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Award Guideline 0501

Ceramic Roof Tiles

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For the Awardance of the Eco-Label

1. Application Areas

The following criteria contain the requirements for the awardance of the natureplus eco-label for untreated/natural ceramic roofing tiles or ceramic roofing tiles treated with glazes or engobes. This awardance guideline is to be applied exclusively to the named products.

2. Award Criteria

The prerequisite for the awardance of the natureplus eco-label is the fulfilment of the basic criteria GL-0000, of the chemicals directive GL-5001 and of the guideline for facility inspections (GL-5004).

2.1 Functional Suitability

The product must fulfil the requirements of DIN EN 1304. The manufacturer must provide documentation proving compliance with the requirements of DIN EN 1304.

2.2 Composition, Forbidden Substances, Substance Restrictions

The following are permitted: Clay, loam, quartz sand and water. The use of any additional additive must be technically justified. The proportion of the organic components within the product is restricted to 1% of the weight of the product (total organic carbons).

Glazes and engobes may not contain any metal compounds which are forbidden according to GL-5001.

Roofing tiles with a porous internal structure are not eligible for certification.

The product is subject to laboratory analyses as laid down in section 3 and has to comply with the limit values stated therein.

2.3 Raw Material Sourcing, Production of Preliminary Products, Production

Proof must be provided of the compliance with the official requirements relating to the extraction of the clay, loam and quartz sand, the re-cultivation of the agricultural land and the manufacture of the tiles.

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The production facility must meet the most modern standards relating to

- the efficiency of the kiln and
- the flue gas cleaning.

Atmospheric emissions of

- dust
- sulphur dioxides, nitrous oxides, hydrogen chloride, hydrogen fluoride
- benzene, phenol, styrene, formaldehyde
- volatile organic compounds (specified as the total level of carbons)

must comply with the limitation requirements of the technical code of practice for the prevention of air pollution (TA-Luft) or a comparable standard and/or the regulations for tile production facilities (BGBl. 720/1993).

Periodic controls through internal and external personnel, the throughput levels, the height of the chimney and the location of the facility must all be sufficient to ensure that no plant damage is caused by the effects of any fluoride emissions. If there remains any suspicion of plant damage then measurements on the surrounding vegetation are to be performed. As a guideline, in this case the limits of the Austrian forestry regulations for measurements on vegetation (indicator – fir tree) should be applied:

- 0.8 % total fluoride in the first year of needle growth
- 1 % total fluoride in the second and third years of needle growth

2.4 Usage

The product must not exhibit any unpleasant or foreign smells or odours.

The emissions during use have to be in compliance with the limit values according to section 3.

2.5 Recycling/Disposal

A disposal concept must be provided for the products.

2.6 Ecological Parameters

The manufacturing of all products of this product group must be in compliance with the ecological parameters listed below.

Ecological parameters per kg	Guide values[1]
Primary energy input of non renewable total resources (PENRE[2]) [MJ]	5,5
Primary energy input of non renewable and renewable total resources (PET[3]) [MJ]	7
Photochemical ozone creation potential (POCP) [kg ethylen-equiv.]	0,00015
Acidification potential (AP) [kg SO_2-equiv.]	0,001
Eutrophication potential (EP) [kg PO_4^{3-}-equiv.]	0,0005
Global-warming potential (GWP) [kg CO_2 equiv.]	0,4
Abiotic depletion potential (ADP) [kg Sb equiv.]	0,000001

If a single guide value is exceeded, it will be decided on a case by case basis whether this is permissible for the purpose of optimising the complete product manufacturing process.

[1]Testing method: Calculation of the ecological parameters according to natureplus® implementing provisions for life cycle assessments; inventory analysis analogous to ISO 14040ff; efficiency categories according to CML-IA version 4.1 from October 2012 and characterised as baseline; primary energy requirement according to Frischknecht 1996; global-warming potential 1994/100 years; system limits: raw material sourcing to products ready for shipment

[2] PENRE: **p**rimary **e**nergy input of **n**on **r**enewable **e**nergy resources

[3] PET: **p**rimary **e**nergy inputs of renewable and non renewable **t**otal resources

2.7 Declaration

The product packaging should display a full declaration of the input materials listed, analogue to the EU-Cosmetic Regulations, according to the declining mass percentage. If it is not possible to display this information directly on the product packing, it should be provided with the product in a technical datasheet or sales leaflet (in English or in the national language). If intermediate/preliminary products or formulations are used as input substances and the proportion present in the final product is >0.1 M-%, then all the substances used within these must also be taken into account for the declaration.

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For naming the input materials as part of the declaration the following applies:

- More than 1 M-% - designation of the substance in question
- Less than 1 M-% - at least a functional designation (e.g. “moth proofing agent“)

Furthermore, it is obligatory to provide the following information in a suitable form to the consumer or user (eg. online):

- Instructions for use and safety precautions
- Indications for storage and disposal
- Batch numbers
- City/town and country of production
- Indication of geographical origin of the key input material

When employing components with a potential for environmental hazard, the manufacturer has to suitably indicate measures to be taken to ensure environmental protection during removal and demolition (i.e. controlled deconstruction).

Additionally, the following product-specific information must be made available to the consumer or user.

- Type and field of application
- Guarantee and guarantee period

2.8 Packaging

The packaging used must be recyclable. The manufacturer must be participate in a recycling system if there is one for the corresponding material.

Paper and cardboard packaging must be made from recycled paper. Alternatively, paper from sources as per GL-5002 is permitted.

Plastic packaging must be comprised from polyolefins. PET, polystyrene or polycarbonates are allowed exceptionally in reasonable cases. Packaging made from PVC is generally not permitted.

Packaging must not contain biocides.

The natureplus certification mark has to be printed on the packaging after the awardance of the product.

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3. Laboratory Tests

The products are subject to laboratory analyses to test for harmful substances and undesirable ancillary ingredients. A representative sample is collected during the site inspection. If the sample collection can not be conducted by a natureplus examiner, an independent person designated by natureplus can collect the sample. For products with different sizes but the same composition, a single sample is sufficient.

3.1 Element Analyses

The product is subject to an element analysis to determine the content of harmful elements and to check for undesirable contaminations. The measurements have to be in compliance with the limit values. The analysis is performed according to the current version of the test method TM-02 metals.

The element analysis is performed on untreated product material (without engobe). In case the limit values are exceeded, an element analysis will be performed for the clay and loam raw materials. If the metal/metalloid concentrations recorded can be linked to the raw materials, an additional eluate analysis of the product will be conducted. The requirements of the elemental analysis are deemed to be met if the measurements are in compliance with the eluate limit values as listed below. If the metal/metalloid concentrations can not be attributed to the raw materials, additional research is necessary to elucidate the causes of the element contents.

Furthermore, an eluate analysis has to be performed for products treated with engobes, when the engobes used to treat the product contain metals or metal compounds for which limit values are specified. The requirements of the elemental analysis are deemed to be met if the measurements are in compliance with the eluate limit values as listed below.

Element	Limit values	Unit
Arsenic (As)	20	mg/kg
Cadmium (Cd)	1	mg/kg
Chromium (Cr)	100	mg/kg
Copper (Cu)	100	mg/kg
Mercury (Hg)	0,5	mg/kg
Molybdenum (Mo)	5	mg/kg
Nickel (Ni)	100	mg/kg
Lead (Pb)	20	mg/kg
Antimony (Sb)	5	mg/kg

For the eluate analysis, the following limit values apply:

Element	Limit values	Unit
Arsenic (As)	0,05	mg/l
Cadmium (Cd)	0,004	mg/l
Chromium (Cr)	0,05	mg/l
Copper (Cu)	0,2	mg/l
Mercury (Hg)	0,001	mg/l
Molybdenum (Mo)	0,05	mg/l
Nickel (Ni)	0,04	mg/l
Lead (Pb)	0,05	mg/l
Antimony (Sb)	0,006	mg/l

3.2 Other Analyses

Test parameters	Limit values	Unit	Method
Chromium VI (Cr VI)	≤ 2	**mg/kg**	TRGS 613
Radioactivity			
Artificial radioactivity Cs-137	not measurable		
Natural radioactivity: total avalue according to ÖNORM S 5200	≤ 0,75	**Bq/kg**	

Test Methods

TM-02 Metals: ICP-MS measurements according to DIN EN ISO 17294-2, supplemented with the natureplus implementation rules and a sample preparation adjusted to the issue analysed.

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