



natureplus e.V.

Guideline 0206

Laminated Wood-Based Boards for Furniture and Interior Fitments

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for the awardance of the eco-label

0 Introduction

The International Association for Sustainable Building and Living – natureplus e.V. – has set itself the goal, through the awardance of a quality label (eco-label), of promoting the use of those construction products which are especially suited to achieving the goal of economicsustainability. The three classic pillars of sustainability (the environment, social aspects and the economy) are reflected in natureplus's the three fundamental requirements: the environment, health and functional quality.

Every construction activity encroaches upon the natural environment and is connected with the consumption of limited resources. Our responsibility towards future generations requires us to undertake every effort to reduce these encroachments to the lowest level possible and to limit our use of resources to a necessary minimum. In view of the foreseeable exhaustion of the reserves of fossil fuels, for example, and the dangers to the earth's climate, such an approach is the only possible means to ensure sustainable and socially equitable development. For the building sector this means promoting the use and application of construction products which help to minimize the consumption of fossil fuels and limited resources. It is natureplus's intention to help promote the commercial success of those products which fulfil these demands.

Energy-saving building methods and the avoidance of uncontrolled ventilation facilitates the accumulation of volatile chemical compounds in the interior air that are emitted by building products and the inventory contained within the building. This presents a(n) (avoidable) danger to the health of the occupants. Also, the accretion of chemical contaminants (especially phthalates/plasticisers) from building products on house dust, the increasing use of biocides in everyday products and the dangers posed by mould growth due to negative product characteristics give rise for concern. An increasing proportion of the population are exhibiting reactions, such as allergies, to the negative health-related effects of these construction products. natureplus therefore evaluates the compatibility of construction products, especially in the usage phase, according to strict standards in order to actively promote those materials which pose no risk to health and are, in addition, conducive to a healthy room climate.

The natureplus®-Eco-label is an award for construction products which meet the highest standards of sustainability by exhibiting the best possible performance in terms of the environment, health and functionality. Scope of the assessment is the building material as raw material and as component. Only the best products in a particular product group are eligible for certification in order to act as an orientation for all building professionals and consumers towards the promotion of a culture of sustainable building. The natureplus®-Eco-label has anticipated the requirements of construction products of the European Construction Products Directive EU CPR 305/2011: In the future this regulation requires a declaration of performance with evidence of the sustainable use of natural resources and of compliance with requirements in terms of low impact, over their entire life cycle, on the environmental quality or on the climate, energy-efficiency and the hygiene, health and safety of people. The natureplus®-Eco-label already provides these proofs of performance in relation to the essential characteristics of construction products. This is gauged by natureplus according to criteria and requirements which, as a rule, far exceed the legal requirements and as a minimum comply in each case with the strictest recognised standards applicable.

The natureplus®-Eco-label is classified as a Type I environmental label as per ISO 14024, taking into consideration the EU Ecolabel Regulation and the EMAS regulation on environmental auditing, and is valid across the whole of Europe according to uniform criteria. The pre-requirements for a construction product to be certified with the natureplus®-Eco-label are its especially high performance characteristics in terms of the environment, health and sustainability. The main focuses are on the protection of limited resources by the minimisation of the use of petrochemical substances, sustainable raw material extraction/harvesting, resource-efficient production methods and the longevity of the products. Therefore, building products made from renewable raw materials, raw materials which are unlimited in their availability or from secondary raw materials will be favoured for certification.

I Application Areas

The following criteria contain the requirements for the awardance of the natureplus eco-label for laminated wood-based boards for furniture and interior usage.

These include:

- Chip- and particle boards of types P2 and P3 according to EN 312
- OSB-Boards of type OSB/I according to EN 300
- MDF-Boards of types MDF and MDF.H according to EN 316 and EN 622-I and -5
- Hard-fibre boards of types HB und HB.H according to EN 316 and EN 622-I and -2
- Fibre Boards of types MBH, MBL, MBH.H and MBL.H according to EN 316 and EN 622-I and -3
- Plywood boards (Veneer plywoods and blockboards) according to EN 636

This award guideline is to be applied exclusively to the named products. Solid wood boards are regulated in Award Guideline RL0205. Unfaced/non-laminated wood-based boards are covered in the Award Guidelines RL0202 "Chip- and particle boards", RL0203 "OSB-Boards", RL0204 "PlywoodBoards", RL0207 "MDF-Boards – Dry process boards" and RL0208 "Hard and medium wood-fibre boards". Wooden floor coverings are regulated in Award Guideline RL0209.

Composite systems are outside the scope of this guideline.

2 Award Criteria

The prerequisite for a product to be awarded the natureplus® quality label in accordance with these guidelines is compliance with the following award guidelines:

- GL-5001 Chemicals Directive
- GL5002 Origin of Wood and Wood Production
- GL-5004 Transparency and Social Responsibility
- GL-5010 Low-emission building products
- GL-5020 Climate compatibility and energy efficiency

2.1 Functional Suitability

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 minimum requirements of EN 13986 ("Wood-based panels for use in construction – Characteristics, evaluation of conformity and marking") for the individual board types must be fulfilled:

The mechanical properties (such as the flexural strength, bending elasticity, transverse tensile strength and resistance to peeling/surface soundness) of products of board types P1 and P2 must satisfy the requirements of EN 312.

The mechanical properties (such as the flexural strength of the principal axis, the flexural strength of the secondary axis, the bending elasticity of the principal axis, the bending elasticity of the secondary axis, the transverse tensile strength) and the 24h swell-density for products of OSB/I-Types must conform to EN 300.

The mechanical properties (such as the flexural strength, transverse tensile strength) for products of board types MDF, MDF.H, HB, HB.H, MBH, MBL, MBH.H and MBL.H must satisfy the requirements of EN 622. The resistance to the axial withdrawal of screws

(surface) as per EN 320 must be a minimum of 200N. For MDF-products, the resistance to peeling/surface soundness must satisfy the requirements of EN 311.

For products of board types EN 636-1 G and EN 636-2 G, the expansion and contraction of the product per% change in the moisture level must not exceed 0.1% along its length, 0.1% across its width and 0.2% in its thickness. The flexural strength (f_m) of these products must fulfil the standards required for classification in class F3 ($f_m = 5 \text{ N/mm}^2$) or better; the bending elasticity (E_m) of these products must fulfil the standards required for classification in class E5 ($E_m = 500 \text{ N/mm}^2$) or better and must exhibit a minimum compressive strength (surface) σ_D of 39 N/mm^2 .

2.2 Composition, Forbidden Substances, Substance Restrictions

The requirements for the composition of the bearer material are regulated in the corresponding natureplus Guidelines (GL-0202 "Chip- and particle boards", GL-0203 "OSB-Boards", GL-0204 "Plywood Boards", GL-0207 "MDF-Boards – Dry process boards" and GL-0208 "Hard and medium wood-fibre boards").

Only long-lasting, low-maintenance and repairable surface coatings may be used as surfacing layers.

Natural wood veneers and natureplus-certified coatings are always permissible. Veneers from non-European countries must be FSC certified. The minimum thickness for veneers must be at least 1 mm.

Varnishes derived from renewable raw materials, waxes, oils and modified oils are permitted as surface coating agents. Coating agents based upon acrylate and alkyl resin are also permissible.

The use of UV-curing systems is permitted. Factory-applied surface sealing/coating materials must not contain a solvent proportion of more than 10%. Sealants which contain more than 10% solvents in total may only be used under the following conditions:

- The production facility must employ protective measures (waste air purification) which ensure that the proportion of solvents emitted is no higher than those preparation processes with a 10% solvent content.
- The total C-content of volatile organic compounds (VOC) in the waste air must not exceed 10 mg/m^3 (as a half-hourly mean value in relation to the correspondingly measured O_2 -content).
- The mass flow rate of volatile organic compounds (VOC) emitted must not exceed a maximum of 0.5 kg/h .
- Proof of compliance with the statutory employee protection (Health and Safety) regulations.

The surface sealant materials must not contain any halogen-organic compounds or metal compounds (desiccants) which are categorised under § 2.6 of the Basic Criteria RL0000. All solvents must be free from aromatics ($\leq 0.1\%$). 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 RawMaterial Sourcing, Production of Preliminary Products, Production

The requirements for the declaration of the bearer material are regulated in the corresponding natureplus Guidelines (GL-0202 "Chip- and particle boards", GL-0203 "OSB-Boards", GL-0204 "Plywood Boards", GL-0207 "MDF-Boards – Dry process boards" and GL-0208 "Hard and medium wood-fibre boards"). The product manufacturing process must be organised in such a manner that the ecological indicators relating to the individual bearer materials as regulated in the corresponding natureplus Guidelines (GL-0202 "Chip- and particle boards", GL-0203 "OSB-Boards", GL-0204 "Plywood Boards", GL-0207 "MDF-Boards – Dry process boards" and GL-0208 "Hard and medium wood-fibreboards") are complied with for the whole product.

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

All products in this product group must be manufactured in such a way that the ecological parameters listed in RL 5020 are fulfilled.

2.7 Declaration

The requirements for the declaration of the bearer material are regulated in the corresponding natureplus guidelines (GL-0202 "Chip- and particle boards", GL-0203 "OSB-Boards", GL-0204 "Plywood Boards", GL-0207 "MDF-Boards – Dry process boards" and GL-0208 "Hard and medium wood-fibre boards").

In addition to the requirements contained therein, the following information is to be provided with the product in a form which is suitable for the consumer and/or user:

- Type and quality of the surface and intermediate ply veneers
- Type of surface treatment/surface coating agent

2.8 Processing and 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 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 production audit. If the sample collection cannot 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 Volatile Organic Compounds VOC / TVOC

To check the emission of VOC and to determine the TVOC and TSVOC, an emission chamber test is carried out with the product. Measurements are usually performed after 3 and 28 days. If a low VOC emission is to be expected, a termination measurement can also be carried out after 7 days. The test-chamber examination is performed according to the current version of natureplus guideline 5010. The product must comply with the limit values specified in guideline 5010.

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 [mg/kg]
Arsenic (As)	≤ 5
Cadmium (Cd)	$\leq 0,5$
Cobalt (Co)	≤ 10
Chromium (Cr)	≤ 2
Copper (Cu)	≤ 20
Mercury (Hg)	$\leq 0,1$
Nickel (Ni)	≤ 10
Lead (Pb)	≤ 5
Antimon (Sb)	≤ 1
Tin (Sn)	≤ 1

3.3 Other Analyses

Halogenic organic compounds

Test parameters	Limit values	Unit	Method
Halogenic organic compounds: AOX/EOX	≤ 1	mg/kg	TM-03 Halo

Odour

Test parameters	Limit values	Unit	Method
Odour	≤ 3	Odour intensity	TM-04 Odour

Pesticides

Test parameters	Limit values	Unit	Method
Total pesticides	≤ 1	mg/kg	TM-05 Pesticides
Individual pesticides			
Organochlorine pesticides: Aldrin, Chlordane, DDD, DDE, DDT, Dichlofluanid, Dieldrin, Endrin, Heptachlor, Hexachlorobenzene, Lindane, Pentachlorophenol	≤ 0,1	mg/kg	TM-05 Pesticides
Organophosphate pesticides: Dimethoat, Fenthion, Parathion-methyl, Parathion-ethyl, Phosalon			
Pyrethroids: Cypermethrin, Lambda-Cyhalothrin, Permethrin			
Other: Benomyl, Carbendazim, Prochloraz			

4 Appendix

Test methods

TM-01 VOC : Volatile Organic Compounds VOC/TVOC, formaldehyde, acetaldehyde and TSOC: 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 extended by natureplus implementing regulations

TM-08 Foreign fibres and foreign substances: scanning electron microscopy SEM

TM-09 Monomeric isocyanates: 24h after test chamber loading

