natureplus e.V.

Award Guideline 0113

Cork Insulation 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 cork insulation boards according to EN 13170 for use as thermal insulation. The award guideline is to be applied exclusively to those products mentioned in 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 manufacturer provides information about technical and physical characteristics of the product and specifies the standards, test procedures and methods used to determine these properties. If the applied standards contain requirements for the products, it is to be clearly indicated whether they are met.

The product meets the requirements for the suitability of application by holding the state-specific or the European technical approval.

The thermal nominal value at 10°C and u_{dry} as per EN ISO 10456 or a comparable standard must comply with the following requirements:

- Insulation not subject to pressure load (W, WL, WV) $\lambda_{90,90} \leq 0{,}045$ W/mK
- Insulation subject to pressure load (WD) $\lambda_{90,90} \leq 0{,}065$ W/mK
- Insulation functioning as plaster base (WD-PT) $\lambda_{90,90} \leq 0{,}050$ W/mK

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

In case the product is supplied to countries in which other requirements apply as the ones in the standards mentioned so far, these requirements must be met as well. The manufacturer states the countries where the product is distributed and provides official certification by approved testing institutions to confirm compliance with the requirements. The product must not, however, fall short of the requirements established by natureplus.

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The product must not be treated with compounds which prevent or strongly reduce its ability for water uptake or water release.

The product must be resistant to mould growth under the conditions of a professional installation. Evidence has to be provided in form of a rating of mould fungus growth as category 0 (no growth visible with microscopic analysis) according to EN ISO 846.

The product must fulfil the requirements of EN 13170: The product must comply with the classes L2 (Length), W2 (Width) and T1 and/or T2 (Thickness). Proof must be provided of the squareness, evenness, dimensional stability, bending strength, fire behaviour, moisture content and apparent density. Cork insulation boards used in external thermal insulation composite systems must also comply with the classes L1 (Length), W1 (Width) and T1 (Thickness). The manufacturer must provide proof based upon applicable inspections and documentary evidence.

2.2 Composition, Forbidden Substances, Substance Restrictions

The product must be made to 100% from renewable raw materials. No other binding agents may be used in the production process other than the inherent, natural binding agents contained within the cork itself.

Biocides and flame retardants are prohibited.

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 cork as a raw material.

The manufacturer has to state and to place his suppliers under the obligation that no synthetic plant protecting product with agents included on the list of banned pesticides of the chemicals directive GL-5001 are used during the cultivation of cork oak forests, harvest, storage or transport of cork. Compounds based on arsenic or mercury must not be employed. Implementing the obligation and the supplier's declarations are a part of the certification procedures.

The use of biocides during the cultivation of cork oaks is not permitted. Exceptions to this rule may include treatments to avoid severe economic losses. In such cases the alternative method of pest control chosen should represent the lowest possible risk factor available.

The sustainable harvesting of the raw materials must be confirmed. This applies in particular to the following:

- The first peeling of the cork bark may only take place when the tree is at least 25 years old and the trunk circumference (including the bark layer) is a minimum of 60 cm at a height of 1,2 m.
- The peeling of branches may only take place when the diameter above the phellogen (the cell developing layer) is no less than 15 cm or the circumference is no less than 47 cm.
- The second and all subsequent peelings of the cork bark may only take place after a period of 9 years has elapsed between individual peelings.
- The cropping of branches must not cause any damage to the trees.
- The peeling of the cork bark must not cause any lasting reductions in the yield levels.

It must be assured that the baking temperature does not exceed 350 - 380 °C via relevant quality control measures.

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.

Treatments with halogen compounds (e.g. washing with hypochlorite) are not permitted.

Freight transport and especially road transport has manifold negative effects upon the environment: noise, dust, road construction, energy consumption, emissions (e.g. 0.014 kg CO_2-equivalent for 1 km Jumbo-truck-transport of 1 m^3 cork insulation boards). Due to the fact that the distances between the production site and the installation sites of the cork insulation boards are usually very large, the licensees are called upon to minimise the negative environmental effects of transportation.

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 Disposal

The product must be suitable for safe disposal in a waste incineration facility.

2.6 Ecological Parameters

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

	Guide values[1]	
Ecological parameters per FU[2]	**Apparent density <90kg/m³**	**Apparent density >90kg/m³**
Primary energy input of non renewable total resources (PENRE[3]) [MJ]	50	140
Primary energy input of non renewable and renewable total resources (PET[4]) [MJ]	90	400
Photochemical ozone creation potential (POCP) [kg ethylen-equiv.]	0,0015	0,02
Acidification potential (AP) [kg SO_2-equiv.]	0,012	0,045
Eutrophication potential (EP) [kg PO_4^{3-}-equiv.]	0,007	0,018
Global-warming potential (GWP) [kg CO_2 equiv.]	3	8
Abiotic depletion potential (ADP) [kg Sb equiv.]	0,00003	0,00005

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] FU: Functional Unit, corresponds to a thermal resistance of 1 m²K/W.

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

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

2.7 Declaration

The following information has to be enclosed with the product and is to be made available to the consumer or the user in a suitable manner.

- Labelling according to the guidelines of the European Community (Communauté Européenne, CE marking) or the respective general technical approval, including a scope specification
- Full declaration of all input materials according to GL-0000
- Apparent density in kg/m³
- Thermal nominal 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
- Instructions for use and safety precautions
- Indications for storage and disposal
- Batch numbers
- 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).

2.8 Processing

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.

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	**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: Categorie 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 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	≤ 48 (1)	**µg/m³**
Acetaldehyde	≤ 48 (1)	**µg/m³**

(1) 48 µg/m³ ≈ 0,04 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)	2	mg/kg
Cadmium (Cd)	0,5	mg/kg
Cobalt (Co)	5	mg/kg
Chromium (Cr)	10	mg/kg
Copper (Cu)	50	mg/kg
Mercury (Hg)	0,2	mg/kg
Nickel (Ni)	10	mg/kg
Lead (Pb)	5	mg/kg
Antimony (Sb)(1)	2	mg/kg
Tin (Sn)	10	mg/kg
Thallium (Tl)	1	mg/kg
Zinc (Zn)	500	mg/kg

(1) As antimony acts as a catalyst in polyester production, the limit value for antimony does not apply for products containing supporting fibres on polyester basis.

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
Total pesticides	≤ 1	**mg/kg**	TM-05 Pesticides
Individual 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	≤ 0,5	**mg/kg**	TM-05 Pesticides

Test parameter	Limit values	Unit	Method
Total PAH (Polycyclic Aromatic Hydrocarbons), according to EPA	≤ 10	**mg/kg**	HPLC/GC-MS

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 supplemented with the natureplus implementation rules.

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