

natureplus e.V.

Award Guideline RL1201

LINOLEUM FLOOR COVERINGS

Issued: September 2010

For the awardance of the Eco-Label



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 Areas of application

The following criteria contain the requirements for the awardance of the natureplus eco-label for the product group "Linoleum floor coverings". This award guideline is to be applied exclusively to the named products. Composite materials, e.g. floor covering including cork, foam-backed carpeting or hard-fibre matting 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 RL 0000.

2.1 Functional suitability

Floor coverings made from linoleum must satisfy the minimum requirements listed below. The manufacturer must provide proof that the product complies with these requirements by submitting appropriate test results and expert assessments.

- Minimum requirements as per EN 548
- Resilience to casters as per EN 425 (caster chair test)
- Color-fastness and resistance to fading as per ISO 105 - B02 \geq level 6
- Electrostatic build-up (static electrical propensity) as per DIN EN 1815 must be \leq 2.0 kV

2.2 Composition, Forbidden Substances, Substance Restrictions

The proportion of renewable raw materials and mineral raw materials in the product must be at least 98 %.

The use of arsenic-, lead-, cadmium-, or mercury compound additives is prohibited. This applies in particular to catalysts (used for accelerating the processes of auto-oxidation or hardening) and to color pigments.

The use of organic halogen compounds is not permitted.

Surface-coating materials must be free of aromatics (\leq 0.1%) and free of tensides based on alkylphenol ethoxylates (APEO). They must not contain any organic halogen compounds or cobalt

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compounds (desiccants) that are classified in and prohibited under Section 2.6 of the Basic Criteria (Award Guideline RL0000).

Any protective surface-coating materials containing acrylates must – even partially – be renewable, in order to extend the useful life of the product. They must not negatively affect the natural properties of the linoleum.

The use of colorants that might release carcinogenic aryl amines, as per the German Food and Commodities Ordinance, Appendix 1, No. 7 (BGVO), are prohibited.

Biocides (e.g. triclosan) are not permitted.

The product will be subject to an analysis for heavy metals and metalloids and EOX (extractable organic halides) and must meet the threshold limits as laid down in section 3 (Laboratory Tests).

2.3 Declaration

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

- Suitability for classes as per EN 685
- Specifications as per the relevant standard (EN 548, EN 687, or EN 688)
- Color-fastness and resistance to fading as per ISO 105-B02
- Thermal resistance as per DIN 52612
- Fire resistance class as per DIN 4102 / DIN EN 9239-1 / DIN EN 11925-2 / DIN EN 13501-1
- Electrical resistance as per EN 1081 and the static electrical propensity as per EN 1815
- Resilience to casters grading as per EN 425
- Resistance to cigarette burns as per EN 1399 and to chemical action as per EN 423
- Floor-laying instructions
- Full-surface adhesion : recommendation of an adhesive certified by *natureplus* or at least *one* low-emission adhesive as per EMICODE EC1 or equivalent
- Cleaning advice and routine care instructions: recommendation of at least *one* product for each area, that complies with Sections 2.1 to 2.7 of the Basic Criteria (Award Guideline RL0000)
- Composition of any surface-coating material(s) used

2.4 Raw Material Sourcing, Production of Preliminary Products, Production

A proof of origin must be supplied for any flax plant materials employed.

It is forbidden to use synthetic pesticides/herbicides containing active ingredients which are prohibited according to the German Prohibited Chemical Substances Regulations (GefStoffV) or according to the Stockholm Convention (POP's - Persistent Organic Pollutants); as environmentally dangerous (N) according to the German Prohibited Chemical Substances Regulations (GefStoffV); those in Class 1 according to the World Health Organisation (WHO) or classified as carcinogenic,



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mutagenic or detrimentally affecting fertility (CMR Cat 1-3 according to TRGS 905 (German Technical Regulations for Dangerous Substances) and CMR Cat 1, 2A and 2B according to IARC). Furthermore compounds based upon arsenic or mercury are forbidden.

The product undergoing certification will be subject to an analysis for pesticides and heavy metals and must meet the threshold limits as laid down in section 3 (Laboratory Tests). An additional test for persistent organic pollutants (POP) will be undertaken where flax plants from outside the European Union have been used.

Any titanium dioxide used must have been produced as per EU directive 92/112/EEC.

During the course of production, the atmospheric emissions of volatile organic compounds (VOC) must be less than 2 g / m² of the floor covering.

The maturing period must be of a sufficient length to ensure that all products comply with the emission tolerances specified for the test chamber examinations as per Section 3.

The manufacturing processes employed for the products must ensure that the following ecological parameters per kg of the product supplied are met

Test Parameters	Limits	Test method
Ecological indicators		Guideline values for interior applications.
Non-renewable energy sources [MJ/ kg]	40	„Methode für die Ökobilanzierung von Produkten für den Hoch- und Innenausbau“. (Methods to produce an ecological balance-sheet for products for construction and interior building).
Global warming potential [kg CO ₂ -equiv./ kg]	1	IBO – the Austrian Institute for Healthy and Ecological Building.
Ozone destruction potential[mg R11-equiv./ kg]	3·10 ⁻⁶	Updated -18.03.2009
Photo-smog [kg Ethylene- equiv./ kg]	0.0004	
Acidification [kg SO _x -equiv./ kg]	0.01	

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/kg]
- Consumption or use of abiotic component resources [kg Sb eq./kg]
- Over-fertilization [kg phosphate-equivalent./kg]

2.5 Usage

The product must not exhibit any unpleasant or foreign smells or odours. Furthermore It must be a very low-emission product. 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 thresholds contained therein.

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3 Laboratory tests

Products submitted for certification will be subjected to the following laboratory tests:

Test parameters	Limits	Test method
Analyses of ingredient substances :		
EOX (Extractable organic halogen compounds)	mg/kg ≤ 1	natureplus –Implementation regulation „AOX/EOX“
Colorants Amines as per the German Foods and Commodities Ordinance, Appendix 1 No. 7 (BGVO) ⁽¹⁾	n.m.	DIN 53316 Threshold limit : 5 mg/kg
Metals and Metalloids	mg/kg	Decomposition as per ISO 11466 (nitrohydrochloric acid)
Arsenic (As), Antimony (Sb)	≤ 1	EN ISO 11885, DIN 38406-E29
Cobalt (Co), Nickel (Ni)	≤ 1	EN ISO 11885, DIN 38406-E29
Cadmium (Cd)	≤ 1	EN ISO 11885, DIN 38406-E29
Chromium (Cr) (total)	≤ 5	EN ISO 11885, DIN 38406-E29
Lead (Pb)	≤ 15	EN ISO 11885, DIN 38406-E29
Copper (Cu)	≤ 50	EN ISO 11885, DIN 38406-E29
Mercury (Hg)	≤ 0.1	EN 1483
Pesticides	mg/kg	Analogue to DFG S 19(German Research Foundation test method 19)
Herbicides: Deiquitdibromid ⁽²⁾ , Linuron, MCPA, S-Metolachlor, Pendimethalin, Triallat	≤ 0.5 *	* Limits for individual substances Measurement threshold: 0.1 mg/kg
Organochloride pesticides: Aldrin, Chlordan, DDD, DDE, DDT, Dichlofluanid, Dieldrin, Endrin, Heptachlor, Hexachlorbenzhol, Lindan, Pentachlorphenol	≤ 0.5 *	
Organophosphorus pesticides: Dimethoat, Fenthion, Parathion-methyl, Parathion-ethyl, Phosalon	≤ 0.5 *	
Pyrethroids: Cypermethrin, Lambda-Cyhalothrin, Permethrin	≤ 0.5 *	
Other pesticides: Benomyl ⁽³⁾ , Carbendazim ⁽³⁾		
Total pesticides	≤ 1	

n.m. ... not measurable

⁽¹⁾ If suspected

⁽²⁾ In case of reasonable doubt/suspicion; Test Method: HPLC-UV (High Performance Liquid Chromatography – Ultra Violet) or GC-TD Gas Chromatography – Thermal Desorption).

⁽³⁾ In case of reasonable doubt/suspicion; Test Method: DFG (German Research Foundation) Nr. 378



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Test parameters	Limits	Test method
Emissions: After conditioning		Chamber Process: natureplus- Implementation regulation
Volatile Organic Compounds (VOC) VOC (VOC, VVOC, SVOC) classified in: (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	µg/m³ n.d.	DIN ISO 16000-6, DIN EN ISO 16000-9, DIN EN ISO 16000-11 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 Total bicyclic Terpenes which:	≤ 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
Formaldehyde	µg/m³ ≤ 36 ⁽⁴⁾	DIN ISO 16000-3, DIN EN 717-1 28 d after loading the testing chamber
Acetaldehyde	µg/m³ ≤ 36 ⁽⁴⁾	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.		

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

⁽⁴⁾ 36 µg/m³ ≅ 0.03 ppm