------------------|-----------------|-----------------|-------------------------|
| Tri-, Tetra-, Pentachlorophenols (including salts and esters) |                                 | Various numbers | Various numbers | < 1 mg/kg <sup>26</sup> |
| Tri-, Tetra-, Pentabromophenols (including salts and esters)  |                                 | Various numbers | Various numbers | < 1 mg/kg <sup>26</sup> |
| Methylene dithiocyanate                                       | Methylene-bis-thiocyanate, MBTC | 228-652-3       | 6317-18-6       | < 5 mg/kg               |
| Methyl benzimidazol-2-ylcarbamate                             | Carbendazim                     | 234-232-0       | 10605-21-7      | < 5 mg/kg               |
| Benzothiazole-2-thiol   | 2-Mercapto-benzothiazole, MBT   | 205-736-8       | 149-30-4        | < 5 mg/kg <sup>27</sup> |

## 2 Analysis Method

- For **chlorophenols, bromophenols**: DIN EN ISO 17070
- For **4-chloro-3-methylphenol, o-phenylphenol, benzothiazole-2-thiol (MBT), 2-octyl-4-isothiazolin-3-one (OIT) and (benzothiazol-2-ylthio)methyl thiocyanate (TCMTB)**: DIN EN ISO 13365
- There are no standardized analysis methods available for **methylene dithiocyanate** and **methyl benzimidazol-2-ylcarbamate**.

<sup>26</sup> Per single substance

<sup>27</sup> If TCMTB is used as a decomposition product MBT shall be analytically determined and comply - as a cumulative parameter with TCMTB - with the test value set out in Paragraph 1. If TCMTB is not used a test value of 5mg/kg shall apply.

### **3 Amendments to Appendix A to the DE-UZ148 Basic Criteria for Leather**

Provided that preservatives are permitted as preservatives for leather (product group 9) within the scope of the evaluation and approval process under the Biocidal Products Regulation (EU) 528/2012 their inclusion in Table 1 of Appendix A to DE-UZ 148 will be checked by the German Umweltbundesamt (UBA) in consultation with Landesgewerbeanstalt (LGA) Bayern (Regional Trade Institute - Bavaria) and Lederfachinstitut FILK (Research Institute of Leather and Plastic Sheeting), Freiberg. Inclusion in Table 1 is limited to those preservatives of product type 9 for which a determination method for leather exists and which are not classified as a strong contact allergen (Car: A) in the BgVV List – (BgVV - Bundesinstitut für Gesundheitlichen Verbraucherschutz und Veterinärmedizin - German institute for consumer health protection and veterinary medicine). In a similar manner, additional limit values may be included or the conditions of use may be adapted to the state of the art.

If a biocidal active substance listed in Table 1 is not included in accordance with the Biocidal Products Regulation (EU) 528/2012 for product type 9 it will be deleted from Table 1 of Appendix A to DE-UZ 148.

## Appendix B Assignment of Hazard Categories and Hazard Statements

The following table assigns the respective hazard statements (H statements) referred to in these Basic Criteria to the hazard categories of the substances that are generally excluded according to para. 3.4.1.

| CLP Regulation (EC) No 1272/2008                                |                   |  |
|---|-------------------|--|
| Hazard category   | Hazard Statements |  |
|   | H Statement       | Wording  |
| <b>Carcinogenic Substances</b>                                  |                   |  |
| Carc. 1A  | H350              | May cause cancer.  |
| Carc. 1B  | H350              | May cause cancer.  |
| Carc. 1A, 1B  | H350i             | May cause cancer by inhalation.                                    |
| <b>Mutagenic Substances</b>                                     |                   |  |
| Muta. 1A  | H340              | May cause genetic defects.   |
| Muta. 1B  | H340              | May cause genetic defects.   |
| <b>Reprotoxic Substances</b>                                    |                   |  |
| Repr. 1A, 1B  | H360D             | May damage the unborn child.                                       |
| Repr. 1A, 1B  | H360F             | May damage fertility.  |
| Repr. 1A, 1B  | H360FD            | May damage fertility.<br>May damage the unborn child.              |
| Repr. 1A, 1B  | H360Df            | May damage the unborn child.<br>Suspected of damaging fertility.   |
| Repr. 1A, 1B  | H360Fd            | May damage fertility.<br>Suspected of damaging the unborn child.   |
| <b>Acutely toxic substances</b>                                 |                   |  |
| Acute Tox. 1<br>Acute Tox. 2                                    | H300              | Fatal if swallowed.  |
| Acute Tox. 1<br>Acute Tox. 2                                    | H310              | Fatal in contact with skin.  |
| Acute Tox. 1<br>Acute Tox. 2                                    | H330              | Fatal if inhaled.  |
| <b>Substances classified for Specific Target Organ Toxicity</b> |                   |  |
| STOT SE 1   | H370              | Causes damage to organs.   |
| STOT SE 2   | H371              | May cause damage to organs.  |
| STOT RE 1   | H372              | Causes damage to organs through prolonged or repeated exposure.    |
| STOT RE 2   | H373              | May cause damage to organs through prolonged or repeated exposure. |
| <b>Substances classified for Environmental Hazards</b>          |                   |  |
| Aquatic Acute 1   | H400              | Very toxic to aquatic life.  |

| <b>CLP Regulation (EC) No 1272/2008</b> |      |   |
|---|------|---|
| Aquatic Chronic.<br>1                   | H410 | Very toxic to aquatic life with long lasting effects.   |
| Aquatic Chronic.<br>2                   | H411 | Toxic to aquatic life with long lasting effects.  |
| Ozone 1                                 | H420 | Hazardous to the ozone layer.<br>New: Harms public health and the environment by destroying<br>ozone<br>in the upper atmosphere |

## Appendix C    Dyes and Pigments the use of which is not permitted under para. 3.5.6:

(according to Commission Decision 2014/350/EC (EU ecolabel for textile products)):

### a)    **Carcinogenic aromatic amines**

| <b>Aryl amine</b>                         | <b>CAS Number</b> |
|---|-------------------|
| 4-aminodiphenyl                           | 92-67-1           |
| Benzidine                                 | 92-87-5           |
| 4-chlor-o-toluidine                       | 95-69-2           |
| 2-naphtylamine                            | 91-59-8           |
| o-amino-azotoluene                        | 97-56-3           |
| 2-amino-4-nitrotoluene                    | 99-55-8           |
| 4-chloraniline                            | 106-47-8          |
| 2,4-diaminoanisol                         | 615-05-4          |
| 4,4'-diaminodiphenylmethane               | 101-77-9          |
| 3,3'-dichlorbenzidine                     | 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'-methylen-bis(2-chloraniline)         | 101-14-4          |
| 4,4'-oxydianiline                         | 101-80-4          |
| 4,4'-thiodianiline                        | 139-65-1          |
| o-toluidine                               | 95-53-4           |
| 2,4-diaminotoluene                        | 95-80-7           |
| 2,4,5-trimethylaniline                    | 137-17-7          |
| 4-aminoazobenzene                         | 60-09-3           |
| o-anisidine                               | 90-04-0           |
| 2,4-Xylidine                              | 95-68-1           |
| 2,6-Xylidine                              | 87-62-7           |

b) **Indicative list of dyes that may cleave to carcinogenic aromatic amines**

| <b>Disperse dyes</b> |                     |
|----------------------|---------------------|
| Disperse Orange 60   | Disperse Yellow 7   |
| Disperse Orange 149  | Disperse Yellow 23  |
| Disperse Red 151     | Disperse Yellow 56  |
| Disperse Red 221     | Disperse Yellow 218 |

| <b>Basic dyes</b> |                  |
|-------------------|------------------|
| Basic Brown 4     | Basic Red 114    |
| Basic Red 42      | Basic Yellow 82  |
| Basic Red 76      | Basic Yellow 103 |
| Basic Red 111     |                  |

| <b>Acid dyes</b>  |                   |                   |
|-------------------|-------------------|-------------------|
| CI Acid Black 29  | CI Acid Red 24    | CI Acid Red 128   |
| CI Acid Black 94  | CI Acid Red 26    | CI Acid Red 115   |
| CI Acid Black 131 | CI Acid Red 26:1  | CI Acid Red 128   |
| CI Acid Black 132 | CI Acid Red 26:2  | CI Acid Red 135   |
| CI Acid Black 209 | CI Acid Red 35    | CI Acid Red 148   |
| CI Acid Black 232 | CI Acid Red 48    | CI Acid Red 150   |
| CI Acid Brown 415 | CI Acid Red 73    | CI Acid Red 158   |
| CI Acid Orange 17 | CI Acid Red 85    | CI Acid Red 167   |
| CI Acid Orange 24 | CI Acid Red 104   | CI Acid Red 170   |
| CI Acid Orange 45 | CI Acid Red 114   | CI Acid Red 264   |
| CI Acid Red 4     | CI Acid Red 115   | CI Acid Red 265   |
| CI Acid Red 5     | CI Acid Red 116   | CI Acid Red 420   |
| CI Acid Red 8     | CI Acid Red 119:1 | CI Acid Violet 12 |

| <b>Direct dyes</b> |                   |                  |
|--------------------|-------------------|------------------|
| Direct Black 4     | Basic Brown 4     | Direct Red 13    |
| Direct Black 29    | Direct Brown 6    | Direct Red 17    |
| Direct Black 38    | Direct Brown 25   | Direct Red 21    |
| Direct Black 154   | Direct Brown 27   | Direct Red 24    |
| Direct Blue 1      | Direct Brown 31   | Direct Red 26    |
| Direct Blue 2      | Direct Brown 33   | Direct Red 22    |
| Direct Blue 3      | Direct Brown 51   | Direct Red 28    |
| Direct Blue 6      | Direct Brown 59   | Direct Red 37    |
| Direct Blue 8      | Direct Brown 74   | Direct Red 39    |
| Direct Blue 9      | Direct Brown 79   | Direct Red 44    |
| Direct Blue 10     | Direct Brown 95   | Direct Red 46    |
| Direct Blue 14     | Direct Brown 101  | Direct Red 62    |
| Direct Blue 15     | Direct Brown 154  | Direct Red 67    |
| Direct Blue 21     | Direct Brown 222  | Direct Red 72    |
| Direct Blue 22     | Direct Brown 223  | Direct Red 126   |
| Direct Blue 25     | Direct Green 1    | Direct Red 168   |
| Direct Blue 35     | Direct Green 6    | Direct Red 216   |
| Direct Blue 76     | Direct Green 8    | Direct Red 264   |
| Direct Blue 116    | Direct Green 8.1  | Direct Violet 1  |
| Direct Blue 151    | Direct Green 85   | Direct Violet 4  |
| Direct Blue 160    | Direct Orange 1   | Direct Violet 12 |
| Direct Blue 173    | Direct Orange 6   | Direct Violet 13 |
| Direct Blue 192    | Direct Orange 7   | Direct Violet 14 |
| Direct Blue 201    | Direct Orange 8   | Direct Violet 21 |
| Direct Blue 215    | Direct Orange 10  | Direct Violet 22 |
| Direct Blue 295    | Direct Orange 108 | Direct Yellow 1  |
| Direct Blue 306    | Direct Red 1      | Direct Yellow 24 |
| Direct Brown 1     | Direct Red 2      | Direct Yellow 48 |
| Direct Brown 1:2   | Direct Red 7      |                  |
| Direct Brown 2     | Direct Red 10     |                  |



c) **Dyes that are CMR or which potentially be sensitizing**

| Dyes that are carcinogenic, mutagenic or toxic to reproduction |                       |                         |
|--|-----------------------|-------------------------|
| C.I. Acid Red 26   | C. I. Direct Black 38 | C.I. Disperse Blue 1    |
| C.I. Basic Red 9   | C. I. Direct Blue 6   | C.I. Disperse Orange 11 |
| C.I. Basic Violet 14   | C. I. Direct Red 28   | C. I. Disperse Yellow 3 |

| Disperse dyes that are potentially sensitising |                         |                         |
|--|-------------------------|-------------------------|
| C.I. Disperse Blue 1                           | C.I. Disperse Blue 124  | C.I. Disperse Red 11    |
| C.I. Disperse Blue 3                           | C.I. Disperse Brown 1   | C.I. Disperse Red 17    |
| C.I. Disperse Blue 7                           | C.I. Disperse Orange 1  | C.I. Disperse Yellow 1  |
| C.I. Disperse Blue 26                          | C.I. Disperse Orange 3  | C.I. Disperse Yellow 3  |
| C.I. Disperse Blue 35                          | C.I. Disperse Orange 37 | C.I. Disperse Yellow 9  |
| C.I. Disperse Blue 102                         | C.I. Disperse Orange 76 | C.I. Disperse Yellow 39 |
| C.I. Disperse Blue 106                         | C.I. Disperse Red 1     | C.I. Disperse Yellow 49 |

## Appendix D Calculation of Chromium and Sulfide in the Partial Stream of the Sewage Treatment Plant

### Calculation of Chromium and Sulfide in the Partial Stream taking into account the Degradation Rate of the Sewage Treatment Plant

- $C_{RohT}$ : Concentration of chromium or sulfide, respectively, in the partial stream before discharge into the sewage treatment plant
- $C_{Roh}$ : concentration of chromium or sulfide of mixed wastewater at the inlet of the sewage treatment plant
- $C_{Rein}$ : concentration of chromium or sulfide at the discharge of the sewage treatment plant
- $\eta$ : degradation rate of the sewage treatment plant in %

The degradation rate of the sewage treatment plant can be calculated using the following formula:

$$\eta = ((C_{Roh} - C_{Rein}) / C_{Roh}) * 100\%$$

The concentration of chromium and sulfide in the respective partial stream can be calculated using the following formula:

- $C_{ReinT}$ : concentration of chromium or sulfide in the partial stream at the discharge of the sewage treatment plant

$$C_{ReinT} = C_{RohT} - ((\eta / 100 \%) * C_{RohT})$$

Example Calculations :

| Chromium   |           |            |               |             |
|------------|-----------|------------|---------------|-------------|
| $C_{RohT}$ | $C_{Roh}$ | $C_{Rein}$ | $\eta$ (in %) | $C_{ReinT}$ |
| [mg/l]     | [mg/l]    | [mg/l]     |               | [mg/l]      |
| 15.38      | 7.23      | 0.71       | 90.18         | <b>1.51</b> |

Result: The limit (1 mg/l) is **not** met.

| Sulfide    |           |            |               |             |
|------------|-----------|------------|---------------|-------------|
| $C_{RohT}$ | $C_{Roh}$ | $C_{Rein}$ | $\eta$ (in %) | $C_{ReinT}$ |
| [mg/l]     | [mg/l]    | [mg/l]     |               | [mg/l]      |
| 5.88       | 3.13      | 0.37       | 88.18         | <b>0.70</b> |

Result: The limit (2 mg/l) is met.

## **Appendix E    Version history**

The following changes were made to ecolabel DE-UZ 148 "Leather, Edition March 2015, Version 1" and required the issuing of an updated version in each case. The version at the time of application is valid. If the changes were required for the implementation of new legal regulations, they apply to all certified products.

Version 2 (09/2017): editorial changes regarding compliance verification to 3.3.2 and new  
Appendix D

Version 3 (03/2018): editorial changes in 3.2

Version 4 (01/2019): Prolongation for 4 years without any change until 31.12.2023

Version 4.1 (01/2022): editorial changes in 3.4.1 and appendix B

Version 5 (01/2023): Prolongation for 4 years without any changes, until 31.12.2027