



natureplus e.V.

Guideline 0300

External thermal insulation composite systems

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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 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 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 the following external thermal insulation composite systems. These systems are comprised of an insulation material, adhesive, fixings and a render system (base render coat with an inlaid fibre-glass webbing/mesh (strengthening), primer or key coat and a finishing coat of plaster).

- External thermal insulation composite systems employing cork insulating boards
- External thermal insulation composite systems employing wood fibre insulating boards
- External thermal insulation composite systems employing hemp insulating boards
- External thermal insulation composite systems employing reed insulating boards
- External thermal insulation composite systems employing mineral foam insulating boards

The award guideline is to be applied exclusively to those products mentioned in this guideline.

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

Requirements for the system components

Wood fibre insulation boards must fulfil the requirements of the award guideline RL0201 "Porous Wood Fibre Board". The award guideline RL0201 is also to be used in the case of products with a raw density below 230 kg/m³.

Hemp insulation boards must fulfil the requirements of the award guideline RL0101 "Hemp Insulation".

Insulation boards made from reeds must fulfil the requirements of the award guideline RL0111 "Straw and Reed Based Insulation".

Cork insulation boards must fulfil the requirements of the award guideline RL0113 "Cork Insulation Boards".

Mineral based foam insulation boards must fulfil the requirements of the award guideline RL0406 "Mineral Based Foam Insulation".

Foam glass boards must meet the requirements of the award guidelines RL0406 "Insulation boards made of foam glass".

2.1 Functional Suitability

An official technical approval for the whole system must be available.

The European Organisation for Technical Approvals (EOTA) Guideline ETAG 004 and the Guideline for External Thermal Insulation Composite Systems with rendering for the use on timber frame building kits CUAP 04.04./26 (Common Understanding of Assessment Procedure (CUAP)) are to be used in the technical approval and evaluation of the products. Compliance with the relevant, valid national application documents must be confirmed.

The fixing plugs/anchors must comply with the relevant national requirements of the guideline ETAG 014 "PLASTIC ANCHORS FOR FIXING OF EXTERNAL THERMAL INSULATION COMPOSITE SYSTEMS WITH RENDERING".

Broad-head fixings must comply with the requirements of CUAP 04.04/26. The vapour diffusion resistance number μ (according to EN 12086) of the insulating material must not exceed a value of 10.

2.2 Composition, Forbidden Substances, Substance Restrictions

For top renders, the following requirements apply:

The levels of organic components within the finishing render may not exceed 7 % (inclusive silicon resins) and may not exceed a maximum of 5% in the base render and the adhesive render. The following additives/components are not permitted:

- Glycol ethers and -esters
- APEO's (Alkyl phenol ethoxylate)
- Formaldehyde separators/dispersers

For wall paints, the following requirements apply:

Preservatives may only be used for pot-preservation for retail ready-to-use liquid products. They are not permitted for film-preservation. Biocides may not be used in products which, due to their properties (e.g. highly alkaline), do not require pot-preservation.

Siccatives (driers) containing cobalt are prohibited.

The product must not be classified in WGK 2 or WGK 3 (Water Hazard Classes 2 and 3) according to VwVwS (Administrative Regulation on the Classification of Substances Hazardous to Waters into Water Hazard Classes) of the German Environmental Agency (Umwelt Bundes Amt).

With regard to the recommended application, the amount of anorganic white pigments of artificial origin is restricted to 38 g/m².

The following substances must not be added to the product:

- softening agents (according to VdL-GL 01)
- glycol compounds
- APEOs (alkylphenol ethoxylates)
- halogenic organic compounds
- organic tin compounds
- azo dyes resulting in carcinogenic amines
- biocides not used for in-can conservation (film preservatives)
- 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.

Only pigments from titanium oxide, iron oxide or non-organic substances with comparable or lower toxicity levels are permitted. Pigments which are ecologically or toxicologically questionable, such as metal compounds which are forbidden as per GL-5001 are not permitted under any circumstances. The proportion of organic solvents must not exceed 0.05 M-%. The render/mortar may only contain low levels of chromates and must not display high levels of radioactivity.

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

The use of biocides for surface protection (eg. against algae growth) is not permitted. If pot-conservation is used, it must not be employed in amounts which imply the misuse for surface protection.

Plastic fixing plugs and accessories must be halogen-free and if available from recycled materials.

2.3 RawMaterial Sourcing, Production of Preliminary Products, Production

No further requirements in this section.

2.4 Usage

No further requirements in this section.

2.5 Recycling/Disposal

A disposal concept must be provided for the complete system. 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". Alternatively the components must be suitable for disposal in a waste incineration plant.

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).

2.8 Processing and Installation

No further requirements in this section.

2.9 Packaging

No further requirements in this section.

3 Laboratory Tests

Finishing plaster (white goods), rendering and adhesive mortars are subject to the following 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

No further requirements in this section.

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 |
| Mercury (Hg) | ≤ 1 |
| Nickel (Ni) | ≤ 20 |
| Lead (Pb) | ≤ 15 |
| Antimon (Sb) | ≤ 5 |
| Tin (Sn) | 150 |

3.3 Other Analyses

Chromium VI

| Test parameters | Limit values | Unit | Method |
|---------------------|--------------|-------|----------|
| Chromium VI (Cr VI) | ≤ 2 | mg/kg | TRGS 613 |

Halogenic organic compounds

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

Free Formaldehyde

| Test parameters | Limit values | Unit | Method |
|-------------------|--------------|-------|--|
| Free Formaldehyde | ≤ 20 | mg/kg | UV-Vis (VdL-RL 03) steam dest., AcAc, UV |

Total VOC (TVOC)

| Test parameters | Limit value | Unit | Method |
|------------------|-------------|-------|-----------------------------------|
| Total VOC (TVOC) | ≤ 1000 | mg/kg | Headspace GC/MS analog E DIN55649 |

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