natureplus e.V.

Award Guideline 1702

Paper Underlay Sheeting from Renewable Raw Materials for Loose-Fill Insulation

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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 paper underlay sheeting from renewable raw materials for loose-fill insulation. This award guideline is to be applied exclusively to the named products. Draught exclusion and vapour barrier sheeting (building paper) from renewable raw materials are outside the scope of this guideline and are dealt with in product guideline RL1701.

2. Award Criteria

The prerequisite for the awardance of the natureplus eco-label is the fulfilment of the basic criteria GL-0000, of the chemicals directive GL-5001 and of the guideline for facility inspections GL-5004.

2.1 Suitability of Application

When used for closed, level floors and similar applications, the product must protect the loose-fill insulation from interior air flows. Such products are, as a rule, unsuitable for use with sharp-edged or moist loose-fill products. The product must meet the requirements of DIN EN 13984 (“Sealant Sheeting”).

The aging stability of the products must exceed 100 years as per DIN 6738.

The sheeting should have a water vapour diffusion resistance of < 0.2 m as per DIN EN 12572.

The products must be classified in fire-rating class B2 and/or E as per DIN EN 13501-1.

The mass per unit area (surface area weight) of the sheeting must be a minimum of 80 g/m² in accordance with DIN EN 1849-2.

Proof must be provided that the products are sufficiently protected against microbial growth or infestation.

2.2 Composition, Forbidden Substances, Substance Restrictions

The product must be made to at least 88% from renewable and/or mineral raw materials (including moisture content) based upon the raw density of the end-product. The fibre composition of the special paper must be composed to at least 50% from recycled cellulose.

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The proportion of adhesives should be kept to a minimum. Polyurethane/Polyurea adhesives based upon isocyanates are not permitted.

The proportion of mineral-based fire-retardants within the product may not exceed 8 % (percent by weight). The fire-retardants must be halogen-free and not exhibit any herbicide effects.

The strengthening layer of fibre-glass sheeting must not contain any organic chlorine compounds.

The product and all pre-fabricated products must not contain any wood preservatives, halogen organic compounds (e.g. Methylchloroisothiazolinone), synthetic colorants (e.g. Azo dyes), formaldehyde or agents which are capable of decomposing formaldehyde.

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 product paper must be made from water-resistant cellulose, of which at least 50% is recycled cellulose which has been manufactured in a closed water system.

A certificate of origin must be provided for all the product components. The raw materials should originate from local/national sources (i.e. within the European Union) and must not be derived from questionable sources.

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 Recyling/Disposal

A disposal concept must be provided for the product (composite materials). The components must be suitable for disposal in an inert materials disposal site/facility according to the “Decision of the EU council of the 19th December 2002 on the definition of criteria and procedures for the receipt and acceptance of waste products at waste disposal sites according to article 16 and appendix 2 of the guideline 1999/31/EG”. Alternatively the components must be suitable for disposal in a waste incineration plant (thermal utilisation).

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	Guide values [1]
Non-renewable energy sources [MJ/m²]	5
Renewable energy sources [MJ/m²]	10
Global warming potential [kg CO_2 equiv./m²]	0,2
Ozone destruction potential [kg R11-equiv./m²]	$2 \cdot 10^{-8}$
Photo smog [kg Ethylen-equiv./m²]	0,0001
Acidification [kg SO_2-equiv./m²]	0,002

[1] Calculation of the guide values as per: Life-cycle inventory analysis analogue ISO 14040ff, Efficiency category according to CML 2001, Primary energy requirement according to Frischknecht 1996, Global warming potential 1994/100 yearsSystem limits: Raw material sourcing up to the delivered product.

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.

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.

- General data (labelling/designation, type, name, batch number, roll number etc.)
- Aging stability (Life-cycle class according to DIN 6738)
- Mass per unit area (according to DIN EN 1849-2) in g/m² or kg/m^2
- Water vapour diffusion resistance numbers (according to DIN EN 1931)
- Fire rating class (according to DIN EN 13501-1)
- The area of application
- Thickness, length and width
- s_d-Value (according to DIN EN 12572) in m, R_D- Value in m² x h x Pa / mg
- µ-Value (according to DIN EN 1931)
- Tensile strength/breaking force longitudinal and transverse to the fibres both in N/5 cm (according to DIN EN 12311-2)

2.8 Processing and Installation

If adhesives or adhesive tapes are used, it must be possible to use a *natureplus* certified adhesive or a very-low-emission adhesive product as per GEV EMICODE EC1 or an equivalent standard (e.g. “Blauer Engel“– the Blue Angel environmental quality label). The manufacturer must recommend the use of at least *one* such adhesive (adhesive tape).

In order to ensure a professional level of processing/installation and to avoid damage after these processes, it is essential that clear and comprehensive processing and installation instructions in the relevant country-specific language are provided with the product.

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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 after 28 days

Test parameters	Limit values	Unit
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

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)	100	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)	5	mg/kg

3.3 Other Analyses

Test parameters	Limit values	Unit	Method
Halogenic organic compounds: AOX/EOX	≤ 1	**mg/kg**	TM-03 Halo
Halogenated isothiazolinones	≤ 0,5	**mg/kg**	
Carcinogenic amines from azo-dyes(1)	≤ 10	**mg/kg**	according to LFGB
Free formaldehyde	≤ 20	**mg/kg**	UV-Vis (VdL-RL 03) steam dest., AcAc, UV
Organic tin compounds(1): single values for MBT, DBT, TBT	≤ 50	**µg/kg**	
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

(1) in case of suspicion

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.

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