

# **BLUE ANGEL**

**The German Ecolabel**



**Salt-free Abrasives**

**DE-UZ 13**

**Basic Award Criteria**

**Edition January 2021**

**Version 1**

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



Federal Ministry  
for the Environment, Nature Conservation  
and Nuclear Safety

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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## Table of contents

1	Introduction.....	4
1.1	Preface .....	4
1.2	Background .....	4
1.3	Objectives of the Environmental Label .....	4
1.4	Definitions.....	5
2	Scope .....	5
3	Requirements .....	6
3.1	Absence of admixtures.....	6
3.2	Compliance with LAGA M20 .....	6
3.3	Guarantee of the blunting effect.....	7
3.4	Packaging.....	7
3.5	Key values for the environmental impact.....	8
3.6	Outlook.....	8
4	Applicants and Parties Involved.....	9
5	Use of the Environmental Label.....	9
	Appendix A Cited legislations and standards, literature .....	10
	Appendix B Test report for winter abrasives .....	11

**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

De-icing salts cause severe damage to trees and shrubs. Roadside plants are damaged either directly (salt spray and splash from passing vehicles) or indirectly (from the soil). Protective measures and replacement plants are not only very expensive but the latter only have a limited effect as it takes 40 to 60 years until newly planted trees develop their full potential to improve the environment.

In addition, road salt does not only increase groundwater salinisation but also expedites the corrosion process of bridges and vehicles. The use of salt-free winter abrasives can help avoid these problems, especially in inner-city areas. Both broken, natural aggregates and also light-weight aggregates such as expanded clay, pumice or furnace residues are used as winter abrasives. Mineral residues such as melting chamber granules are currently not used as winter abrasives. The requirements for the blunting effect of the material are based on the guidelines in the H BeStreu standard (2017, formerly TL-Streu), which describes the technical standard for abrasives.

## 1.3 Objectives of the Environmental Label

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



## 1.4 Definitions

For the purpose of their use in these Basic Award Criteria, the following definitions are valid:

**Abrasives:** natural or artificial aggregates used to roughen icy surfaces in winter (according to H BeStreu)

**Ersatzbaustoffverordnung (Substitute Building Materials Ordinance):** Planned ordinance from the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety to regulate the use of substitute mineral building materials such as recycled materials and secondary materials in building materials.

**FGSV:** The Road and Transportation Research Association (FGSV) is an association that promotes scientific research and the further development of technical knowledge in the road and transportation sector by cooperating with the worlds of science, business and public administration.

**H BeStreu:** "Hinweise für die Beschaffung von tauenden und abstumpfenden Streustoffen für den Winterdienst" (Version 2017) (Instructions for the procurement of de-icing and abrasive materials for winter road maintenance) describes the technical rules for de-icing and abrasive materials and replaces the previous standard TL-Streu (Technische Lieferbedingungen für Streustoffe des Winterdienstes - Technical delivery conditions for abrasives for winter road maintenance) from 2004. The requirements with respect to winter abrasives correspond to those described in TL-Streu.

**LAGA:** The "Länderarbeitsgemeinschaft Abfall" (German Working Group of the Federal States on Waste) is a working committee of the Conference of Environmental Ministers whose role is to ensure the uniform implementation of waste law in the different federal states across the Federal Republic of Germany.

**LAGA communication M20:** LAGA M20 describes the requirements for the recycling of mineral residues/waste, which are implemented in different ways by the federal states. Therefore, LAGA M20 is due to be replaced by the "Ersatzbaustoffverordnung" (Substitute Building Materials Ordinance) in the future.

**Corn cob granules:** Corn cobs left over from the harvesting of corn after removing the corn grains that are then cut into granules, sieved and used as abrasives.

**Mineral residues:** Mineral residues are mineral waste in the sense of LAGA M20 which are incorporated into building structures or used to produce building products in unbound or bound forms.

**Melting chamber granules:** Aggregates from hard coal melting furnaces produced by sudden cooling.

## 2 Scope

These Basic Award Criteria apply to salt-free abrasives for use on pavements and similar areas (such as walking paths, park paths, private garden and service paths, squares, public squares, yards and parking areas).

These Basic Award Criteria do not apply to the use of winter abrasives on roads.

### 3 Requirements

#### 3.1 Absence of admixtures

The abrasives named under Paragraph 2 can be labelled with the environmental label illustrated on the first page of these Basic Award Criteria if they are free of admixtures such as de-icing agents or organic substances.

#### **Compliance verification**

*The applicant shall declare compliance with the requirement in Annex 1 and submit a list of the ingredients and their proportions in the product.*

#### 3.2 Compliance with LAGA M20

The winter abrasives must comply with the requirements for unrestricted use in close-to-ground applications "Z0" according to LAGA M20<sup>1</sup>. The applicant must verify compliance with the allocation values for heavy metals in the solid following aqua regia digestion for the following elements (see Table 1):

Table 1: Maximum permissible heavy metal content in mg/kg TS\*

Arsenic	Lead	Cadmium	Chrome	Nickel	Copper	Mercury	Thallium	Zinc
15	70	1	60	50	40	0.5	0.7	150

\*) The permissible heavy metal contents correspond to the allocation values Z0 (installation category Z0 unrestricted open installation) in LAGA Communication M20 "Requirements for the Recycling of Mineral Waste" (Version 06.11.2003)

For mineral residues, the applicant must also verify compliance with the allocation values Z0 for eluates (melting chamber granules) (see Table 2):

Table 2: Standard values for eluates\*\*

Parameter	Dimension	Standard value
Arsenic	µg/l	10
Lead	µg/l	20
Cadmium	µg/l	2
Total chromium	µg/l	15
Copper	µg/l	50
Nickel	µg/l	40
Mercury	µg/l	0.2
Zinc	µg/l	100
Chloride	mg/l	10
Sulphate	mg/l	50
pH value	-	7-12
Electrical conductivity	µS/cm	500

\*\*\*) The standard values correspond to the allocation values Z0 for the eluates of coarse ash/boiler ash, grate ash and melting chamber granules in Table II.4-1 of the "Technischen Regel für die Verwertung von Aschen und Schlacken aus steinkohlebefeuerten Kraftwerken, Heizkraftwerken und Heizwerken" (Technical Rules for the Recycling of Ashes and Slags from Coal-fired Power Plants, Combined Heating and Power Plants as well as Heating Plants) (Version: 06.11.2003)

<sup>1</sup> LAGA M20 (11/1997 and 11/2003) Requirements for the recycling of mineral residues/waste – Technical rules

### **Compliance verification**

*The applicant shall confirm compliance with the requirement in Annex 1. The applicant shall state the geological-mineralogical characterization for abrasives obtained from natural rocks and the source and manufacturing process for lightweight aggregates and mineral residues. The total heavy metal content shall be stated. The heavy metal contents in the eluate shall also be documented for mineral residues. The applicant shall submit a test report according to Appendix B of the Basic Award Criteria for DE-UZ 13.*

### **3.3 Guarantee of the blunting effect**

In order to comply with the user's obligation to ensure road safety, the abrasive must have a blunting effect:

#### **Grain size**

The grain size of the abrasive should mainly (> 50% by mass) fall within a range of 1 to 5 mm. The maximum grain size must not exceed 8 mm. The proportion of fine grains < 0.063 mm must not exceed 5% by mass.

#### **Spreadability**

The moisture content of the delivered abrasive must guarantee that it can be stored and spread at any time. This means that natural, normal aggregates must not exceed a maximum adherent moisture of 2% by mass in accordance with H BeStreu. For other types of abrasives, the manufacturer must define a maximum moisture content, measured according to DIN EN 1097-5, and submit a corresponding declaration.

#### **Impact resistance**

The resistance of the abrasive to impact, measured according to DIN EN 1097-2, must not exceed 30% by mass.

#### **Angularity**

The angularity of the abrasive must guarantee a blunting effect. This requirement is considered to have been complied with if the proportion of cubically shaped particles according to DIN EN 933-4 is > 50% by mass (no sharp-edged particles) and the proportion of fracture surfaces according to DIN EN 933-5 is > 90% by mass.

### **Compliance verification**

*The applicant shall declare compliance with the requirement in Annex 1 and submit a test report according to Appendix B of the Basic Award Criteria DE-UZ 13.*

### **3.4 Packaging**

The plastics used are not permitted to contain any halogenated polymers. If the packaging is made out of plastic, paper or cardboard, it must contain at least 80% recycled materials. Packaging materials are considered recycled if product waste (post-consumer waste) has been subjected to a material recycling process.

### **Compliance verification**

*The applicant shall declare compliance with the requirement in Annex 1 and submit a sample of the product packaging (photo) to RAL gGmbH. The applicant shall submit verification of the proportion of recycled materials in the packaging. If packaging materials that are already certified with the Blue Angel according to DE UZ 30a (Recycled plastics) or DE UZ 56 (Recycled cardboard) are used, the corresponding contract numbers shall be stated.*

### **3.5 Key values for the environmental impact**

The applicant shall inform RAL gGmbH about the extraction site and production site.

The applicant must submit, if available, at least the key indicators for the environmental impact of the product according to DIN EN 15804:2012+A1, including e.g. the global warming potential (GWP) and parameters on the use of resources – for the life cycle stages “from the cradle to the gate” or, if already available, “from the cradle to the grave” in accordance with DIN EN 15804:2012+A2:2019.

The results for all modules must be stated separately.

### **Compliance verification**

*The applicant shall have a valid product-specific environmental product declaration (EPD) according to DIN EN 15804:2012+A1 or DIN EN 15804:2012+2: 2019 at the time of application and shall submit it to RAL gGmbH.*

*If the applicant can only submit an EPD for a class of average products, all of the parameters and justifications used in the EPD background report for the formation of this class of products must be submitted.*

### **3.6 Outlook**

This revision of the Basic Award Criteria is still based on LAGA M20. However, LAGA M20 is due to be replaced by the “Ersatzbaustoffverordnung” (Substitute Building Materials Ordinance) in the future. This will also have implications for the standards on which the Basic Award Criteria are based.

Organic de-icing salts (e.g. formiates, acetates) and organic by-products, such as corn cob granules, have been excluded from the scope of the Basic Award Criteria up to now because there is currently no current environmental assessment of their benefits or, in the case of corn cob granules, no verification of their blunting effect.

From existing environmental assessments of winter road maintenance, it is known that the production and transport of abrasives is linked to significant energy consumption and thus CO<sub>2</sub> emissions. To minimise transport routes, the Basic Award Criteria should promote the use of local/regional sources of abrasives and also promote their reuse. In future revisions of these Basic Award Criteria, it will be examined whether it is possible to develop suitable criteria that cover these aspects.



## **4 Applicants and Parties Involved**

Manufacturers or 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, 2024.

They shall be extended by periods of one year each, unless terminated in writing by March 31, 2024 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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## **Appendix A Cited legislations and standards, literature**

- [1]** DIN EN 933-4:2015-01 Tests for geometrical properties of aggregates - Part 4: Determination of particle shape - Shape index
- [2]** DIN EN 933-5:2005-02 Tests for geometrical properties of aggregates - Part 5: Determination of percentage of crushed and broken surfaces in coarse aggregate particles (including amendment A1:2004)
- [3]** DIN EN 1097-2:2020-06 Tests for mechanical and physical properties of aggregates - Part 2: Methods for the determination of resistance to fragmentation
- [4]** DIN EN 1097-5:2008-06 Tests for mechanical and physical properties of aggregates - Part 5: Determination of the water content by drying in a ventilated oven
- [5]** DIN EN 12457-4:2003-01 Characterization of waste - Leaching; Compliance test for leaching of granular waste materials and sludges - Part 4: One stage batch test at a liquid to solid ratio of 10 l/kg for materials with particle size below 10 mm (without or with limited size reduction). Note: Replacement for the withdrawn standard DIN 38414-4:1984-10, which is still referred to in LAGA M20.
- [6]** DIN EN 13346:2001-04 Characterization of sludges - Determination of trace elements and phosphorus - Aqua regia extraction methods. Note: Replacement for the withdrawn standard DIN 384 14-7, which is still referred to in LAGA M20.
- [7]** DIN EN 15804:2020-03: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
- [8]** H BeStreu: 2017 Hinweise für die Beschaffung von tauenden und abstumpfenden Streustoffen für den Winterdienst (Instructions for the procurement of de-icing and abrasive materials for winter road maintenance). Technical Rules, FGSV No. 379
- [9]** LAGA EW 98:2017-9 Richtlinie für das Vorgehen bei physikalischen und chemischen Untersuchungen von Abfällen, verunreinigten Böden und Materialien aus dem Altlastenbereich Herstellung und Untersuchung von wässrigen Eluaten (Guideline on procedures for physical and chemical examination of waste, polluted soil and materials from contaminated sites, production and examination of aqueous eluates). Short description: EW 98, Version: September 2017 Note: The standard process EW 98 S was replaced by DIN EN 12457-4, while the trough method EW 98 T was replaced by DIN EN 1744-3. LAGA EW 98 thus only describes the method at a constant pH value (EW 98 p).
- [10]** LAGA M20:2003-11 Anforderungen an die stoffliche Verwertung von mineralischen Abfällen - Technische Regeln - Allgemeiner Teil (Requirements for the recycling of mineral wastes - Technical rules - General part). Version: 06/11/2003

**Appendix B Test report for winter abrasives**

Manufacturer / origin
<p><b>Manufacturer / user</b> (name, address, telephone):</p>
<p><b>Origin</b> (storage site, extraction site):</p>

Description												
<p>Natural rock <input type="checkbox"/></p> <p>- Contamination assumed due to the origin <input type="checkbox"/> Yes  <input type="checkbox"/> No</p> <p>Main components, among other things, a mineralogical/petrographic description:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <table style="width:100%; border: none;"> <tr> <td style="border: none;">Admixtures:</td> <td style="border: none;">None</td> <td style="border: none;">Comment if applicable</td> </tr> <tr> <td style="border: none;">- added de-icing agents</td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;">.....</td> </tr> <tr> <td style="border: none;">- foreign bodies</td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;">.....</td> </tr> <tr> <td style="border: none;">- agent with a fertilizing effect</td> <td style="border: none;"><input type="checkbox"/></td> <td style="border: none;">.....</td> </tr> </table>	Admixtures:	None	Comment if applicable	- added de-icing agents	<input type="checkbox"/>	.....	- foreign bodies	<input type="checkbox"/>	.....	- agent with a fertilizing effect	<input type="checkbox"/>	.....
Admixtures:	None	Comment if applicable										
- added de-icing agents	<input type="checkbox"/>	.....										
- foreign bodies	<input type="checkbox"/>	.....										
- agent with a fertilizing effect	<input type="checkbox"/>	.....										

Heavy metal content
<p>(not applicable for natural rock material that has not been contaminated earlier)</p>
<p><b>Agua regia digestion method:</b></p> <p>- DIN 384 14-7 (LAGA M20) or DIN EN 13346:2001-04 <input type="checkbox"/></p> <p>- DIN ISO 11466 (BodSchV) <input type="checkbox"/></p> <p>- Other (please specify) .....</p> <p>.....</p>
<p><b>Elution method (optional):</b></p> <p>DIN 38414-4 (LAGA M20) or DIN EN 12457-4 <input type="checkbox"/></p> <p>LAGA EW 98 method P) <input type="checkbox"/></p> <p>DIN EN 12457-4 (replacement for EW 98 method S) <input type="checkbox"/></p> <p>DIN EN 1744-3 (replacement for EW 98 T) <input type="checkbox"/></p> <p>Other (please specify):.....</p> <p>.....</p> <p>.....</p>

**Heavy metal concentrations in the solid and eluate parameters:**

	Solid content following aqua regia digestion		Aqueous eluate	
	Measured values mg/kg TS	Standard values * mg/kg TS	Measured value	Standard value **
Arsenic		15		10 µg/l
Lead		70		20 µg/l
Cadmium		1		2 µg/l
Total chromium		60		15 µg/l
Copper		40		50 µg/l
Nickel		50		40 µg/l
Mercury		0.5		0.2 µg/l
Thallium		0.7		-
Zinc		150		100 µg/l
Chloride		-		10 mg/l
Sulphate		-		50 mg/l
pH value		-		500 µS/cm
Electrical conductivity		-		7-12

\* The permissible heavy metal contents correspond to the allocation values Z0 (installation category Z0 unrestricted open installation) from LAGA M20 for loam/silt (LAGA M20 Table II.1.2-2).

\*\* The standard values correspond to the allocation values Z0 for the eluates of coarse ash/boiler ash, grate ash and melting chamber granules (LAGA M20 Table II.4-1).

Have the standard values for the heavy metal contents in the solid and the eluate parameters been complied with?

.....

.....

.....

.....

<b>Moisture content according to DIN EN 1097-5</b>	
Water content in % by mass	.....
Spreadability is guaranteed <input type="checkbox"/>	

<b>Grain size distribution:</b>		
	Undersize material in % by mass	
	0.063 mm	8 mm
Actual value		
Limit value	≤ 5	Set point = 100

<b>Grain shape</b> according to DIN EN 933-4:	
Grain shape measurement value	> 50% by mass <input type="checkbox"/> (set value, cubic=proportion of cubically shaped grains with length/width ratio $\leq 3$ in the overall sample)

<b>Percentage of broken grains</b> based on DIN EN 933-5:					
Estimated values <input type="checkbox"/>		Measured values <input type="checkbox"/>			
	Fully broken >90% surface	broken broken	Broken >50% broken surface	Rounded < 50% broken surface	Fully rounded < 10% broken surface
% by mass					

broken surface = visually determined broken surface

<b>Impact crushing value:</b>	
- According to DIN EN 1097-2	<input type="checkbox"/>
- Other (please specify)	<input type="checkbox"/>
Measured value (SZ) .....	(limit value $\leq 30$ )

<b>Further data</b>
.....
.....
.....
.....
.....
.....

Location:  
Date:

Signature of the responsible  
testing laboratory and company stamp: