natureplus e.V.

Guideline 1006

Clay Boards

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for the awardance of the eco-label

natureplus e.V., Hauptstr. 24, 69151 Neckargemünd, Germany, info@natureplus.org

Introduction

The International Association for Sustainable Building and Living - natureplus association - pursues the goal of promoting sustainable building products and increasing their popularity and use. To this end, sustainability criteria for building products are defined and verified as part of regular conformity assessments at the applicant's premises.

Three comprehensive sustainability definitions are created to achieve a holistic understanding of quality.

CLIMATE PROTECTION

The climate crisis is worsening, and the consequences are becoming increasingly visible. The construction sector is one of the largest emitters, accounting for around 40% [1] of global greenhouse gas emissions. Energy-intensive manufacturing processes, long transport routes and short renovation cycles are often still characteristic of the status quo.

The natureplus certification requires manufacturers to meet limit values on CO2 emissions and primary energy consumption.

[1] UNEP, 2020, 2020 Global Status Report for Buildings and Construction, p. 4.

HEALTHY LIVING

In Western societies, we spend about 90% [2] of our lives in buildings. Pollutants emitted by building materials can accumulate in the indoor air we breathe daily, posing unnecessary health risks to occupants. The accumulation of chemical pollutants from building materials in household dust is also a cause for concern.

The natureplus certification ensures that hazardous input materials are avoided or used in quantities that are harmless to health. Emissions from building products are strictly regulated and regularly monitored.

[2] Umweltbundesamt, o. D., Ausschuss für Innenraumrichtwerte (AIR)

CONSERVATION OF RESOURCES

All construction activities have an impact on nature and the environment, with the consumption of finite resources remaining unacceptably high. The production of building materials in Germany consumes about 60% of our resources, and as much as 90% if only mineral raw materials are considered. At the same time, the construction sector is responsible for 50% of the waste generated. [3]

The natureplus certification sets out requirements for increased transparency in the supply chain, respect for human rights and the environment, and the responsible use of resources throughout the life cycle of a building product.
Sustainable materials should also be durable, reusable, or recyclable.

[3] VDI ZRE, 2019, Ressourceneffizienz im Bauwesen – Von der Planung bis zum Bauwerk, p. 5.

Notes on this product guideline:

The eco-label, the certification programme including all associated documents is the property of the non-profit natureplus® environmental organisation. The Association and its specially appointed Criteria Commission are therefore responsible for the further development of the requirements.

The label is awarded by the European cooperative natureplus Institute SCE mbH.

In the event of textual discrepancies between different language versions of a guideline, the Criteria Commission's Task Force will determine the valid wording. The affected language versions will be amended to reflect the valid wording.

In the event of conflict between the basic guidelines (50XX) and this product guideline, the product award guideline shall prevail.

For questions, criticism and suggestions, please contact:

International Association for Sustainable Building and Living - natureplus association
Hauptstr. 24, 69151 Neckargemünd, Germany
criteria@natureplus.org
+49 (0)6223 866 017 0

1 Application Areas

The following award criteria contain requirements for the natureplus®-ecolabel.

This guidelines applies to clay boards. Clay boards, as defined in this guideline, are factory produced pre-fabricated thin boards from claybuilding materials. This includes lightweight clay boards (i.e. with a raw density under 1200 kg/m3). They are used as cladding for solid building components or in dry wall construction and subsequently rendered/plastered. The use of strengthening materials is permitted in order to increase the tensile stability and reduce damage during transportation of the products. (Lehmbau Regeln 2002/Clay Building Regulations 2002).

The guidelines apply exclusively to the products mentioned.

The following clay boards are outside the scope of this guideline:

- Clay boards made from clay-rendered bearer-boards. The individual layers of these boards are subject to testing according to the relevant individual guidelines.
- Clay boards/slabs/blocks with a thickness of 50 mm or more which are used to construct walls which do not require a sub-construction. These clay boards are covered in guideline RL1101 “Clay Bricks”.
- Clay boards/slabs/blocks with a thickness of 50 mm or more which require a sub- or auxiliary construction. These clay boards are covered in guideline RL1101 “Clay Bricks”.

2 Award Criteria

The prerequisite for a product to be awarded the natureplus® quality label in accordance with these guidelines is compliance with the following award guidelines:

- GL5001 Chemicals Directive
- GL5002 Origin of Wood and Wood Production
- GL-5003 Nature Conservation when Exploiting Mineral Resources
- GL5004 Transparency and Social Responsibility
- GL5010 Low-emission building products
- GL5020 Climate compatibility and energy efficiency

2.1 Functional Suitability

Proof of the following requirements must be supplied by an accredited testing institute:

- Apparent density: The clay boards must be cut to size for a suitable test sample. The rounded mean value from three tests will be regarded as the standard value. Individual values may not deviate from this mean value by more than 10%.
- Dimensional tolerance (maximum deviation from the nominal dimensions according to EN 13168): Thickness: max. +3/-2 mm, Length: max. +5/ -10 mm, Width: ±3 mm, Angle: ≤6 mm/m, Levelness: ≤6 mm
- The flexural tensile strength at a defined sub-construction grid measurement according to DIN EN 310 in N/mm²
- Swelling and shrinkage characteristics: The manufacturer must provide detailed processing/handling instructions and describe in an appropriate manner how cracks in the render/plaster at joints and abutments may be avoided.

2.2 Composition, Forbidden Substances, Substance Restrictions

The product must be made to 99 M-% from mineral and renewable raw materials based upon its state of moisture balance.

Any binding agents must be made predominantly from clay or loam.

Products may contain a maximum of 10 M-% synthetically modified natural materials (e.g. waxes, cellulose and starch derivatives).

The use and addition of biozides is not permitted.

The use of halogen-organic compounds is prohibited.

Synthetic materials and fibres (i.e. Acrylate, Polyvinyl acetate) with the exception of waxes and chemically modified natural materials e.g. methyl-cellulose are not permitted.

Any hydrophobic agents employed must not contain organic solvents or softeners.

The product is subject to assessments as detailed in section 3 and must comply with the limits specified therein.

2.3 Raw Material Sourcing, Production of Preliminary Products, Production

A certificate of origin must be provided for all raw materials.

When using mineral raw materials, the requirements of RL-5003 " Nature conservation in the mining of mineral raw materials" must be complied with.

Clay boards are produced from unformed clay building materials. The normal processes include extrusion press, single press, brush-on process or conveyor belt production. Local on-site manufactured products are outside the scope of this guideline.

If secondary raw materials are used, the product may if required, be tested for material specific parameters.

If methyl-cellulose is used as an additive, the following requirement must be complied with:

- The production of the methyl-cellulose must not negatively impact upon the environment through waste water. Proof of compliance must be provided in the form of an independentexpert assessment report in accordance with BGBl. II Nr. 272/2003 (Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management – Regulations relating to organic chemicals) Appendix 2 or a comparable standard.

In production facilities outside the European Union, the applicant must demonstrate that the production facility has a hazardous substance management system for the

protection of employees that meets the relevant European standards and legal regulations. This must also include information on the release of dust and compliance with the general dust limit values. Where technical or organizational measures cannot ensure compliance with general dust limit values or other workplace limit values, suitable personal protective equipment must be provided. Efforts must be made to minimize avoidable exposure of workers.

2.4 Usage

During use, the product must not have any odor or no odor foreign to the product (see 3.3 Other analysis: Odor).

The product emissions must not exceed the natureplus requirement values for the use phase (see section 3.1 Volatile organic compounds and GL5010 Low-emission building products).

2.5 Reuse, recycling and disposal

Proof must be provided that the products are suitable for recycling or disposal in an inert materialsdisposal site/facility.

2.6 Ecological Parameters

All products in this product group must be manufactured in such a way that the environmental parameters listed in RL5020 are complied with.

2.7 Public Declaration

A public declaration of ingredients[1] must be provided in the official language of the country in which the product is intended for sale. It must be freely accessible. Ingredients must be listed in descending order of weight. The following publicly accessible documentation paths are permitted:

- Product packaging
- Technical data sheet
- Sales brochures
- Website

Ingredients from preliminary products or preparations that remain in the final product with a content of >1 M% must also be included in the full declaration.

The following applies to the public declaration of ingredients:

- above 1 M% the name of the ingredient
- below 1 M% at least the functional name of the ingredient, the mass order is cancelled.

[1] Ingredients are substances and mixtures that remain in the final product. Reactants and ancillary input materials are included in the non-public full declaration submitted to the assessment body

Furthermore, there is an obligation to include the following information with the product or to make it available to the consumer or user in an appropriate manner (e.g. online):

- Instructions for use and safety instructions
- Storage and disposal instructions
- Batch numbers
- Country of production
- Country of origin of input materials > 20 M-% where there is a deviation from the country of production

When using ingredients with an environmentally hazardous potential, the applicant must indicate at an appropriate place which measures are to be taken within the framework of dismantling and demolition work to protect the environment (e.g. controlled dismantling).

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

- As a Building Materials Description, the following terms should be used: - “Clay Boards” or “Lightweight Clay Boards” or alternatively the abbreviated description “CB”. Clay Boards which contain binding agents other than clay or loam are to be described as “Stabilised Clay Boards”.
- Consumption data
- Storage capabilities and storage requirements
- Apparent density in kg/m3
- Thermal conductivity in W/mK
- The water vapour diffusion resistance number
- Specific heat storage capacity

- The flexural tensile strength at the prescribed sub-construction grid measurement in N/mm²
- Dimensional tolerance

2.8 Processing and Installation

The applicant must demonstrate whether low-dust working methods are available for processing the product. If this is the case, these procedures are to be recommended and suitably presented within the processing guidelines. Compliance with the general dust limit value must be ensured by low-dust working methods. If this is not possible, the wearing of personal protective equipment must be prescribed.

2.9 Packaging

The packaging used must be recyclable.

The manufacturer must belong to a recycling system, if one exists for the corresponding material.

Paper and cardboard packaging must be made from recycled paper. Alternatively, paper from sources as per GL5002 is also permitted.

Plastic packaging must be made from polyolefins. PET, polystyrene or polycarbonates are allowed exceptionally in reasonablecases.

PVC packaging is generally not permitted.

Packaging must not contain biocides.

Once awarded, the natureplus label together with the license number must be printed on the packaging or made visible to the consumer in another suitable place.

3 LaboratoryTests

The products are subject to laboratory analyses to test for harmful substances and undesirable ancillary ingredients. A representative sample is collected during the production audit. If the sample collection cannot 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 Volatile Organic Compounds VOC / TVOC

To check the emission of VOC and to determine the TVOC and TSVOC, an emission chamber test is carried out with the product. Measurements are usually performed after 3 and 28 days. The test-chamber examination is performed according to the current version of natureplus guideline 5010. The product must comply with the limit values specified in guideline 5010.

3.2 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.

An eluate analysis is mandatory if the required values of the content analysis are not met.

Element	Limit value [mg/kg]
Arsenic (As)	≤ 20
Cadmium (Cd)	≤ 1
Cobalt (Co)	≤ 20
Chromium (Cr)	≤ 200
Mercury (Hg)	≤ 0,5
Nickel (Ni)	≤ 100
Lead (Pb)	≤ 20

3.3 Other Analyses

Halogenic organic compounds

Test parameters	Limit values	Unit	Method
Halogenic organic compounds: AOX/EOX	≤ 1	mg/kg	TM-03 Halo

Odour

Test parameters	Limit values	Unit	Method
Odour	≤ 3	Odour intensity	TM-04 Odour

Pesticides

To be examined only if necessary:

Test parameters	Limit values	Unit	Method
Total pesticides	≤ 1	mg/kg	TM-05 Pesticides
Individual pesticides Organochlorine pesticides: Aldrin, Chlordane, DDD, DDE, DDT, Dichlofluanid, Dieldrin, Endrin, Heptachlor, Hexachlorobenzene, Lindane, Pentachlorophenol Organophosphate pesticides: Dimethoat, Fenthion, Parathion-methyl, Parathion-ethyl, Phosalon Pyrethroids: Cypermethrin, Lambda-Cyhalothrin, Permethrin Other: Benomyl, Carbendazim, Prochloraz	≤ 0,1	mg/kg	TM-05 Pesticides

4 Appendix

Test methods

TM-01 VOC : Volatile Organic Compounds VOC/TVOC, formaldehyde, acetaldehyde and TSVOC: DIN EN ISO 16000 series expanded by the natureplus implementation rules in guideline 5010.

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.

TM-03 Halo: Halogenic organic compounds after combustion, determined by microcoulometry according to the natureplus implementation rules "AOX/EOX".

TM-04 Odour: natureplus implementation rules "odour intensity", 6-degree grading scale 3 days after loading the test chamber following VDA 270:2018.

TM-05 Pesticides: DFG S 19 extended by natureplus implementing regulations

TM-08 Foreign fibres and foreign substances: scanning electron microscopy SEM

TM-09 Monomeric isocyanates: 24h after test chamber loading

TM-10 PAH: HPLC / GC-MS, sum according to EPA