



natureplus e.V.

Guideline 0209

Wood and Wood-Based Flooring

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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 list the requirements that wood and wood-based flooring must satisfy for the product to qualify for the natureplus eco-label.

These include:

- Tongue and groove, floor boards and solid wood flooring.
- Parquet floor blocks with tongue and groove according to DIN EN 13226
- Solid wood parquet products (without tongue and groove) according to DIN EN 13227
- Solid wood parquet including parquet floor blocks with a connecting system according to DIN EN 13228
- Mosaic parquet with and without surfacing treatments according to DIN EN 13488
- Multi-layer parquet according to DIN EN 13489
- Parquet according to DIN 280, Parts 1, 2 and 5
- Wood based materials – Veneered flooring DIN EN 14354
- Others product types which deviate from the DIN norms must fulfil the minimum requirements analogue to the DIN

This award guideline must be applied exclusively to products of this description. This award guideline does not apply to composite materials, e.g. wood and wood based flooring in combination with other materials (e.g. wooden flooring with sound-proofing insulation). A separate guideline will be produced for surface treatments which are applied after the flooring has been laid. These are not included in 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 surface layer of the products must meet the following requirements:

Product type	Total thickness	Thickness of wear layer
Solid wood flooring	Variable	A minimum of 35% of the total thickness
Parquet and multi-layer parquet	< 12 mm	Hardwood min. 2,5 mm, softwood min. 4 mm ¹
	> 12 mm	Hard- or softwood min. 4 mm ¹

¹ A deviation of 10% below the required surface layer thickness of 4 mm is permissible.

2.2 Composition, Forbidden Substances, Substance Restrictions

The proportion of renewable raw materials (including fluids) in the wood and wood based floor covering products must be at least 95% of the mass (apparent density) of the end product.

The adhesive proportion should be kept to minimum. It must not exceed a content level of 5 M-% of the absolute dry weight of the wood/wood based material. Polyurethane/Polyurea adhesives based upon Isocyanates may only be used where they do not exceed 2 M-% of the absolute dry weight of the wood/wood-based material.

The surface sealing material must be from renewable raw materials. Modified oils are permitted if it is proven that they provide increased functionality or a longer life span. The use of UV-curing systems, which are based upon oil/petroleum-based products, is permissible if it can be proven that these do not cause harmful, product emissions. Factory applied surface sealing materials must not contain more than 10% solvents. Sealants which contain more than 10% solvents in total may only be used under the following conditions:

1. 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.
2. The total C-content of volatile organic compounds (VOC) in the waste air must not exceed 100 mg/m³ (as a half-hourly mean value in relation to the correspondingly measured O₂-content).
3. The maximum allowable mass flow rate of emitted volatile organic compounds is 0.5 kg/h.
4. Proof of compliance with the statutory employee protection (Health and Safety) regulations.

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 of the guideline GL-5002 for the origins of wood and wood production must be met for wood as a raw material. Only the following may compose the main constituents of certified products:

- Timber species suited to the location
- Species of timber which are not excluded by the terms of the Washington Wildlife Protection Agreement
- One year old fibre plants

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.

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. If products with surface layers from softwood and hardwood are to be certified, it is necessary that separate emissions tests are carried out for both types of product. For products with softwood surface layers, samples with the highest number of branch knots will be selected for testing. If the emission levels for this quality grade exceed the specified limits, it is permitted to continue the certification process for the middle and high quality grades. The emissions tests will be applied to the medium quality product. In the case that adhesive is to be applied to the complete surface, it must be possible to use a natureplus-certified adhesive or at least a low emission adhesive complying with EMICODE ECI or comparable. The manufacturer must provide a reference to at least one such adhesive.

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 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/pre-liminary 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, length and width in mm or the total length where the included lengths vary
- Wood type and origin
- Euro class according to EN 13501-1
- The packet weight
- In the case that adhesive is to be applied to the complete surface: The recommendation of a natureplus-certified adhesive or at least a low emission adhesive complying with EMICODE ECI or comparable.
- Cleaning and maintenance instructions: At least product that complies with the substance restrictions and prohibitions as per GL-5001 and with the requirements for declarations according to the product guideline must be recommended.

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 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)	≤ 0,5
Cobalt (Co)	≤ 100
Chromium (Cr)	≤ 5
Copper (Cu)	≤ 20
Mercury (Hg)	≤ 0,1
Nickel (Ni)	≤ 10
Lead (Pb)	≤ 5
Antimon (Sb)	≤ 1

If a backing layer based on chipboard or fibreboard is applied, the backing layer is tested for the following metals:

Element	Limit value [mg/kg]
Arsenic (As)	≤ 1
Boron (B)	≤ 25
Beryllium (Be)	≤ 1
Cadmium (Cd)	≤ 0,5
Cobalt (Co)	≤ 1
Chromium (Cr)	≤ 2
Copper (Cu)	≤ 10
Mercury (Hg)	≤ 0,1
Nickel (Ni)	≤ 1
Lead (Pb)	≤ 10
Antimon (Sb)	≤ 1
Zirconium (Zr)	≤ 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

