

Established pursuant to Annex II of the Council Directive 89/106 of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products (Construction Products Directive)

ETAG 022

GUIDELINE FOR EUROPEAN TECHNICAL APPROVAL of

Watertight covering kits for wet room floors and or walls

Part 3: Kits based on inherently watertight boards

Version November 2010

This Guideline for European Technical Approval is established and published in accordance with Article 11 of the Construction Products Directive as a basis for the preparation and issue of European Technical Approvals in accordance with Article 9.1 of the Construction Products Directive.

European Technical Approvals are issued by approval bodies authorised and notified in accordance with Article 10 of the Construction Products Directive. These bodies are organized in EOTA.

The European Technical Approval, according to the Construction Products Directive, is a favourable technical assessment of the fitness for use of a construction product and the technical specification of the assessed product, serving as basis for the CE marking of this product when and where a harmonised standard according to the Directive is not or not yet available.

Due to technical innovation and the progress of the state of the art, guidelines for technical approval might not reflect the latest developments and experiences gained in approval procedures. The reader of this Guideline is therefore advised to check with an EOTA member whether there are further provisions which have to be taken into account in the use of the Guideline.

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1 SCOPE OF THE ETAG

1.1 Definition of the construction product

A "kit" is a special form of a "construction product" in the sense of the CPD. It consists of several "components" which are

- Placed on the market with a common CE marking,
- Assembled on site, and
- Thus become an "assembled system" installed in the construction works.

Individual components of a kit may be separately available on the market. Such a component may itself, as a construction product in the sense of the CPD, bear the CE marking on its own right on the basis of a product hEN or ETA. Nevertheless, it may need to be assessed again as a component of the kit.

The Guideline 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. See also Commission Guidance paper C on kits and systems.

Components of the kits covered by this guideline may already be CE marked in their own right according to relevant standards e.g. EN 13986 and consequently some of the component characteristics have already been determined. However an assessment of the components as part of the kit still needs to be carried out according to this guideline.

This part 3 of the Guideline covers kits, which can be supplied as inherently watertight boards with possible associated adhesives, joint sealing materials, collars, primers etc.

Other parts of the Guideline cover kits, which can be supplied as:

- Single- or multi component liquid waterproofing membranes with possible associated adhesives, primers etc and jointless coverings such as paint systems, glass fibre reinforced polyester, polyurethane or epoxy (Part 1).
- Flexible sheets. The sheets can be in the form of resilient coverings, e.g. bituminous, elastomeric or plastic sheets (Part 2).

The boards can be with or without a surface treatment which may act as wearing surface and/or to obtain watertightness 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 watertightness 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 kit shall at least resist stresses caused by movements of construction elements acting as substrate and resist the influence of water, temperature variations, and alkalinity of concrete and ceramic tile mortars.

The exact composition of watertight coverings may vary with the type of use and with the type of substrate with which the covering shall perform in a hygrothermally, mechanically and chemically satisfactory manner.

The components of the kit are manufactured in a factory and are assembled on site as a waterproofing system.

This Guideline does not cover watertight coverings for swimming pools and industrial processes.

This Guideline does not cover watertight coverings intended to be resistant to extreme chemical or biological exposures, such as can be expected in industrial kitchens and industrial processes, and claims to this effect by the applicant cannot be assessed in accordance with this ETAG.

1.2 Intended use of the construction product

1.2.1 General

The intended uses of the coverings 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. However, the use may be limited due to national legislation in the Member States.

1.2.2 Substrates

The actions on the assembled watertight covering system, which influence a durable watertight function, depend also on the function and type of substrate. The approval body judges the influence of the substrate on the performance of the entire kit/system, e.g. depending on thickness and stiffness of the board, adhesion to the substrate and separate constructions. If the substrate has no influence table 1 is not relevant.

The following table is not an exhaustive list of substrates but only indicates the tests related to the type of substrate.

In general the substrates fall in different types:

Table 1: Different types of substrates and the corresponding system tests

	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	<p>Examples: Gypsum blocks</p> <p>Tests: 2.4.4.2 Assessment Category 0,1, 2, 3 2.4.4.7, Assessment Category 1 or 2 with annex G</p>	<p>Examples: Gypsum boards, Wood based materials</p> <p>Tests: 2.4.4.5, Assessment Category 0, 1 or 2 2.4.4.7, Assessment Category 1 or 2 with annex A and F, or E</p>	None known
Non moisture sensitive substrates	<p>Examples: In-situ concrete, masonry</p> <p>Tests: 2.4.4.2 Assessment Category 0, 1, 2, 3 2.4.4.7, Assessment Category 1 or 2 with annex G</p>	<p>Examples: Calcium silicate boards, fibre cement boards</p> <p>Tests: 2.4.4.5, Assessment Category 0, 1 or 2 2.4.4.7, Assessment Category 1 or 2 with annex A and F or E</p>	<p>Examples: Concrete or aerated concrete elements</p> <p>Tests: 2.4.4.2 Assessment Category 0, 1, 2, 3 2.4.4.5, Assessment Category 0, 1 or 2 2.4.4.7, Assessment Category 1 or 2 with annex G</p>

The decision on whether to apply assessment category 0, 1, 2 or 3 in 2.4.4.2 or assessment category 0, 1 or 2 in 2.4.4.5 and 2.4.4.7 depends on the national requirements. These can apply to the strength and stability of the substrate and to the security for the waterproofing system dependent on the nature of the substrate (moisture sensitive/not moisture sensitive).

¹ For substrates with un-reinforced filled jointing, the crack bridging ability test has to be performed according to 2.4.4.2

1.3 Assumed working life of the construction product

The provisions and the verification and assessment methods included or referred to in this ETAG have been written based upon the assumed working life of the watertight covering kits for the intended use of 25 years, provided that the watertight coverings kit is subject to appropriate installation, use and maintenance (see 4). These provisions are based upon the current state of art and the available knowledge and experience.

"Assumed working life" means that it is expected that, when an assessment following the ETAG-provisions is made, and when this working life has elapsed, the real working life may be, in normal use conditions, considerably longer without major degradation affecting the Essential Requirements².

The indications given as to the working life of a watertight covering kit cannot be interpreted as a guarantee given by the producer or the approval body. They should be regarded only as a means for choosing the appropriate criteria for watertight covering kits in relation to the expected economically reasonable working life of the works (see 5.2.2 of Interpretative Documents).

1.4 Terminology

1.4.1 Common terms relating to the Construction Products Directive

For the meaning of these terms see EOTA document "Common terms used in Guidelines for European Technical Approval" published on the EOTA website.

1.4.2 Specific terms used in this ETAG

1.4.2.1 Wet room

Wet rooms are rooms where the floor and possibly the walls are frequently exposed to water, e.g. bathrooms, sculleries or washing rooms.

1.4.2.2 Manufacturer's technical dossier (MTD)

A document, or collection of documents, consisting of the Factory Production Control (setting out the specific quality practices, resources and sequence of activities), the design rules, the application methods (including procedures for quality control on site), build-up/composition of the kit, characteristics of a possible wearing surface and the directions concerning maintenance and repair of the assembled system, relevant to a particular product or a range of products. Confidential information may be given in a confidential part of the MTD.

1.4.2.3 Batch

A limited amount of materials made in a single production process.

1.4.2.4 Production sequence

Continuous period of time in which a single component is manufactured, e.g. the time in which 8 batches are produced.

1.4.2.5 Wearing surface

A protective layer applied in liquid or solid form used over a watertight covering in order to protect it from mechanical wear e.g. pedestrian access

² The real working **life** of a product incorporated in a specific works depends on the environmental conditions to which that works is subject and the particular conditions of the design, execution, use and maintenance of that works **may be outside this ETAG**. Therefore, it cannot be excluded that in **these** cases the real working life of the product may also be shorter than the assumed working life.

- 1.4.2.6 Watertight
- A property related to the characteristics of the assembled system meaning that no liquid water shall penetrate after exposure to water.
- 1.4.2.7 Tile
- A rigid surface layer meant for protection of the substrate and/or for decorative purposes e.g. ceramic tiles in accordance with EN 14411.
- 1.4.2.8 Watertight boards
- Boards which are watertight. The watertightness may be due to a factory applied surface treatment or due to the nature of the material from which the board is made
- 1.4.2.9 Crack
- A crack in the sense of this guideline is an unpredictable opening/gap in the substrate, e.g. cracks caused by shrinking of concrete. Cracks may occur in the material used to fill joints between elements, e.g. in mortar
- 1.4.2.10 Jointing
- Jointing is a deliberate act of connecting two or more boards in order to maintain watertightness.
- 1.4.2.11 Joint
- A joint is a discontinuity, between two watertight boards or around a penetration. In the sense of this ETAG the phrase “joint” does not include movement joints, such as shrinkage joints, expansion joints and structural joints or mortar joints in masonry
- 1.4.2.12 Moisture sensitive
- In the sense of this ETAG it means that the substrate will deteriorate under the continuous influence of moisture
- 1.4.2.13 Adhesive
- In the context of this part of the ETAG an adhesive is understood to be a bonding agent for adhering the wearing surface to the watertight board or for adhering the watertight board to the substrate. In some cases the adhesive can also act as a primer.
- 1.4.2.14 Sealing product
- A sealing product is used in order to ensure the watertightness of the joint between boards and between boards and penetrations. Sealing products can be e.g. sealants, sealing strips, collars or an adhesive with joint filling capacity.
- 1.4.2.15 Primer
- In the context of this part of the ETAG a primer is understood to be a pre-treatment of the substrate which in some cases also can act as an adhesive.

1.5 Procedure in the case of a significant deviation from the ETAG

The provisions of this ETAG apply to the preparation and issue of European Technical Approvals in accordance with Art. 9.1 of the CPD and section 3.1 of the Common Procedural Rules.

In cases in which a certain provision of this ETAG is not wholly or partially applicable, or a particular aspect of a product and/or intended use to be assessed is not wholly or sufficiently covered by the methods and criteria of the ETAG, the procedure of Art. 9.2 of the CPD and section 3.2 of the Common Procedural Rules apply with regard to the deviation or aspect concerned.

2 ASSESSMENT OF FITNESS FOR USE

2.1 Meaning of "fitness for use"

"Fitness for use" or "fitness for the intended use" of a construction product means that the product has such characteristics that the works in which it is to be incorporated, assembled, applied or installed, can, if properly designed and built,

- Satisfy the Essential Requirements when and where such works are subject to regulations containing such requirements (CPD Art. 2.1) and
- Be fit for their intended use, account being taken of economy, and in this connection satisfy the Essential Requirements for an economically reasonable working life, if normally maintained (CPD Annex I, Preamble).

In the case of kits, "fitness for (the intended) use" refers to

- a) the assembled system (it must have "such characteristics that the works in which it is to be incorporated, assembled, applied or installed, can, if properly designed and built, satisfy the Essential Requirements when and where such works are subject to regulations containing such requirements")
- b) The components of the assembled system (each of the components, including those which are not included in the kit, if any, must have such characteristics that the assembled system can, if properly assembled, be fit for the intended use in the sense of clause a above).

2.2 Elements of the assessment of fitness for use

The assessment of the fitness of a construction product for its intended use includes:

- The identification of the characteristics of the assembled system which are relevant to its fitness for use (and for which the NPD option is not applicable);
- The establishment of methods for the verification and assessment of the characteristics of the assembled system and the expression of the respective performances;
- The identification of characteristics to which the option "No Performance Determined" applies for the reason that in one or more Member States they are not relevant for the fulfilment of the requirements applicable to the works;
- The identification of characteristics for which limit values (threshold values) have to be respected for technical reasons.

With regard to the legislation in the member states the assessment of the kit has to be done for the product- and/ or the system-characteristics to fulfil requirements for the performance of the product depending on the intended use of the product and the kind of substrate and aspects of security (consequences of water permeability for the works e.g. depending on moisture sensitive or not moisture sensitive substrates) (see paragraph 1.2.2)

Not every characteristic has to be proven if it is not required in at least one of the member states (npd - i.e. no performance determined - option). For fundamental characteristics for which limiting values have to be respected for technical reasons the npd option is not possible.

2.3 Relationship of requirements to the characteristics of the assembled system and its components and methods of verification and assessment

The system and component characteristics, methods of verification and assessment criteria, which are relevant for the fitness of watertight coverings kits for the intended use(s) referred to in 1.2, are given in Table 2.

Table 2: Characteristics of the assembled system and methods of verification and assessment

Number	Product characteristic	Option "No Performance Determined"	Method of verification and assessment	Expression of test result (<i>value, class, NPD, criterion, etc</i>)
(1)	(2)	(3)	(4)	(5)
Essential Requirement 1 Mechanical resistance and stability				
	Not relevant (for use as watertight kit)			
Essential Requirement 2 Safety in case of fire				
1	Reaction to fire	Yes	2.4.1	Euroclass A1 – F or A1 _n – F _n
Essential Requirement 3 Hygiene, health and environment				
2	Release of dangerous substances	Yes	2.4.2	Statement by applicant
3	Vapour permeability	Yes	2.4.3	Declared value
4	Moisture resistance		2.4.4	
4.1	Water tightness	No	2.4.4.1	Pass/fail (No penetration of water)
4.2	Crack bridging ability**)	Substrates susceptible to cracks: No Substrates not susceptible to cracks: Yes	2.4.4.2	Pass/fail Assessment category 0 - 3
4.3	Bond strength	Boards to be supplied with a separate wearing surface and/or boards which are bonded to the substrate: No Boards with an inherent wearing surface: Yes	2.4.4.3	Pass/fail Assessment category 1 ($\geq 0,2$ MPa) Assessment category 2 ($\geq 0,3$ MPa) Assessment category 3 ($\geq 0,5$ MPa)
4.4	Scratching resistance	Boards to be supplied with a separate wearing surface: Yes Boards with an inherent wearing surface: No	2.4.4.4	Pass/fail (No visual penetration)
4.5	Joint bridging ability**)	Substrates with joints: No Substrates without joints: Yes	2.4.4.5	Pass/fail Assessment category 0, 1 or 2
4.6	Impermeability at sealings	Yes	2.4.4.6	Pass/fail
4.7	Watertightness around penetrations*)	No	2.4.4.7	Pass/fail Assessment category 1 or assessment category 2
Essential Requirement 4 Safety in use				
5	Slipperiness	Yes	2.4.5	Declared value
Essential Requirement 5 Protection against noise				
	Not relevant			
Essential Requirement 6 Energy economy and heat retention				
	Not relevant			

General aspects relating to fitness for use ¹				
6	Durability		2.4.6	
6.1	Dimensional stability	Yes	2.4.6.1	Declared value
6.2	Resistance to temperature	No	2.4.6.2	Bending test: Pass/fail Bond test: Pass/fail Assessment category 1 ($\geq 0,2$ MPa) Assessment category 2 ($\geq 0,3$ MPa) Assessment category 3 ($\geq 0,5$ MPa) In addition, the test temperature shall be declared.
6.3	Resistance to water	No	2.4.6.3	Pass/fail
6.4	Resistance to alkalinity	For boards intended for use with an alkaline environment: No For boards not anticipated to be used together with alkaline materials: Yes	2.4.6.4	Pass/fail Assessment category 1 ($\geq 0,2$ MPa) Assessment category 2 ($\geq 0,3$ MPa) Assessment category 3 ($\geq 0,5$ MPa)
6.5	Resistance to chemical agents	Yes	2.4.6.5	Assessment
6.6	Resistance to biological agents	Yes	2.4.6.6	Assessment
6.7	Resistance to mechanical wear	Yes	2.4.6.7	Declared value
7	Serviceability		2.4.7	
7.1	Cleanability	Yes	2.4.7.1	Declared value
7.2	Reparability	Yes	2.4.7.2	Statement by the applicant
7.3	Thickness	No	2.4.7.3	Declared value
7.4	Applicability	Not relevant	2.4.7.4	Not relevant
1) Aspects of durability and economy of the works (see CPD Annex 1, sentence 1 and 2)				
*) This characteristic also relates to the durability of the kit				
**) The relevance of this test depends on the substrate covered by the intended use, see paragraph 1.2.2				

Adaptation of the general test regime to a specified waterproofing system on the basis of national requirements

Under consideration of national requirements for the evaluation of the watertight covering kit (required characteristics and assessment categories depending on the kind of substrate, see 1.2.2) and on the basis of the general test regime above the test regime for the provided use and application conditions for a waterproofing system which shall be approved has to be specified. The characteristics linked with the npd option "NO" have to be proven in any case. The characteristics linked with the npd option "Yes" have to be proven only if there is a requirement in the member state to which the product shall be marketed.

It should be noted that some member states have prescriptive requirements for certain characteristics given in the ETA, e.g. for moisture in buildings and building elements or water vapour resistance. This should be investigated by the applicant and the approval body in relation to the intended market.

2.4 Characteristics of the assembled system, which are relevant for the fitness for use

If the board has been CE marked in accordance with harmonised standards, some of the below mentioned tests may not be necessary, provided that the relevant characteristic has been determined in connection with the CE marking.

2.4.1 Reaction to fire

2.4.1.1 Method of verification

The watertight board kit shall be tested in its end use condition, using the test method(s) relevant for the corresponding reaction to fire class, in order to be classified according to EN 13501-1:2007.

Where national regulation exists for any of the components of the kits (e.g. jointing material or cover strip), this component shall be classified according to EN 13501-1:2007

Or

The watertight board kit and/or individual kit components is considered to satisfy the requirements for performance Class A1 or Class A1_{f1} of the characteristic reaction to fire, in accordance with the provisions of EC Decision 96/603/EC (as amended) without the need for further testing on the basis of its listing in that Decision.

Or

The watertight board kit and/or individual kit components is considered to satisfy the requirements for the performance of reaction to fire in accordance with the relevant EC Decision, when applicable, without the need for testing on the basis of its conformity with the specification of the product detailed in that Decision and its intended end use application being covered by that Decision.

Concerning mounting and fixing rules: See annex I

2.4.1.2 Method of assessing and judging

The kit shall be classified according to EN 13501-1:2007 in its end use condition (assembled system in which the kit is intended to be incorporated).

It shall be noted in the ETA which components of the kit have been tested and classified.

2.4.2 Release of dangerous substances

2.4.2.1 Method of verification

Presence of dangerous substances in the product

The applicant shall submit a written declaration stating whether or not the product/kit contains dangerous substances according to European and national regulations, when and where relevant in the Member States of destination, and shall list these substances.

Compliance with the applicable regulations

If the product/kit contains dangerous substances as declared above, the ETA will provide the method(s) which has been used for demonstrating compliance with the applicable regulations in the Member States of destination, according to the dated EU data-base (method(s) of content or release, as appropriate).

2.4.2.2 Method of assessing and judging

The product/kit shall comply with all relevant European and national provisions applicable for the uses for which it is brought to the market. The attention of the applicant should be drawn on the fact that for other uses or other Member States of destination there may be other requirements, which would have to be respected. For dangerous substances contained in the product but not covered by the ETA, the NPD option (no performance determined) is applicable

2.4.3 Vapour permeability

2.4.3.1 Method of verification

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, see paragraph. 4.3. Otherwise the test of the water vapour permeability shall be carried out without the primer.

2.4.3.2 Method of assessing and judging

Declared value

2.4.4 Moisture resistance

2.4.4.1 Watertightness

2.4.4.1.1 Method of verification

The watertightness of the watertight board itself is determined according to the principles in paragraph A7 in prEN 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.

2.4.4.1.2 Method of assessing and judging

Pass/fail

2.4.4.2 Crack bridging ability

2.4.4.2.1 Method of verification

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

Testing shall be carried out following the method C.2 of prEN 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 × width = 300 mm x 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.

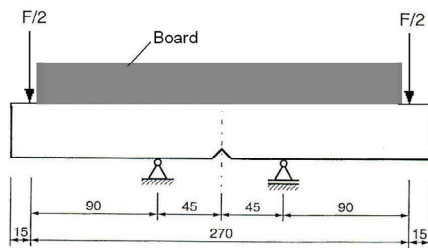


Figure 1: Test set-up for generating cracks by bending of test specimen. Dimensions in mm

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 has to 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

2.4.4.2.2 Method of assessing and judging

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.

2.4.4.3 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).

2.4.4.3.1 Method of verification

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 determined in accordance with paragraph A.6.2 in prEN 14891. The samples are stored according to the standard or according to the manufacturers 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 prEN 14891. When a result of more than or equal to the threshold values according to 2.4.4.3.2 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.

2.4.4.3.2 Method of assessing and judging

Assessment category 0: The test is irrelevant

Assessment category 1: The bond strength shall be higher than or equal to 0,2 MPa

Assessment category 2: The bond strength shall be higher than or equal to 0,3 MPa .

Assessment category 3: The bond strength shall be higher than or equal to 0,5 MPa .

2.4.4.4 Scratching resistance

2.4.4.4.1 Method of verification

The scratching resistance of the watertight board kit is determined in accordance with annex C.

The test is only carried out on kits with an inherent wearing surface. The test applies for both floor and wall applications.

2.4.4.4.2 Method of assessing and judging

Pass/fail

2.4.4.5 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

2.4.4.5.1 Method of verification

The joint bridging ability of watertight board kits for both floors and/or walls with and without wearing surface at joints subjected to movement of the substrate shall be evaluated based on:

Assessment category 0: The test is irrelevant

Assessment category 1: Judging by the approval body based on the descriptions and drawings in the manufacturer's technical dossier (MTD) that sealings with the components of the kit may be established properly to fulfil the requirements on the assembled waterproofing system.

Assessment category 2: additional to assessment category 1 testing is performed in accordance with the principles in annex B with a 2 mm gap.

2.4.4.5.2 Method of assessing and judging

Indication of assessment category

2.4.4.6 Impermeability at sealings

This property deals with 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.

2.4.4.6.1 Method of verification

For joints foreseen to accommodate movements, the impermeability at sealings of the watertight board kits with or without wearing surface is determined in accordance with the principles of annex B with a 2 mm gap.

2.4.4.6.2 Method of assessing and judging

Pass/fail

2.4.4.7 Watertightness around penetrations

2.4.4.7.1 Method of verification

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 shall be determined in one of two categories of assessment.

Assessment category 1: Judging by the approval body of the descriptions and drawings in the manufacturer's technical dossier (MTD) that sealings with the components of the kit may be established properly to fulfil the requirements on the assembled waterproofing system.

Assessment category 2: Additional to assessment category 1 a test is performed 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).

2.4.4.7.2 Method of assessing and judging

Indication of assessment category.

2.4.5 Slipperiness

2.4.5.1 Method of verification

This test is only relevant for kits for floors without a wearing surface. Verification of slip resistance of flooring materials shall be undertaken in accordance with the relevant EN-standards prepared or under preparation by CEN/TC 339.

2.4.5.2 Method of assessing and judging

When this performance is determined the slip resistance of finished floorings shall be declared according to the relevant standard.

2.4.6 Durability

Due to the variety of the types of boards covered by this guideline and the lack of experience with durability testing the following paragraphs gives indications based on state of the art and may not be exhaustive. The approval body may need to consider additional tests for durability assessment including durability of the joint sealing.

The following tests and assessments apply for kits with or without wearing surface as specified in the below text.

2.4.6.1 Dimensional stability

2.4.6.1.1 Method of verification

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

For board materials the dimensional stability is determined 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 13613, EN 13614, 13615 for EPS/XPS/PUR.

Where the board is already CE marked and tested in accordance with a relevant test method, it is not necessary to repeat the tests.

2.4.6.1.2 Method of assessing and judging

Declared value.

2.4.6.2 Resistance to temperature

2.4.6.2.1 Method of verification

The resistance to temperature of the watertight covering kits with or without a wearing surface is determined 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 determined for exposed and unexposed materials respectively according to the relevant standard e.g. EN 12089.

Bond strength is performed according to the directions given in 2.4.4.3 for exposed and unexposed materials respectively.

Where the board is already CE marked and aged and tested in accordance with a relevant test method, it is not necessary to repeat the tests

2.4.6.1.2 Method of assessing and judging

After exposure the flexural bending strength and the stiffness are not allowed to deviate by more than $\pm 20\%$ from the bending strength of the unaged material.

After exposure the bond strength shall fulfil the requirements for the same relevant assessment category. The temperature at which the test was performed shall be indicated.

2.4.6.3 Resistance to water

2.4.6.3.1 Method of verification

The resistance to water of the watertight covering kits is covered by the test according to Annex A, F, G or E.

2.4.6.3.2 Method of assessing and judging

After the test, the bond strength criterion to the relevant assessment category mentioned in 2.4.4.3.2 shall be fulfilled.

2.4.6.4 Resistance to alkalinity

2.4.6.4.1 Method of verification

The resistance to alkalinity of the watertight board kit is where relevant determined 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. The exposure mode shall be declared in the ETA.

Bond strength is performed according to the directions given in 2.4.4.3 for exposed and unexposed materials respectively.

2.4.6.4.2 Method of assessing and judging

After exposure the bond strength shall fulfil the requirements for the same relevant assessment category.

2.4.6.5 Resistance to chemical agents

2.4.6.5.1 Method of verification

Within the scope of this ETAG, the applicable chemical agent is considered to be ordinary cleaning agents, which are generally basic. Therefore, the assessment of this characteristic is considered to have been taken into account in the assessments described in 2.4.6.4 for resistance to alkalinity.

Exposures to acid agents and particular claims for resistance to chemical agents are not covered by this ETAG.

2.4.6.5.2 Method of assessing and judging

Not applicable

2.4.6.6 Resistance to biological agents

2.4.6.6.1 Method of verification

Particular claims for resistance to particular biological agents or an enhanced resistance to biological agents are not covered by this ETAG.

The biological exposure in wet rooms will typically be in the form of mould growth on the wearing surface (tiles and grouts, which are not part of the kit) or on the substrate, if these are organic. Mould growth on the substrate is considered to be caused by inappropriate design of the wall or floor structure. Kits with a wearing surface are therefore not intended to have a particular biological resistance. For kits where the watertight covering is also the wearing surface, the biological resistance can be assessed based on the relevant standards for the membrane.

In the absence of standards, the assessment shall be based on the relevant European and national provisions applicable for the uses for which it is brought to the market. The attention of the applicant should be drawn on the fact that for other uses or other Member States of destination there may be other requirements, which would have to be respected

2.4.6.6.2 Method of assessing and judging

Assessment by approval body depending on the test

2.4.6.7 Resistance to mechanical wear

2.4.6.7.1 Method of verification

Only relevant for watertight board kits 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, EN 660-1 and EN 660-2.

The test is carried out for all intended uses.

2.4.6.7.2 Method of assessing and judging

When this performance is determined, the mechanical wear resistance of the products shall be declared according to the relevant standard for the specified flooring product.

2.4.7 Serviceability

2.4.7.1 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 a 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 × 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 % cation active tenside 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.

2.4.7.1.2 Method of assessing and judging

The grey scale category is declared for each step of cleaning according to the below grey scale:

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

2.4.7.2 Repairability

2.4.7.2.1 Method of verification

The approval body based on experience and plausibility shall verify the information if the manufacturer claims certain provisions concerning repair of the board.

2.4.7.2.2 Method of assessing and judging

Statement by the approval body on the ability to perform repairs on the watertight board kit.

2.4.7.3 Thickness

2.4.7.3.1 Method of verification

The thickness of the watertight board kit is determined according to relevant standards e.g. EN 324-1 or EN 822-825.

Where the thickness of the membrane is already tested in accordance with the appropriate test it is not necessary to repeat the tests. However, assessment still has to be carried out according to this Guideline to ensure that the test method is appropriate and that the membrane is fit for the intended use.

2.4.7.3.2 Method of assessing and judging

Declared value

2.4.7.4 Applicability

2.4.7.4.1 Method of verification

The test is not relevant

2.4.7.4.2 Method of assessing and judging

Not relevant

2.5 Components and their characteristics, which are relevant for the fitness for use

No additional tests on components with regard to the assessment of the fitness for use are relevant. However, certain component characteristics are used for identification purposes, see chapter 5.

3 Evaluation and attestation of conformity and CE marking

3.1 Systems of conformity attestation

According to the decision 2003/655/EC, dated 2003-09-17 of the European Commission³ the following systems of conformity attestation apply to the watertight covering kits:

Product	Intended use	Levels or classes	Attestation of conformity system
Watertight covering kits for wetroom floors and walls	For building works	-	2+

Table 3: System of attestation of conformity applicable to Watertight covering kits for wetroom floors and walls

Attestation of conformity concerning the product properties, which have an influence on the waterproofing function

System 2+:

Declaration of conformity of the product by the manufacturer on the basis of:
(See Annex III.2.(ii), first possibility, of the CPD):

- (a) Tasks for the manufacturer:
 - (1) Initial type-testing of the product;
 - (2) Factory production control;
 - (3) Testing of samples taken at the factory in accordance with a prescribed test plan.
- (b) Tasks for the notified body:
 - (4) Certification of factory production control on the basis of:
 - Initial inspection of factory and of factory production control;
 - Continuous surveillance, assessment and approval of factory production control.

If reaction to fire is relevant in addition, according to the decision 2003/655/EC, dated 2003-09-17 of the European Commission¹ the following systems of conformity attestation applies to watertight covering kits with regard to reaction to fire (the attestation of conformity system to be applied depends on the composition of the product):

Product(s)	Intended use(s)	Level(s) or class(es) (<i>reaction to fire</i>)	Attestation of conformity system(s)
<i>Watertight covering kits for wet room floors and walls</i>	For uses subject to regulations on reaction to fire	A1*, A2*, B*, C*	1
		A1**, A2**, B**, C**, D, E,	3
		(A1 to E) ***, F	4
System 1: See Directive 89/106/EEC Annex III.2.(i), without audit-testing of samples System 3: See Directive 89/106/EEC Annex III.2.(ii), Second possibility System 4: See Directive 89/106/EEC Annex III.2.(ii), Third possibility * 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) ** Products/materials not covered by footnote (*) *** Products/materials that do not require to be tested for reaction to fire (e.g. Products/materials of class A1 according to Commission Decision 96/603/EC, as amended)			

Table 4: Choice of the attestation of conformity system with respect to reaction to fire

Attestation of Conformity of the product properties which have an influence on the reaction to fire for products with in table 2 specified classes and footnotes:

³ Official Journal of the European Communities L 231/12

System 1

Certification of the conformity of the product by a notified certification body on the basis of:
(See Annex III.2.(i), of the CPD without audit-testing of samples)

- (a) Tasks for the manufacturer:
 - (1) Factory production control;
 - (2) Further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan;
- (b) Tasks for the notified body:
 - (3) Initial type-testing of the product;
 - (4) Initial inspection of factory and of factory production control;
 - (5) Continuous surveillance, assessment and approval of factory production control.

System 3

Declaration of conformity of the product by the manufacturer on the basis of:
(See Annex III.2.(ii), Second possibility of the CPD)

- (a) Tasks for the manufacturer:
 - (1) Factory production control;
- (b) Tasks for the notified body:
 - (2) Initial type testing of the product.

System 4

Declaration of conformity of the product by the manufacturer on the basis of:
(Annex III.2. (ii), Third possibility of the CPD)

- (a) Tasks for the manufacturer:
 - (1) Initial type testing of the product;
 - (2) Factory production control.

3.2 Tasks and responsibilities of the manufacturer and notified bodies

In transposing the relevant systems of attestation of conformity to the approved kit, the approval body has to lay down the specific tasks of the manufacturer and the notified body in the process of attestation of conformity in control plans. Both large and small companies produce these products and there is a wide variation in the materials and test methods used. Therefore a precise test plan can only be set up on a case-by-case basis.

In general it is not necessary to conduct tests on complete kits or applied systems. Indirect methods will normally be sufficient, e.g. control of raw materials, manufacturing processes and properties of components.

The following gives general cornerstones on how to write these control plans for the product family of this ETAG. They shall be specified and filled in by the approval body for the approved product under consideration of the specified production process of the manufacturer.

It is assumed that the characteristics given in the following control plans have a correlation to the properties of the products both for the water tightening function and the reaction to fire.

3.2.1 Tasks of the manufacturer (Control plan)

Table 5: Example of a control plan of the manufacturer

Type of control		Test or control method	Minimum extent/frequency of control	
AoC element (acc. to CPD Annex III.1)	Product, raw/constituent material, product component and characteristic concerned			
Factory production control (For all systems including testing of samples in accordance with a prescribed test plan for systems 1 and 2+)	Identification of incoming materials	Depending on the nature of the materials	Every delivery	
	Assembled system or relevant assembled components of the kit Reaction to fire	2.4.1	When starting the production process of the product or when starting a new production line	
	Board materials: Compression behaviour Flexural bending capacity Bond strength	5.2.1.1 5.2.1.3 4.2.1.4	Every batch Every batch Every batch	
	Liquid components: Viscosity Density Mixing sequence/time Curing time Dry content Ash content pH-value Infrared Spectrometry	5.2.3.2 5.2.3.3 5.2.2.1 5.2.2.1 5.2.3.4 5.2.3.1	Every batch Every batch Every batch Every batch Once a year Once a year Every batch Once a year	
	Adhesive and sealants: For adhesives according to the provisions for CE marking (EN 12004 or other relevant standards)		According to the provisions for CE marking (EN 12004)	
	Sealing/reinforcement strip: Colour, thickness, weight, build-up	5.2.4	Every production sequence/delivery	
	Initial type test of the product for systems 2+ and 4*	No tests necessary when the test leading to an ETA are done on products coming from the production process which is related with the ETA	-	-
	Identification of components Vapour permeability Watertightness Bond strength	See chapter 5 2.4.3 2.4.4.1 2.4.4.3	When starting the production process or when starting a new production line	

*) In case of system 4 there is no need for reaction to fire testing, see footnote *** of table 4 or class F

3.2.1.1 Factory production control (FPC)

The manufacturer shall exercise permanent internal control of production. Elements controlling the production process include testing of materials before during and at the end of that process. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures (See chapter 4 MTD). This production control system shall ensure that the product is in conformity with the European Technical Approval (ETA).

Manufacturers having an FPC system which complies with EN ISO 9001 **and** which addresses the requirements of an ETA are recognised as satisfying the FPC requirements of the Directive.

3.2.1.2 Testing of samples taken at the factory

These tests refer to finished product coming out of the production process. When the requirements of the FPC are fulfilled it is not necessary to have any more tests on samples taken at the factory.

3.2.1.3 Initial Type Testing (ITT)

Approval tests will have been conducted by the approval body or under its responsibility (which may include a proportion conducted by a laboratory or by the manufacturer, witnessed by the approval body) in accordance with section 2 of this ETAG. The approval body will have assessed the results of these tests in accordance with section 2 of this ETAG, as part of the ETA issuing procedure.

These tests should be used for the purposes of Initial Type Testing⁴ if they are done on samples coming from the current production process of the manufacturer which is referred to in the ETA. So further test are not necessary.

If the approval tests are done on samples e.g. of a prototype or if a new production line is started at the beginning of the of the new production process, an additional ITT is necessary.

3.2.1.4 Declaration of Conformity

When all the criteria of the Conformity Attestation on the basis of the tasks of the manufacturer and the tasks of the notified body (Certification) are satisfied the manufacturer shall make a Declaration of Conformity and has to assign the product with the CE-mark (see Chapter 3.39)

⁴ In this respect Approval Bodies shall be able to have open arrangements with relevant Notified Bodies to avoid duplication, respecting each others responsibilities.

3.2.2 Tasks of the notified body (control plan)

Table 6: Tasks of the notified body

Type of control		Test or control method	Minimum extent/frequency of control
AoC element (acc. to CPD Annex III.1)	Product, raw/constituent material, product component and characteristic concerned		
Initial type-testing of the product (for systems 1 and 3)	No tests necessary when the test leading to an ETA (see approval testing in chapter 2) are done on products coming from the production process which is related with the ETA	-	-
	Reaction to fire of the kit	2.4.1	When starting the production process or when starting a new production line
Initial inspection of factory and of factory production control (for systems 1 and 2+)	Inspection of the factory and the factory production control of the manufacturer as described in the MTD and the control plan	Control of devices and equipment and the documentation of the FPC	When starting the production process or when starting a new production line
Continuous surveillance, assessment and approval of the factory production control (for systems 1 and 2+)	Surveillance, assessment and approval of the factory production control of the manufacturer as described in the MTD and the control plan	Control of the documentation of the FPC	Once (twice) a year

3.2.2.1 Initial Type Testing (ITT)

Approval tests will have been conducted by the approval body or under its responsibility (which may include a proportion conducted by a laboratory or by the manufacturer, witnessed by the approval body) in accordance with section 2 of this ETAG. The approval body will have assessed the results of these tests in accordance with section 2 of this ETAG, as part of the ETA issuing procedure.

These tests should be used for the purposes of Initial Type Testing⁵ if they are done on samples coming from the current production process of the manufacturer, which is referred to in the ETA. So further tests are not necessary.

If the approval test are done on samples e.g. of a prototype or if a new production line is started at the beginning of the of the new production process an additional ITT are necessary.

⁵ In this respect Approval Bodies shall be able to have open arrangements with relevant Notified Bodies to avoid duplication, respecting each others responsibilities.

3.2.2.2 Assessment of the factory production control system - initial inspection and continuous surveillance

The Assessment of the factory production control system is the responsibility of the notified body.

The assessment shall be carried out of each production unit to demonstrate that the factory production control is in conformity with the ETA and any subsidiary information. This assessment shall be based on an initial inspection of the factory.

Subsequently continuous surveillance of factory production control is necessary to ensure continuing conformity with the ETA.

It is recommended that surveillance inspections be conducted once a year but if necessary i.e. if the results of the first inspection is unsatisfactory it may be required to be done more often e.g. twice per year.

3.2.2.3 Certification of product or Factory Production Control

When the criteria of the assessment of the factory production control are fulfilled the notified body shall issue the Certification of the product (system 1) or the Certification of the Factory Production Control (system 2+).


3.3 CE marking and accompanying information

According to Council Directive 93/68/EEC⁶ the CE marking consists of the letters "CE", followed by the identification number of the notified certification body, where applicable (*for AoC systems 1 and 2+*).

The ETA shall indicate the information to accompany the CE marking, i.e.

- The name or identifying mark of the producer and the manufacturing plant,
- The last two digits of the year in which the CE marking was affixed,
- For AoC systems 1: the number of the EC certificate of conformity for the product,⁷
- For AoC systems 2+ : the number of the EC certificate for the FPC,
- The number of the European technical approval..

Example of CE-Marking and accompanying information:

 nnnn
Any Company Street 1 Country Plant 1 Yy nnnn-CPD-xxxx
ETA-YY/WWWW ETAG 022 – part 3

"CE"-symbol

Number of Notified Body (*for AoC system 2+*)

Name and address of the ETA-holder or his representative established in the EEA and of the plant where the kit was manufactured

Two last digits of year of affixing CE Marking
 Number of EC certificate of conformity (*for AoC systems 1*) or EC certificate for the FPC (*for AoC systems 2 and 2+*)

ETA Number
 ETAG 022 – part 3

⁶ Official Journal of the European Communities no L 220, 30/8/1993, p. 1.

⁷ According to Guidance Paper D (*this is not envisaged in the CPD itself*)

4 ASSUMPTIONS UNDER WHICH THE FITNESS FOR THE INTENDED USE IS ASSESSED

4.1 Manufacturing of the kit

The manufacturing of the components of the kit is performed in a factory. The Manufacturers Technical Dossier will describe the manufacturing of the components constituting the kit.

4.2 Packaging, transport, storage of the kit

The components of the watertight board kit shall be protected from damage and excessive exposure to harmful actions.

The components shall be handled and stored with care and be protected from accidental damage.

The manufacturers installation guide shall contain information on proper storage, e.g. storage temperature, way of storage.

4.3 Installation of the kit in the works

The incorporation into the works is in fact the manufacturing of the wet room waterproofing as an assembled system.

It is a precondition that the boards are suitable as a substrate under the intended use conditions including imposed dynamic and static loads. If the suitability is not apparent it may be assessed, e.g. for walls according to ETAG 003. For floors the assessment should include strength, stiffness, deformation and compression under load. The purpose is for example to assess that the board has sufficient stability to ensure that a wearing surface of tiles do not crack or loose adhesion.

The works in which the covering kit is installed are deemed to satisfy the Essential Requirements when that kit is assessed and declared fit for use and when the design and application rules specified by the applicant are fulfilled. In general the proper incorporation, assembly, application and installation therefore should be possible under practical circumstances.

The Manufacturers Technical Dossier shall include at least the following information:

- Definition of acceptable surfaces
- Preparation of the substrate (cleaning, moisture content, flatness, texture, maximum allowed cracks etc.)
- Method of application, order of application
- For mechanically fixed boards: Information on fixing points, spacing, type etc.
- Required minimum consumption of primers etc. belonging to the kit
- Period of time between the application of each of the components
- Total drying time
- Guidance on details, such as water tightness around pipe penetrations, floor gullies, inside and outside corners, connection between floor and wall, sealing over joints in the substrate etc.
- Information on protection of watertight covering prior to installation of wearing surface and how work can be interrupted

The installation guide shall describe how to obtain a continuous layer of the primer on different substrates, where the primer is intended to enhance the water vapour resistance. In case this guidance is not provided, the test according to sec. 2.4.3.1 should be carried out on the board only.

4.4 Use, maintenance, repair

Guidance for use, maintenance and possibly repair shall be a part of the manufacturers installation guide and the assessment of the fitness for use is based on the assumption that normal maintenance of the watertight covering kit is performed.

For kits without a wearing surface the maintenance shall include cleaning, as necessary, with normal cleaning agents compatible with the watertight covering kit followed by rinsing with water.

The assessments covered by this ETAG assume that the kit is subject only to basic cleaning agents (not acid) and that the kit is not used for intended uses with a requirement for an extreme resistance to biological and chemical agents.

5 IDENTIFICATION OF THE CONSTRUCTION PRODUCT

5.1 Means of identification

The kit and its components which are the subject of the technical approval shall be identified by:

- Testing of product characteristics of the system and/or components as laid down in the tables of this chapter.
- Fingerprinting.
- Formulation.
- Manufacturing process parameters.
- Calculations, details, drawings.

Even though all testing is performed on the kit, the identification of the kit is subject to the identification of the components of the kit.

There may be five main components of the watertight board kit; board, adhesive, primers, sealing products and reinforcement, which are dealt with in the following.

5.2 Product characteristics used for identification checking

5.2.1 Boards

Examples on properties for inherently watertight boards including surface layers etc. Note that the characteristic/test methods are not all applicable to all materials.

Number	Characteristic	Verification method: Clause ...	Criteria for product identity:
(1)	(2)	(3)	(4)
	Material composition	Relevant product standards	
	Geometric properties e.g. length, width, thickness, flatness	Relevant product standards	
	Mass per m ² /density	Relevant product standards	
5.2.1.1	Compression behaviour	5.2.1.1.1	
5.2.1.2	Spectrometry and/or thermographic analysis for surface layers	5.2.1.2.1	5.2.1.2.2
5.2.1.3	Flexural Bending capacity	5.2.1.4.1	5.2.1.4.2
5.2.1.4	Bond strength	5.2.1.5.1	5.2.1.5.2

Table 7: Product characteristics, methods of verification and criteria used for checking the product identity

5.2.1.1 Compression behaviour

5.2.1.1.1 Method of verification

The compression behaviour shall be determined in accordance with EN 826

5.2.1.1.2 Method of assessing and judging

Declared value

5.2.1.2 Thermographic analysis

This test is relevant for boards with a surface covering/coating

5.2.1.2.1 Method of verification

The analysis shall be carried out at air atmosphere, temperature increase rate 5 °C/min, maximum temperature 1000 °C.

On the basis of the thermographic analysis the ash content and dry extract are determined.

5.2.1.2.2 Method of assessing and judging

The result of the analysis shall be reported in the form of a TG graph together with relevant parameters and description of the preparation of the samples.

Ash content and dry extract shall be given as declared value.

5.2.1.3 Flexural bending capacity

5.2.1.3.1 Method of verification

The flexural bending capacity shall be determined according to EN 12089

5.2.1.3.2 Method of assessing and judging

Declared value

5.2.1.4 Bond strength

This test applies to boards with a surface covering, such as a fibre reinforcement or a cementitious surface covering

5.2.1.4.1 Method of verification

The bond strength shall be determined according to EN 1607

5.2.1.4.2 Method of assessing and judging

Declared value

5.2.2 Adhesives, screeds (where relevant) and renders (where relevant)

Adhesives may be used to mount the board to the substrate, cohere layers internally in the boards or to adhere a wearing surface to the board.

Screeds and renders may be used as facings/coverings of the board.

For identification purposes the following tests are performed on the adhesives covered by the ETA unless the tests already have been performed in connection with CE marking of the product according to a relevant standard:

Number	Characteristic	Verification method: Clause ...	Criteria for product identity:
(1)	(2)	(3)	(4)
5.2.2.1	Thermographic analysis	5.2.2.1.1	5.2.2.1.2
5.2.2.2	Viscosity	5.2.2.2.1	5.2.2.2.2
5.2.2.3	Density	5.2.2.3.1	5.2.2.3.2
5.2.2.4	pH-value	5.2.2.4.1	5.2.2.4.2

Table 8: Product characteristics, methods of verification and criteria used for checking the product identity

5.2.2.1 Thermographic analysis

5.2.2.1.1 Method of verification

The analysis shall be carried out at air atmosphere, temperature increase rate 5 °C/min, maximum temperature 1000 °C.

On the basis of the thermographic analysis the ash content and dry extract are determined.

5.2.2.1.2 Method of assessing and judging

The result of the analysis shall be reported in the form of a TG graph together with relevant parameters and description of the preparation of the samples.

Ash content and dry extract shall be given as declared value.

5.2.2.2 Viscosity

5.2.2.2.1 Method of verification

The viscosity shall be determined according to a method appropriate for the adhesive, screeds (where relevant) and renders (where relevant), e.g. EN 12092 or EN ISO 2555.

5.2.2.2.2 Method of assessing and judging

Declared value

5.2.2.3 Density

5.2.2.3.1 Method of verification

The density shall be determined according to a method appropriate for the adhesive, screeds (where relevant) and renders (where relevant)

5.2.2.3.2 Method of assessing and judging

Declared value

5.2.2.4 pH-Value

5.2.2.4.1 Method of verification

The pH-value shall be determined according to a method appropriate for the adhesive, screeds (where relevant) and renders (where relevant)

5.2.2.4.2 Method of assessing and judging

Declared value

5.2.3 Primers and sealing products

Number	Characteristic	Verification method: Clause ...	Criteria for product identity:
(1)	(2)	(3)	(4)
5.2.3.1	Infrared spectrometry	5.2.3.1.1	5.2.3.1.2
5.2.3.2	Viscosity	5.2.3.2.1	5.2.3.2.2
5.2.3.3	Density	5.2.3.3.1	5.2.3.3.2
5.2.3.4	pH-value	5.2.3.4.1	5.2.3.4.2

Table 9: Product characteristics, methods of verification and criteria used for checking the product identity

5.2.3.1 Infrared spectrometry of the primer and of sealants

5.2.3.1.1 Method of verification

The infrared spectrometry is carried out at a resolution of 4 cm^{-1} with a measuring range of $4\ 000 - 400\text{ cm}^{-1}$. 32 scannings are made.

5.2.3.1.2 Method of assessing and judging

The result of the analysis shall be reported in the form of an IR graph together with relevant parameters and description of the preparation of the samples.

5.2.3.2 Viscosity

5.2.3.2.1 Method of verification

The viscosity shall be determined according to a method appropriate for the primer and/or sealant composition, e.g. EN 12092 or EN ISO 2555.

5.2.3.2.2 Method of assessing and judging

Declared value

5.2.3.3 Density

5.2.3.3.1 Method of verification

The density shall be determined according to a method appropriate for the primer and/or sealant composition

5.2.3.3.2 Method of assessing and judging

Declared value

5.2.3.4 pH-Value

5.2.3.4.1 Method of verification

The pH-value shall be determined according to a method appropriate for the primer and/or sealant composition

5.2.3.4.2 Method of assessing and judging

Declared value

5.2.4 Reinforcements

The reinforcement is identified by a description of the colour, thickness, mass and build-up.

Where relevant the above-mentioned characteristics can be supplemented with the following test

5.2.4.1 Tensile strength and elongation

5.2.4.1.1 Method of verification

The tensile strength and elongation shall be determined according to a method appropriate for the reinforcement, e.g. EN 29073-3 or - in the absence of a standardised test method - as described below.

The tear strength and the elongation of the reinforcement are measured in the weft and warp directions on 10 samples respectively. The samples should measure 50 mm by at least 300 mm. They shall contain at minimum 5 threads within the width.

The clamps of the testing machine shall be covered with a suitable rubber surface and hold the whole width of the samples. They shall be sufficiently rigid to resist deformation during the test.

The sample shall be located perpendicular to the clamp of the tensile testing machine.

The free length of the sample between clamps should be 200 mm.

The tensile force is increased with a constant crosshead speed of (100 ± 5) mm/min until failure occurs.

The strength in N at failure and the elongation are recorded.

Samples where the specimen is displaced within the clamps or where the failure occurs at the clamps shall be discarded.

Calculation is undertaken to determine:

- The individual values of the tensile strength calculated from the force (F) at failure in relation to the width (w) of the sample

$$\beta = \frac{F}{w} \text{ in N/mm}$$

- The individual values of elongation calculated from the change of the length $\Delta\ell$ at failure in relation to the length ℓ of the sample between the clamps

$$\varepsilon = \frac{\Delta\ell}{\ell} \text{ in \%}$$

- The mean values of tensile strength and elongation calculated from these individual values
- The residual value calculated from the mean tensile strength value after ageing in relation to the mean tensile strength value in the as-delivered state.

Testing in the as-delivered state

The test is conducted after conditioning the samples at $(23 \pm 2)^\circ\text{C}$ and (50 ± 5) % RH for at least 24 hours.

5.2.4.1.2 Method of assessing and judging

Declared value

6 **FORMAT OF ETAs ISSUED ON THE BASIS OF THE ETAG**

European technical approvals issued on the basis of this ETAG/CUAP shall be in accordance with the ETA format given in the Addendum to the Guidance to ETAG/CUAP writers.

Specifically, the ETA shall include the determined values of the harmonised characteristics or npd according to table 2. Particularly the ETA shall specify the intended use in relation to substrates and joints as described in paragraph 1.2.2 of the guideline.

7 **REFERENCE DOCUMENTS**

Commission Guidance Paper C	The treatment of kits and systems under the construction products directive
EN 13501-1:2002	Fire classification of construction products – Part 1: Classification using test data from reaction to fire tests
EN/ISO 12572: June 2001	Hygrothermal performance of building materials and products - Determination of water vapour transmission properties
prEN 14891: February 2004	Liquid applied waterproofing membranes for use beneath ceramic tiling – Definitions, specifications and test methods
prEN 1062-7: July 2003	Paints and varnishes – coating materials and coating systems for exterior masonry and concrete – Part 7: Determination of crack bridging properties, test methods
EN 13813: October 2002	Screed material and floor screeds – Screed material – Properties and requirements
EN 660-1: 1999	Resilient floor coverings – Determination of wear resistance. Part 1: Stuttgart test
EN 660-2: 1999	Resilient floor coverings – Determination of wear resistance. Part 2: Frick-Taber test
EEC Decision 2003/655/EC	Mandate for Watertight covering kits for wet room floors and walls
EN 12004: March 2001	Adhesives for tiles – Definitions and specifications
EN 826	Thermal insulating products for building applications - Determination of compression behaviour
EN 12089	Thermal insulating products for building applications - Determination of bending behaviour
EN 1607	Thermal insulating products for building applications - Determination of tensile strength perpendicular to faces
EN 12092:2001	Adhesives – Determination of viscosity
EN ISO 2555:1999	Plastics – Resins in the liquid state or as emulsions or dispersions - Determination of apparent viscosity by the Brookfield Test method
EN 29073-3	Textiles - Test methods for nonwovens. Part 3: Determination of tensile strength and elongation
EN 318	Wood based panels - Determination of dimensional changes associated with changes in relative humidity
EN 12467	Fibre-cement flat sheets - Product specification and test methods

EN 13164	Thermal insulation products for buildings - Factory made products of extruded polystyrene foam (XPS) - Specification
EN 13165	Thermal insulation products for buildings - Factory made rigid polyurethane foam (PUR) products - Specification
EN 13163	Thermal insulation products for buildings - Factory made products of phenolic foam (PF) - Specification
EN 1847	Flexible sheets for waterproofing - Plastic and rubber sheets for roof waterproofing - methods for exposure to liquid chemicals, including water
EN 324-1	Wood based panels - Determination of dimensions of boards - Part 1: Determination of thickness, width and length
EN 822	Thermal insulating products for building applications - Determination of length and width
EN 823	Thermal insulating products for building applications - Determination of thickness
EN 824	Thermal insulating products for building applications - Determination of squareness
EN 825	Thermal insulating products for building applications - Determination of flatness
EN 13823	Reaction to fire tests for building products - Building products excluding floorings exposed to the thermal attack by a single burning item
EN 11925-2	Reaction to fire tests - Ignitability of building products subjected to direct impingement of flame - Part 2: Single-flame source test
EN 14195	Metal framing components for gypsum plasterboard systems - Definitions, requirements and test methods
EN 13238	Reaction to fire tests for building products - Conditioning procedures and general rules for selection of substrates
EN ISO 1716	Reaction to fire tests for building products - Determination of the heat of combustion