



natureplus e.V.

Guideline 0803

Loam/Clay Based Mortar

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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 economic sustainability. 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 requires us to undertake every effort to reduce these encroachments to the lowest level possible and to 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 healthy room 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 award criteria contain requirements for the natureplus®-ecolabel.

This guideline applies to clay plaster mortar for interior use with an application thickness of at least 5 mm.

The guidelines apply exclusively to the products mentioned.

Products for the color design of the interior and for application thicknesses of less than 5 mm are regulated in the natureplus award guideline GL0607 Clay thin-layer coatings and clay coatings.

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

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.

The use and addition of biozides is not permitted.

The use of halogen-organic compounds is prohibited.

In particular, the following materials may not be used in the loam/clay mortar:

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

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.

The product must not be prepared with pigments and siccatives based on lead, cadmium, chrome VI and their compounds. Pigments posing ecological and toxicological problems, e.g. Naples yellow, 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 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](#) must be complied with.

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

During use, the product must not have any odour or any odour foreign to the product. (see section 3.3 Other analysis: Odour)

Emissions must not exceed the natureplus limits according to section 3 during the use phase. (see section 3 and [GL5010](#))

2.5 Recycling/Disposal

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

The products must be disposable in inert landfills in accordance with the "Decision of the EU Council of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC".

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 [1] of the main input material [2]

[1] Designation of countries or more specific regions

[2] Key input material: The input material with the highest proportion in the product

When using ingredients with an environmentally hazardous potential, the manufacturer 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.

- 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).

2.8 Processing and Installation

No further requirements in this section.

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 [GL-5002](#) is also permitted.

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

PVC packaging is generally not permitted.

Packaging must not contain biocides.

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

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 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

Pesticides

Analysis if necessary, if the product contains input materials based on renewable raw materials from agriculture or forestry:

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	≤ 0,1	mg/ kg	TM-05 Pesticides
Organophosphate pesticides: Dimethoat, Fenthion, Parathion-methyl, Parathion-ethyl, Phosalon			
Pyrethroids: Cypermethrin, Lambda-Cyhalothrin, Permethrin			
Other: Benomyl, Carbendazim, Prochloraz			

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 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 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

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

