Kleppergasse 3
D-69151 Neckargemünd
T 06223 / 861147
info@natureplus.org

natureplus e.V.

Award Guideline RL1007

MINERAL-BONDED WOOD-WOOL BOARDS

Issued: September 2010

For the awardance of the Eco-Label

natureplus
Kleppergasse 3
D-69151 Neckargemünd
T 06223 / 861147
info@natureplus.org

0 Introduction

The natureplus-award guidelines (GL) are hierarchically organised. Every product that is tested according to the product-GL must also fulfill the Basic Criteria requirements (RL0000) as well as those of the applicable product group-GL (See also § 2). In order to avoid double entries, these requirements are, as a rule, not included in the product-GL a second time.

1 Application Areas

The following criteria contain the requirements for the awardance of the natureplus eco-label for wood-wool boards (WW) in accordance with EN 13168. Wood-wool boards are defined in this standard as factory manufactured hard render-bearer boards made from loose wood-wool, bonded using a mineral-based binder. These include EPV boards (in which the pores are sealed on one side only) with a single-sided, mineral-sealed, crush-resistant surface. The award guideline is to be applied exclusively to those products mentioned in this guideline. Wood-wool boards with a room-side lamination and wood-wool multi-layer boards are outside the scope of this guideline.

2 Award Criteria

A pre-requirement for the awardance of the natureplus eco-label is the fulfilment of the Basic Criteria RL0000 and the Product Group-Award Guideline RL1000 “Dry Wall Construction Boards”.

2.1 Functional Suitability

The manufacturer must provide documentary evidence of compliance with EN 13168. The binding agent employed must comply with EN 197 or a comparable standard.

If the manufacturer advertises special sound-proofing or thermal storage characteristics of the product, these must be verified through appropriate specialist test analyses.

2.2 Composition, Forbidden Substances, Substance Restrictions

The product must be made to 99 M-% from mineral and renewable raw materials. Only cement, magnesite and cement-lime combinations are permitted as binding agents.

Mineralisation agents (mineral salts) are permitted additives. Additional additives are to be restricted to a technically possible minimum. The use of halogen-organic compounds is not permitted. Only mineral pigments are permitted in the colouration/dyeing of the wood-wool boards.

natureplus
Kleppergasse 3
D-69151 Neckargemünd
T 06223 / 861147
info@natureplus.org

In particular, the following materials may not be used in wood-wool boards:
- Biocides
- Halogen-organic compounds

The total levels of organic carbons, absorbable organic halogen compounds (AOX) and metals/metalloids will be tested according to the criteria laid down in section 3. A test chamber analysis must also be performed as per the laboratory tests outlined in section 3.

2.3 Raw Material Sourcing, Production of Preliminary Products, Production

A certificate of origin must be provided for all renewable, primary raw materials.

The wood shavings/chips employed should contain a high proportion of secondary raw materials such as old-wood, timber obtained from the pruning/thinning and maintenance of forests or industrial waste wood i.e. sawn off-cuts, chippings, bark and off-cuts from trees.

If old-wood is employed, it must be verified that this wood is free from harmful substances such as category A1 old-wood [(1)] in accordance with the German Old-Wood Regulations (Altholzverordnung) or selected, untreated wood which complies with the Austrian Federal Waste Management Plan 2006 (A). The manufacturer is responsible for ensuring compliance by obligating their suppliers to provide declarations proving that the old-wood has not been chemically treated or contains harmful substances. These must be supported by regular, documented, raw materials intake tests.

[(1)] A1 = Natural, untreated or purely mechanically processed old-wood which in its previous application has only incurred a minimal level of contamination from foreign substances.

If newly-felled timber is employed, the highest possible proportion of this newly-felled timber should be sourced from renewable, managed forestry. If a significant amount of newly-felled timber is employed (>25 M.-% of the total wood employed), it is necessary to provide proof of sustainable forestry which complies with the natureplus requirements of the certification system for agricultural forestry (See addendum) for a minimum of 10% of this total. The Forest Stewardship Council (FSC) is recognised a suitable source of certification. The scope of this proof is based upon the regional availability of certified timber and its suitability for the application. It is required that a minimum proportion of certified wood is used in the processing chain of the manufacturer/processor, in which the product is manufactured, that corresponds to the current proportion of certified woodland within the relevant region. This is mandatory if the relevant proportion within the region is greater than 20%. The results of research relating to the availability of certified timber which complies with the natureplus requirements of the certification system for agricultural forestry must be documented.

natureplus
Kleppergasse 3
D-69151 Neckargemünd
T 06223 / 861147
info@natureplus.org

The requirements of the “Chain-of-Custody” certification do not apply to the recycling of secondary raw materials and industrial waste wood i.e. shavings, chippings and bark. Non-indigenous (European) timber is only permitted if it is FSC-certified.

The timber may not originate from a source in which exhaustive cultivation or over-felling has been practised. If the timber has not been directly obtained from a regional forestry source it must be shown by the raw material supplier and the processor through “Chain-of-Custody” certification that the timber has not been obtained from dubious or controversial sources.

Wood from controversial sources is deemed to be:

1. Illegally harvested timber (if the felling of such trees is prohibited or exceeds the permitted quotas and/or the felling area is under state protection or if an application has been made public for state protection of the felling area by a state controlled or state-recognised institution.
2. Timber from forests requiring special protection (if harvesting endangers species with a special national relevance; the forests are part of an endangered national eco-system or harvesting may represent a relevant national danger to other areas e.g. through erosion or flooding)[(2)]
3. Timber from areas, in which the harvesting of such timber, may infringe upon the public or human rights of the indigenous population (in Europe this applies to the area of the Sami people in Finland)
4. The conversion of natural wooded areas to other purposes (e.g. natural forests into plantations in south-western Europe).
5. Timber from genetically modified trees (e.g. eucalyptus plantations in south-western Europe)

[(2)] Until the preparation of a relevant map of the corresponding areas, wood from PEFC- certified stands is deemed to fulfil these requirements without the need for additional verification.

At least 80 % of the wood contained within the product must originate from a source within a radius of no further than a 300 road-kilometre-equivalent [(3)] from the production plant.

[(3)] 1 km Road ≅ 2.5 km Train ≅ 27 km Ship-Overseas ≅ 4 km Ship-Inland waterways.

If the product uses cement as a binding agent, the cement manufacturer must provide confirmation that the following requirements have been met:

- The cement production equipment must meet modern standards for energy efficiency of the ovens and for the flue gas cleaning equipment.
- If waste products are also incinerated, then the emissions must comply with the guideline 2000/76/EC of 4th December 2000 concerning the incineration of waste - Point II.1 “Special Regulations for Cement Ovens in which Waste Products are Incinerated”

natureplus
Kleppergasse 3
D-69151 Neckargemünd
T 06223 / 861147
info@natureplus.org

The product manufacturing process for wood-wool (WW) and sealed-pore (PV) boards must comply with the following ecological indicators.

Test Parameters			
Ecological indicators	**Limits**		**Testing Method**
	WW-Board	**PV-Board**	
Non-renewable energy sources [MJ/m³]	2500	3500	Life-cycle inventory analysis analogue ISO 14040ff
Global warming potential [kg CO2 equiv./ m^3]	- 50	- 50	Efficiency category according to CML 2001
Photo-smog [kg Ethylene- equiv./ m^3]	0.06	0.08	Primary energy requirement according to Frischknecht 1996 Global warming potential 1994/100 years
Acidification [kg SOx -equiv./ m³]	0.65	0.90	System limits: Raw material sourcing up to the delivered product.

If just a single guideline limit is exceeded, it will be decided on a case by case basis if this is permissible in order to optimise the complete product manufacturing process. Additional indicators which are calculated within the framework of the test procedure are:

- Renewable energy sources [MJ/m²]
- Over-fertilization potential [PO_4^{3-}/m²]
- Consumption or use of abiotic component resources [kg Sb eq./m²]

2.4 Declaration

The following information is to be provided with the product in a form which is suitable for the consumer and/or user:

- General data (designation, type, name, etc.)
- Full declaration of all input materials as per the Basic Criteria (Award Guideline 0000)
- Weight per surface area in kg/m^2 or weight per volume [kg/m³]
- Origin of the wood and the type of binding agent
- The use of sensitising additives
- Batch number
- Fire resistance classification in accordance with DIN EN 13501 Part 1
- The rated value of the thermal conductivity [W/mK]
- The degree of sound absorption (for acoustic elements)
- Handling/installation advice and safety instructions
- Storage and disposal instructions
- The compatibility of the wood-wool boards with other building materials must be indicated

Formatiert: Nummerierung und Aufzählungszeichen

natureplus
Kleppergasse 3
D-69151 Neckargemünd
T 06223 / 861147
info@natureplus.org

2.5 Installation

If it is necessary to employ an adhesive during the handling/installation process, the manufacturer must recommend a natureplus certified product or a very low emission adhesive in accordance with EMICODE EC1 or a comparable standard (e.g. “Blauer Engel“ – the Blue Angel environmental quality label). In order to use or apply the recommended adhesive, the following additives are forbidden:

- Glycol ethers and esters
- APEO's (alkylphenol ethoxylates)
- Halogenated Isothiazolinone
- Formaldehyde decomposition agents

2.6 Usage

The products must not display any increased levels of radioactivity and must comply with the thresholds specified in section 3 (laboratory tests).

The product must not exhibit any unpleasant or foreign smells or odours. The products will be subject to an odour/smell test and an emissions test for volatile organic compounds (VOC) according to section 3 and must fulfil the specified emissions thresholds contained therein.

natureplus
Kleppergasse 3
D-69151 Neckargemünd
T 06223 / 861147
info@natureplus.org

3 Laboratory Tests

The following laboratory tests are applied to those products applying for the eco-label. The concentration of harmful substances contained and their emission levels must not exceed the limits listed below.

Test Parameters	**Limits**	**Testing Method**
Contents:		
Metals und Metalloids	**mg/kg**	Decomposition - Nitric Acid/Hydrofluoric Acid
Arsenic (As)	≤ 5	AAS (atomic absorption spectroscopy) graphite tube or DIN 38406-E29
Antimony (Sb)	≤ 5	AAS (atomic absorption spectroscopy) graphite tube or DIN 38406-E29
Cadmium (Cd)	≤ 1	DIN 38406-E19 or DIN 38406-E29
Cobalt (Co)	≤ 20	EN ISO 11885 or DIN 38406-E29
Chromium (Cr) Total	≤ 50	EN ISO 11885 or DIN 38406-E29
Chromium (Cr) VI	≤ 2	TRGS 613
Copper (Cu)	≤ 50	EN ISO 11885 or DIN 38406-E29
Lead (Pb)	≤ 20	DIN 38406-E6 or DIN 38406-E29
Mercury (Hg)	≤ 1	EN 1483 or DIN 38406-E29
Nickel (Ni)	≤ 20	EN ISO 11885 or DIN 38406-E29
Thallium (Tl)	≤ 1	AAS (atomic absorption spectroscopy) graphite tube or DIN 38406-E29
Tin (Sn)	≤ 10	AAS (atomic absorption spectroscopy) graphite tube or DIN 38406-E29
Organische Schadstoffanteile	**mg/kg**	
Halogen-organic compounds AOX	≤ 1	natureplus –Implementation regulation „AOX/EOX“
Pesticides[1]	**mg/kg**	Analogue to DFG S 19(German Research Foundation test method 19)
Organochloride pesticides: Aldrin, Chlordane, Chlorothalonil, DDD, DDE, DDT, Dichofluanide, Dieldrin, Endosulfan, Endrin, Hexachlorbenzine (HCB), Heptachlor, Lindane (gamma HCH), other HCH- Isomers, Mirex, Pentachlorophenol (PCP)	≤ 0.5 *	* Limits for individual substances Measurement threshold: 0.1 mg/kg
Organophosphorous pesticides: Dichlorvos	≤ 0,5 *	
Pyrethroids: Cyfluthrin, Cyhalothrin, Cypermethrin, Deltamethrin, Fenvalerate, Permethrin	≤ 0.5 *	

natureplus
Kleppergasse 3
D-69151 Neckargemünd
T 06223 / 861147
info@natureplus.org

Test Parameters	Limits	Testing Method
Others: Imazalil, Isoxaben , Lambda-Cyhalothrin, Simazin,	≤ 0.5 *	
Total of Pesticides	≤ 1	
Radioactivity		Measurement of the activity in Bq/kg of the radioactive nuclides C-40 und Cs-137 as well as the Th-sequence, U-sequence and the Ac-sequence using gamma-spectroscopy Measurement threshold: 0.5 Bq/Kg
Artificial Radioactivity: Cs -137	n.m. (2)	
Natural Radioactivity:		
Total value according to ÖNORM S 5200 (Austrian Standard S5200)	≤ 0.75	
Emissions: After conditioning		Chamber Process: natureplus-Implementation regulation
Volatile Organic Compounds (VOC)	**µg/m³**	DIN ISO 16000-6, DIN EN ISO 16000-9, DIN EN ISO 16000-11
VOC (VOC, VVOC, SVOC) classified in: Regulation (EG) 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 & 2A; DFG MAK-List III1, III2	n.d.	3 d after loading the testing chamber
Total Volatile Organic Compounds (TVOC)	≤ 3,000	3 d after loading the testing chamber
Total Volatile Organic Compounds (TVOC)	≤ 300	28 d after loading the testing chamber
Of which: Total bicyclic Terpenes	≤ 200	28 d after loading the testing chamber
Total sensitising substances per MAK IV, BgVV-List Cat. A, TRGS 907	≤ 100	28 d after loading the testing chamber
Total VOC (VOC, VVOC, SVOC) classified in: Regulation (EG) N0. 1272/2008: Categories Carc. 2, Muta 2, Repr. 2; TRGS 905: K3, M3, R3; IARC Group 2B; DFG MAK-List III3	≤ 50	28 d after loading the testing chamber
Total Aldehyde, C4-C11, acyclic, aliphatic	≤ 100	28 d after loading the testing chamber
Styrene	≤ 10	28 d after loading the testing chamber
Methylisothiazolinone (MIT)	n.d.	28 d after loading the testing chamber
Benzaldehyde	≤ 20	28 d after loading the testing chamber
Total Volatile Organic Compounds (VOC) without non-identified compounds	≤ 100	28 d after loading the testing chamber
Total Semi-Volatile Organic Compounds (TSVOC)	≤ 100	28 d after loading the testing chamber
R-Value	**Value**	
	≤ 1.0	28 d after loading the testing chamber

natureplus
Kleppergasse 3
D-69151 Neckargemünd
T 06223 / 861147
info@natureplus.org

Test Parameters	Limits	Testing Method
Formaldehyde	**µg/m³** ≤ 24 (3)	DIN ISO 16000-3, DIN EN 717-1 28 d after loading the testing chamber
Acetaldehyde	**µg/m³** ≤ 24 (3)	DIN ISO 16000-3 28 d after loading the testing chamber
Termination criteria: The emissions test can be terminated 7 days after the test chamber has been loaded if the values measured at this time are lower than 50% of the 28-day threshold limits.		
Odour/Smell	**Odour intensity**	VDA 270; 23°C
	≤ 3	natureplus- Implementation regulation "Odour/Smell Test", 6-stage scale, 24 hrs after loading the testing chamber

n.m. ... not measurable;
n.d. not detectable; Threshold limit: VOC 1 µg/m³

(1) Only if required – if the use of pesticide additives is suspected

(2) Measurement Threshold 0.5Bq/kg

(3) 24 µg/m³ ≙ 0.02 ppm

Addendum: Requirements of the Forestry Certification System

Sustainable Forestry:
The standards include criteria whose compliance guarantees environmentally friendly, socially responsible and economically sustainable forest or plantation management.
These include the maintenance and promotion of bio-diversity, the protection of water resources, the soil and ecological systems as well as respecting the rights of indigenous populations.

Independent Certification System:
The certification is carried out by independent third parties (Certification offices) and regularly assessed. The certification offices are accredited by an independent institution.

Local Operations Checks:
The audits are carried out on-site and are adapted to the relevant production process (they may be applied to individual concerns or regionally co-operative company groups).

Performance Standards:
The checks are based on measurable, performance based standards.

natureplus
Kleppergasse 3
D-69151 Neckargemünd
T 06223 / 861147
info@natureplus.org

Closed Product Chain:
All organisations in the production chain from the forestry operation to the manufacturer are subject to a material- flow control process. This guarantees that at any time during the production process, the proportion of certified wood to the total level of material employed can be verified.

Transparency and Participation:
The certification system is transparent and requires an active declaration of intent from the participating organisations. Decisions are made by a committee comprised of a balanced representation of environmental, social and commercial interests.

Internationalism:
The certification system is applicable globally.

Recognition:
The Forest Stewardship Council (FSC) is recognised a suitable proof.