



EUROPEAN ASSESSMENT DOCUMENT

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WATERPROOFING KIT BASED ON POLYMERIC MEMBRANES FOR IN- AND OUTDOOR WALLS AND FLOORS OF WET AREAS AND SWIMMING POOLS

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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 waterproofing kit based on polymeric membranes for in- and outdoor walls and floors of wet areas and swimming pools (in the following referred to as "waterproofing kit") consists of the following components:

- Profiled polymeric waterproofing membrane with fleece on one side or a fleece-covered polymeric waterproofing membrane.
- Sealing strip for butt joints made of fleece-covered polymeric waterproofing membranes.
- Sealing conveyer strip for the covering of building joints made of fleece-covered polymeric waterproofing membranes with a fleece-free median strip.
- Pipe collar
- Internal and external corner strips made of fleece-covered polymeric waterproofing membranes.
- Adhesive for the waterproofing membrane and for the covering tiles.
- Glue for sealing and joints.

The product is not covered by a harmonised technical specification.

This EAD covers waterproofing kits intended to be used under water pressure up to 10 m which corresponds with tests of the maximum water pressure up to 200 kPa (2 bars; see 1.2.1, use scenario B).

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 waterproofing kit in combination with covering tiles can be used for a waterproof covering for in- and outdoor walls and floors of wet areas and swimming pools.

There are the two use scenarios:

- A) Floor and wall waterproof covering in wet areas (e.g. in shower areas, around bathtubs or in lower galleries of swimming pools)
 - In wet areas which may be used for a few showers daily (e.g. in ordinary dwellings).
 - In wet rooms with direct exposure to water more frequently or of longer than normal duration anticipated in dwellings (e.g. in public wet rooms, schools or sport facilities).
- B) Floor and wall waterproof covering in swimming pools against pressing water from the inside up to a height of water of 10 m.

The tiles are fully bonded. The kit can be used under indoor and outdoor conditions and on rigid and flexible substrates as e.g. masonry, concrete or gypsum boards.

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 waterproofing kit for the intended use of 25 years when installed in the works (provided that the waterproofing kit 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, 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 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

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

2.1 Essential characteristics of the product

Table 2.1 shows how the performance of the Waterproofing kit is assessed in relation to the essential characteristics.

Table 2.1 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
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, level
3	Water vapour diffusion resistance	2.2.3	Level
4	Water tightness	2.2.4	Description, level
5	Water tightness after mechanical damage - Resistance to impact	2.2.5	Description, level
6	Water tightness after mechanical damage - Resistance to static loading	2.2.6	Description, level
7	Water tightness at sealing and around penetrations at low and high temperatures	2.2.7	Description
8	Water tightness at joint sealings under high pressure	2.2.8	Description, level
9	Bond strength	2.2.9	Level, class
10	Shear resistance of joints	2.2.10	Level
11	Crack bridging ability	2.2.11	Class / level
12	Resistance to freeze/thaw	2.2.12	Level, class

No	Essential characteristic	Assessment method	Type of expression of product performance
13	Resistance to heat ageing	2.2.13	Level, class
14	Resistance to chlorine water	2.2.14	Level, class
15	Resistance to alkalinity	2.2.15	Level, class
16	Resistance to heat aging of the joints	2.2.16	Level
17	Resistance to water aging of the joints	2.2.17	Level

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

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 assembled waterproofing system shall be tested, using the test method(s) according to EN 13501-1 and relevant for the corresponding reaction to fire class. The waterproofing system shall be classified according to Commission Delegated Regulation (EU) No 2016/364 in connection with EN 13501-1.

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 manufacturer³ after identifying the release scenarios (in accordance with EOTA TR 034:2015) 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 scenario for this product and intended use with respect to dangerous substances is:

³ 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.

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

2.2.2.1 SVOC and VOC

For the intended use covered by the release scenario IA2 semi-volatile organic compounds (SVOC) and volatile organic compounds (VOC) are to be determined in accordance with EN 16516. The respective loading factor [m^2/m^3] used for emission testing can be taken from the following Table 2.2:

Table 2.2 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	0,4
Small surfaces	0,05
Very small surfaces, e.g. sealants	0,007

The preparation of the representative test specimen is performed in accordance with the manufacturer's product installation instructions (MPII) or (in absence of such instructions) the usual practice of installation, including all possible components of the kit and covering tiles.

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 product performance shall be expressed in [mg/m^3] and stated in the ETA.

2.2.3 Water vapour diffusion resistance

The test shall be carried out in accordance with EN 1931 for the waterproofing sheets and the sealing conveyer strip.

Moisture resistance factor μ [-] or S_d -value [m] shall be given in the ETA.

2.2.4 Water tightness

The water tightness shall be determined for the waterproofing sheets and the sealing conveyer strip in accordance with EN 1928 method B at (23 ± 2) °C.

For use scenario A: The test water pressure shall be 60 kPa as indicated in the relevant corresponding harmonised standard EN 13967.

For use scenario B (covers use scenario A also):

- The maximum test water pressure is 200 kPa (see Clauses 1.1 and 1.2.1).
- The minimum test water pressure is 60 kPa (see use scenario A).
- The tests shall be performed taking the safety factor of 2 into account (e.g. for a value for the envisaged water pressure of 10 m, the test water pressure is 200 kPa (2bar)).

The pressure shall be kept constant throughout the test for 7 days.

The tested waterproofing sheets and sealing conveyer strip shall remain watertight⁴.

A description of the test results using expressions such as "watertight" or "water penetration" shall be stated in the ETA.

In addition only for use scenario B, the relevant envisaged water pressure (water column) in [m] shall be stated.

2.2.5 Water tightness after mechanical damage – Resistance to impact

The resistance to impact of the waterproofing sheets shall be determined in accordance with EN 12691 method A. The drop height is 300 mm or higher.

A description of the test results using expressions such as "watertight" or "water penetration in X sample/s from X" with the relevant drop height shall be stated in the ETA.

2.2.6 Water tightness after mechanical damage – Resistance to static loading

The resistance to static loading of the waterproofing sheets shall be determined in accordance with EN 12730 method B. The drop weight shall be 8 kg or higher.

A description of the test results using expressions such as "watertight" or "water penetration in X sample/s from X" drop weight shall be stated in the ETA.

2.2.7 Water tightness at sealing and around penetrations at low and high temperature

This test is necessary only for use scenario A.

The test is based on ETAG 022, Annex A.

One sample as described in ETAG 022, Annex A, Chapter 5 with all details, e.g. penetrations in the floor and in- and outgoing corners (see Figure 1 and 2 in Annex 1 of this EAD), is used for the test, taking into consideration the following points:

- If the waterproofing of penetrations on floors and walls are not identical, additional penetrations of the mentioned water pipes are required.
- On the floor, the waterproofing sheet shall be installed with a butt joint.
- The waterproofing sheet on the floor shall continue as waterproofing layer up the wall to form a basin.
- The tests are carried out without covering tiles.

A sand bag and 9 nozzles as described in ETAG 022, Annex A, Clause 6.2 with the following deviations:

- Two of the nozzles spray water against the wall with the penetrating pipes.
- The pressure of water shall be about 0.1 MPa before the nozzles.

The test shall be carried out under the procedure described in ETAG 022, Annex A, Clause 6.3.

The assembled waterproofing system shall remain watertight⁴.

A description of the test results using expressions such as "watertight" or "water penetration" shall be stated in the ETA.

2.2.8 Water tightness at joint sealings under high pressure

This test is relevant only for use scenario B.

⁴ The Performance is formally established in ETAG 022-2 - Version November 2010.

The test shall be carried out according to the following test procedure.

Test specimen:

- The waterproofing sheet is applied to the surface of two concrete slabs which comply with EN 12004-2, Annex A and which are put against each other. The butt joint of the waterproofing sheet is arranged above the slit.
- The sealing conveyor strip is applied on the surface of the waterproofing membrane according to manufacturer's instructions.

Test procedure:

- Test rig see Annex 1, Figure 3.
- After the application, the slit shall be opened with $0,5\pm 0,1$ mm/min up to 3 mm (slit width shall be the same one used for testing in Clause 2.2.11, use scenario B) at a temperature of 0 ± 2 °C. The slit is held while testing the water tightness.
- Specimens are placed in equipment which permits the specified specimen to be placed in such a way that the water pressure acts from above the specimen. The machine shall permit the unexposed faces to be observed to detect any possible sign of water permeation. The internal diameter of the sealing ring shall be (100 ± 1) mm.
- The water tightness is tested at a temperature of (40 ± 3) °C and the same water pressure used for testing in Clause 2.2.4, use scenario B for 7 days.
- If water penetrates through to the underside of the specimen or if the unexposed faces show sign of water penetration, the test may be terminated.
- Immediately after the pressure has been released the specimen shall be removed in order to evaluate if any water penetration occurred.

A description of the test results using expressions such as "watertight" or "water penetration" with the relevant envisaged water pressure (water column) in [m] shall be stated in the ETA.

2.2.9 Bond strength

The test is based on EN 14891, A.6.2.

The test samples shall be prepared as described in EN 14891, A.6.1 with the following deviations:

- The substrate is made of concrete slabs according to EN 12004-2, Annex A.
- The waterproofing sheet is glued with the special adhesive according to instructions of the manufacturer to the surface of two concrete slabs.
- The tile adhesive is applied onto the waterproofing sheet in accordance with manufacturer's instructions.

The bond strength in [MPa] shall be given in the ETA. The bond strength shall be classified into the following assessment categories⁴:

- Assessment category 1: The bond strength on concrete shall be higher than or equal to 0,2 MPa
- Assessment category 2: The bond strength on concrete shall be higher than or equal to 0,3 MPa
- Assessment category 3: The bond strength on concrete shall be higher than or equal to 0,5 MPa

2.2.10 Shear resistance of joints

After conditioning the test specimen for 2 days under standard conditions (23 ± 2 °C, 50 ± 4 % r.h.), the shear resistance of the joints shall be determined in accordance with EN 12317-2.

The number of test specimens is 3 per each membrane type. The joint is prepared with either the sealing strip or overlapping (depending on the tested membrane type) in accordance with manufacturer's instructions.

Shear resistance of the joints in [N/50 mm] shall be given in the ETA.

2.2.11 Crack bridging ability

Test specimen: The waterproofing sheet is applied to the surface of two concrete slabs which comply with EN 12004-2, Annex A and which are put against each other in such a way that the slit is closed.

For use scenario A:

The test shall be carried out as following.

- Test rig see Annex 1, Figure 3.
- After the application, the slit shall be opened with $0,5\pm 0,1$ mm/min up to a crack width according to the following assessment categories⁴ at a temperature of 0 ± 2 °C. The slit is held at least for 24 h while testing the water tightness.
- The sample shall be checked visually
- *(other tests formally carried out, with a similar procedure and conditions for similar intended use, may be accepted for this use scenario)*

No incipient crack, tear or through crack shall be observed on the waterproofing sheet⁴:

- 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.

The assessment category shall be given in the ETA.

For use scenario B (test procedure and conditions cover use scenario A also):

The test shall be carried out in same procedure described in Clause 2.2.8.

The slit shall be opened up to a width which is equal to the envisaged crack width increased by a safety factor of 2. (e.g. for envisaged crack width of 1,5 mm the slit width in the test shall be 3mm)

If no water penetration observed during the test or after releasing the pressure the envisaged crack width in [mm] shall be given in the ETA.

2.2.12 Resistance to freeze/thaw

The test is based on EN 14891, A.6.6.

The samples for each type of waterproofing sheets shall be prepared according to 2.2.9 and EN 14891, A.6.6.

The bond strength after freeze / thaw exposure in [MPa] shall be given in the ETA. The bond strength shall be classified into assessment categories as stated in Clause 2.2.9.

2.2.13 Resistance to heat ageing

The test is based on EN 14891, A.6.5.

The samples for each type of waterproofing sheets shall be prepared according to 2.2.9.

The bond strength after heat ageing in [MPa] shall be given in the ETA. The bond strength shall be classified into assessment categories as stated in Clause 2.2.9.

2.2.14 Resistance to chlorine water

This test is relevant only for use scenario B.

The test is based on EN 14891, A.6.7.

The samples for each type of sheets shall be prepared as described in 2.2.9 and EN 14891, A.6.3.

In deviation to the standard, the test units shall be conditioned for 7 days under standard conditions before filling in with chlorine water, which shall be poured away after 20 days (the level of chlorine water shall be maintained at about 6 mm at a temperature of (23 ± 2) °C during the 20 days).

The bond strength after exposure to chlorine water in [MPa] shall be given in the ETA. The bond strength shall be classified into assessment categories as stated in Clause 2.2.9.

2.2.15 Resistance to alkalinity

The test is based on EN 14891, A.6.9.

In deviation to the standard, the samples for each type of sheets shall be prepared according to 2.2.14 (reservoir) and the test units shall be conditioned for 7 days under standard conditions before filling in with lime water ($\text{pH} \geq 12$), which shall be poured away after 20 days (the level of lime water shall be maintained at about 6 mm at a temperature of (40 ± 3) °C during the 20 days).

The bond strength after exposure to alkalinity in [MPa] shall be given in the ETA. The bond strength shall be classified into assessment categories as stated in Clause 2.2.9.

2.2.16 Resistance to heat ageing of the joints

The shear resistance of the joints after heat aging shall be determined in accordance with EN 12317-2 on 3 test specimens (pro each membrane type) with butt joint covered with the sealing strip (or overlapping, depending on the tested membrane type) in accordance with manufacturer's instructions.

Conditioning:

- 2 days in standard conditions (23 ± 2 °C, 50 ± 4 % r.h.)
- 14 days in an air circulating oven at 70 ± 3 °C (heat ageing)
- 1 day in standard conditions

If the measured values of shear strength after heat aging deviate more than ± 20 % from the state of delivery, the resistance to heat ageing of the joints cannot be assessed on the basis of this EAD. *(In this case additional assessment methods, which are not part of this EAD, might be required in order to assess the effect of this change on the durability of the water tightness of the product, e.g. water tightness at joint sealings under high pressure after heat aging. Therefore, an amendment of this EAD would be recommended).*

The deviation of the mean values in [%] from the test results in 2.2.10 shall be given in the ETA.

2.2.17 Resistance to water ageing of the joints

The shear resistance of the joints after water aging shall be determined in accordance with EN 12317-2 on 3 test specimens (pro each membrane type) with butt joint covered with the sealing strip (or overlapping, depending on the tested membrane type) in accordance with manufacturer's instructions.

Conditioning:

- 2 days in standard conditions (23 ± 2 °C, 50 ± 4 % r.h.)
- 56 days in water at a temperature of 40 ± 3 °C (water ageing)
- 1 day in standard conditions

If the measured values of shear strength after heat aging deviate more than ± 20 % from the state of delivery, the resistance to water ageing of the joints cannot be assessed on the basis of this EAD. *(In this case additional assessment methods, which are not part of this EAD, might be required in order to assess the effect of this change on the durability of the water tightness of the product, e.g. water tightness at joint sealings under high pressure after water aging. Therefore an amendment of this EAD would be recommended).*

The deviation of the mean values in [%] from the test results in 2.2.10 shall be given in the ETA.

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 1999/90/EC.

The system is: 2+ for any use except for uses subject to regulations on reaction to fire performance.

For uses subject to regulations on reaction to fire the applicable AVCP systems are 1, 3 or 4 depending on the conditions defined in the said Decision, as amended by Decision 2001/596/EC.

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 3.1.

Table 3.1 Control plan for the manufacturer; cornerstones

No	Subject/type of control	Test or control method	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]					
<u>For waterproofing sheets und sealing conveyer strip</u>					
1	Reaction to fire (only for sheets)	EN ISO 11925-2	¹⁾	As defined in control plan	Once a year
2	Dimensions	EN 1848-2	±5 %.	3	Once each day
3	Thickness and mass per unit area	EN 1849-2	±10 %	3	Once each day
4	Tensile Strength and elongation	EN 12311-2	> MLV	5 long 5 trans	every three months
5	Foldability at low temperature	EN 495-5	< -5°C	3	every three months
<u>For glue for sealing, tile adhesive</u>					
6	TG analysis	EN ISO 11358-1		1	Once a year
7	Residue on ignition	EN ISO 3451-1 at 550 °C	±3%	2	each batch supplied or each batch
¹⁾ According to Product specification					

3.3 Tasks of the notified body

The cornerstones of the actions to be undertaken by the notified body of the product in the procedure of assessment and verification of constancy of performance are laid down in Table 3.2.

The intervention of the notified body with regard to reaction to fire is only necessary for products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material).

Table 3.2 Control plan for the notified body; cornerstones

No	Subject/type of control	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					
<i>(for systems 1 and 2+)</i>					When starting the production or a new production line
1	The notified product certification body shall verify the ability of the manufacturer for a continuous and orderly manufacturing of the product according to the Manufacturer's Control Plan. In particular the following items shall be appropriately considered <ul style="list-style-type: none"> - personnel and equipment - the suitability of the factory production control established by the manufacturer - full implementation of the prescribed test plan 	Verification of the complete FPC, to be implemented by the manufacturer	-	-	
<i>(for system 1 only)</i>					
2	Basic Works Requirement 2* -: Safety in case of fire: <ul style="list-style-type: none"> - Presence of suitable test equipment - Presence of trained personnel - Presence of an appropriate quality assurance system and the necessary stipulations 	Clause 2.2.1	Control Plan	-	

No	Subject/type of control	Test or control method	Criteria, if any	Minimum number of samples	Minimum frequency of control
Continuous surveillance, assessment and evaluation of factory production control					
<i>(for systems 1 and 2+)</i>					1 per year
3	It shall be verified that the system of factory production control and the specified manufacturing process are maintained taking account of the control plan.	Verification of the controls carried out by the manufacturer on the raw materials, on the process and on the product as indicated in Table 3.1	-	-	
<i>(for system 1 only)</i>					
4	Basic Works Requirement 2* - Safety in case of fire: <ul style="list-style-type: none"> - Inspection of factory, of the production of the product and of the facilities for factory production control - Evaluation of the documents concerning factory production control - Issuing a report of surveillance 	Clause 2.2.1	Control Plan		

*Only relevant for products/materials of class C and higher for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material)

4 REFERENCE DOCUMENTS

ETAG 022 Part 2 - Version November 2010	Guideline for European Technical Approval of Watertight covering kits for wet room floors and or walls - Part 2: Kits based on flexible sheets - Version November 2010
EN 13501-1:2018	Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests
(EU) No 2016/364:	Commission Delegated Regulation on the classification of the reaction to fire performance of construction products pursuant to Regulation (EU) No 305/2011 of the European Parliament and of the Council
EOTA Technical Report TR 034: October 2015	General checklist for EADs/ETAs – Content and/or release of dangerous substances in construction products
EN 16516:2017	Construction products – Assessment of release of dangerous substances – Determination of emissions into indoor air
EN 1931:2000	Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for water proofing – Determination of water vapor transmission properties
EN 1928:2000	Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for water proofing – Determination of watertightness
EN 13967:2012	Flexible sheets for waterproofing – Plastic and rubber damp sheets including plastic and rubber basement tanking sheet – Determination and characteristics
EN 12691:2018	Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for water proofing – Determination of resistance to impact
EN 12730:2015	Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for water proofing – Determination of resistance to static loading
EN 12004-2:2017	Adhesives for ceramic tiles – Part 2: Test methods
EN 14891:2012	Liquid applied waterproofing membranes for use beneath ceramic tiling – Definitions, specifications and test methods; EN 14891:2012/AC:2012
EN 12317-2:2010	Flexible sheets for waterproofing – Determination of shear resistance of joints – Part 2: Plastic and rubber sheets for waterproofing
EN ISO 11925-2:2010	Reaction to fire tests – Ignitability of products subjected to direct impingement of flame – Part 2: Single-flame source test (ISO 11925-2:2010)
EN 1848-2:2001	Flexible sheets for waterproofing – Determination of length, width, straightness and flatness – Part 2: Plastic and rubber sheets for waterproofing
EN 1849-2:2009	Flexible sheets for waterproofing – Determination of thickness and mass per unit area – Part 2: Plastic and rubber sheets for waterproofing
EN 12311-2:2013	Flexible sheets for waterproofing – Determination of tensile properties – Part 2: Plastic and rubber sheets for waterproofing
EN 495-5:2013	Flexible sheets for waterproofing – Determination of foldability at low temperature – Part 5: Bitumen, plastic and rubber sheets for water proofing
EN ISO 11358-1:2014	Plastics – Thermogravimetry (TG) of polymers – General principles (ISO 11358-1:2014)
EN ISO 3451-1:2008	Plastics – Determination of ash – Part 1: General methods (ISO 3451-1:2008)

ANNEX 1: FIGURES

Figure 1 : plan view

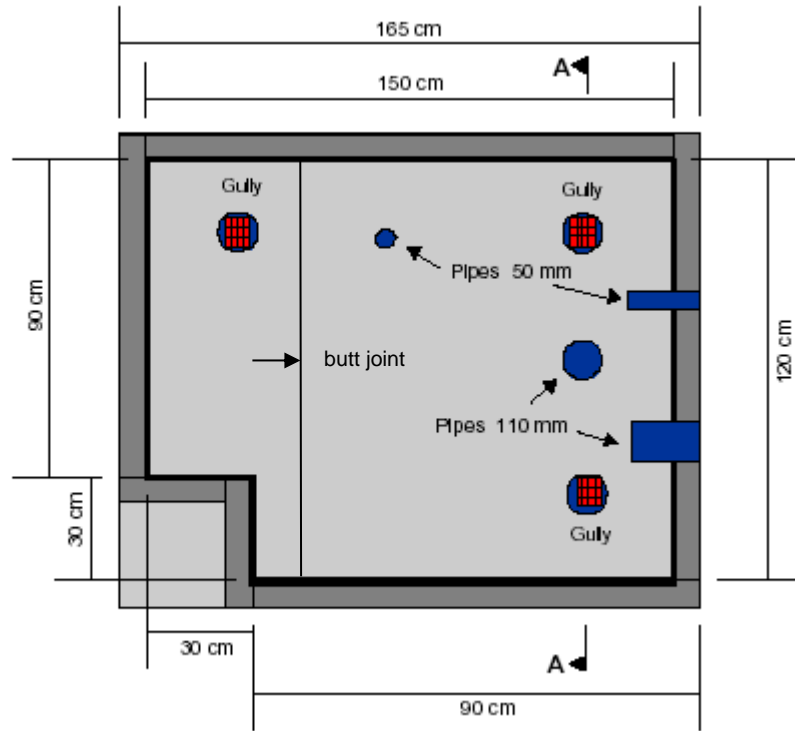
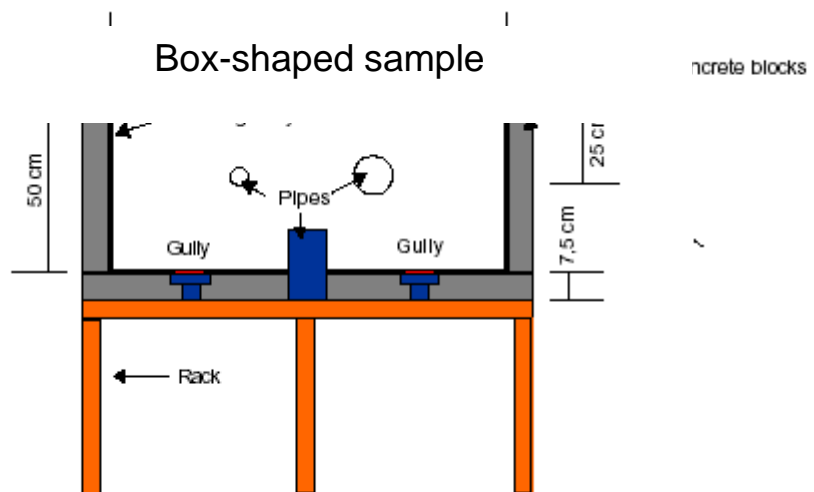
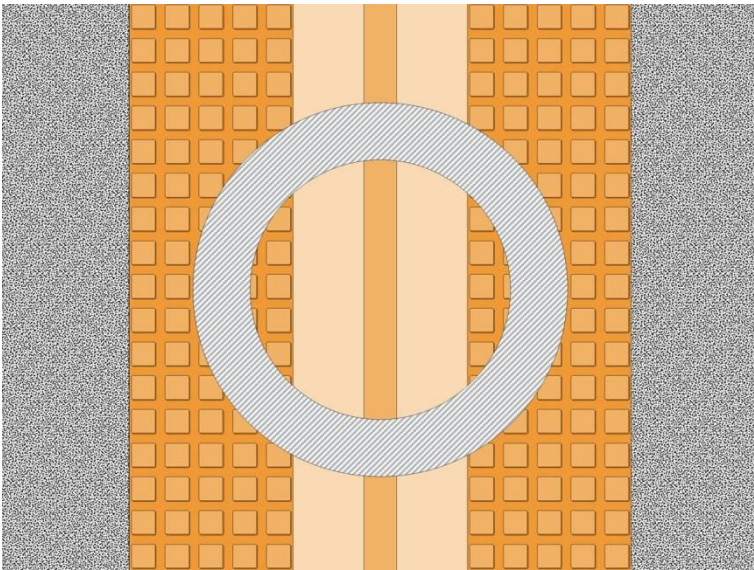


Figure 2 : view A-A



Plan view



Side view

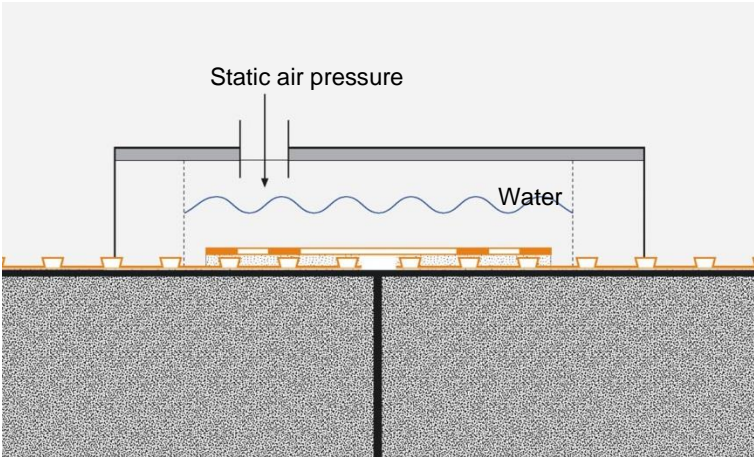


Figure 3: determining the waterproofing of joints (test for use scenario B)