

EUROPEAN ASSESSMENT DOCUMENT

EAD 030437-00-0503

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WATERTIGHT COVERING KITS BASED ON INHERENTLY WATERTIGHT BOARDS FOR WET ROOM FLOORS AND OR WALLS

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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).

Contents

1 Scope of the EAD	4
1.1 Description of the construction product	4
1.2 Information on the intended use(s) of the construction product	5
1.2.1 Intended use(s)	5
1.2.2 Working life/Durability	6
2. Essential characteristics and relevant assessment methods and criteria	7
2.1 Essential characteristics of the product	7
2.2 Methods and criteria for assessing the performance of the product in relation to essential characteristics of the product	8
2.2.1 Reaction to fire	8
2.2.2 Content, emission and/or release of dangerous substances.....	8
2.2.3 Vapour permeability	9
2.2.4 Water tightness	9
2.2.5 Crack bridging ability	10
2.2.6 Bond strength.....	11
2.2.7 Scratching resistance	11
2.2.8 Joint bridging ability	11
2.2.9 Impermeability at sealings	12
2.2.10 Dimensional stability	12
2.2.11 Water tightness around penetrations	12
2.2.12 Resistance to temperature.....	12
2.2.13 Resistance to mechanical wear	13
2.2.14 Resistance to alkalinity	13
2.2.15 Slipperiness.....	13
2.2.16 Cleanability	13
2.2.17 Thickness.....	14
3 Assessment and verification of constancy of performance	15
3.1 Systems of assessment and verification of constancy of performance to be applied	15
3.2 Tasks of the manufacturer	15
3.3 Tasks of the notified body	17
4 Reference documents.....	19
Annex A – MOUNTING AND FIXING RULES FOR THE REACTIO_n TO FIRE TESTING.....	21

1 Scope of the EAD

1.1 Description of the construction product

This EAD covers an assessment of watertight covering kits based on inherently watertight boards for wet room floors and or walls (in the following referred to as "watertight covering kit"), with or without wearing surface.

This EAD covers watertight covering kits for interior wet room floors and/or walls. The watertight covering is placed on the inner surface of the wet room floor or wall. A screed or render may be installed over the board which may itself form the wearing layer of the installed system or which may be covered by another product, e.g. ceramic tiles. This possible wearing layer is not part of the kit.

The boards can be with or without a surface treatment which may act as wearing surface and/or to obtain water tightness and/or to facilitate adherence of an additional wearing layer.

The boards may be jointed with adhesives, profiles etc.

The kits include any associated components specified by the applicant such as profiles, fasteners, primers and sealants for the joints and possible reinforcements or specific sealants for penetrations e.g. for pipes and gullies. The fasteners are only considered if they may affect the water tightness of the board e.g. if a screw perforates the board. If a wearing surface of tiles is foreseen, the tile adhesive(s) shall be specified and subject to relevant assessment.

Pipes and floor gullies themselves are not part of the kit.

Ceramic tiles and their jointing material, e.g. grouts, are not part of the kit.

The kits include any associated components specified by the manufacturer such as reinforcement nets, mats or fibres used in the whole, kit in the corners, penetrations etc.

This EAD does not cover swimming pools, outdoor applications and industrial processes.

The watertight covering kit based on inherently watertight boards for wet room floors and or walls is not covered by a harmonized European standard, since EN 13163:2016, EN 13164:2016 and 13615:2016 does not cover the intended use included in this EAD.

This EAD covers watertight covering kits based on based on inherently watertight boards for wet room floors and or walls, whereas EAD 030352-00-0503 covers liquid applied covering kit for wet room floors and or walls, with or without wearing surface, and EAD 030436-00-05035 is for watertight covering kits based on flexible sheets for wet room floors and or walls

The watertight covering kits based on inherently watertight boards for wet room floors and or walls is not covered by a harmonized European standard.

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise their clients on the transport, storage, maintenance, replacement and repair of the product, as the manufacturer 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 intended uses of the watertight covering kits are:

Indoor applications, where the kit is not exposed to temperatures (i.e. temperature of structure) below 5°C and above 40°C, in the following uses:

Floor and/or wall surfaces with only occasional direct exposure to water, e.g. at a good distance from shower or bathtub.

Floors and/or walls in shower areas or around bathtubs used for a few showers daily, e.g. in ordinary dwellings, multi-family houses and hotels

Floor and/or wall surfaces with exposure to water more frequent or of longer duration than normally anticipated in dwellings, e.g. public wet rooms, schools and sport facilities.

The various intended uses indicated above do not lead to different assessment criteria and the ETA will cover all intended uses.

The actions on the assembled watertight covering kit, which influence a durable watertight function, depend also on the function and type of substrate. The following table is not an exhaustive list of tests but only indicate the tests related to the type of substrate.

In general, the substrates fall in different types:

	Substrates (usually “rigid”), homogenous but susceptible to cracking	Substrates (usually “flexible”) not susceptible to cracking but with jointing¹	Substrates (usually “rigid”) susceptible to cracking and with jointing
Moisture sensitive substrates	Examples: Gypsum blocks Tests: 2.2.5; Assessment Category 1,2,3 2.2.9; Assessment Category 1 or 2 with annex G*	Examples: Gypsum boards, Wood based materials Tests: 2.2.8; Assessment Category 1 or 2 2.2.9; Assessment Category 1 or 2 with annex A and F, or E*	None known
Non moisture sensitive substrates	Examples: In-situ concrete, masonry Tests: 2.2.5; Assessment Category 1,2,3 2.2.9; Assessment Category 1 or 2 with annex G*	Examples: Calcium silicate boards, fibre cement boards Tests: 2.2.8; Assessment Category 1 or 2 2.2.9; Assessment Category 1 or 2 with annex A and F, or E*	Examples: Concrete or aerated concrete elements Tests: 2.2.5; Assessment Category 1,2,3 2.2.8; Assessment Category 1 or 2 2.2.9; Assessment Category 1 or 2 with annex G*

*The annex'es in the table above are with reference to EAD 030352-00-0503

¹ For substrates with un-reinforced filled jointing, the crack bridging ability test must be performed according to 2.2.5

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 consider a working life of the watertight covering kits for the intended use of 25 years when installed in the works (provided that the watertight covering kit for wet room floors and or walls is subject to appropriate installation (see 1.1)) These provisions are based upon the current state of the art and the available knowledge and experience.

When assessing the product by 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 works².

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.

² 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 watertight covering kits based on inherently watertight boards for wet room floors and/or walls are assessed in relation to the essential characteristics.

Note. All undated references to standards or to EAD's in this chapter are to be understood as references to the dated versions listed in clause 4.

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

No	Essential characteristic	Assessment method	Type of expression of product performance (level, class, description)
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, emission and/or release of dangerous substances	2.2.2	Description
3	Vapour permeability	2.2.3	Level
4	Water tightness	2.2.4	Level
5	Crack bridging ability ^{*)}	2.2.5	Description
6	Bond strength	2.2.6	Description
7	Scratching resistance	2.2.7	Level
8	Joint bridging ability	2.2.8	Level
9	Impermeability at sealings	2.2.9	Level
10	Dimensional stability	2.2.10	Level
11	Water tightness around penetrations	2.2.11	Level
12	Resistance to temperature	2.2.12	Description
13	Resistance to mechanical wear	2.2.13	Level
14	Resistance to alkalinity	2.2.14	Description
Basic Works Requirement 4: Safety in use			
15	Slipperiness	2.2.15	Level
16	Cleanability	2.2.16	Description
17	Thickness	2.2.17	Level

^{*)} The relevance of this test depends on the substrate covered by the intended use see paragraph 1.2.1

2.2 Methods and criteria for assessing the performance of the product in relation to essential characteristics of the product³

Testing will be limited only to the essential characteristics of the kit which the manufacturer intends to declare. In addition, if for any component covered by a harmonised standard or a European Technical Assessment the manufacturer of that component has included the performance regarding the relevant characteristics in the Declaration of Performance retesting that component for issuing a ETA under the current EAD is not required.

This chapter is intended to provide instructions for TABs. Therefore, the use of wordings such as “shall be stated in the ETA” or “it has to be given in the ETA” shall be understood only as such instructions for TABs on how results of assessments shall be presented in the ETA. Such wordings do not impose any obligations for the manufacturer and the TAB shall not carry out the assessment of the performance in relation to a given essential characteristic when the manufacturer does not wish to declare this performance in the Declaration of Performance.

2.2.1 Reaction to fire

The product shall be tested, shall be tested, using the test method(s) according to EN 13501-1, which is(are) relevant for the corresponding reaction to fire class, and classified according to Delegated Regulation (EU) 2016/364 in connection with EN 13501-1.

Concerning mounting and fixing rules: See annex I in EAD 030352-00-0503

The classification shall be stated in the ETA.

2.2.2 Content, emission and/or release of dangerous substances.

The performance of the product 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 manufacturer⁴ 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 intended use with respect to dangerous substances are:

IA1: Product with direct contact to indoor air

IA2: Product with indirect contact to indoor air (e.g. covered products) but possible impact on indoor air

SVOC and VOC

For the intended use covered by the release scenario IA1 and/or IA2 semi-volatile organic compounds (SVOC) and volatile organic compounds (VOC) shall be determined in accordance with EN 16516.

The following loading factors are applicable:

³ Unless otherwise specified, the threshold values and assessment categories formally established in ETAG 022-2 - Version November 2010 - are the source of those in this EAD.

⁴ 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.

Table 2 Loading factor *L*, depending on the product type (in accordance with EN 16516)

Intended use	Loading factor [m ² /m ³]
Walls	1,0
Floor, ceiling	0,4

The preparation of the test specimen is performed by using a sample of the product - installed in accordance with the manufacturer's product installation instructions or in absence of such instructions the usual practice of the product installation - on an inert substrate (e.g. glass or stainless steel).

For the test specimen all parts of the product including associated components which are specified by the manufacturer such as reinforcement nets, mats or fibres used in the whole kit or partially in the corners and penetrations, and welding bands and sealants for the joints and possible reinforcements for penetrations, gullies etc.- have to be considered proportionally. Only products which are used in accommodation areas have to be tested.

Tile adhesives covered by EN 12004 or other adhesives already covered by a harmonized specification are not included in the test specimens.

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/or 28 days testing.

2.2.3 Vapour permeability

The test is carried out in accordance with EN ISO 12572. The test shall be performed as described in annex A of the standard. The tests shall be carried out with climatic conditions as described for option C in chapter 7 of the standard.

The preparation of the watertight board kit shall be in accordance with the manufacturer's instructions – including primer etc. if so required.

If a primer is intended to have a significant additional function in limiting the water vapour permeability, testing shall be performed on the kit including the primer, and it shall be ensured by the manufacturer's installation procedures that it is possible to obtain a continuous layer of the primer on site. Otherwise the test of the water vapour permeability shall be carried out without the primer.

The level shall be stated in the ETA together with the climatic conditions at which the performance was determined.

2.2.4 Water tightness

The water tightness of the watertight board itself is assessed according to paragraph A7 in EN 14891. The testing is performed by testing the board material in the desired thickness. Any penetration of water is detected e.g. by colour change of methylene blue placed on the substrate beneath the test specimen.

The test applies for kits with or without a wearing surface, such as ceramic tiles etc, but the test is performed without the possible wearing surface. The test applies for floor and wall applications respectively.

It shall be stated in the ETA if the watertight covering kit for wet room floors and or walls is watertight.

2.2.5 Crack bridging ability

Testing is not relevant unless it is anticipated that cracks in the substrate might propagate through the board, e.g. for very thin and brittle boards fully or sometimes partially bonded to the substrate. The ETA shall state, along with results of assessment, an information on whether or not joints between the joints were reinforced.

The test is carried out in accordance with the method described below:

Testing shall be carried out following the method C.2 of EN 1062-7 with the following precisions. The substrates are reinforced concrete slabs, which are manufactured as described in chapter C.2.2 of the above-mentioned standard. The watertight board shall be applied onto three of these substrates.

Application of the watertight board

The application of the watertight covering shall take place in a strip with a width of 150 mm covering 270 mm over the centre of the slab so that at the longitudinal edges 15 mm wide strips remain uncovered for observing the cracks in the substrate (surface length \times width = 300 mm \times 200 mm).

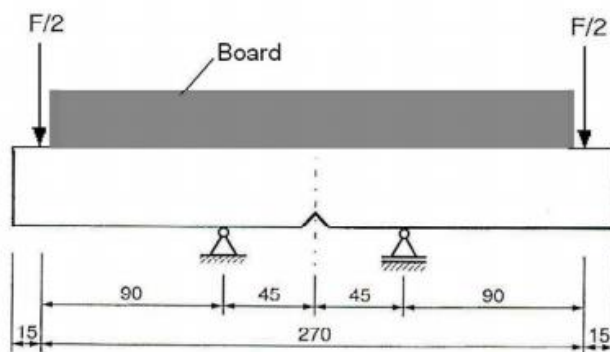
Storage of the prepared test specimen

28 days or according to the manufacturers description at standard atmosphere 23 ± 2 °C / 50 ± 5 % RH.

Testing

After storage the test specimen shall be loaded in a bending test apparatus with way/distance control with the load arrangement as shown in figure 1.

Figure 1. Test set-up for generating cracks by bending of test specimen.
Measurements in mm



Bending of the test specimen shall be increased constantly by applying a force F until a crack appears on the uncovered sides of the concrete surface. The crack shall appear on both sides of the concrete, close to the edge of the watertight board. The velocity of the crack opening shall be 0,02 mm/min. from the point of time a crack is recognizable in the concrete (possible appearance of a light zone in the watertight material) until a crack width of 0,4 mm, 0,75 mm or 1,5 mm respectively (depending on the assessment category) is reached. The crack shall be measured – for example using a graduated magnifying glass. The crack size must be fixed. Each type of change during the following 24 h (incipient crack, tear or through crack) shall be stated in the test report.

Assessment category 0: The test is irrelevant

Assessment category 1: Crack width in test: 0,4 mm

Assessment category 2: Crack width in test: 0,75 mm

Assessment category 3: Crack width in test: 1,5 mm

For all assessment categories the test is passed if, 24 h after fixing the crack in the substrate, no perforation or through crack (damage) has occurred in the watertight board.

The assessment category shall be stated in the ETA, together with the crack width.

2.2.6 Bond strength

Bond strength is tested only if the board itself is internally bonded, or if the board is bonded to the substrate or to other components (e.g. screed or ceramic tiles).

The bond strength of all bonded interfaces including adhesion of board to substrate, cohesion between layers in the board and adhesion of surface coating to the board are covered by this test.

The bond strength of the bonded interfaces of the kit are assessed in accordance with paragraph A.6.2 in EN 14891. The number of samples are as described in paragraph A.6.1 in EN 14891. The samples are stored according to the standard or according to the manufacturer's instructions. For wear layers others than ceramic tiling the test is carried out using a square metal plate (50 × 50 mm) as pull off plate. The square metal plate is glued with a suitable high strength adhesive, e.g. solvent free epoxy directly to the wear layer in surface.

For kits which are fixed to the substrate by bonding alone, the board is adhered to a substrate of concrete with the adhesive prescribed by the manufacturer.

Other substrates may be used upon agreement if the manufacturer recommends the substrate for the watertight covering kit. To demonstrate compatibility with other optional substrates, the board kit shall be applied to the selected substrate in accordance with the initial adhesion test method (A 6.2) in EN 14891. When a result of more than or equal to the threshold values according to the bond strength assessments listed below is achieved or cohesive failure occurs in the substrate, the requirement is considered satisfied.

If several types of adhesive are envisaged, then a bond strength test is carried out for each adhesive.

The bond strength is to be assessed according to:

Assessment category 0: The test is irrelevant

Assessment category 1: The bond strength $\geq 0,2$ MPa

Assessment category 2: The bond strength $\geq 0,3$ MPa

Assessment category 3: The bond strength $\geq 0,5$ MPa

The assessment category shall be stated in the ETA.

2.2.7 Scratching resistance

The scratching resistance of the watertight covering kit is assessed in accordance with annex C in EAD 030352-00-0503.

The test is only carried out on kits without an envisaged wearing surface. One sample is prepared and subjected to the test regime in annex C

The test applies for both floor and wall applications.

It shall be stated in the ETA if the watertight covering kit is scratching resistant.

2.2.8 Joint bridging ability

The assessment is not relevant unless it is anticipated that joint movements in the substrate might propagate through the board, e.g. for very thin and brittle boards fully bonded to the substrate

The joint bridging ability of watertight covering kit with and without wearing surface at joints subjected to movement of the substrate is tested in accordance with annex B, in EAD 030352-00-0503, with a 2-mm gap.

It is stated in the ETA if the kit can or cannot bridge joints.

2.2.9 Impermeability at sealings

This characteristic concerns the joints between the watertight boards themselves, i.e. joints in the watertight layer and not in the substrate. The test applies to joints foreseen to accommodate movements, e.g. in corners between walls or between boards and pipe penetrations.

For joints foreseen to accommodate movements, the Impermeability at sealings of the watertight board kits with or without wearing surface is assessed in accordance with annex B, in EAD 030352-00-0503, with a 2-mm gap.

It is stated in the ETA if the joints are watertight or not.

2.2.10 Dimensional stability

The assessment is carried out for kits both with and without a wearing surface.

For board materials the dimensional stability is assessed in accordance with relevant test methods for the material in question e.g. EN 318 for wooden boards or EN 12467 for fibre cement flat sheets or EN 13163, EN 13164, EN 13165 for EPS/XPS/PUR.

The level shall be stated in the ETA.

2.2.11 Water tightness around penetrations

Note: The annexes referred in the text below are with reference to EAD 030352-00-0503.

The water tightness of the watertight board kit for both floors and/or walls with and without wearing surface around penetrations, such as floor gullies; pipes and corners etc. is tested in accordance with Annexes A, F and E for flexible substrates or in accordance with Annex G for rigid substrates without joints, with the following explanation:

- For kits only for use on floors, the assessment shall be carried out on the basis of test according to annex A or G depending on the substrate.
- For kits only for use on walls, the assessment shall be carried out on the basis of test according to annex E or G. depending on the substrate.
- For kits used for walls as well as floors, the assessment shall be carried out on the basis of tests according to annex A and F in combination or annex G depending on the substrate
- Products tested according to annexes A and F in combination or E for flexible substrates do not need to be further tested according to annex G to comply with the assessment criteria for rigid substrates without joints.
- If the substrate doesn't have influence, the assessment shall be carried out on the basis of test according to annex A and F. The boxes can if possible be built from the watertight boards.

When testing in accordance with annex A and F or, G the specimen shall be mounted in accordance with the manufacturer's installation manual and shall include joints in the floor and the wall. The test shall reflect the most severe joint geometry envisaged by the manufacturer's installation instructions, e.g. including joints in the connections wall/wall and floor/wall and in a corner between a floor and 2 walls (if relevant).

Note. This assessment methods also covers the durability assessment of the resistance to water

It shall be stated in the ETA if the kit is watertight or not.

2.2.12 Resistance to temperature

The resistance to temperature of the watertight covering kits with or without a wearing surface is assessed in accordance with the following procedure:

Heat ageing is done according to relevant standards for the board materials if available. In other cases, the board is exposed to heat ageing at 70° C for 2 weeks. If the board is vulnerable to such a high temperature

exposure may instead be performed for 4 weeks at 60° C or 8 weeks at 50° C. After ageing the samples are stored at ambient laboratory conditions for at least 24 hours before testing.

The flexural bending strength and the stiffness are assessed for exposed and unexposed materials respectively according to the relevant standard e.g. EN 12089. At least three samples are made for each situation.

The flexural bending strength and the stiffness shall be stated in the ETA together with the temperature at which the test was performed.

2.2.13 Resistance to mechanical wear

Only relevant for products without a wearing surface.

The purpose of the test is to assess the resistance to wear.

Verification of the resistance to mechanical wear of the possible wearing surface of the watertight covering kit shall be undertaken in accordance with the relevant EN-standards for the specified products, e.g. EN 13813 and EN 660-2.

The test is carried out for all intended uses.

When this performance is assessed, the mechanical wear resistance of the products shall be stated in the ETA according to the relevant standard for the specified flooring product.

2.2.14 Resistance to alkalinity

The resistance to alkalinity of the watertight covering kit is where relevant assessed in accordance with the following procedure:

Ageing is performed by one sided exposure (to the front of the board) or on both sides according to the intended uses requested by the manufacturer using a reservoir filled with the alkaline solution described in EN 1847 at 50° C for 8 weeks.

Bond strength is performed according to 2.2.6 for exposed materials.

The bond strength assessment category after testing and exposure mode shall be stated in the ETA.

Bond strength categories are mentioned in 2.2.6

2.2.15 Slipperiness

This test is only relevant for the wearing surface. Verification of slip resistance of flooring materials shall be undertaken in accordance with the relevant EN-standards prepared by CEN/TC 339.

When this performance is assessed the slip resistance of finished floorings shall be stated in the ETA according to the relevant standard for the specified flooring product.

2.2.16 Cleanability

Only relevant for watertight covering kits without a wearing surface, i.e. those kits where the watertight covering is also the wearing surface.

The test shall be carried out in accordance with the following procedure:

The test is carried out on two samples. The samples are prepared on two watertight boards with dimensions 430 mm long, 165 mm wide and 5 mm thick. The brightest colour of the covering shall be chosen, and where available, white shall be used.

The samples are conditioned for 30 days at standard atmosphere 23 ± 2 °C / 50 ± 5 % RH.

To simulate the soil a solution made from 9 g of (mild hand) soap, 1 g of carbon black and 600 g of tap water is mixed.

1 ml of the soil solution is applied to the samples with a pipette to form one spot of approx. 35 mm in diameter. The soil spot shall air dry at ambient temperature for three days.

One of the samples is not cleaned and left for reference. The other is cleaned according to the following procedure.

The sample is cleaned with a brush made with 20.000 – 25.000 evenly cut pigs hairs with a free length of 18 – 20 mm and a diameter of 0,10 – 0,15 mm. The brush size shall be 80 mm x 30 mm and the mass shall be 450 g ± 10 g.

The brush is fixed in an apparatus so that it is moved over the sample 330 mm back and forth at a speed equal to 33 – 45 cycles per minute. One cycle is 660 mm. The number of cycles shall be recorded.

The cleaning is performed in three steps:

Step 1: The sample is washed down for 1 minute with lukewarm tap water 30 – 35 °C with a water amount of 6 -7 l/m at a distance from the tap of approx. 50 mm and at an angle of 45°. The soil spot shall not be touched and left to dry for 15 minutes. Any change compared to the reference sample is recorded.

Step 2: The sample is fixed in the cleaning apparatus with the front of the board facing up and in a manner so that the brush can travel in the longitudinal direction of the sample. The brush is dipped in water and placed in the apparatus and set in motion over the sample.

After 20 cycles the cleaning is stopped and the sample is cleaned according to step 1. After 15 minutes drying the remaining soil spot is assessed against the grey scale.

Step 3: The sample is cleaned according to step 2, but the water is replaced with a cleaning agent made from 10 % cat ion active tenside (surfactant) with 4 % metasilicate/water 1:10, or the cleaning agent specified by the ETA applicant. The procedure in this step is repeated twice.

After 15 minutes drying the remaining soil spot is assessed against the grey scale.

Table 3: Grey scale classification

Classification	Classification according to NCS colour code system	Cleaning degree
100/70 %	6.500	0
100/60 %	5.750	1
100/50 %	5.000	2
100/40 %	4.500	3
100/30 %	3.000	4
100/20 %	2.500	5
100/10 %	1.500	6
100/0 %		7

A description by the TAB, based on experience and plausibility, will be stated in the ETA.

2.2.17 Thickness

The thickness of the watertight board kit is assessed according to relevant standards e.g. EN 324-1 or EN 823.

Where the thickness of the membrane is already tested in accordance with the appropriate tests it is not necessary to repeat them.

The thickness shall be stated in the ETA.

3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 Systems 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 2003/655/EC.

The applicable AVCP system is 2+ except for uses subject to regulations on reaction to fire.

For uses subject to regulations on reaction to fire the applicable AVCP systems regarding reaction to fire are 1, or 3, or 4 depending on the conditions defined in the said Decision.

3.2 Tasks of the manufacturer

The cornerstones of the actions to be undertaken by the manufacturer of the product in the procedure of assessment and verification of constancy of performance are laid down in Table 4.

Table 4 Control plan for the manufacturer; cornerstones

Subject/type of control	Test or control method <i>(refer to 2.2)</i>	Criteria, if any	Minimum number of samples	Minimum frequency of control
Factory production control (FPC)				
Check of incoming materials				Every delivery
Assembled system				
Reaction to fire	EN ISO 11925-2	As defined in the control plan	As defined in the control plan	According to the control plan
Board materials				
Compression behaviour	As defined in the control plan	As defined in the control plan	As defined in the control plan	Every batch
Flexural bending capacity	As defined in the control plan	As defined in the control plan	As defined in the control plan	Every batch
Bond strength	As defined in the control plan	As defined in the control plan	As defined in the control plan	Every batch
Liquid components				
Viscosity	As defined in the control plan	As defined in the control plan	As defined in the control plan	Every batch
Density	As defined in the control plan	As defined in the control plan	As defined in the control plan	Every batch
Mixing sequence/time	As defined in the control plan	As defined in the control plan	As defined in the control plan	Every batch
Curing time	As defined in the control plan	As defined in the control plan	As defined in the control plan	Every batch
Dry content	As defined in the control plan	As defined in the control plan	As defined in the control plan	According to the control plan

Subject/type of control	Test or control method <i>(refer to 2.2)</i>	Criteria, if any	Minimum number of samples	Minimum frequency of control
Factory production control (FPC)				
Ash content	As defined in the control plan	As defined in the control plan	As defined in the control plan	According to the control plan
pH-value	As defined in the control plan	As defined in the control plan	As defined in the control plan	Every batch
Infrared spectrometry	As defined in the control plan	As defined in the control plan	As defined in the control plan	According to the control plan
Adhesive	EN 12004	As defined in the control plan	As defined in the control plan	As defined in EN 12004
Sealing/Reinforcement strip				
Colour, thickness, weight build-up	As defined in the control plan	As defined in the control plan	As defined in the control plan	Every batch
Identification of components				
Vapour permeability	2.2.3	As defined in the control plan	As defined in the control plan	When starting the production
Water tightness	2.2.4	As defined in the control plan	As defined in the control plan	When starting the production
Bond strength	2.2.6	As defined in the control plan	As defined in the control plan	When starting the production

3.3 Tasks of the notified body

The cornerstones of the actions to be undertaken by the notified body in the procedure of assessment and verification of constancy of performance for the watertight covering kits based on inherently watertight boards for wet room floors and or walls are laid down in Table 5.

In this case of AVCP system 2+ applies the cornerstones of the tasks to be undertaken by the notified body are laid down in Table 5

Table 5 Control plan for the notified body under AVCP system 2+; corner stones

Subject/type of control (<i>product, raw/constituent material, component - indicating characteristic concerned</i>)	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Initial inspection of the manufacturing plant and of factory production control				
Initial inspection of the manufacturing plant and of factory production control carried out by the manufacturer regarding the constancy of performance of the watertight covering kits based on inherently watertight boards for wet room floors and or walls defined in the control plan (except reaction to fire).	As defined in control plan	As defined in control plan	As defined in control plan	Once every year
Continuous surveillance, assessment and evaluation of factory production control				
Continuous surveillance, assessment and evaluation of the factory production control carried out by the manufacturer regarding the constancy of performance of the watertight covering kits based on inherently watertight boards for wet room floors and or walls defined in the control plan (except reaction to fire).	As defined in control plan	As defined in control plan	As defined in control plan	Once every year

Regarding reaction to fire the involvement of the notified body is required only under the conditions defined in 99/90/EC amended by 2001/596/EC – in case of reaction to fire class A1, A2, B, C of the product for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an additional of fire retardants or a limiting of organic material).

In this case the cornerstones of the tasks to be undertaken by the notified body under AVCP system 1 are laid down in table 6.

Table 6 Control plan for the notified body under AVCP system 1; corner stones

Subject/type of control (<i>product, raw/constituent material, component - indicating characteristic concerned</i>)	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Initial inspection of the manufacturing plant and of factory production control				
Initial inspection of the manufacturing plant and of factory production control carried out by the manufacturer regarding the constancy of performance related to reaction to fire and taking into account a limiting of organic material and/or the addition of fire retardants.	As defined in control plan	As defined in control plan	As defined in control plan	Once every year
Continuous surveillance, assessment and evaluation of factory production control				
Continuous surveillance, assessment and evaluation of the factory production control carried out by the manufacturer regarding the constancy of performance related to reaction to fire and taking into account a limiting of organic material and/or the addition of fire retardants.	As defined in control plan	As defined in control plan	As defined in control plan	Once every year

4 REFERENCE DOCUMENTS

EN 13501-1:2018	Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests.
EN ISO 12572:2016	Hygrothermal performance of building materials and products – Determination of water vapour transmission properties – Cup method.
EN 16516:2017	Construction products: Assessment of release of dangerous substances – Determination of emissions into indoor air
EN 14891:2017	Liquid applied water impermeable products for use beneath ceramic tiling bonded with adhesives – Requirements, test methods, assessment and verification of constancy of performance, classification and marking.
EN 1062-7:2004	Paints and varnishes – Coating materials and coating systems for exterior masonry and concrete – Part 7: Determination of crack bridging properties.
EN 13813:2003	Screed material and floor screeds – Screed material – Properties and requirements
EN 660-2/A1:2003	Resilient floor coverings – Determination of wear resistance – Part 2: Frick-Taber Test
EN 12004:2008	Adhesives for ceramic tiles – Part 1: Requirements, assessment and verification of constancy of performance classification and marking
EN 826:2013	Thermal insulating products for building applications - Determination of compression behavior
EN 12089:2013	Thermal insulating products for building applications - Determination of bending behavior.
EN 1607:2013	Thermal insulating products for building applications – Determination of tensile strength perpendicular to faces
EN 12092:2001	Adhesives – Determination of viscosity
EN 29073-3:1993	Textiles – Test methods for nonwovens – Part 3: Determination of tensile strength and elongation
EN 318:2002	Wood based panels – Determination of dimensional changes associated with changes in relative humidity
EN 12467:2002 +A2:2018	Fibre-cement flat sheets – Product specification and test methods
EN 13164:2012 +A1:2015	Thermal insulation products for buildings – Factory made extruded polystyrene foam (XPS) products - Specification
EN 13165:2012 +A2:2016	Thermal insulation products for buildings – Factory made rigid polyurethane foam (PU) products - Specification
EN 13163:2012 +A2:2016	Thermal insulation products for buildings – Factory made expanded polystyrene (EPS) products – Specification
EN 1847:2010	Flexible sheets for waterproofing – Plastics and rubber sheets for roof waterproofing – Methods for exposure to liquid chemicals, including water
EN 324-1:1994	Wood-based panels – Determination of dimensions of boards – Part 1: Determination of thickness, width and length

EN 823:2013 Thermal insulation products for building applications – Determination of thickness

EN 13823:2010

+A1:2014 Reaction to fire tests for building products – Building products excluding floorings exposed to the thermal attack by a single burning item

EN 11925-2:2010 Reaction to fire tests – Ignitability of products subjected to direct impingement of flame – Part 2: Single-flame source test

EN 14195:2015 Metal framing components for gypsum board systems – Definitions, requirements and test methods

EN 13238:2010 Reaction to fire tests for building products – Conditioning procedures and general rules for selection of substrates

EN ISO 1716:2018 Plastic piping systems – Polyethylene (PE) tapping tees – Test method for impact resistance of an assembled tapping tee

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Annex A: Water tightness around penetrations and other details in wet room floors with flexible substrate

EAD 030352-00-0503

Annex B: Impermeability when subject to movement of the underlaying material - Tensile and shear loading

EAD 030352-00-0503

Annex C: Test for scratching resistance

EAD 030352-00-0503

Annex D: Thickness of membrane

EAD 030352-00-0503

Annex E: Water tightness and resistance to water and moisture of walls with flexible substrate

EAD 030352-00-0503

Annex F: Water tightness around penetrations and other details in wet room walls with flexible substrate

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Annex G: Water tightness around penetrations and other details in wet room walls and floors with rigid substrates

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Annex I: Mounting and Fixing rules for the reaction to fire testing

ANNEX A – MOUNTING AND FIXING RULES FOR THE REACTION TO FIRE TESTING

A.1. Reaction to fire: Mounting and fixing provisions

A. 1.1 Terminology Module:

A sample of the kit fully reflecting all components (e.g. board, frame, fasteners etc.) in the kit cut to fit the size of the test rig.

A.1.2 Mounting and fixing in accordance with EN 13823

A.1.2.1 Dimensions of the test rig

The test rig consists of a corner with a long (1000 ± 5 mm) and a short (495 ± 5 mm) wing. The long wing consists of 2 modules, with one vertical and one horizontal module-to-module joint in between. All modules shall be tested vertically. In accordance with EN 13823 clause 5.1 the dimensions of the specimens shall be:

	Assembly dimensions (mm – nominally)	
	Length	Height
Short wing	495	1500
Long wing (see figure A.1)	200 + t	1500
	800 - t	1500
Where t = thickness of the kit		

A.1.2.2 Test specimen

The watertight board kit shall be mounted and fixed according to EN 13823.

The test specimen shall fully represent all the envisaged components in the end use condition as specified by the applicant, as e.g.:

- facings and/or coatings,
- adhesives,
- sealing compounds,
- collars,
- primers
- joint profiles
- fasteners

Further details are stated in clause A.1.3.

The assembly including corner and joint details shall be in accordance with the end use conditions as specified by the applicant.

The type and dimensions of materials and products used, the dimensions and location of possible fixings etc shall be recorded in the test report.

The manner in which the product is tested, and the number of different tests conducted, has a direct consequence upon the scope of the applicability of the classification(s) to potential variations in product properties and the range of end use conditions that may be adopted in practice (see also clause A.1.3).

A.1.2.3 Mounting and fixing of the test assembly

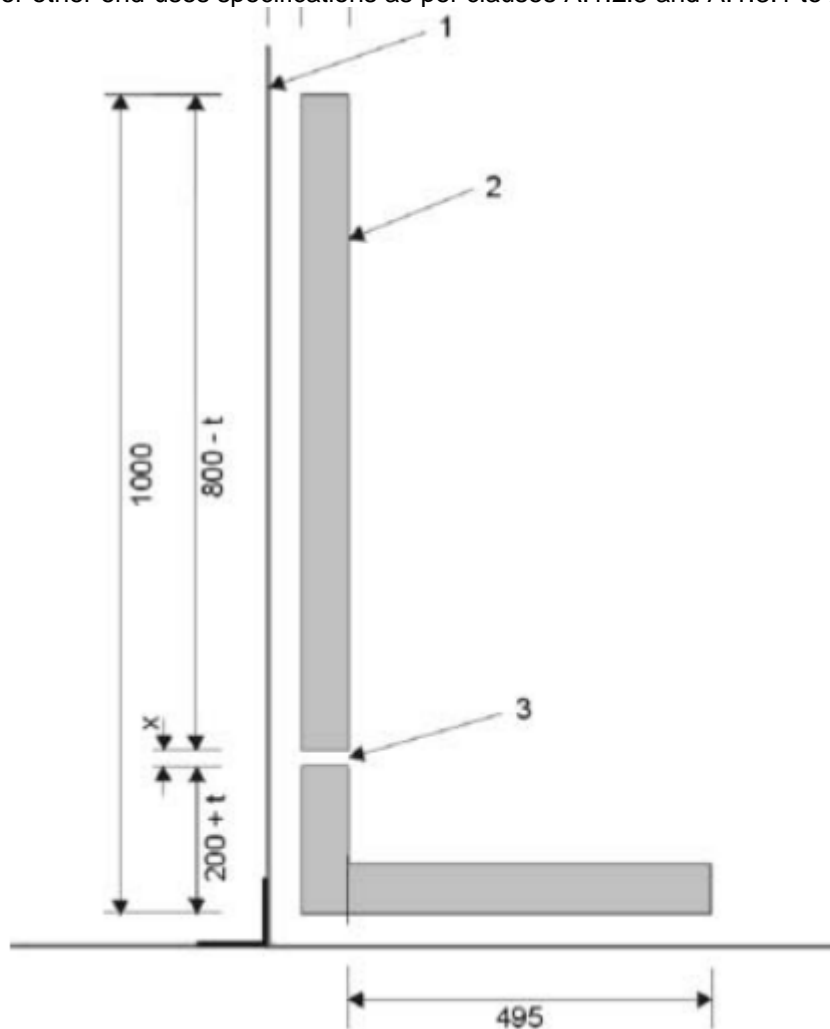
The mounting and fixing of the test specimens shall be in accordance with EN 13823 and shall be fully representative of the product's end use conditions, e.g. fixed to a substrate, with or without cavity, ventilated or non-ventilated or free-standing.

The assembly may be prepared, and fixed together, away from the test chamber. The complete assembly can then be transported to the chamber.

Figure A.1:

Model test assembly for end-use application with cavity (schematic drawing)

For other end-uses specifications as per clauses A.1.2.3 and A.1.3.1 to A.1.3.7 have to be considered



Key:

- 1 Backing board
- 2 Watertight board kit sample
- 3 Joint
- t Thickness of watertight board kit sample
- x Joint width

A.1.3 End Use Application

When determining the testing programme all potential variations in product properties and in its potential end-use condition need to be considered. For this type of construction product, the following provides guidance on the potential end-use application rules that may apply depending on the testing programme undertaken.

A.1.3.1 Influence of thickness of the watertight boards

The influence of increased thickness of the watertight boards shall be determined as well as the influence of the use of multi-layer boards. Tests shall be conducted, as a minimum, on the watertight boards at minimum and maximum thickness of the thickness range. If the thickness range reaches the same classification then that classification shall apply to all thicknesses within that range.

A.1.3.2 Influence of density / mass per unit area

The influence of density / mass per unit area shall be determined. Therefore, tests have to be conducted at minimum and maximum density / mass per unit area for each tested thickness.

A.1.3.3 Influence of air space and substrate

The dimension of the cavity behind the tested watertight board has to be in accordance with EN 13823 and representative of the end use, e.g. in respect of it either being ventilated or non-ventilated. A tested depth of 40 mm represents cavity dimensions equal to or greater than 40 mm. If a cavity in end use has a depth of less than 40 mm this dimension has to be tested separately.

Tests performed on timber framework also apply to metal framework. Where the applicant claims a better performance with a metal frame or where the applicant does not use timber framework, the test can also be performed on a metal frame. Metal frames shall be made from components detailed in EN 14195. Wooden frames shall be made from vertical members (40 ± 1) mm x (40 ± 1) mm and horizontal members (20 ± 1) mm x (40 ± 1) mm. They shall be fixed by nails or screws.

The material forming the opposite face of the air space behind the watertight board in the EN 13823 test determines the type of element in front of which the watertight board can be used.

If in end use the watertight board is mounted directly on a substrate the sample shall be tested with a representative substrate directly behind it.

EN 13238 gives guidance on appropriate substrates to represent the requested end-use situation in fire tests.

A.1.3.4 Influence of insulation product

If in the SBI test the standard mineral wool substrate according to EN 13238 is used this represents end use insulation products of reaction to fire class A1 or A2-s1,d0 which have a density and thickness equal to or greater than the one of the insulation product tested.

The use of any other type of insulation material with reaction to fire class A2-s2,d0 or below, is to be tested separately, whereas the lowest and the greatest thickness and density of the product is to be taken into account.

A.1.3.5 Influence of surface finishes and colour

The classification of the watertight board will be influenced by the presence and nature of any applied surface finish, e.g. paint or wall-covering. The external surface of the kit used in the test assembly shall always include all facings and/or coatings that are applied to the product, as placed on the market. Each facing and/or coating shall be considered.

To determine the colour with the highest content of organic material the PCS-value per unit area according to EN ISO 1716 shall be confirmed. The colour with the highest PCS-value per unit area shall then be used for testing.

A.1.3.6 Influence of joint seals, joint profiles and collars

The watertight board has to be tested together with any type of joint seal foreseen in end-use.

Where a national regulation exists, a separate additional classification shall be provided for any material included as a jointing material or cover strip. This may not be required to have the same classification as the watertight board surface itself, dependent upon the national requirements.

A.1.3.7 Influence of means of fixing

Test results achieved with metal fasteners like e.g. screws are applicable to all end-use situations where metal fasteners are used with spacing equal to or smaller than the one tested.

Test results from specimens where the watertight board has been glued to the substrate are only valid for the same type of adhesive with the same or less amount of adhesive applied. No grouping is possible.

A.1.3.8 General note

If different classifications are obtained when investigating the influence of variation in product properties or end use application, additional testing shall be conducted to redefine the product family to which any single classification applies.

A.2. Mounting and fixing in accordance with EN ISO 11925-2

Where, in end use conditions, the watertight boards are fixed to substrates the test specimen shall represent the end use conditions. Substrate shall be selected in accordance with EN 13238.

The tests shall be conducted to surface exposure and to edge exposure. The edges of the test specimen shall not be covered (cut edges). For multi-layered boards or if the boards are glued on a substrate the specimen shall be rotated by 90 degrees around its vertical axis. EN ISO 11925-2 clause 7.3.3.2.3 is to be taken into account.

The rules according to EN ISO 11925-2 apply. Testing shall further be in line with the rules as stated in clauses A.1.3.1, A.1.3.2, A.1.3.4, A.1.3.5, A.1.3.6 and A.1.3.7 of this Annex.