natureplus e.V.

Award Guideline 1104

THERMAL INSULATION COMPOSITE SYSTEMS
Bricks and Blocks containing Integrated Insulation

Issued: June 2016

For the award of the Eco-Label

1 Application Areas

The following criteria contain the requirements for the award of the natureplus eco-label for bricks and blocks filled with insulation material. These products are a combination of two products that can each be awarded the natureplus eco-label. The award guideline is to be applied exclusively to products of the stated combination.

2 Award Criteria

Those products which comply with the requirements of this guideline (GL-1104) can be awarded the natureplus eco-label.

Only bricks and blocks which comply with the respective nature award guideline GL-1102 or GL-1107 may be used.

Bricks and blocks may only be filled with insulation material which has been certified or is certifiable according to a natureplus-guideline.

If an insulation material is used that has been awarded the natureplus eco-label, no additional evaluation of the insulation material is necessary. If the materials are not currently certified by natureplus, an evaluation according to the corresponding guideline is required.

2.1 Functional Suitability

The manufacturer must provide information on the technical and physical characteristics of the product and specify the standards, test procedures and methods used to determine these properties. If these standards specify requirements for the products, it is to be clearly indicated whether they have been met.

The product must have been awarded a valid, state-specific or the European technical approval in order to meet the basic requirements for functional suitability.

The product must fulfil the following requirement for thermal transmittance calculated in accordance with the current, applicable European standards:

• Thermal transmittance (U-Wert): ≤ 0.2 W/m^{2}K

If the product does not meet the requirement(s) for thermal transmittance, it must be clearly stated on the product packaging and in the technical data sheets that further measures are necessary in order to achieve the required insulating effect.

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The fire behaviour of the product must correspond to at least building material class E according to EN 13501-1.

If the product is to be marketed in countries in which other requirements apply than those in the standards previously specified in this guideline, the product must also comply with these country-specific standards. The manufacturer must name the countries in which the products are sold and must provide proof of compliance with the local standards by provision of official certification from an approved testing institution. Furthermore, the product must meet any additional requirements specified by natureplus.

2.2 Composition, Prohibited Substances, Substance Restrictions

Bricks and blocks filled with integrated insulation must be made to at least 99% from the basic components masonry and insulation.

The use of additional additives, up to 1 M-%, is only permissible if they are necessary to anchor/bind the insulation material within the brick/block. These additives must fulfil the requirements of the Chemicals Directive GL-5001. The use of such additives may require that additional laboratory tests must be conducted, in accordance with Section 3 of this guideline.

In order to evaluate these additives, a full declaration of the input components must be provided.

For construction blocks filled with insulation, in accordance with GL-0401, only the exclusive use of inorganic additives is permitted.

2.3 Raw Material Sourcing, Production of Prefabricated Products, Production

The requirements for raw material sourcing and production of prefabricated products are addressed in the guidelines for the prefabricated products.

The manufacturer must demonstrate that for the protection of employees, a system of management for hazardous substances which conforms to national standards and legal regulations is in place at the production facility. 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 made available. The employer must take measures to minimize the levels of avoidable exposure to the employees to harmful substances.

2.4 Usage

The product must not exhibit any unpleasant or foreign smells or odours during use.

The emissions during use must comply with the threshold values according to section 3.

2.5 Recycling/Disposal

A disposal concept for the products must be presented and must contain details on the system for component separation and recycling.

Disposal at 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/EC” is permitted for mineral components. If this is not possible, alternative disposal procedures must be specified by the manufacturer.

2.6 Environmental Indicators

Based upon the certification conducted the environmental indicators, in accordance with the relevant natureplus guidelines, for the end-product masonry bricks/blocks are available.

All insulating materials employed must meet the requirements for the environmental indicators as specified in the relevant insulation guideline. If the insulation material has been awarded a current natureplus certification, these values are available. In all other cases, the values must be ascertained within the framework of the natureplus assessment procedures.

Based upon the data for the bricks/blocks and the insulation material, a common environmental performance evaluation will be calculated according to the respective proportions of these components within the product and the data specified below.

For this purpose the manufacturer must supply the following data:

- Details of the energy consumption required to combine the product components i.e. the hollow construction brick/block and the insulation.

- The transportation burden for the insulation materials i.e. the mode of transport and the distance between the manufacturer and the supplier.

The product manufacturing process for all products within this product group must comply with the following criterion:

In the impact category "Primary energy inputs of renewable and non-renewable total resources (PET)" the sum total of the energy consumption for the binding of the insulation to the brick/block and the transport burden for the transportation of the insulation material

to the manufacturer must not exceed 5 % the sum total applicable to the brick/block and the insulation.

2.7 Declaration

The product packaging should display a full declaration (in English or in the national language) 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. If prefabricated 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 included in 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

Furthermore, it is obligatory to provide the following information in a suitable form to the consumer or user (e.g. online):

- Instructions for processing, use and safety precautions
- Instructions for storage and disposal
- Batch numbers
- City/town and country of production
- A full declaration of the country of origin of the main components

If components are employed which are potentially environmentally damaging, the manufacturer must, in an appropriate place, provide information on the environmental protection measures to be taken during removal and demolition (i.e. controlled deconstruction).

Additionally, the following product-specific information must be made available to the consumer or user.

- Labelling according to the guidelines of the European Community (Communauté Européenne, CE marking) or the respective general technical approval, including details of the scope of application/validity
- Apparent density in kg/m³
- Thermal insulation rated value λ_D according to EN ISO 10456 or an equivalent standard
- Thermal design value λ_R according to EN ISO 10456 or an equivalent standard

- Type and field of application, i.e. as per DIN 4108, Austrian standard ÖNORM B 6000
- Euro class according to EN 13501-1

2.8 Processing

The manufacturer must recommend a natureplus-certified mortar for use in the installation/ application of the product. If such a mortar is not available, at least one low-emission mortar based on mineral compounds is to be recommended. This mortar must not contain more than a maximum of 5 M-% organic components and a maximum of 0.1 M.-% volatile organic compounds. This is subject to testing based on the full declaration of all input materials, supplemented with information supplied by the manufacturer of the mortar.

The following additives are prohibited:

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

If appropriate working procedures for the avoidance of the production or release of dust can be employed, the manufacturer must ensure that the installer is provided with adequate instructions on the appropriate method of installation and processing for the avoidance of dust. If it can be assumed that compliance with the general dust limit values can not be guaranteed, the wearing of personal protection equipment must be recommended.

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 manufactured from polyolefins. In cases when sufficient grounds can be presented, the use of PET, polystyrene or polycarbonates may be permitted. Packaging made from PVC is generally not permitted.

Packaging must not contain biocides.

Upon award of a natureplus certification, the natureplus logo must be printed/displayed on the packaging.

3 Laboratory Tests

If, based on the details of the full declaration, additional additives have been employed to combine the masonry brick/block and the insulation, it will be necessary to evaluate whether all of the stated laboratory tests or just individual tests must be conducted. This decision will be taken during the preliminary assessment procedure.

A representative sample for the laboratory analyses will be 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

In order to assess the emission of VOC, SVOC and other volatile compounds, the product will be subject to a test-chamber analysis to check compliance with the relevant threshold limits. Measurements are normally taken after 3 and 28 days. If low VOC emissions are to be expected, an interim measurement can be taken after 7 days. If the relevant threshold limits have not been exceeded the analysis can be terminated at this point. The test-chamber analysis is to be conducted in accordance with 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 and 1B, Muta 1A and 1B, Repr. 1A and 1B; TRGS 905: K1, K2, M1, M2, R1, R2; IARC groups 1 and 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: Regulation (EC) No. 1272/2008: Categories Carc. 2, Muta 2, Repr. 2; TRGS 905: K3, M3, R3; IARC: group 2B; DFG MAK-list: III3	≤ 50	**µg/m³**
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 will be conducted. The threshold limit is ≤ **1**.

Other emission measurements after 28 days

Test parameters	Limit values	Unit
Total semi-volatile organic compounds (TSVOC)	≤ 100	**µg/m³**
Formaldehyde	≤ 36 (1)	**µg/m³**
Acetaldehyde	≤ 36 (1)	**µg/m³**

(1) 36 µg/m³ ≈ 0.03 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 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