natureplus e.V.

Guideline 1400

Textile floor coverings

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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 requiresus to undertake every effort to reduce these encroachments to the lowest level possible andto 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 healthyroom 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 305/20111: 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.

1 Application Areas

The following award criteria contain the requirements for the awardance of the natureplus eco-label for insulation materials within the product group "Textile floor coverings made from renewable raw materials".

This includes textile floor coverings made from animal hair and/or vegetable fibres.

The award criteria is to be applied exclusively to the mentioned product group. Composite systems made from textile floor coverings mixed with other materials (e.g. flooring with impact sound insulation) are not considered here.

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
- GL-5004 Transparency and Social Responsibility
- GL-5010 Low-emission building products
- GL-5020 Climate compatibility and energy efficiency

2.1 Functional Suitability

For textile floor coverings -with the exception of loose (clean running) mats, runners and carpets -a declaration of performance of the essential characteristics in accordance with EN 14041 shall be submitted.

The applicable load classes and additional functional requirementsmust be classified in accord-ance with EN ISO 10874 and the respective flooring standard (EN 1307 or EN 14215).

2.2 Composition, Forbidden Substances, Substance Restrictions

The proportion of renewable or mineral raw materials in textile floor coverings must be at least 85 percent.

The following substance bans and restrictions apply in addition to those listed in the natureplus Chemicals Directive GL-5001.

- The addition of organohalogen compounds is prohibited.
- The addition of synthetic-organic flame retardants is prohibited. The addition of other flame retardants is only permitted for products that are intended for use in commercial buildings and which are subject to fire protection regulations. Subsequent spray-treatments with flame retardants are not permitted.
- No biocidal treatments may be used. The definition of "biocide" corresponds to the defini-tion in Regulation (EU) No 528/2012 on the placing on the market and use of biocidal prod-ucts.
- The use of azo dyes/colorants which are capable of decomposing carcinogenic amines and dispersion emulsion paints suspected of being carcinogenic or of causing allergic reactions is prohibited. The current status (January 2019) of prohibited dyes is listed in appendix 1.

The product to be awarded is subject to laboratory analyses for foreign fibers (PoI), AOX, biocides, heavy metals including aluminum and zirconium (flame retardants), organotin compounds and organophosphates (flame retardants) and shall comply with the limits given in section 3 (Laboratory tests).

If necessary, colored products are additionally tested for azo dyes and disperse dyes. When using natural latex, the product is subjected to an analysis for nitrosamines and carbon disulfide.

2.3 Raw Material Sourcing, Production of Preliminary Products, Production

The following main componentsare permitted:

- Vegetable fibres
- Animal hair and products

Proof of origin must be provided for the mainrawmaterials and input components.The aim is to achieve complete transparency in the supply chain (Chain of Custody -CoC) from the extraction of the primary raw materials to the finished carpet. The Supplier information should include not only the technical characteristics, but also the description of the processing steps and the type and quantity of input materials. In the case of transparency gaps in the supply chain, more frequent test cycles for the relevant pollutants will be defined according to section 3. Laboratory tests, depending on their relevance.

Compliance with the criteria for "transparency and social sustainability" throughout the entire supply chain must be ensuredin accordance with natureplus award guideline RL 5004. In addition to the proofs mentioned in the RL 5004, Rugmark or STEP certifications are also suitable.

The manufacturer undertakes to obtain declarations of conformity from his raw material suppliers that no synthetic **pesticides** are used in the cultivation of the vegetable fibres. If possible, internationally recognised labels should be used as evidence. Compliance with the criterion is also checked by laboratory tests (see pesticide screening below).

For **cotton**, an additional confirmation that no chemical defoliant has been used must be submitted. Any irrigation of the cotton fields must not impair the local ecosystem sustainably (example: Aral Sea).At least 10% of the cotton used should come from controlled organic cultivation. A confirma-tion from the cotton suppliers must be submitted that in the spinning mills, e.g. through extraction systems, it is ensured that there is no risk of byssinosis for the processors.

Chemical chlorine bleaching of the textiles is not permitted.

The final energy requirement for spinning, weaving and textile finishing must be declared, with a detailed breakdown according to energy sources.

The pollutant load in the wastewater from textile production and finishing must be kept as low as possible. Before being discharged into the environment, the waste water must be purified in a sewage treatment plant.

In addition, compliance with the applicable legal requirements for wastewater treatment must be confirmed.

The product to be awarded is comprehensively screened for pesticide residues according to DFG S19. This method allows the detection of approx. 500 pesticides in biogenic products. If a pesticide is de-tected, it is assessed on a case-by-case basis whether the result can be tolerated or whether measures to avoid it are necessary. This assessment is based on the toxicological classification of the pesticide, analogies to the pesticides already evaluated and the suspected source of contamination.For products for which pesticide residues have been detected, more frequent control measurements may be established, even if the limit values in Section 3 have not been reached.

The pH value must comply with the limit values given in Section 3 (Laboratory tests).

2.4 Usage

For full-surface bonding, it must be possible to use a natureplus®-certified adhesive or a "very low-emission" adhesive in accordance with EMICODE EC1 plus, Blauer Engel DE-UZ 113, eco-Institut label or equivalent.

The manufacturer must point out the use of at least one such adhesive.

The product must not exhibit any unpleasant or foreign smells or odours.

Furthermore, the product must be low emitting and fulfil the specified emissions limits according to Section 3 (Laboratory tests).

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/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“)

Textile floor coverings must be declared in accordance with ISO 10874.

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 using ingredients with an environmentally hazardous potential, the manufacturer must indicate at an appropriate place which measures are to be taken within the framework of dismantling and demolition work to protect the environment (e.g. controlled dismantling).

For full-surface bonding: recommendation of a natureplus®-certified adhesive or at least a "very low-emission" adhesive according to EMICODE EC1 plus or equivalent.

2.8 Processing and Installation

No further requirements in this section.

2.9 Packaging

The packaging used must be recyclable. The manufacturer must belong to a recycling system, if one exists for the corresponding material.

Paper and cardboard packaging must be made from recycled paper. Alternatively, paper from sources as per GL-5002 is also permitted.

Plastic packaging must be made from polyolefins. PET, polystyrene or polycarbonates are allowed exceptionally in reasonablecases.

PVC packaging is generally not permitted.

Packaging must not contain biocides.

The natureplus certification mark has to be printed on the packaging after it has been awarded.

3 LaboratoryTests

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]**
Aluminium (Al)	≤ (1)
Arsenic (As)	≤ 2
Cadmium (Cd)	≤ 0,5
Cobalt (Co)	≤ 10
Chromium (Cr)	≤ 10
Chromium (Cr VI)	≤ 10
Copper (Cu)(2)	≤ 20
Mercury (Hg)	≤ 0,2
Nickel (Ni)	≤ 10
Lead (Pb)	≤ 5
Antimon (Sb)	≤ 5 (3)
Tin (Sn)	≤ 10
Thallium (Tl)	≤ 1
Zinc (Zn)	≤ (1)
Zirconium (Zr)	≤ (1)

(1) No limit value, purity control: the substance will only be tested for possible additions of aluminium, zinc, and zirconium compounds (possibly as flame retardant and proofing agents).

(2) Guideline value. If copper fibres are used, these are not included in the analysis.

(3) When plastics such as polyester are used, the limit value for antimony is not applicable because antimony is used as a catalyst in polyes-ter production.

3.3 Other Analyses

Halogenic organic compounds

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

Foreign substances/fibres

Test parameters	Limit values	Unit	Method
Foreign substances/fibres	NAD		TM-08 foreign fibres

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 Organophosphate pesticides: Dimethoat, Fenthion, Parathion-methyl, Parathion-ethyl, Phosalon Pyrethroids: Cypermethrin, Lambda-Cyhalothrin, Permethrin Other: Benomyl, Carbendazim, Prochloraz	≤ 0,1	mg/kg	TM-05 Pesticides

(1) Halogenic organic compounds: AOX/EOX after combustion, determined by microcoulometry

(2) Analysis is only considered necessary in the case of coloured and / or printed products.

(3) Analysis only when synthetic materials are used; see appendix for a list of dispersion dyes classified as carcinogenic.

(4) Odour: 6-stage scale 24h after test room loading(5) Pesticides: Determination of pesticide residues according to DFG S19

4 Appendix

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 ac-cording 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

TM-10 PAH: HPLC / GC-MS, sum according to EPA

References

- DIN EN ISO 10874 – Resilient, textile and laminate floor coverings - Classification (ISO 10874:2009); German version EN ISO 10874:2012
- DIN EN 1307:2018-05 Textile floor coverings - Classification; German version EN 1307:2014+A2:2018.
- DIN EN 14215:2018-12 Textile floor coverings - Classification of machine-made rugs and run-ners; German version EN 14215:2018
- DIN EN 14041:2018-05 Resilient, textile, laminate and modular multilayer floor coverings - Essential characteristics; German version EN 14041:2018
- DIN ISO 2424:1999-01 Textile floor coverings - Vocabulary (ISO 2424:1992)

Lists of harmful substances

Ad Azo dyes

List of aromatic amines according to Directive 2002/61/EC or REACH Annex XVII Appendix 8:

- 4-Aminobiphenyl (92-67-1),
- Benzidin (92-87-5),
- 4-Chloro-o-toluidin (95-69-2),
- 2-Naphthylamin (91-59-8),
- o-Aminoazotoluol (97-56-3),
- 2-Amino-4-nitrotoluol (99-55-8),
- p-Chloroanilin (106-47-8),
- 2,4-Diaminoanisol (615-05-4),
- 4,4'-Diaminodiphenylmethan (101-77-9),
- 3,3'-Dichlorobenzidin (91-94-1),

- 3,3'-Dimethoxybenzidin (119-90-4),
- 3,3'-Dimethylbenzidin (119-93-7),
- 3,3'-Dimethyl-4,4'-diaminodiphenylmethan (838-88-0),
- p-Kresidin (120-71-8),
- 4,4'-Methylen-bis-(2-chloranilin) (101-14-4),
- 4,4'-Oxydianilin (101-80-4),
- 4,4'-Thiodianilin (139-65-1),
- o-Toluidin (95-53-4),
- 2,4-Diaminotoluol (95-80-7),
- 2,4,5-Trimethylanilin (137-17-7),
- 4-Aminoazobenzol (60-09-3),
- o-Anisidin (90-04-0)

Ad carcinogenic dyes

Dye stuffs and pigments classified as carcinogenic (according to ÖKO-TEX Standard 100 100, 2019:

- C.I. Acid Red 26
- C.I. Acid Red 114
- C.I. Basic Blue 26 (with ≥ 0,1 % Michler's ketone or base)
- C.I. Basic Red 9
- C.I. Basic Violet 3 (with ≥ 0,1 % Michler's ketone or base)
- C.I. Basic Violet 14
- C.I. Direct Black 38
- C.I. Direct Blue 6
- C.I. Direct Blue 15
- C.I. Direct Red 28
- C.I. Disperse Blue 1
- C.I. Disperse Orange 11
- C.I. Disperse Yellow 3
- C.I. Pigment Red 104 (Lead Chromate molybdate sulphate red)
- C.I. Pigment Yellow 34 (Lead sulfochromate yellow)
- C.I. Solvent Yellow 1 (4-Aminoazobenzene, Aniline Yellow)
- C.I. Solvent Yellow 3 (o-Aminoazotoluol)

Ad Allergenic dispersion dyes

Dye stuffs and pigments classified as allergenic (according to ÖKO-TEX Standard 100 100, 2019):

- C.I. Disperse Blue 1
- C.I. Disperse Blue 3
- C.I. Disperse Blue 7
- C.I. Disperse Blue 26
- C.I. Disperse Blue 35,
- C.I. Disperse Blue 102,
- C.I. Disperse Blue 106,
- C.I. Disperse Blue 124,
- C.I. Disperse Brown 1,
- C.I. Disperse Orange 1

- C.I. Disperse Orange 3
- C.I. Disperse Orange 37 (= 59 / = 76)
- C.I. Disperse Orange 59 (frühere Bezeichnung Orange 37)
- C.I. Disperse Orange 76 (frühere Bezeichnung Orange 37)
- C.I. Disperse Red 1
- C.I. Disperse Red 11
- C.I. Disperse Red 17
- C.I. Disperse Yellow 1
- C.I. Disperse Yellow 3
- C.I. Disperse Yellow 9
- C.I. Disperse Yellow 39
- C.I. Disperse Yellow 49

Ad prohibited dyes

Prohibited dyes

- C.I. Acid Violet 49
- C.I. Basic Green 4 (chloride)
- C.I. Basic Green 4 (free)
- C.I. Basic Green 4 (oxalate)
- C.I. Basic Violet 1
- C.I. Direct Blue 2018
- C.I. Disperse Orange 149
- C.I. Disperse Yellow 23
- C.I. Solvent Yellow 2
- C.I. Solvent Yellow 14
- Navy Blue