natureplus e.V.

Guideline 0803

Loam/Clay Based Mortar

Version: 22-05, Jan. 14, 2022

for the awardance of the eco-label

0 Introduction

The International Association for Sustainable Building and Living – natureplus e.V. – has set itself the goal, through the awardance of a quality label (eco-label), of promoting the use of those construction products which are especially suited to achieving the goal of economicsustainability. The three classic pillars of sustainability (the environment, social aspects and the economy) are reflected in natureplus's the three fundamental requirements: the environment, health and functional quality.

Every construction activity encroaches upon the natural environment and is connected with the consumption of limited resources. Our responsibility towards future generations requiresus to undertake every effort to reduce these encroachments to the lowest level possible andto limit our use of resources to a necessary minimum. In view of the foreseeable exhaustion of the reserves of fossil fuels, for example, and the dangers to the earth's climate, such an approach is the only possible means to ensure sustainable and socially equitable development. For the building sector this means promoting the use and application of construction products which help to minimize the consumption of fossil fuels and limited resources. It is natureplus's intention to help promote the commercial success of those products which fulfil these demands.

Energy-saving building methods and the avoidance of uncontrolled ventilation facilitates the accumulation of volatile chemical compounds in the interior air that are emitted by building products and the inventory contained within the building. This presents a(n) (avoidable)danger to the health of the occupants. Also, the accretion of chemical contaminants (especially phthalates/plasticisers) from building products on house dust, the increasing use of biocides in everyday products and the dangers posed by mould growth due to negative product characteristics give rise for concern. An increasing proportion of the population are exhibiting reactions, such as allergies, to the negative health-related effects of these construction products. natureplus therefore evaluates the compatibility of construction products, especially in the usage phase, according to strict standards in order to actively promote those materials which pose no risk to health and are, in addition, conducive to a healthyroom climate.

The natureplus®-Eco-label is an award for construction products which meet the highest standards of sustainability by exhibiting the best possible performance in terms of the environment, health and functionality. Scope of the assessment is the building material as raw material and as component. Only the best products in a particular product group are eligible for certification in order to act as an orientation for all building professionals and consumers towards the promotion of a culture of sustainable building. The natureplus®-Eco-label has anticipated the requirements of construction products of the European Construction Products Directive EU CPR 305/20111: In the future this regulation requires a declaration of performance with evidence of the sustainable use of natural resources and of compliance with requirements in terms of low impact, over their entire life cycle, on the environmental quality or on the climate, energy-efficiency and the hygiene, health and safety of people. The natureplus®-Eco-label already provides these proofs of performance in relation to the essential characteristics of construction products. This is gauged by natureplus according to criteria and requirements which, as a rule, far exceed the legal requirements and as a minimum comply in each case with the strictest recognised standards applicable.

The natureplus®-Eco-label is classified as a Type I environmental label as per ISO 14024, taking into consideration the EU Ecolabel Regulation and the EMAS regulation on environmental auditing, and is valid across the whole of Europe according to uniform criteria. The pre-requirements for a construction product to be certified with the natureplus®-Eco-label are its especially high performance characteristics in terms of the environment, health and sustainability. The main focuses are on the protection of limited resources by the minimisation of the use of petrochemical substances, sustainable raw material extraction/harvesting, resource-efficient production methods and the longevity of the products. Therefore, building products made from renewable raw materials, raw materials which are unlimited in their availability or from secondary raw materials will be favoured for certification.

1 Application Areas

The following criteria contain the requirements for the awardance of the natureplus eco-label for loam/clay mortar for interior applications with a minimum coating thickness of 5mm. This award guideline is to be applied exclusively to the named products.

Products which are used for the coloured design, decoration or configuration of the interior or products with a coat thickness of under 5mm are covered in the natureplus award guideline GL-0607 "Loam/Clay Paints and Thin Layer Loam/Clay Plaster Coatings". Plaster/mortar which contains binding agents other than clay or loam/clay are covered in the natureplus award guideline GL-0804 "Stabilised Loam/Clay Mortar".

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:

- GL-5001 Chemicals Directive
- GL-5003 Nature Conservation when Exploiting Mineral Resources
- GL-5004 Transparency and Social Responsibility
- GL-5010 Low-emission building products
- GL-5020 Climate compatibility and energy efficiency

2.1 Functional Suitability

The following points must be certified by an appropriate testing institute:

A measurement of the dry shrinkage (mm/m) according to DIN 1060 part 3 with a spread measure of 140 mm instead of 180 mm

- The sorption capacity measured upon reaching a moisture equilibrium level of 50% relative humidity and 21°C and increasing the relative humidity to 80% in time intervals of 0.5; 1.5; 3; 6; 12; 24; and 48 hours.
- The flexural tensile strength DIN EN 196-1 in N/mm²
- The compression resistance according to DIN EN 196-1(Test Sample 40 x 40 x 40 mm) in N/mm²
- The abrasion resistance g (See the appendix for the method employed)

2.2 Composition, Forbidden Substances, Substance Restrictions

The product must be made from 100 M-% from mineral and renewable raw materials. Only clay and loam/clay are permitted as binding agents. In particular, the following materials may not be used in the loam/clay mortar:

- Biocides
- Halogen-organic compounds
- Synthetic materials and fibres (e.g. Acrylate, Polyvinyl acetate)
- Lime, gypsum and cement as binding agents
- Cellulose and carbohydrate derivatives

Furthermore, the following substances must not be added to the product:

- glycol ether and esters
- APEOs (alkylphenol ethoxylates)
- halogenated isothiazolinones

- formaldehyde releasing substances

Only pigments prepared from iron oxides or anorganic substances with comparable or less toxicity may be added to the product. Pigments posing ecological and toxicologial problems prohibited as per GL-5001, e.g Naples yellow or metal compounds, are not permitted.

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 RawMaterial Sourcing, Production of Preliminary Products, Production

A certificate of origin must be provided for all renewable raw materials. If mineral raw materials are used, the requirements of GL-5003 must be complied with. Evidence of compliance needs to be provided. If titan dioxide is employed, it must correspond with EU-GL 92/112/EWG.

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

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

Proof must be provided that the products can be recycled (compliance with the requirements of the functional suitability).

The components must be suitable for disposal in an inert materials disposal site/facility according to the "Decision of the EU council of the 19th December 2002 on the definition of criteria and procedures for the receipt and acceptance of waste products at waste disposal sites according to article 16 and appendix 2 of the guideline 1999/31/EG".

2.6 Ecological Parameters

All products in this product group must be manufactured in such a way that the ecological parameters listed in RL 5020 are fulfilled.

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.

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 quantity of the organic aggregates
- Consumption data
- The dry shrinkage measurement in mm/m; including processing/handling instructions if necessary
- Details of the flexural tensile strength.
- Details of the compression resistance according to EN 988-1.
- The pH-Value.
- The sorption capacity after 1.5 and 12 hours.
- Details of the abrasion resistance
- A warning note: Surface treatments may influence the sorption capacity.
- Information to the guarantee terms and guarantee period
- Minimum durability

If the loam/clay mortar is not sold or distributed exclusively by trained specialists, then the manufacturer must make reference on the product to possible serious processing/handling errors (i.e. the addition of excess amounts of water or an insufficient drying period).

2.9 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.

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. If a low VOC emission is to be expected, a termination measurement can also be carried out after 7 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.

Element	**Limit value [mg/kg]**
Arsenic (As)	≤ 5
Cadmium (Cd)	≤ 1
Cobalt (Co)	≤ 20
Chromium (Cr)	≤ 20
Copper (Cu)	≤ 35
Mercury (Hg)	≤ 0,5
Nickel (Ni)	≤ 20
Lead (Pb)	≤ 15
Antimon (Sb)	≤ 5
Tin (Sn)	≤ 5
Zinc (Zn)	≤ 150

3.3 Other Analyses

Halogenic organic compounds

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

pH value

Test parameters	Limit values	Unit	Method
pH value	≤ 12,75		ISO 10390

Odour

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

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.

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

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

TM-04 Odour: natureplus implementation rules "odour intensity", 6-degree grading scale 24h after loading the test chamber

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