

natureplus e.V.

Award Guideline 1001

Gypsum-Bonded Fibre Boards

Issued: June 2015

For the Awardance of the Eco-Label





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1. Application Areas

The following criteria contain the requirements for the awardance of the natureplus eco-label for gypsum-bonded fibre boards. The award guideline is to be applied exclusively to those products mentioned in this guideline. External thermal insulation composite systems employing gypsum-bonded fibre 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

Please note: The following functional suitability requirements remain valid until the introduction of a European Standard for gypsum-bonded fibre boards.

The dimensions (length, width, thickness, diagonal etc) must comply with the tolerance requirements of comparable products (e.g. gypsum/plaster boards).

The apparent density of the boards must lie in the range 1.0 – 1.4 g/cm³

The flexural strength of the boards must be $\geq 5.5 \text{ N/mm}^2$. Boards with a thickness of 18mm or greater must exhibit a flexural strength of $\geq 5.0 \text{ N/mm}^2$

The boards must be classified as non-flammable.

After the absorption of moisture and subsequent drying, the boards should not exhibit any loss of strength or stability.

If the product is to be used in timber-framed constructions for structural related purposes (strengthening/stiffening of ceilings, roofs or walls), its suitability must be confirmed by relevant technical building approvals.

Compliance with the aforementioned requirements should be ensured by means of self-monitoring and third-party control based upon EN 520 ⁽¹⁾ or a comparable standard and should be verified by a state authorised test institute.



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For the following constructions, measurement results of the sound reduction index value R'_w (according to DIN 4109 or a comparable standard) and the fire rating classification (according to DIN 4102 or a comparable standard) must be provided:

- Stud partition wall with a profiled, sheet-steel frame, coated on both sides with a single layer of the product applying for certification (board thickness 12.5mm) and containing a 40mm layer of insulation material.
- Stud partition wall with a profiled, sheet-steel frame, coated on both sides with a double layer of the product applying for certification (board thickness 12.5mm) and containing a 40mm layer of insulation material.

⁽¹⁾ EN 520, Gypsum/plaster boards - Definition, requirements and test procedures

2.2 Composition, Forbidden Substances, Substance Restrictions

At least 98% of the product based upon its state of moisture balance must be made from mineral or renewable raw materials.

The following component substances are permitted: gypsum, cellulose fibres from recovered paper and water.

The use of hydrophobic (water resistant/repellent) substances within the product is permitted if required. Any hydrophobic agents employed must not, however, contain organic solvents or softeners.

The use of further additives must be technically justified.

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. 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.

By the use of cellulose fibres from recovered paper, the manufacturer must ensure through intake controls that paper contaminated with heavy metals is not employed.



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The production equipment must comply with modern standards relating to

- the energy efficiency of the dryer and the press
- the water consumption and the water circulation management (recycling)

Atmospheric emissions, especially dust, must comply with the limits of TA-Luft (German technical code of practice for atmospheric emissions) or a comparable regulatory standard.

Production waste and swarf must be re-employed in the production process or utilised by another means.

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.

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 m ³	Guide values ¹
Primary energy input of non renewable total resources (PENRE ²) [MJ]	5000
Primary energy input of non renewable and renewable total resources (PET ³) [MJ]	7000
Photochemical ozone creation potential (POCP) [kg ethylen-equiv.]	0,14



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Acidification potential (AP) [kg SO ₂ -equiv.]	2
Eutrophication potential (EP) [kg PO ₄ ³⁻ -equiv.]	0,5
Global-warming potential (GWP) [kg CO ₂ equiv.]	450
Abiotic depletion potential (ADP) [kg Sb equiv.]	0,0003

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.

¹Testing 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: primary energy input of non renewable energy resources

³ PET: primary energy inputs of renewable and non renewable total 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



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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).

For the constructions specified in section 2.1, the product documentation must contain a declaration of the measurement results of the sound reduction index value $R'w$ and the fire rating classification.

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 bonding material 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.

2.9 Packaging

The packaging used must be recyclable. The manufacturer must 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: 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	$\mu\text{g}/\text{m}^3$
Total volatile organic compounds (TVOC)	≤ 3000	$\mu\text{g}/\text{m}^3$

Emission measurement after 28 days

Test parameters	Limits	Unit
Total volatile organic compounds (TVOC)	≤ 300	$\mu\text{g}/\text{m}^3$
of which:		
Total bicyclic terpenes	≤ 200	$\mu\text{g}/\text{m}^3$
Total sensitising substances per MAK IV, BgVV-list cat. A, TRGS 907	≤ 100	$\mu\text{g}/\text{m}^3$
Total VOC (VOC, VVOC, SVOC) classified in:	≤ 50	$\mu\text{g}/\text{m}^3$

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/m ³
Styrene	≤ 10	µg/m ³
Methylisothiazolinone (MIT)	< 1	µg/m ³
Benzaldehyde	≤ 20	µg/m ³
Total (VOC) without non-identified compounds	≤ 100	µg/m ³

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/m ³
Formaldehyde	≤ 24 ⁽¹⁾	µg/m ³
Acetaldehyde	≤ 24 ⁽¹⁾	µg/m ³

⁽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 value	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