



EUROPEAN ASSESSMENT DOCUMENT

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RUBBER FIBRE MAT TO BE USED FOR IMPACT SOUND INSULATION

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This European Assessment Document (EAD) has been developed taking into account up-to-date technical and scientific knowledge at the time of issue and is published in accordance with the relevant provisions of Regulation (EU) No 305/2011 as a basis for the preparation and issuing of European Technical Assessments (ETA).

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1 SCOPE OF THE EAD

1.1 Description of the construction product

The construction product is a rubber fibre mat for impact sound insulation. The rubber fibre mats can be made of a mixture of rubber fibres and/or granulated crumbs. Synthetic latex or polyurethane is used as a binding agent.

The mats can have a profiled surface and optional layers (e.g. foil, non-woven polypropylene backing, self-adhesive bond, high-grab/ lo-grab applications, single or double-stick adhesive membranes etc) on one or both sides. The self-adhesive fibre mats may be provided with a single-stick or double-stick membrane.

The rubber can consist of recycled material (e.g. recycled vulcanized rubber crumb granules).

The rubber fibre mats can be used with accessories such as sealing tapes and damp proof membranes.

The product is not covered by a harmonised European standard (hEN).

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

It is assumed that the product will be installed according to the manufacturer's instructions or (in absence of such instructions) according to the usual practice of the building professionals.

Relevant manufacturer's stipulations having influence on the performance of the product covered by this European Assessment Document shall be considered for the determination of the performance and detailed in the ETA.

1.2 Information on the intended use(s) of the construction product

1.2.1 Intended use(s)

The rubber fibre mats are used for the improvement of impact sound insulation of floors.

The rubber fibre mats are for use under floating screeds or comparable build-ups on solid slabs, underfloor heating systems, wood/ laminate flooring, vinyl and/or carpet tiles, ceramic/ porcelain tiles and carpeted floors.

The assessment of the product applies only when the product is used internally in building structures where they are protected from wetting and weathering, such as residential homes, hospitality, retail, healthcare, housing, education etc.

The mats are loose-laid on the sufficiently flat solid floor slab. The mats are protected by a suitable foil or the joints between the mats are covered with a suitable adhesive tape before the screed or other floor finish will be built in. When used under screed floors, the manufacturer shall ensure the screed mass per unit area is appropriate for that of the insulation material.

The rubber mat joints are closely installed. The mats are fixed using a suitable adhesive tape to ensure that no gaps occur. Appropriate insulating edge strips are used on rising walls in order to avoid sonic bridges.

1.2.2 Working life/Durability

The assessment methods included or referred to in this EAD have been written based on the manufacturer's request to take into account a working life of the rubber fibre mats for the intended use of 25 years when installed in the works provided that the mats are subject to appropriate installation and use (see 1.1). These provisions are based upon the current state of the art and the available knowledge and experience.

When assessing the product, the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works¹.

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA when drafting this EAD nor by the Technical Assessment Body issuing an ETA based on this EAD, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

1.3 Specific terms used in this EAD (if necessary in addition to the definitions in CPR, Art 2)

1.3.1 High grab adhesive applications

High grab adhesive applications refer to those installation applications where a permanent bond is required such as dryback and woven vinyl tiles, solid engineered wood (tongue and groove), broadloom carpet installations. High grab adhesion membrane is for installations where more permanently bonded floor coverings are required.

1.3.2 Low grab adhesive applications

Low grab adhesive applications refer to installation applications for carpet tiles, engineered wood and laminate wood (click joint) installations. Low grab adhesion membrane is typically for use in installations where future lifting, without replacing the underlay is envisaged.

1.3.3 Single-stick adhesive membrane

Exposed adhesive side of the rubber fibre mats that adheres to the floor covering. Typically used in installations with either low traffic, where damp-proof membrane (referred to as DPM) is used or where low grab adhesive applications.

1.3.4 Double-stick adhesive membrane

Recommended in installations subject to heavy wheeled traffic. The exposed side of the acoustic rubber fibre mat is bonded to the sub-floor and the floor covering is bonded to the adhesive membrane of the underlay.

¹ The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, as well as on the particular conditions of the design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than referred to above.

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

2.1 Essential characteristics of the product

Table 1 shows how the performance of the acoustic rubber fibre mat is assessed in relation to the essential characteristics.

Table 1 Essential characteristics of the product and assessment methods and criteria for the performance of the product in relation to those essential characteristics

No	Essential characteristic	Assessment method	Type of expression of product performance <i>(level, class, description)</i>
Basic Works Requirement 2: Safety in case of fire			
1	Reaction to fire	2.2.1	Class
Basic Works Requirement 3: Hygiene, health and the environment			
2	Content and/or release of dangerous substances	2.2.10	Level of VOC/SVOC Level of PAH/ B[a] Level of nitrosamines
Basic Works Requirement 5: Protection against noise			
3	Dynamic stiffness	2.2.2	Level
4	Impact sound reduction	2.2.3	Level
5	Geometry	2.2.4	Level
6	Thickness and compressibility	2.2.5	Level
7	Mass per unit area	2.2.6	Level
8	Compressive creep	2.2.7	Level
9	Compressive stress/strength	2.2.8	Level
10	Deformation under specified load and temperature*	2.2.9	Level
11	Resistance to breaking or cracking	2.2.12	Level
Basic Works Requirement 6:			
12	Thermal resistance	2.2.11	Level

2.2 Assessment methods and criteria for the performance of the product in relation to essential characteristics of the product

The level to be stated and the classification respectively for each characteristic has to be representative for the range of density, dimension and thicknesses of the product.

The samples shall be chosen accordingly. If necessary, the tests shall be performed on samples with different dimensions, densities and thicknesses so that the worst case for each characteristic can be declared by the manufacturer.

2.2.1 Reaction to fire - exposure

The rubber fibre mats shall be tested, using the test method according to EN ISO 11925-2, in order to be classified according to EN 13501-1.

The product shall be tested directly exposed to the thermal attack with surface and edge exposure. The following parameters shall be considered when testing the rubber mat:

- The use on different substrates for end-use applications
- The highest and lowest thickness of the mat
- The highest and lowest density and weight per unit area respectively
- Any different chemical composition
- Any type of facings/ surface coatings
- Any type of adhesive layers
- Any different types of surface profiles
- Joints a.s.o

The results of the relevant tests shall be given in the ETAs..

The rubber fibre mats shall be classified in accordance with EN 13501-1.

2.2.2 Dynamic stiffness

The determination of dynamic stiffness s' or s'_t shall be carried out according to EN 29052-1.

The maximum dynamic stiffness s' or s'_t (if need be, for different thickness) shall be stated in the ETA in levels using steps of 1 MN/m³.

2.2.3 Impact sound reduction

The impact sound reduction ΔL on a heavyweight standard floor using the rubber fibre mat shall be determined according to EN ISO 10140-1, EN ISO 10140-3, EN ISO 10140-4 and EN ISO 10140-5 as appropriate (category II). Using this data the weighted impact sound reduction ΔL_w shall be calculated according to EN ISO 717-2.

The test shall be performed with the floor build-up representing the worst case for impact sound reduction (e.g. minimum mass per unit area of the floating screed and thinnest rubber fibre mat covered by the ETA). If required, the tests shall be carried out with several build-ups.

The weighted impact sound reduction ΔL_w (if applicable, for different build-ups) shall be stated in the ETA. The assessed floor build-up shall be described in detail in the ETA. It shall be clearly stated to which floor build-up the declared impact sound reduction applies. In particular the minimum mass per unit area and the way of installation of the screed shall be given in the ETA.

2.2.4 Geometry

The length and width of the rubber fibre mat shall be determined on at least three test specimens in accordance with EN 822.

The squareness shall be determined on at least three test specimens in accordance with EN 824.

The nominal length and width shall be given in the ETA. The deviation from nominal width and nominal length shall be given in the ETA using the classes according to EN 16069.

The deviation from the squareness in the direction of length and width shall be in accordance with clause 4.2.4 of EN 16069.

2.2.5 Thickness and compressibility

The determination of thickness d_L and d_B shall be carried out in accordance with EN 12431, with at least 3 test samples. The determination shall be performed for each nominal thickness of the product or at least for the maximum nominal thickness.

The compressibility c is defined as follows: $c = d_L - d_B$.

The nominal thickness d_L and the acceptance limits shall be stated in the ETA.. The maximum compressibility c shall be stated in the ETA.

2.2.6 Mass per unit area

The mass per unit area is to be determined on samples for which the thickness d_L was determined. EN 1602- Thermal insulating products for building applications- Determination of the apparent density – shall be used as a basis.

The mass per unit area can be determined with the measured density (according to EN 1602) and the measured thickness of the specimens.

The mass per unit area including the tolerances shall be stated in the ETA.

2.2.7 Compressive creep

The compressive creep and the total thickness reduction shall be determined after 122 days of testing with at least the imposed load plus self-weight of the screed in accordance with EN 1606 and extrapolated 30 times, corresponding to 10 years.

The compressive creep and the total thickness reduction shall be stated in the ETA.

2.2.8 Compressive stress/ strength

Compressive stress at 10% deformation or compressive strength shall be determined according to EN 826 with at least 5 test samples of 200 mm x 200 mm.

If necessary, the compressive stress at 20 % deformation can be determined exceptionally deviating from EN 826.

The minimum level shall be stated in the ETA.

2.2.9 Deformation under specified load and temperature

Deformation in thickness under specified load and temperature shall be determined in accordance with clause 7 of EN 1605, for the test conditions 2 or 3 described in Table 1 and depending on the intended use. Dimensions and test specimens shall be selected in accordance with clause 6 of EN 1605..

The maximum change of the relative deformation % (difference between the relative deformation ϵ_1 after step A and ϵ_2 after step B) shall be stated in the ETA.

2.2.10 Content, emission and/or release of dangerous substances

The performance of the rubber fibre mat for impact sound insulation related to the emissions and/or release and, where appropriate, the content of dangerous substances will be assessed on the basis of the information provided by the manufacturer² after identifying the release scenarios (in accordance with EOTA TR 034) taking into account the intended use of the product AND THE Member States where the manufacturer intends his product to be made available on the market.

The identified intended release scenarios for this product and the intended use with respect to dangerous substances are:

IA 2- Product with indirect contact to indoor air (e.g. covered products) but possible impact on indoor air

IA 3- Product with no contact to indoor air.

2.2.10.1 SVOC and VOC

For the intended use covered by the release scenario IA2, the semi-volatile organic compounds (SVOC) and the volatile organic compounds (VOC) are to be determined in accordance with EN 16516. The loading factor to be used for the emission testing is $0.4 \text{ m}^2/\text{m}^3$.

The preparation of the test specimen is performance in accordance with the manufacturer's product installation instructions or (in absence of such instructions) the usual practice of rubber fibre mats. The specimen with maximum thickness shall be used.

Once the test specimen has been produced, as described above, it should immediately be placed in the emission test chamber. This time is considered the starting time of the emission test.

The test results have to be reported for the relevant parameters (e.g. chamber size, temperature and relative humidity, air exchange rate, loading factor, size of test specimen, conditioning, production date, arrival date, test period, test result) after 3 and 28 days testing.

The relevant test results shall be expressed in $[\text{mg}/\text{m}^3]$ and stated in the ETA.

2.2.10.2 PAH and B[a]P

For the intended use covered by the release scenario IS2 and IA3, the specific organic compounds polyaromatic hydrocarbons (PAH) and Benzo(a)pyrene (B[a]P) are to be determined in accordance with ISO 18287 (GC-MS) or ISO 13877 (HPLC).

The preparation of the test specimen is performance in accordance with the manufacturer's product installation instructions or (in absence of such instructions) the usual practice of rubber fibre mats. The specimen with maximum thickness shall be used.

Once the test specimen has been produced, as described above, it should immediately be placed in the emission test chamber. This time is considered the starting time of the emission test.

² The manufacturer may be asked to provide to the TAB the REACH related information which he must accompany the DoP with (cf. Article 6(5) of Regulation {EU} No 305/2011).

The manufacturer is **not** obliged:

To provide the chemical constitution and composition of the product (or of constituents of the product) to the TAB, or
To provide a written declaration to the TAB stating whether the product (or constituents of the product) contain(s) substances which are classified as dangerous according to Directive 67/548/EEC and Regulation (EC) No 1272/2008 and listed in the "Indicative list on dangerous substances" of the SGDS.

Any information provided by the manufacturer regarding the chemical composition of the products may not be distributed to EOTA or to TABs.

The test results have to be reported for the relevant parameters (e.g. chamber size, temperature and relative humidity, air exchange rate, loading factor, size of test specimen, conditioning, production date, arrival date, test period, test result) after 3 and 28 days testing.

The relevant test results shall be expressed in mg/kg and stated in the ETA.

2.2.10.3 Nitrosamines

For the intended use covered by the release scenarios IA2 and IA3, the content of nitrosamines, where applicable, is to be determined in accordance with the method established by DIK, published in "Kautschuk Gummi Kunststoffe, Nr. 6/91, "Methods for the determination of n-nitrosamines in the air vulcanization steams" by Liekefeld, R et.al.

The preparation of the test specimen is performance in accordance with the manufacturer's product installation instructions or (in absence of such instructions) the usual practice of rubber fibre mats. The specimen with maximum thickness shall be used.

Once the test specimen has been produced, as described above, it should immediately be placed in the emission test chamber. This time is considered the starting time of the emission test.

The test results have to be reported for the relevant parameters (e.g. chamber size, temperature and relative humidity, air exchange rate, loading factor, size of test specimen, conditioning, production date, arrival date, test period, test result) after 3 and 28 days testing.

The relevant test results shall be expressed in $\mu\text{g}/\text{m}^3$ and stated in the ETA.

2.2.11 Durability- thermal resistance

The thermal resistance, if applicable and when used with underfloor heating, shall be determined (if need be for different rubber mats thicknesses) according to EN 12664.

The thermal resistance value shall be stated in the ETA.

The thermal resistance value can then be used to calculate the thermal conductivity of the rubber fibre mat.

2.2.12 Resistance to breaking or cracking

The resistance to breaking or cracking of the rubber fibre mat shall be determined according to EN 14499.

The performance shall be assessed as pass/fail criteria with the test samples observing no cracks longer than 50mm. The results of this/ these test(s) shall be stated in the ETA.

The test is applicable to rubber mats manufactured from recycled rubber material.

3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 System(s) of assessment and verification of constancy of performance to be applied

For the products covered by this EAD the applicable European legal act is: Decision 2000/273/EC

The system is: **3**.

In addition, with regard to reaction to fire for products covered by this EAD the applicable European legal act is: Decision 2000/273/EC.

Therefore the system with regard to reaction to fire is: **3**.

3.2 Tasks of the manufacturer

The cornerstones of the actions to be undertaken by the manufacturer of the rubber fibre mat in the procedure of assessment and verification of constancy of performance are laid down in Table 2.

Table 2 Control plan for the manufacturer; cornerstones

No	Subject/type of control (<i>product, raw/constituent material, component</i> - <i>indicating characteristic concerned</i>)	Test or control method (<i>refer to 2.2 or 3.4</i>)	Criteria, if any	Minimum number of samples	Minimum frequency of control*
Factory production control (FPC) [including testing of samples taken at the factory in accordance with a prescribed test plan]*					
1	Reaction to fire	EN ISO 11925-2	2.2.1	1	once per week
2	Dynamic stiffness	2.2.2	2.2.2	See test standard	once per week
3	Impact sound reduction	2.2.3	2.2.3	1	once per year
4	Geometry	2.2.4	2.2.4	1	once per day
5	Thickness d _L	2.2.5	2.2.5	3	once per day
6	Compressibility	2.2.5	2.2.5	3	once per week
7	Mass per unit area	2.2.6	2.2.6	3	once per day
8	Compressive stress/ strength	2.2.8	2.2.8	3	once per week
9	Deformation under specified load and temperature	2.2.9	2.2.9	3	twice per year
<p>* In case of discontinuous production these minimum frequencies should be adapted to an equivalent frequency. In the context of factory production control compliance with the limit values and classifications corresponding to the respective properties stated in the ETA shall be checked.</p>					

4 REFERENCE DOCUMENTS

As far as no edition date is given in the list of standards thereafter, the standard in its current version at the time of issuing the European Technical Assessment, is of relevance.

EN 822	Thermal insulating products for building applications - Determination of length and width
EN 824	Thermal insulating products for building applications - Determination of squareness
EN 826	Thermal insulating products for building applications - Determination of compression behaviour
EN 1602	Thermal insulating products for building applications - Determination of the apparent density
EN 1605	Thermal insulating products for building applications - Determination of deformation under specified compressive load and temperature conditions
EN 1606	Thermal insulating products for building applications - Determination of compressive creep
EN 12431	Thermal insulating products for building applications - Determination of thickness for floating floor insulating products
EN 13501-1	Fire classification of construction products and building elements - Part 1: Classification using test data from fire reaction to fire tests
EN 16069	Thermal insulating products for buildings – Factory made products of polyethylene foam (PEF) - Specification
EN 29052-1	Acoustics- Determination of dynamic stiffness - Part 1: Materials used under floating floors in dwellings
EN ISO 10140	Acoustics - Laboratory measurement of sound insulation of building elements
EN ISO 717-2	Acoustics - Rating of sound insulation in buildings and of building elements - Part 2: Impact sound insulation
EN ISO 11925-2	Reaction to fire tests for building products - Part 2: Ignitability when subjected to direct impingement of flame
EOTA TR 034	General checklist for EADs/ETAs – Content and/or release of dangerous substances in construction products