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European Organisation for Technical Approvals  
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## ETAG 022

GUIDELINE FOR  
EUROPEAN TECHNICAL APPROVAL  
of

**Watertight covering kits for wet room floors and or walls**

**- ANNEX H PAINT SYSTEMS FOR WALLS WITHOUT WEARING SURFACE**

Edition **2006-10-16**

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- Annex E Walls in wet rooms: Water tightness and resistance to water and moisture of walls with flexible substrate**
- Annex F Water tightness around penetrations and other details in wet room walls with flexible substrate**
- Annex G Water tightness around penetrations and other details in wet room walls and floors with rigid substrates**

## **1 SCOPE OF THE ETAG**

This annex is elaborated separate to Part 1, since certain characteristics of paint systems are assessed differently then described in Part 1. This is due to the fact that the estimated working life is shorter and particular requirements for the maintenance of paint systems have been established.

### **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" (to be) 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 component of the kit.

This annex to part 1 of the Guideline covers watertight covering kits for interior wet room walls. The watertight covering is placed on the inner surface of the wet room wall. The covering serves as both watertight layer and wearing surface. See also Commission Guidance paper C on kits and systems.

This annex to part 1 of the Guideline covers paint systems including possible fabric of glass fibre or polyester fabric, primer, adhesive, paint etc. see figure 1. Current state of the art is that the paint systems generally have an overall thickness of approx. 0.5 mm.

Painted systems are meant to be used without a wearing surface.

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

- Flexible sheets. The sheets can be in the form of resilient coverings, e.g. bituminous, elastomeric or plastic sheets (Part 2).
- Kits of inherently watertight boards including jointing bands (Part 3).

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

Pipes themselves are not part of the kit.

Sealing of penetrations can be executed with the actual watertight covering product, separate sealants, sealing strips or collars acting together with the waterproofing product.

In normal use conditions, the kit shall at least resist stresses caused by movements of construction elements acting as substrate and resist the influence of water, temperature variations.

The exact composition of the paint systems may vary with the type of use and with the type of substrate with which the covering must 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 swimming pools and industrial processes.

## 1.2 Intended use of the construction product

### 1.2.1 General

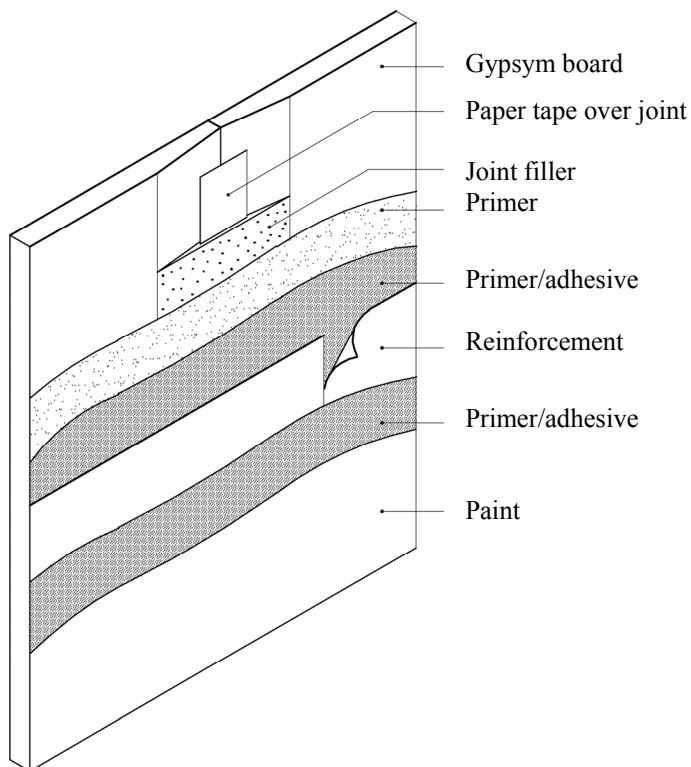
The intended uses of the coverings kits are:

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

- Wall surfaces with only occasional direct exposure to water, e.g. at a good distance from shower or bathtub.
- Walls in shower areas or around bathtubs used for a few showers daily, e.g. in ordinary dwellings, multi-family houses and hotels

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.

**Figure 1 Example of the build up of a paint system**



## 1.2.2 Substrates

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

In general the substrates fall in different types:

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

	<b>Substrates (usually “rigid”), homogenous but susceptible to cracking</b>	<b>Substrates (usually “flexible”) not susceptible to cracking but with jointing<sup>1</sup></b>	<b>Substrates (usually “rigid”) susceptible to cracking and with jointing<sup>1</sup></b>
<b>Moisture sensitive substrates</b>	<p><b>Examples:</b> Gypsum blocks</p> <p><b>Tests:</b> 2.4.4.2 2.4.4.6 with annex G 2.4.6.1</p>	<p><b>Examples:</b> Gypsum boards, Wood based materials</p> <p><b>Tests:</b> 2.4.4.5 2.4.4.6 with annex E 2.4.6.1</p>	None known
<b>Non moisture sensitive substrates</b>	<p><b>Examples:</b> In-situ concrete, masonry</p> <p><b>Tests:</b> 2.4.4.2 2.4.4.6 with annex G 2.4.6.1</p>	<p><b>Examples:</b> Calcium silicate boards, fibre cement boards</p> <p><b>Tests:</b> 2.4.4.5 2.4.4.6 with annex E 2.4.6.1</p>	<p><b>Examples:</b> Concrete or aerated concrete elements</p> <p><b>Tests:</b> 2.4.4.2 or 2.4.4.5 2.4.4.6 with annex G 2.4.6.1</p>

<sup>1</sup> 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 paint system for the intended use of 10 years, provided that the watertight paint system is subject to appropriate installation, use and maintenance (see 4.4). 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 Requirements<sup>2</sup>.

The indications given as to the working life of a paint system 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 paint system 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 floor and possibly the walls are frequently exposed to water, e.g. bathrooms, sculleries or washing rooms.

##### **1.4.2.2 Liquid applied watertight covering kit**

A particular combination of a defined set of components (kit) to be installed in the works by application and/or incorporation and/or assembly of its components in conformity with particular design methods and/or particular execution procedures. The liquid applied watertight covering is usually a paste-like material or a combination of materials that can be poured, spread or sprayed. It is applied to the substrate by brush, roller or similar suitable applicator.

##### **1.4.2.3 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.

##### **1.4.2.4 Batch**

A limited amount of materials made in a single production process e.g. one mix of a waterproofing component.

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<sup>2</sup> 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. Therefore, it cannot be excluded that there are cases in which the real working life of the product may also be shorter than the assumed working life.

- 1.4.2.5      Production sequence
- Continuous period of time in which a single component is manufactured, e.g. the time in which 8 batches are produced.
- 1.4.2.6      Wearing surface
- A protective layer applied in liquid or solid form used over a watertight covering in order to protect it from mechanical wear and allowing pedestrian access
- 1.4.2.7      Watertight
- A property related to the characteristics of the assembled system meaning that no liquid water shall penetrate after exposure to water.
- 1.4.2.8      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.
- 1.4.2.9      Flexible sheet
- A sheet in e.g. roll form forming a resilient watertight covering, e.g. bituminous, elastomeric or plastic sheet. The sheet can also constitute the wearing surface.
- 1.4.2.10     Paint system
- Multi-layer watertight, decorative, possibly reinforced kit for walls with thin coats of paint applied by brush, roller or similar suitable applicator requiring increased maintenance due to a shorter assumed working life. Due to the nature and assumed working life of the kit special provisions apply for the assessment of these kits, which are covered by annex H of this part of the ETAG.
- 1.4.2.11     Watertight boards
- Boards which in themselves or due to a factory applied surface treatment are inherently watertight.
- 1.4.2.12     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
- 1.4.2.13     Jointing
- Jointing is a deliberate act of connecting two or more elements forming the substrate. Jointing can be unfilled, e.g. between two gypsum boards or can be filled e.g. with mortar between two concrete elements. Jointing in the substrate can be reinforced.
- 1.4.2.14     Joint
- A joint is a discontinuity in the substrate. 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
- 1.4.2.15     Moisture sensitive
- In the sense of this ETAG it means that the substrate will deteriorate under the continuous influence of moisture



**1.4.2.16** Adhesive

In the context of this annex an adhesive is understood to be a ready-to-use bonding agent for adhering the reinforcement to the possibly pre-treated substrate. In some cases the adhesive can also act as a primer.

**1.4.2.17** Primer

In the context of this annex 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 AND IDENTIFICATION**

### **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, e.g. tiles and grouts (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 determined 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 para 1.2.2)

Not every characteristic has to be proven if it is not required in at least one of the member states (npd 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 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 paint 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			
Essential Requirement 2 Safety in case of fire				
1	Reaction to fire	Yes	2.4.1	Euroclass E – F
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	Declared value of weight increase $\leq 200 \text{ g/m}^2$
4.2	Crack bridging ability**)	Substrates susceptible to cracks: No  Substrates not susceptible to cracks: Yes	2.4.4.2	Pass/fail
4.3	Bond strength	No	2.4.4.3	Declared value $\geq 0.3 \text{ MPa}$
4.4	Scratching resistance	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
4.6	Water tightness around penetrations*)**)	No	2.4.4.6	Pass/fail
Essential Requirement 4 Safety in use				
5	Slipperiness	Yes	2.4.5	Not relevant
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 <sup>1</sup>				
6	Durability		2.4.6	
6.1	Resistance to temperature **)	No	2.4.6.1	Assessed under 2.4.4.1
6.2	Resistance to water	No	2.4.6.2	Assessed under 2.4.4.1
6.3	Resistance to alkalinity		2.4.6.3	Not relevant
6.4	Resistance to chemical agents		2.4.6.4	Not relevant
6.5	Resistance to biological agents		2.4.6.5	Not relevant
6.6	Resistance to mechanical wear	Yes	2.4.6.6	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

7.3	Thickness	No	2.4.7.3	Declared value
7.4	Applicability	No	2.4.7.4	Declaration
<p><i>1) Aspects of durability and economy of the works (see CPD Annex 1, sentence 1 and 2)</i></p> <p><i>*) This characteristic also relates to the durability of the kit</i></p> <p><i>**) The relevance of this test depends on the substrate covered by the intended use, see paragraph 1.2.2</i></p>				

### **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 paint system (required characteristics 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 relative humidity 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**

### **2.4.1 Reaction to fire**

#### 2.4.1.1 Method of verification

Where required, the product shall be tested and classified in accordance with EN 13501-1:2002, Table 1. When tested according to EN ISO 11925-2, the products shall be tested under conditions of surface flame attack.

NOTE It is currently considered that the Euroclasses Classification system at Classes D and above requires investigation to determine its appropriateness to the products covered by this document (the SBI test may be inappropriate for products covered by the standard). Pending results of such an investigation and discussions in the Fire ors Group, products covered by this document are tested according to EN ISO 11925-2.

#### 2.4.1.2 Method of assessing and judging

The part of the works or assembled system in which the watertight covering kit is intended to be incorporated, installed or applied shall be classified according to the appropriate Part of EN 13501-1:2002.

### **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 on a sample made of gypsum plasterboard with approximately 12.5 mm thickness and a density of approximately 720 kg/m<sup>3</sup>. The test shall be performed as described in annex E of the standard and the substrate shall be tested in accordance with annex A. The tests shall be carried out with climatic conditions as described for option C in chapter 7 of the standard.

The application of the paint system 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 system including the primer, and it must be ensured by the manufacturer's installation procedures that it is possible to obtain a continuous layer of the primer on site, see para. 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 Water tightness

##### 2.4.4.1.1 Method of verification

The paint kit is applied to a sample made of gypsum plasterboard with approximately 12.5 mm thickness and a density of approximately 720 kg/m<sup>3</sup>. The backside of the specimen is covered with a 0,2 mm polyethylene foil. The test specimen is mounted in the rig without the wooden frame. The specimen is tested according to Annex F with the amendment that the test is performed on 2 test specimens without pipe penetrations and only the first 1500 cycles are carried out.

An additional sample is made on a sheet of non-absorbent material, e.g. aluminium, in order to determine the water absorption in the paint system

The samples are weighed twice. Before water exposure and again directly after the water exposure. Free water on the surface is wiped off before the weighing.

##### 2.4.4.1.2 Method of assessing and judging

The weight increase in the samples are measured and the weight increase of the specimens with gypsum substrate,  $W_{\text{system}}$ , are corrected with the weight of water retained in the paint system itself,  $W_{\text{paint}}$ . i.e. ( $W_{\text{substrate}} = W_{\text{system}} - W_{\text{paint}}$ ).

The calculated weight increase  $W_{\text{substrate}}$  shall be declared and shall be  $\leq 200 \text{ g/m}^2$

#### 2.4.4.2 Crack bridging ability

##### 2.4.4.2.1 Method of verification

The test is only carried out when the intended use covers substrates susceptible to cracking, see para. 1.2.2. and footnote \*\*) of table 2 or if the use covers substrates not susceptible to cracks but with filled joints.

For kits with a reinforcement that covers the entire surface of the wall and for which the joint bridging ability (2.4.4.5) has to be tested the crack bridging ability will be covered by the joint bridging test

For kits without reinforcement and for kits with a reinforcement only covering the joint, the crack bridging ability test has to be carried out. In the latter case the test is carried out on the kit without the reinforcement.

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 abovementioned standard. The watertight covering shall be applied onto three of these substrates.

#### **Application of the waterproofing membrane**

The application of the watertight covering shall take place in a strip of 15 cm over the entire length of the slab so that at the longitudinal edges 2.5 cm wide strips remain uncovered for observing the cracks in the substrate (surface length  $\times$  width = 30 cm  $\times$  20 cm).

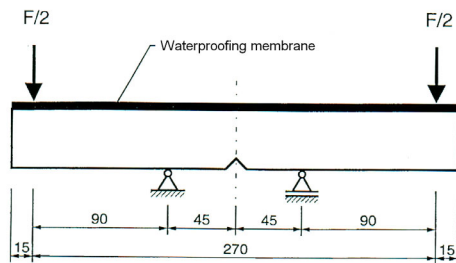
#### **Storage of the prepared test specimen**

28 days dry at standard atmosphere  $23 \pm 2 \text{ }^\circ\text{C} / 50 \pm 5 \text{ \% RH}$ .

## Testing

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

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



Bending 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 material. The velocity of the crack opening shall be arranged that 20 minutes from the point of time a crack is recognizable in the concrete (possible appearance of a light zone in the watertight material) a crack width of 0.4 mm, is reached (0.02 mm/min.). The crack shall be measured – for example using a graduated magnifying glass. The crack 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.

### 2.4.4.2.2 Method of assessing and judging

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 covering.

### 2.4.4.3 Bond strength

#### 2.4.4.3.1 Method of verification

The bond strength of the watertight paint system to the substrate is determined in accordance with

EN ISO 4624 with a  $\varnothing$  50 mm dolly on a substrate of concrete and a force rate of 250 N/s.

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 membrane shall be applied to the selected substrate in accordance with the initial adhesion test method in EN ISO 4624. When a result of more or equal the threshold values according to 2.4.4.3.2 is achieved or cohesive failure occurs in the substrate, the requirement is considered satisfied.

#### 2.4.4.3.2 Method of assessing and judging

The bond strength on concrete shall be higher than or equal to 0.30 MPa and the value reached shall be declared.

### 2.4.4.4 Scratching resistance

#### 2.4.4.4.1 Method of verification

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

#### 2.4.4.4.2 Method of assessing and judging

Pass/fail



#### **2.4.4.5 Joint bridging ability (in the mandate referred to as impermeability at sealings)**

##### 2.4.4.5.1 Method of verification

The test is only carried out when the intended use covers substrates susceptible to joint movements, see para. 1.2.2, i.e. joints in substrates that are not filled, such as between boards.

For kits with a reinforcement that covers the entire surface of the wall, this test also covers the assessment of the crack bridging ability (2.4.4.2).

The test is performed in accordance with annex B with a 1 mm gap in tension and a 2 mm gap in shear.

##### 2.4.4.5.2 Method of assessing and judging

Pass/fail

#### **2.4.4.6 Water tightness around penetrations**

##### 2.4.4.6.1 Method of verification

The water tightness of the paint system around penetrations, such as pipes and corners etc. shall be assessed on the basis of test according to annex G or E depending on the substrate.

##### 2.4.4.6.2 Method of assessment and judging

Pass/fail

#### **2.4.5 Slipperiness**

Not relevant

#### **2.4.6 Durability**

This assessment will be valid for all substrates.

##### **2.4.6.1 Resistance to temperature**

###### 2.4.6.1.1 Method of verification

The resistance to temperature of the paint system is considered to be done with the exposure to a temperature of 60 °C used for testing the water tightness, cf. 2.4.4.1 and 2.4.4.6.

###### 2.4.6.1.2 Method of assessing and judging

A visual inspection is performed to assess any adverse changes in appearance, e.g. cracking, blistering or wrinkling.

Pass/fail

##### **2.4.6.2 Resistance to water**

###### 2.4.6.2.1 Method of verification

Considered during the test for water tightness, cf. 2.4.4.1 and 2.4.4.6.

###### 2.4.6.2.2 Method of assessing and judging

A visual inspection is performed to assess any adverse changes in appearance, e.g. cracking, blistering or wrinkling.

### **2.4.6.3 Resistance to alkalinity**

Not relevant

### **2.4.6.4 Resistance to chemical agents**

Not relevant

### **2.4.6.5 Resistance to biological agents**

Not relevant

### **2.4.6.6 Resistance to mechanical wear**

#### 2.4.6.6.1 Method of verification

Considered during the test for scratching resistance, cf. 2.4.4.4 and the assumptions concerning maintenance in section 4.4

### **2.4.7 Serviceability**

#### **2.4.7.1 Cleanability**

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 wood fibre boards with dimensions 430 mm long, 165 mm wide and 5 mm thick. For the paint system, the brightest colour shall be chosen, and where available, white shall be used.

The samples are conditioned for 30 days at standard atmosphere  $23 \pm 2$  °C /  $50 \pm 5$  % 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 weight 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 samples 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. The soil spot is assessed against the grey scale. Any change compared to the reference sample is recorded.

Step 2: The sample is fixed in the cleaning apparatus with the paint system facing up and in a manor so that the brush can travel in the longitudinal direction af the sample. The brush is dipped in water and placed in the apparatus and set in motion over the sample.

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

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

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

#### 2.4.6.6.2 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 (grey scale)	Cleaning degree
100/70 %	6500	0
100/60 %	5750	1
100/50 %	5000	2
100/40 %	4500	3
100/30 %	3000	4
100/20 %	2500	5
100/10 %	1500	6
100/0 %		7

#### 2.4.7.2 Repairability

Not relevant

#### 2.4.7.3 Thickness

##### 2.4.7.3.1 Method of verification

The thickness of the paint system with and without the possible reinforcement and the consumption of each of the liquid components for the indicated thickness is determined in accordance with annex D.

##### 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 applicability of the paint system is determined by a visual inspection, in connection with determining the thickness of the complete paint system (including possible reinforcement), see 2.4.7.3

##### 2.4.7.4.2 Method of assessing and judging

The approval body/test laboratory makes a declaration of the applicability of the kit.

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

No 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 EVALUATIONS 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 Commission<sup>3</sup> 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 Commission<sup>1</sup> 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

<sup>3</sup> Official Journal of the European Communities L 231/12

**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:**

**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 manufacturer and notified bodies**

In transposing the relevant systems of attestation of conformity to the approved product the approval body has to lay down the specific tasks of the manufacturer and the notified body (if relevant) 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 must 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 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 for 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
	<b>Assembled system</b>		
	Reaction to fire	2.4.1	Once a year
	Water tightness	2.4.4.1	Once a year
	<b>Paint:</b>		
	Viscosity		Every batch
	Density	5.2.3.1	Every batch
Dry content	5.2.1.4	Once a year	
pH value	5.2.3.4	Every batch	
<b>Primer:</b>			
Viscosity	5.2.3.2	Every batch	
Density	5.2.3.3	Every batch	
Dry content	5.2.3.4	Once a year	
pH-value	5.2.3.4	Every batch	
<b>Adhesive:</b>			
Viscosity	5.2.3.2	Every batch	
Density	5.2.3.3	Every batch	
Dry content	5.2.3.4	Once a year	
pH-value	5.2.3.4	Every batch	
<b>Reinforcement:</b>			
Colour, thickness, weight build-up	5.2.4	Every production sequence/delivery	
Initial type testing 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	See chapter 5	When starting the production process of the CE marked product or when starting a new production line
	Vapour permeability	2.4.3	
	Water tightness	2.4.4.1	
	Bond strength	2.4.4.3	

\*) In case of system 4 there is no requirement 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 are controlling of the production process including 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 9000 **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 Testing<sup>4</sup> 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)

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<sup>4</sup> 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 typetesting 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	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 equipments 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	Twice (once) 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 Testing<sup>5</sup> 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 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.

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.

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

The assessment must 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/EEC<sup>6</sup> 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,<sup>7</sup>
- For AoC systems 2+ : the number of the EC certificate for the FPC,<sup>8</sup>
- The number of the European technical approval,

Example of CE-Marking and accompanying information:

 nnnn	<b>"CE"-symbol</b>  Number of Notified Body ( <i>for AoC systems 1 and 2+</i> )
Any Company Street 1 Country Plant 1 Yy nnnn-CPD-xxxx	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 ( <i>for AoC systems 1</i> ) or EC certificate for the FPC ( <i>for AoC systems 2+</i> )
ETA-YY/WWWW ETAG 022	ETA Number ETAG Reference

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

<sup>7</sup> According to Guidance Paper D (this is not envisaged in the CPD itself)

<sup>8</sup> This is neither envisaged in the CPD itself nor in Guidance Paper D

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

### **4.1 Manufacturing of the kit**

The actual manufacturing of the kit is performed on site. 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 paint system should be protected from damage and excessive exposure to harmful actions.

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

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

### **4.3 Installation of the kit in the works**

Since the application method of the paint system is the e.g. spraying, rolling, spreading or brushing of liquid components, whether or not blended in advance, the incorporation into the works is in fact the manufacturing of the wet room waterproofing as an assembled system.

The works in which the paint system, is 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 assessments indicated in this annex is based on the assumption that- when the paint system is intended to be used on a concrete substrate - the concrete is dry.

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

- Definition of acceptable surfaces
- Preparation of the substrate (cleaning, moisture content, flatness, texture, maximum allowed cracks etc.)
- Definition and coverage rate of suitable primer for each substrate
- Method of application, order of application
- Required minimum thickness and/or consumption of the various layers
- Period of time between the application of each of the components
- Total drying time
- Guidance on details, such as water tightness around pipe penetrations, inside and outside corners, connection between floor and wall, sealing over joints in the substrate etc.
- joints in the substrates

The installation guide should 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 membrane only.

### **4.4 Use, maintenance, repair**

Guidance for use, maintenance and possibly repair should 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 paint system is performed.

For paint system maintenance is essential for a satisfactory performance. The maintenance is normally anticipated to be repainting at regular intervals during the expected working life. Intervals will depend on the use frequency of the wet room.

The assumed working life does not apply to the original paint system, but only to the system, which has been maintained according to the manufacturer's technical dossier. The maintenance shall not have a detrimental effect on the working life.

For paint system maintenance should include cleaning, as necessary, with normal cleaning agents compatible with the watertight covering kit followed by rinsing with water. Cleaning agents should not be done with agents with an abrasive or detrimental effect.

## 5 IDENTIFICATION OF THE CONSTRUCTION PRODUCT

### 5.1 Means of identification

The product 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 four main components of the paint system; paint, primer, adhesive and reinforcement, which are dealt with in the following.

### 5.2 Product characteristics used for identification checking

#### 5.2.1 Paint

Number	Characteristic	Verification method: Clause ...	Criteria for product identity:
(1)	(2)	(3)	(4)
5.2.1.1	Infrared spectrometry	5.2.1.1.1	5.2.1.1.2
5.2.1.2	Thermographic analysis	5.2.1.2.1	5.2.1.2.2
5.2.1.3	Viscosity	5.2.1.3.1	5.2.1.3.2
5.2.1.4	Density	5.2.1.4.1	5.2.1.4.2
5.2.1.5	Dry content	5.2.1.5.1	5.2.1.5.2
5.2.1.6	pH Value	5.2.1.6.1	5.2.1.6.2

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

#### 5.2.1.1 Infrared spectrometry of paint

##### 5.2.1.1.1 Method of verification

The infrared spectrometry is carried out at a resolution of  $4\text{ cm}^{-1}$  with a measuring range of 4000 - 400. 32 scannings are made.

##### 5.2.1.1.2 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.

#### 5.2.1.2 Thermographic analysis

##### 5.2.1.2.1 Method of verification

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

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 and the chosen test conditions shall be given as declared value.

### **5.2.1.3 Viscosity**

#### 5.2.1.3.1 Method of verification

The viscosity shall be determined according to a method appropriate for the paint composition

#### 5.2.1.3.2 Method of assessing and judging

Declared value

### **5.2.1.4 Density**

#### 5.2.1.4.1 Method of verification

The density shall be determined according to a method appropriate for the paint composition

#### 5.2.1.4.2 Method of assessing and judging

Declared value

### **5.2.1.5 Dry content**

#### 5.2.1.5.1 Method of verification

The dry content shall be determined in accordance with EN/ISO 3251

#### 5.2.1.5.2 Method of assessing and judging

The dry extract and the chosen test conditions shall be given as declared value.

### **5.2.1.6 pH-Value**

#### 5.2.1.6.1 Method of verification

The pH-value shall be determined according to a method appropriate for the paint composition

#### 5.2.1.6.2 Method of assessing and judging

Declared value

## 5.2.2 Adhesives

Number	Characteristic	Verification method: Clause ...	Criteria for product identity:
(1)	(2)	(3)	(4)
5.2.2.1	Infrared spectrometry	5.2.2.1.1	5.2.2.1.2
5.2.2.2	Thermographic analysis	5.2.2.2.1	5.2.2.2.2
5.2.2.3	Viscosity	5.2.2.3.1	5.2.2.3.2
5.2.2.4	Density	5.2.2.4.1	5.2.2.4.2
5.2.2.5	Dry content	5.2.2.5.1	5.2.2.5.2
5.2.2.6	pH Value	5.2.2.6.1	5.2.2.6.2

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

### 5.2.2.1 Infrared spectrometry of adhesive

#### 5.2.2.1.1 Method of verification

The infrared spectrometry is carried out at a resolution of  $4\text{ cm}^{-1}$  with a measuring range of 4000 - 400. 32 scanings are made.

#### 5.2.2.1.2 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.

### 5.2.2.2 Thermographic analysis

#### 5.2.2.2.1 Method of verification

The analysis shall be carried out at air atmosphere, temperature increase rate  $5\text{ }^{\circ}\text{C}/\text{min}$ , maximum temperature  $1000\text{ }^{\circ}\text{C}$ .

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

#### 5.2.2.2.2 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 and the chosen test conditions shall be given as declared value.

### 5.2.2.3 Viscosity

#### 5.2.2.3.1 Method of verification

The viscosity shall be determined according to a method appropriate for the adhesive

#### 5.2.2.3.2 Method of assessing and judging

Declared value

### 5.2.2.4 Density

#### 5.2.2.4.1 Method of verification

The density shall be determined according to a method appropriate for the adhesive

#### 5.2.2.4.2 Method of assessing and judging

Declared value

### 5.2.2.5 Dry content

#### 5.2.2.5.1 Method of verification

The dry content shall be determined in accordance with EN/ISO 3251

#### 5.2.2.5.2 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.

The dry extract and the chosen test conditions shall be given as declared value.

### 5.2.2.6 pH-Value

#### 5.2.2.6.1 Method of verification

The pH-value shall be determined according to a method appropriate for the adhesive

#### 5.2.2.6.2 Method of assessing and judging

Declared value

## 5.2.3 Primers

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	Thermographic analysis	5.2.3.2.1	5.2.3.2.2
5.2.3.3	Viscosity	5.2.3.3.1	5.2.3.3.2
5.2.3.4	Density	5.2.3.4.1	5.2.3.4.2
5.2.3.5	Dry content	5.2.3.5.1	5.2.3.5.2
5.2.3.6	pH Value	5.2.3.6.1	5.2.3.6.2

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

### 5.2.3.1 Infrared spectrometry of the primer

#### 5.2.3.1.1 Method of verification

The infrared spectrometry is carried out at a resolution of  $4\text{ cm}^{-1}$  with a measuring range of 4000 - 400. 32 scanings 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 Thermographic analysis**

#### 5.2.3.2.1 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.

#### 5.2.3.2.2 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 and the chosen test conditions shall be given as declared value.

### **5.2.3.3 Viscosity**

#### 5.2.3.3.1 Method of verification

The viscosity shall be determined according to a method appropriate for the primer

#### 5.2.3.3.2 Method of assessing and judging

Declared value

### **5.2.3.4 Density**

#### 5.2.3.4.1 Method of verification

The density shall be determined according to a method appropriate for the primer

#### 5.2.3.4.2 Method of assessing and judging

Declared value

### **5.2.3.5 Dry content**

#### 5.2.3.5.1 Method of verification

The dry content shall be determined in accordance with EN/ISO 3251

#### 5.2.3.5.2 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.

The dry extract and the chosen test conditions shall be given as declared value.

### **5.2.3.6 pH-Value**

#### 5.2.3.6.1 Method of verification

The pH-value shall be determined according to a method appropriate for the primer

#### 5.2.3.6.2 Method of assessing and judging

Declared value

#### 5.2.4 Reinforcements

The reinforcement is identified by a description of the colour, thickness, weight 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 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  $(100 \pm 5)$  mm/min until failure occurs.

Testing is done in the as-delivered state.

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  $\ell$  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  $(50 \pm 5)\%$  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 guidance document to ETAG/CUAP writers.

Specifically, the ETA shall include the test results 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
ETAG 005: March 2001, revision March 2004	ETA Guideline for Liquid applied roof waterproofing kits
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
EOTA Technical Report 0013: May 2004	Determination of crack bridging capability
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 ISO 3251	Paints, varnishes and plastics – Determination of non-volatile-matter content