natureplus e.V.

Award Guideline 0207

MDF Boards – Dry Process 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 non-surfaced MDF-boards (medium density fibreboards) with a density of 500 kg/m³ to 1000 kg/m³ manufactured from ligno-cellulose fibres according to the drying process as per EN 316 and EN 622-5 from 2006 or with a general Building Inspectorate approval or a CE-designation. The following guideline applies to MDF-boards which are not treated with chemical preservatives and which are used for general, load-bearing and reinforcement purposes in dry or damp environments (service classes SC1 and SC2 as per EN 1995-1). This award guideline is to be applied exclusively to the named products. Bonded systems which incorporate MDF-boards are outside the scope of this guideline. Surfaced MDF-boards for use in interior construction or furniture are regulated in Award Guideline RL0206.

2. Award Criteria

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

2.1 Suitability of Application

The product meets the requirements for the suitability of application by holding the state-specific or the European technical approval or the building inspectorate approval. If none of the approvals apply, the manufacturer has to provide evidence that all standards relevant for the product are met.

The product must fulfil the requirements of EN 316 (“Wood fibreboards - Definition, classification and symbols”) and EN 622-1(“Fibreboards - Specifications - Part 1: General requirements”) and EN 622-5 (“Fibreboards - Specifications - Part 5: Requirements for dry process boards (MDF)”) with the additional stipulations according to EN 13986 (“Wood-based panels - Characteristics, evaluation of conformity and marking”).

If required by the relevant building and construction regulations relating to the general strength parameters (i.e. the apparent density, flexural-, tensile-, compressive and shearing strength) and the mean rigidity (such as flexural-, tensile-, compressive and transversal strength), the product must fulfil the requirements of EN 12369-1(“Wood-based panels - Characteristic values for structural design - Part 1”).

2.2 Composition, Forbidden Substances, Substance Restrictions

At least 85% of the product based upon its dry weight must be made from renewable raw materials.

The proportion of hydrophobic (water resistant/repellent) substances including synthetic binding agents is restricted to a maximum of 15 M-% of the dry weight of the ligno-cellulose based fibres, shavings and chippings contained in the product. Polyurethane/Polyurea binding agents based upon isocyanates are restricted to a maximum of 6 M-% of the dry weight of the ligno-cellulose [(1)] based fibres, shavings and chippings contained in the product. Mixed resins based upon aminoplasts and phenols are permitted. Unfortified UF-compounds (urea-formaldehyde) are only permitted in service class 1.

The application of biozides are not permitted.

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 requirements of the guideline GL-5002 for the origins of wood and wood production must be met for wood as a raw material.

A certificate of origin must be provided for all renewable raw materials. At least 80 % of the lignocellulose shavings, chippings and fibres contained within the product must originate from a source within a radius of no further than a 300 road-kilometre-equivalent[(1)] from the production plant.

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 growing, harvest, storage or transport of the materials used. 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 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.

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

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 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.

Ecological parameters per m³	Guide values[1]
Primary energy input of non renewable total resources (PENRE[2]) [MJ]	9000
Primary energy input of non renewable and renewable total resources (PET[3]) [MJ]	13000
Photochemical ozone creation potential (POCP) [kg ethylen-equiv.]	0,4
Acidification potential (AP) [kg SO_2-equiv.]	2
Eutrophication potential (EP) [kg PO_4^{3-}-equiv.]	0,8
Global-warming potential (GWP) [kg CO_2 equiv.]	500
Abiotic depletion potential (ADP) [kg Sb equiv.]	0,0004

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.

- Labelling according to the guidelines of the European Community (Communauté Européenne, CE marking) or the respective general technical approval, including a scope specification
- General data (designation, type, name, etc.)
- Surface weight [kg/m²] or density [kg/m³]
- Thickness [mm]
- Areas of application in accordance with EN 13986 (Dry-, moist/wet-, Exterior areas)
- Thermal conductivity number λ (small Lambda) in W/mK
- Wood origin
- Euro class according to EN 13501-1

- Type of adhesive
- The adhesive class in accordance with EN 314
- Service/Usage class in accordance with EN pr1995-1 (Wood moisture)

Information about the avoidance of chemical wood preservation and special construction measures being a requirement for classifying wood materials as hazard class 0 (according to DIN 68800-2 or an equivalent standard) is to be provided in the form of a leaflet.

The manufacturer has to give indications regarding sufficient wood conditioning before installation.

2.8 Processing/Installation

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 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.

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

Test parameters	Limit values	Unit
after 24 hours		
Monomeric isocyanates TDI, HDI	≤ 1	**µg/m³**
Monomeric isocyanates MDI[2]	≤ 2	**µg/m³**
after 28 days		
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 [2] if binding agents based on polymeric MDI are used

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)	0,5	mg/kg
Cobalt (Co)	10	mg/kg
Chromium (Cr)	2	mg/kg
Copper (Cu)	20	mg/kg
Mercury (Hg)	0,1	mg/kg
Nickel (Ni)	10	mg/kg
Lead (Pb)	5	mg/kg
Antimony (Sb)	1	mg/kg
Tin (Zn)	1	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
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 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.