



natureplus e.V.

## **Guideline 0806**

### **Insulating Plaster/Render**

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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 305/2011: 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.

## I Application Areas

The following criteria contain the requirements for the awardance of the natureplus eco-label for factory produced insulation plaster/ render for interior and exterior applications.

## 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

Insulating plasters/renders must fulfil the requirements of EN 988-1.

Gypsum based insulating plasters/renders must comply with the requirements of EN 13279.

The cement employed must comply with EN 197 or a comparable standard.

The lime employed must comply with EN 459-1 or a comparable standard.

Insulating plasters/renders should exhibit the following characteristics:

- Thermal conductivity  $\lambda \leq 0.13 \text{ W}/(\text{m} \times \text{K})$
- Capillary water absorption coefficient  $\leq 0.40 \text{ kg}/\text{m}^2 \times \text{min}0.5$  (as per EN 1015-18 cf. EN 998-1 category W1)

The following additional requirements apply to insulating plasters/renders which are to be used in interior areas

- Water vapour diffusion resistance number  $\mu < 15$  according to EN 1015-19, as long as this does not conflict with the characteristics of the application area i.e. damp locations and moisture prone areas/rooms (with the exception of residential kitchens and bathrooms).
- Compression resistance  $\geq 0.4 \text{ N}/\text{mm}^2$ . Products suitable for subsequent tiling must exhibit a minimum compression resistance  $\geq 2.0 \text{ N}/\text{mm}^2$ .

The manufacturer must provide documentary evidence of compliance with aforementioned standards.

### 2.2 Composition, Forbidden Substances, Substance Restrictions

The product must be made to at least 99M-% from renewable and mineral raw materials and water.

The following components are permitted: mineralbinding agents such as cement, hydrated lime, gypsum or trass-lime, as well as sand and mineral or renewable raw material lightweight aggregates.

The proportion of synthetic organic components within the product is restricted to a maximum of 1 M-% of the product.

The use and addition of biozides is not permitted.

The use of halogen-organic compounds is prohibited.

The following substances must not be added to the product:

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

Products containing cement must be low in chromate as per TRGS 613.

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.

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

## 2.3 Raw Material Sourcing, Production of Preliminary Products, Production

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

A certificate of the quality of the mineral and renewable raw materials must be provided. In particular, it must be ensured that the secondary raw materials are of a consistent quality level.

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 cement is employed as a binding agent, the cement manufacturer must provide confirmation that the following requirements have been met:

- The cement production equipment must meet modern standards of energy efficiency for the ovens and for the flue gas cleaning equipment.
- If waste products are also incinerated, the emissions must comply with the guideline 2000/76/EG of 4. December 2000 concerning the incineration of waste - Point II.1 "Special Regulations for Cement Ovens in which Waste Products are Incinerated"

If gypsum is employed as a binding agent, the manufacturer must provide proof that the following requirements have been met:

- Particular consideration of the need to protect the natural environment and biodiversity in the extraction of natural gypsum.
- The use of suitable secondary raw materials (e.g. flue gas desulphurisation (FGD)-gypsum, industrial gypsum, recycled production and building-site waste).

Proof must be provided of compliance with statutory regulations relating to the extraction of the natural, mineral raw materials for the binding agent(s).

Documentation on the energy consumption levels and emission analyses must be provided in order that they can be confirmed.

For renewable raw materials, proof must be provided that regionally available or secondary raw materials (e.g. production waste) have been used.

## 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.

Emissions must not exceed the natureplus limits according to section 3 during the use phase. (see section 3 and RL5010)

## 2.5 Recycling/Disposal

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 of the key input material

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.

- Specification of the main binder and the lightweight aggregate.

- Vapour diffusion resistance according to EN 1015
- Compressive strength according to EN 998-1

## 2.8 Processing and Installation

The manufacturer must provide qualified processing/usage guidelines which contain comprehensive details on the correct methods of preparation and application with respects to structural aspects. In particular, the processing/usage instructions should include:

- Measures for the correct preparation of the foundation substrate.
- Recommendations on the correct coating sequence and/or constructions in relation to the compressive strength and water vapour diffusion characteristics.
- Advice on measures to avoid the formation of cracks in the finishing coating.

Products containing cement must comply with the requirements of EU-RL 2003/53/EG.

## 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.

The natureplus certification mark has to be printed on the packaging after it has been awarded.

## 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)	≤ 10
Cadmium (Cd)	≤ 1
Cobalt (Co)	≤ 20
Chromium (Cr)	≤ 50
Copper (Cu)	≤ 35
Mercury (Hg)	≤ 0,5
Nickel (Ni)	≤ 40
Lead (Pb)	≤ 15
Antimon (Sb)	≤ 5
Tin (Sn)	≤ 5
Zinc (Zn)	≤ 300

In case the limit values are exceeded, an element analysis will be performed for the 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.

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The analysis is carried out according to the eluate in accordance with DIN 38414 Part 4; DIN EN ISO 17294 in the respective current version. The applicable limit values are listed in the following table.

Element	Limit value [mg/l]
Arsenic (As)	≤ 0,05
Barium (Ba)	≤ 2
Cadmium (Cd)	≤ 0,005
Chromium (Cr)	≤ 1
Cobalt (Co)	≤ 0,1
Mercury (Hg)	≤ 0,001
Nickel (Ni)	≤ 0,2
Lead (Pb)	≤ 0,04

### 3.3 Other Analyses

#### Chromium VI

Test parameters	Limit values	Unit	Method
Chromium VI (Cr VI)	≤ 1	mg/kg	TRGS 613

#### Halogenic organic compounds

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

#### Polycyclic aromatic hydrocarbons

If the product contains secondary materials:

Test parameters	Limit values	Unit	Method
Polycyclic aromatic hydrocarbons	≤ 0,003	mg/l	DIN 38407 part 18

#### Phenol



If the product contains secondary materials:

Test parameters	Limit values	Unit	Method
Phenol	≤ 0,02	mg/l	DIN 38409 part I 6

pH value

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

Asbestos fibres

If the product contains secondary materials:

Test parameters	Limit values	Unit	Method
Asbestos fibres	asbestos free per DAB <sup>1</sup>		SEM

1: DAB: German Register of Medicines

Odour

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

Pesticides

Test parameters	Limit values	Unit	Method
Total pesticides	≤ 1	mg/ kg	TM-05 Pesticides
Individual pesticides	≤ 0,1	mg/ kg	TM-05 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			

## 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

