natureplus e.V.

Award Guideline 1002

# Gypsum Boards

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For the Awardance of the Eco-Label

# 1. Application Areas

The following criteria contain the requirements for the awardance of the natureplus eco-label for gypsum boards. The award guideline is to be applied exclusively to those products mentioned in this guideline. Composite systems employing gypsum boards or adhesive-bonded boards are outside the scope of this guideline.

# 2. Award Criteria

The prerequisite for the awardance of the natureplus eco-label is the fulfilment of the basic criteria GL-0000, of the chemicals directive GL-5001 and of the guideline for facility inspections GL-5004.

## 2.1 Suitability of Application

The products must comply with the requirements of EN 520. The manufacturer must provide the user with information on constructions, in particular for partition walls, which have been proven to exceed the official requirements relating to sound-proofing and fire protection.

## 2.2 Composition, Forbidden Substances, Substance Restrictions

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

The use of hydrophobic (water resistant/repellent) substances in products which are designed for use in areas with increased moisture levels e.g. bathrooms and the use of fibre-glass reinforcement components is permitted, if required, as long as these products are correctly labelled. Any hydrophobic agents employed must not, however, contain organic solvents or softeners. The use of further components and additives must be technically justified. This also applies to components and additives which are supposed to offer additional benefits, for example the ability to bind or break down harmful substances contained in interior room air or to shield against electro-smog. The manufacturer must provide adequate evidence of the functionality of these additional benefits.

The product and any preliminary products must not contain any halogenated isothiazolinones. The use of synthetically produced, so called, nano materials which can detach themselves from the product matrix is not permitted as long as a conclusive evaluation of the health risks and the toxicological risks to the environment of these materials has not been completed. The manufacturer is responsible for providing such proof.


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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

The gypsum boards must exhibit an above average ecological performance, in the areas of the conservation of natural resources and energy efficiency in both the extraction of resources and the production process, in order to be eligible for the awardance of the natureplus®-eco Label. A product eligible for certification must exhibit a distinct, above-average performance in at least one of these areas and must not fall below the level of accepted comparative standards in the other areas. The manufacturer must provide suitable proof of compliance with these criteria. For products which are not normally sold in markets beyond national borders, the comparative standards shall be deemed to be the normal industry standards of the domestic country; otherwise the standards of the target country shall apply. Included in these areas are:

The sustainable sourcing/extraction of raw materials

- 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)

Resource-efficient production

- The energy efficiency of the dryer and the press
- Reduced production related water consumption
- Reduced atmospheric emissions, especially dust
- Overfulfilment of the ecological indicator requirements

Recycling and reusage

- The recovery of gypsum- and board production waste and its reuse within the production process or an alternative form of reuse
- A system for recycling building-site waste (off-cuts) and/or the reuse of the products

A certificate of origin must be provided for all raw materials. If mineral raw materials are used, the requirements of GL-5003 must be complied with. Evidence of compliance needs to be provided. Evidence must be provided that the gypsum employed within the products is of a pure quality.

If flue gas desulphurisation (FGD)-gypsum is used, the manufacturer may demonstrate this through specifications to the supplier relating to the use of high quality fuels, appropriate combustion techniques, filter sequences and regular intake controls. The special paper (card wrapping) must be made to at least 80% from recovered paper.

The manufacturer must demonstrate that a hazardous substance management according to national standards and regulations is available at the production facility for employee protection. Information on dust release and compliance with general dust limit values must be included therein. Where compliance with the general dust limit values or other occupational limit values cannot be guaranteed despite technical and organisational measures, personal protection equipment must be available. It must be aimed for a minimisation of avoidable burdens of the employees.

## 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

The board components must be suitable for recycling. A system for product returns and recycling must be at least in the preparatory stage.

## 2.6 Ecological Parameters

The manufacturing of all products of this product group must be in compliance with the ecological parameters listed below.

| Ecological parameters per m³ | Guide values[1] |
|---|---|
| Primary energy input of non renewable total resources (PENRE[2]) [MJ] | 3500 |
| Primary energy input of non renewable and renewable total resources (PET[3]) [MJ] | 4000 |
| Photochemical ozone creation potential (POCP) [kg ethylen-equiv.] | 0,06 |
| Acidification potential (AP) [kg $SO_2$-equiv.] | 0,6 |
| Eutrophication potential (EP) [kg $PO_4^{3-}$-equiv.] | 0,25 |
| Global-warming potential (GWP) [kg $CO_2$ equiv.] | 200 |
| Abiotic depletion potential (ADP) [kg Sb equiv.] | 0,00007 |

If a single guide value is exceeded, it will be decided on a case by case basis whether this is permissible for the purpose of optimising the complete product manufacturing process.

[1]Testing method: Calculation of the ecological parameters according to natureplus® implementing provisions for life cycle assessments; inventory analysis analogous to ISO 14040ff; efficiency categories according to CML-IA version 4.1 from October 2012 and characterised as baseline; primary energy requirement according to Frischknecht 1996; global-warming potential 1994/100 years; system limits: raw material sourcing to products ready for shipment

[2] PENRE: **p**rimary **e**nergy input of **n**on **r**enewable **e**nergy resources

[3] PET: **p**rimary **e**nergy inputs of renewable and non renewable **t**otal resources

## 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.

- Board type according to EN 520 or a national standard (e.g. ÖN B 3410 and DIN 18180)
- Awardance reason as per 2.3 (field of above-average performance)

For the constructions referred to in section 2.1, both the numerical value of the rated sound insulation value $R'_w$ (for Germany or a corresponding national standard) and the fire resistance class must be declared in the product literature/data sheet.

## 2.8 Processing and Installation

When bonding the boards or the joints with adhesive, it must be possible to use a natureplus certified adhesive or a very low emission adhesive product in accordance with EMICODE EC1 or a comparable standard (e.g. “Blauer Engel“ – the Blue Angel environmental quality label). The manufacturer must include a reference to at least one of these products within the product documentation.

The manufacturer must demonstrate whether working procedures avoiding dust release are available for the processing of the product. If this is the case, these procedures are to be recommended and suitably presented within the processing guidelines. If compliance with the general dust limit values might not be guaranteed, wearing personal protection equipment must be recommended. For glass fibre reinforced boards, proof must be supplied that no respirable fibres can issue from the reinforcement material – even if the boards are cut, sawn or drilled into.

## 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.


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# 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 site inspection. If the sample collection can not 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 VOC - TVOC

The product is subject to a test-chamber examination to survey the emissions of VOC, SVOC and other volatile compounds and to check compliance with the limit values. Measurements usually occur after 3 and 28 days. When low VOC emissions are to be expected, the emissions test can be terminated early, if a measurement 7 days after loading of the test chamber does not object to this. The test-chamber examination is performed according to the current version of the test method TM-01 VOC.

**Emission measurement after 3 days**

| Test parameters | Limits | Unit |
|---|---|---|
| VOC (VOC, VVOC, SVOC) classified in:<br><br>Regulations (EC) No. 1272/2008: categories Carc. 1A und 1B, Muta 1A und 1B, Repr. 1A und 1B; TRGS 905: K1, K2, M1, M2, R1, R2; IARC groups 1 u. 2A; DFG MAK-list III1, III2 | < 1 | **µg/m³** |
| Total volatile organic compounds (TVOC) | ≤ 3000 | **µg/m³** |

**Emission measurement after 28 days**

| Test parameters | Limits | Unit |
|---|---|---|
| Total volatile organic compounds (TVOC) | ≤ 300 | **µg/m³** |
| | | |
| of which: | | |
| Total bicyclic terpenes | ≤ 200 | **µg/m³** |
| Total sensitising substances per MAK IV, BgVV-list cat. A, TRGS 907 | ≤ 100 | **µg/m³** |
| Total VOC (VOC, VVOC, SVOC) classified in: | ≤ 50 | **µg/m³** |

| | | |
|---|---|---|
| Regulation (EC) No. 1272/2008: Categorie Carc. 2, Muta 2, Repr. 2; TRGS 905: K3, M3, R3; IARC: group 2B; DFG MAK-list: III3 | | |
| Total aldehyde, C4-C11, acyclic, aliphatic | ≤ 100 | **µg/m³** |
| Styrene | ≤ 10 | **µg/m³** |
| Methylisothiazolinone (MIT) | < 1 | **µg/m³** |
| Benzaldehyde | ≤ 20 | **µg/m³** |
| Total (VOC) without non-identified compounds | ≤ 100 | **µg/m³** |

A calculation of the r-value is performed. The limit value is ≤ **1**.

**Other emission measurements after 28 days**

| Test parameters | Limit values | Unit |
|---|---|---|
| Total semi-volatile organic compounds (TSVOC) | ≤ 100 | **µg/m³** |
| Formaldehyde | ≤ 24 (1) | **µg/m³** |
| Acetaldehyde | ≤ 24 (1) | **µg/m³** |

(1) 24 µg/m³ ≈ 0,02 ppm

**Termination criteria:**

The emissions test can be terminated 7 days after loading the test chamber, if the values measured at this time are lower than 50% of the 28-day threshold limits.

## 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 values | Unit |
|---|---|---|
| Arsenic (As) | 5 | mg/kg |
| Cadmium (Cd) | 1 | mg/kg |
| Chromium (Cr) | 20 | mg/kg |
| Copper (Cu) | 35 | mg/kg |
| Mercury (Hg) | 1 | mg/kg |

| | | |
|---|---|---|
| Molybdenum (Mo) | 5 | mg/kg |
| Nickel (Ni) | 20 | mg/kg |
| Lead (Pb) | 15 | mg/kg |
| Antimony (Sb) | 5 | mg/kg |
| Selen (Se) | 10 | mg/kg |
| Tin (Sn) | 5 | mg/kg |
| Thallium (Tl) | 1 | mg/kg |
| Zinc (Zn) | 300 | mg/kg |

## 3.3 Other Analyses

| Test parameters | Limit values | Unit | Method |
|---|---|---|---|
| Halogenic organic compounds: AOX/EOX | ≤ 1 | **mg/kg** | TM-03 Halo |
| Odour | ≤ 3 | **Odour intensity** | TM-04 Odour |
| **Radioactivity** | | | |
| Artificial radioactivity Cs-137 | not measurable | | |
| Natural radioactivity: total avalue according to ÖNORM S 5200 | ≤ 0,75 | **Bq/kg** | |

## 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