EUROPEAN ASSESSMENT DOCUMENT

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# COMPOSITE ROOF WATERPROOFING KIT



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

# Contents

# 1 SCOPE OF THE EAD

## 1.1 Description of the construction product

The composite roof waterproofing kit is a sealing system for roofs with two sealing layers on concrete. The following components are part of the kit:

- Primer on the basis of bitumen
- Internal layer on the basis of a glass silk fabric mat with a mesh
- Polymer modified unfilled bitumen, melted and hot applied liquid material
- Polymer modified bitumen waterproofing sheet

For first sealing layer the glass silk fabric mat is rolled out. The hot polymer modified bitumen is poured on the pre-rolled glass silk fabric mat. The polymer modified bitumen is unfilled to ensure its flowing through the glass silk fabric mat and its penetrating into all irregularities of the concrete structural deck.

In the same step the second sealing layer is produced by rolling a polymer modified bitumen waterproofing sheet into the hot polymer modified bitumen so that the sheet is fully bonded.

Details for overlapping of the mat and the sheet as indicated by the manufacturer shall be given in the ETA.

Concerning the resistance to root penetration no substances for protection against root penetration are used within the product kit.

The polymer modified bitumen roof waterproofing sheet shall be a component according to EN 13969 or EN 13707. Alternatively, polymer modified bitumen waterproofing sheets without any chemicals used to prevent root penetration can be used.

Classifications are taken from ETAG 005 Part 1 (see Ch. 2.1). This EAD is only valid for classes S1, TL1/TL 2, TH2, P4 and W3.

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

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

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

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

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

### 1.2.1 Intended use(s)

The composite roof waterproofing kit is used for the roof waterproofing of underground car parks, terrace and park deck surfaces and roof areas planted with intensive vegetation (green roofs).

The composite roof waterproofing kit is only used underneath a heavy surface protection[1] which could be also a flooring wearing surface.

The surfaces to be waterproofed shall have a slope of < 5 %.

### 1.2.2 Working life/Durability

The assessment methods included or referred to in this EAD have been written based on the manufacturer's request to take into account a working life of the composite roof waterproofing kit for the intended use of 25 years when installed in the works (provided that the composite roof waterproofing kit is subject to appropriate installation (see 1.2.1)). These provisions are based upon the current state of the art and the available knowledge and experience.

When assessing the product, the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works[2].

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

1 According to 2000/553/EC: Commission Decision of 6 September implementing Council Directive 89/106/EEC as regards the external fire performance of roof coverings OJ L 235 19.9.2000, p. 19

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

# 2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

## 2.1 Essential characteristics of the product

Table 1 shows how the performance of composite roof waterproofing kit is assessed in relation to the essential characteristics.

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

| No | Essential characteristic | Assessment method | Type of expression of product performance |
|---|---|---|---|
| Basic Works Requirement 2: Safety in case of fire | | | |
| 1 | Reaction to fire | 2.2.1 | Class (E) |
| 2 | External fire performance of roofs | Acc. to Commission Decision 2000/553/EC classified without testing since the specific conditions for the roof covering are fulfilled. | Description |
| Basic Works Requirement 3: Hygiene, health and the environment | | | |
| 3 | Water vapour permeability | 2.2.2 | Level |
| 4 | Water tightness | 2.2.3 | Pass (see ETAG oo5) |
| 5 | Resistance to perforation | 2.2.4 | Class (see ETAG oo5) |
| 6 | Resistance to fatigue movement | 2.2.5 | Pass (see ETAG oo5) |
| 7 | Resistance to the effects of low and high surface temperatures | 2.2.6 | Class (see ETAG oo5) |
| 8 | Working Life | 2.2.7 | Class (see ETAG oo5) |
| 9 | Resistance to heat aging | 2.2.8 | Pass (see ETAG oo5) |
| 10 | Resistance to water aging | 2.2.9 | Pass (see ETAG oo5) |
| 11 | Resistance to plant roots*) | 2.2.10 | Pass (see ETAG oo5) |
| 12 | Effects of application conditions | 2.2.11 | Pass (see ETAG oo5) |
| Basic Works Requirement 4: Safety and accessibility in use | | | |
| 13 | Resistance to wind loads | 2.2.12 | Description |

To facilitate the expression of different performances of the product with regard to combinations of essential characteristics referred to in Table 2 distinction is made between the following use categories:

The following classes come from ETAG 005:

Categorisation according to working life:

**Table 2 - Categorisation according to working life**

| | Category W3 |
|---|---|
| Expected working life (years) | 25 |

Categorisation according to climatic zone of use:

The assembled system, including its support and protection (if any) shall be resistant to the solar exposure effects (solar energy, temperature, etc.) occurring during its expected working life which will depend on the geographical location of use. Two categories of climatic zone have been established (Moderate and Severe) and the limiting values for mean annual radiant exposure and the mean air temperature during the warmest month are defined in Table 3.

**Table 3 - Categorisation according to climatic zone**

| | Category M<br>Moderate Climate |
|---|---|
| Annual radiant exposure on horizontal surface | < 5 GJ/m$^2$<br>and<br>< 22 °C |
| Average temperature of the warmest month per year | |

Note 1: The annual radiant exposure is the total amount of solar energy received by horizontal global surface within a defined geographical region, calculated as a mean measured value over a period of five years. The average temperature of the warmest month is the calculated mean value over a period of five years for the average measured maximum air temperature of that month.

Note 2: The "isoline 5" (see map of TR-010.C - mean UV radiant exposure) can be used as an indicative dividing line between "moderate" and "severe" climatic zones of use, related to temperatures.

Categorisation of user loads

The assembled systems, including their support and protection (if any), shall be capable of withstanding mechanical damage due to the user loads likely to occur during their working life. The risk of mechanical damage will depend on the accessibility of the roof and the frequency of the traffic envisaged. The appropriate categories of user loads and examples of the related accessibility are given in Table 4.

**Table 4 - Categorisation according to user loads**

| Category | User load | Examples of accessibility |
|---|---|---|
| P4 | Special | roof gardens, inverted roofs, green roofs |

Categorisation of roof slope

The assembled system, including its support and protection (if any), shall be capable of withstanding the effects originating from its slope. The appropriate categories of roof slopes and examples of the related effects which can influence the fitness for use are given in Table 5.

**Table 5 - Categorisation according to roof slopes**

| Category | Slope [%] | Examples of possible related effects |
|---|---|---|
| S1 | < 5 | - frost (thickness of ice layer)<br>- UV/standing water<br>- user loads (accessibility)<br>- effects of standing water<br>- fire behaviour<br>- plant roots (roof gardens and green roofs) |

Categorisation according to surface temperature

The assembled system, including its support and protection (if any) shall be resistant to the maximum and minimum surface temperatures occurring during its expected working life which will depend on the geographical location of use (see Table 3) and the levels of protection. Tables 6(a) and 6(b) define the appropriate categories.

**Table 6(a): Categorisation according to minimum surface temperature of the assembled system**

| Category | Climatic zone | Surface protection | Minimum surface Temperature (°C) |
|---|---|---|---|
| TL2 | Moderate low temperature | All other protected assembled systems or exposed roofs | -10 |

**Table 6(b): Categorisation according to maximum surface temperature of the assembled system**

| Category | Climatic zone | Surface protection | Maximum surface Temperature (°C) |
|---|---|---|---|
| TH1 | All climatic zones | Inverted roofs and roof gardens | +30 |
| TH2 | Moderate high temperature | Exposed, non-insulated roofs or heavily protected roofs including "green roofs" | +60 |

Note: For southern European regions considered as having "severe" climatic conditions related to high surface temperatures (area south of indicative "isoline 5" - see map of EOTA technical report TR-010, Annex TR-010.C)

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

Characterisation of products to be assessed shall be done in accordance with available specifications, notably of the following characteristics: ./.

### 2.2.1 Reaction to fire

The polymer modified bitumen roof waterproofing system shall be tested, using the test method(s) according to EN 13501-1 and relevant for the corresponding reaction to fire class.

The product shall be classified according to Commission Delegated Regulation (EU) No 2016/364 in connection with EN 13501-1.

### 2.2.2 Water vapour permeability

The water vapour permeability of the system is lower than from the water vapour permeability of the bitumen sheet. The value of water vapour resistance of the sheet can be given without further testing as a minimum value.

The water vapour permeability of the assembled system shall be determined in accordance with EN 1931, using a free sample according to Annex B.

The value of water vapour resistance shall be stated in the ETA.

### 2.2.3 Water tightness

The water tightness of the polymer modified bitumen waterproofing layer shall be determined by testing in accordance with the test method given in EOTA technical report TR 003.

The test is passed successfully, if the system is watertight.

### 2.2.4 Resistance to perforation

- Resistance to dynamic indentation

The resistance to dynamic indentation at 23 °C shall be determined in accordance with the test method given in EOTA technical report TR-006, using the indentor size $I_4$ corresponding to the user load category P4 (see Table 5).

These tests shall be performed on the most and least compressible of the substrates specified by the applicant for the kit.

The test is passed successfully, if the system is still watertight.

For the assessment of the user load category, all minimum level resistances, also according to chapter 2.2.9 to 2.2.12 shall be taking into account. The class maybe has to be reduced after the tests on different classes of temperature and durability tests.

- Resistance to static indentation

The resistance to static indentation at 23 °C shall be determined in accordance with the test method given in EOTA technical report TR-007, using the load of resistance level $L_4$ corresponding to the user load category P4 (see Table 5).

These tests shall be performed on the most and least compressible of the substrates specified by the Applicant for the kit.

The test is passed successfully, if the system is still watertight.

For the assessment of the user load category, all minimum level resistances, also according to chapter 2.2.9 to 2.2.12 shall be taking into account. The class maybe has to be reduced after the tests on different classes of temperature and durability tests.

### 2.2.5 Resistance to fatigue movement

The resistance to fatigue movement of the assembled system is tested according to the test method given in EOTA technical report TR-008 at a temperature of –10 °C; number of cycles 1000 related to the expected working life category W3.

The test is passed successfully, if the system is still watertight. There is no visible debonding. Also the individual layers must remain bonded to each other.

### 2.2.6 Resistance to the effects of low and high surface temperatures

- Low Temperatures

The effect of the minimum surface temperatures on the resistance to mechanical damage shall be determined by performing the dynamic indentation test in accordance with the method given in EOTA Technical Report TR-006 at a temperature of -10 °C for category TL 2 (see Table 7(a)) by using indentor type $I_4$ corresponding to the user load category P4.

These tests shall be performed on the most and least compressible of the substrates specified by the applicant.

After testing dynamic indentation the test is passed successfully, if the system is still watertight.

- High temperatures

The effect of the maximum surface temperatures on the resistance to mechanical damage shall be determined by performing the static indentation test in accordance with the method given in EOTA technical report TR-007 at a temperature of +60°C for category TH 2 by applying the load of resistance level $L_4$ corresponding to the user load category P4

These tests shall be performed on the most and least compressible of the substrates specified by the applicant.

After testing static indentation the test is passed successfully, if the system is still watertight.

### 2.2.7 Working Life

The methods of assessment of the resistance to ageing media are given in 2.2.9 to 2.2.12.

The classification of working life has to be taken into account the results of durability tests in characteristics 2.2.9 to 2.2.12. The class of working life shall be given in the ETA.

### 2.2.8 Resistance to heat aging

The effects of heat ageing on the resistance to mechanical damage shall be assessed by subjecting an assembled system (according to Annex A) to heat ageing in accordance with EOTA technical report TR-011 at 70 +/- 2 °C for a period of 200 days corresponding to climatic zone class M.

Following the heat ageing period the resistance to dynamic indentation at a temperature of 23 °C by using indentor type $I_4$ corresponding to the user load category P4 on a substrate classified as hardest and softest respectively shall be performed.

The resistance to fatigue movement at –10 °C (see 2.1.6) shall be performed. The number of cycles shall be 50.

The comparative testing of flexibility of free samples of the assembled system on new and aged samples shall be performed in accordance with the test method CAN/CGSB 37.50-M89.

After testing dynamic indentation the test is passed successfully, if the system is still watertight.

After testing fatigue movement the test is passed successfully, if the system is still watertight.

After testing flexibility the test is passed successfully, if the system is still watertight.

The test results shall be evaluated in view of the working life class W3.

### 2.2.9 Resistance to water ageing

The effects of water ageing shall be determined in accordance with the method as given in EOTA technical report TR-012 by exposing the upper surface of the assembled system to water at 60 +/- 2 °C for a period of 180 days.

Following the water ageing period the resistance to static indentation at a surface temperature of 30 °C (TH 1) by applying the load of resistance level $L_4$ corresponding to the user load category P4 shall be performed.

In addition the possible effect of ageing by water on the flexibility of free samples of the assembled system at new and aged samples, the assembled system shall be determined with the test method according to CAN/CGSB 37.50-M89.

After testing static indentation the test is passed successfully, if the system is still watertight.

After testing flexibility the test is passed successfully, if the system is still watertight.

The Assessment Body shall satisfy itself that the expected working life, based on the data is consistent with the defined working life categories.

The test results shall be evaluated in view of the working life class W3.

### 2.2.10 Resistance to plant roots

The resistance to plant roots of the installed system of a kit or of one of the sealing layers (for inverted roofs, roof gardens and green roofs) shall be assessed according to EN 13948

or by

assessment on previous use:

The Assessment Body shall take into account, by examination where appropriate, existing examples of the installed system used in roof gardens and green roofs.

Such examples of the installed system shall be:

a) at least three,
b) as old as possible, with a minimum of 5 years,
c) installed with minimum thickness,
d) installed with the minimum of slope and
f) with details, e.g. penetrations, upstands.

The Assessment Body shall satisfy itself or with help of a test laboratory that such indirect evidence of previous use is equal to requirements in EN 13948.

Roots shall not penetrate the installed system. In case of doubt the watertightness of the installed system shall be assessed according to EOTA Technical Report TR-003. The installed system shall remain watertight.

### 2.2.11 Effects of application conditions

The effects of prolonged heating and the effects of remelting shall be determined.

The polymer modified bitumen shall be held at the maximum temperature permitted by the applicant, and the following properties measured:

- Penetration at 50 °C, test method CAN/CGSB 37.50-M89
- Flow at 60 °C, test method CAN/CGSB 37.50-M89

The polymer modified bitumen shall be remelted following the procedure permitted by the applicant, and the following properties measured:

- Penetration at 50 °C, test method CAN/CGSB 37.50-M89
- Flow at 60 °C, test method CAN/CGSB 37.50-M89

The properties measured shall fall within the accepted limits stated by the applicant and shall not affect the performance of the system.

### 2.2.12 Resistance to wind loads

The resistance to wind loads is given by the use under a heavy protection acc. the specific conditions for the roof covering to Commission Decision 2000/553.

# 3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

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

For the products covered by this EAD the applicable European legal act is: Decision 1998/599/EC

The system is: 3 for any use except for uses subject to regulations on reaction to fire performance.

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

## 3.2 Tasks of the manufacturer

The cornerstones of the actions to be undertaken by the manufacturer of the product in the procedure of assessment and verification of constancy of performance are laid down in Table 7.

**Table 7 Control plan for the manufacturer; cornerstones**

| No | Subject/type of control (product, raw/constituent material, component - indicating characteristic concerned) | Test or control method | Criteria, if any | Minimum number of samples | Minimum frequency of control |
|---|---|---|---|---|---|
| **Factory production control (FPC) [including testing of samples taken at the factory in accordance with a prescribed test plan]** | | | | | |
| Primer | | | | | |
| 1 | Material | See control plan | See control plan | 1 | each batch |
| 2 | Flow time/ Viscosity | EN ISO 2431 | See control plan | 1 | each batch |
| 3 | Solid contents | EN ISO 3251 | See control plan | 1 | each batch |
| 4 | Flash Point (Pensky-Martens closed cup) | EN ISO 2719 | See control plan | 1 | once in 5 years |
| Liquid applied roof waterproofing | | | | | |
| 5 | Needle penetration | EN 1426 | See control plan | 1 | each batch |
| 6 | Softening point | EN 1427 | See control plan | 1 | each batch |
| 7 | Fraass breaking point | EN 12593 | See control plan | 1 | each batch |
| 8 | Viscosity | CAN/CGS B 27.50 – M89 | See control plan | 1 | once in 5 years |

| No | Subject/type of control (product, raw/constituent material, component - indicating characteristic concerned) | Test or control method | Criteria, if any | Minimum number of samples | Minimum frequency of control |
|---|---|---|---|---|---|
| 9 | Penetration at 25 °C and 50 °C | CAN/CGS B 27.50 – M89 | See control plan | 1 | once in 5 years |
| 10 | Flow at 48 °C and 60 °C time | CAN/CGS B 27.50 – M89 | See control plan | 1 | once in 5 years |
| 11 | Solids content | EN ISO 3251 | See control plan | 1 | once in 5 years |
| 12 | Elongation | ASTM D 5329 | See control plan | 1 | once in 5 years |
| 13 | Resiliency | ASTM D 5329 | See control plan | 1 | once in 5 years |
| Internal layer | | | | | |
| 14 | Nature (especially material and texture) | Technical data sheet | See control plan | 1 | each batch |
| 15 | Mesh size | Measurement | See control plan | 3 | each batch |
| 16 | Tensile strength | EN ISO 29073-3 | See control plan | 1 | each batch |
| 17 | Elongation at break | EN ISO 29073-3 | See control plan | 1 | each batch |
| 18 | Mass per unit | EN ISO 29073-1 | See control plan | 1 | each batch |
| Polymer modified bitumen roof waterproofing sheet | | | | | |
| 19 | Material and layer composition | Technical data sheet | See control plan | 1 | Each delivery |
| 20 | Thickness | EN 1849-1 | See control plan | 1 | Each batch |
| 21 | Dimensions | EN 1849-1 | See control plan | 1 | Each batch |
| 22 | Dimensional Stability | EN 1107-1 | See control plan | 1 | Once a year |
| 23 | Visible damages | visual | See control plan | 1 | each batch |

| No | Subject/type of control (product, raw/constituent material, component - indicating characteristic concerned) | Test or control method | Criteria, if any | Minimum number of samples | Minimum frequency of control |
|---|---|---|---|---|---|
| 24 | Mass per unit | EN 1846-1 | See control plan | 1 | each batch |
| 25 | Tensile strength | EN 12311-1 | See control plan | 1 | Once per month |
| 26 | Elongation at break | EN 12311-1 | See control plan | 1 | Once per month |
| 27 | Resistance to tearing (Nail shank) | EN 12310-1 | See control plan | 1 | Once per year |
| 28 | Flexibility at low temperatures | EN 1109-1 | See control plan | 1 | Once per year |
| 29 | Flow resistance at elevated temperature | EN 1110 | See control plan | 1 | Once per week |
| 30 | Soluble content | DIN 52123 | See control plan | 1 | Once per year |

## 3.3 Tasks of the notified body

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

The cornerstones of the actions to be undertaken by the notified body in the procedure of assessment and verification of constancy of performance for the composite roof waterproofing kit are laid down in Table 9.

**Table 9 Control plan for the notified body; cornerstones**

| No | Subject/type of control *(product, raw/constituent material, component - indicating characteristic concerned)* | Test or control method | Criteria, if any | Minimum number of samples | Minimum frequency of control |
|---|---|---|---|---|---|
| **Initial inspection of the manufacturing plant and of factory production control** *(for systems 1+, 1 and 2+ only)* | | | | | |
| 1 | Reaction to fire | 2.2.1 | See control plan | 1 | Once a year |
| **Continuous surveillance, assessment and evaluation of factory production control** *(for systems 1+, 1 and 2+ only)* | | | | | |
| 2 | Reaction to fire | 2.2.1 | See control plan | 1 | Once a year |

# 4 REFERENCE DOCUMENTS

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

| | |
|---|---|
| ETAG 005 | Guideline for European Technical Approval of Liquid applied Roof waterproofing kits – Part 1: General and Part 5: Specific stipulations for Kits based on Hot Applied Polymer Modified Bitumen Edition March 2000, Revision March 2004 |
| EN 13969 | Flexible sheets for waterproofing - Bitumen damp proof sheets including bitumen basement tanking sheets - Definitions and characteristics |
| EN 13707 | Flexible sheets for waterproofing - Reinforced bitumen sheets for roof waterproofing - Definitions and characteristics |
| EN ISO 2719 | Determination of flash point - Pensky-Martens closed cup method (ISO 2719:2002) |
| EN ISO 2431 | Paints and varnishes - Determination of flow time by use of flow cups (ISO 2431:2011) |
| EN ISO 3251 | Paints, varnishes and plastics - Determination of non-volatile-matter content (ISO 3251:2008) |
| CAN/CGSB 37.50-M89 | Hot Applied, Rubberized Asphalt for Roofing and Waterproofing |
| ASTM D 5329:2009 | Standard Test Methods for Sealants and Fillers, Hot-Applied, for Joints and Cracks in Asphaltic and Portland Cement Concrete Pavements |
| EN 29073-1 | Textiles; test method for nonwovens; part 1: determination of mass per unit area |
| EN 29073-3 | Textiles; test method for nonwovens; part 3: determination of tensile strength and elongation |
| EN 1849-1 | Flexible sheets for waterproofing - Determination of thickness and mass per unit area - Part 1: Bitumen sheets for roof waterproofing |
| EN 1107-1 | Flexible sheets for waterproofing - Determination of dimensional stability - Part 1: Bitumen sheets for roof waterproofing |
| EN 12311-1 | Flexible sheets for waterproofing - Part 1: Bitumen sheets for roof waterproofing; Determination of tensile properties |
| EN 12310-1 | Flexible sheets for waterproofing - Part 1: Bitumen sheets for roof waterproofing; determination of resistance to tearing (nail shank) |
| EN 1109 | Flexible sheets for waterproofing - Bitumen sheets for roof waterproofing - Determination of flexibility at low temperature |
| EN 1110 | Flexible sheets for waterproofing - Bitumen sheets for roof waterproofing - Determination of flow resistance at elevated temperature |
| EN 13501-1 | Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests |
| EN 1931 | Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for roof waterproofing – Determination of water vapour transmission properties. |

| | |
|---|---|
| EN 13948 | Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for roof waterproofing – Determination of resistance to root penetration |
| EN ISO 2431 | Paints and varnishes - Determination of flow time by use of flow cups |
| pr EN 1426:2013 | Bitumen and bituminous binders - Determination of needle penetration |
| pr EN 1427:2013 | Bitumen and bituminous binders - Determination of the softening point - Ring and Ball method |
| pr EN 12593:2013 | Bitumen and bituminous binders - Determination of the Fraass breaking point |
| DIN 52123:2014 | Testing of bitumen and polymer bitumen sheets |
| EOTA TR – 003 | Determination of the watertightness. |
| EOTA TR – 006 | Determination of the resistance to dynamic indentation. |
| EOTA TR – 007 | Determination of the resistance to static indentation. |
| EOTA TR – 008 | Determination of the resistance to fatigue movement. |
| EOTA TR – 010 | Exposure procedure for artificial weathering<br>Annex TR – 010.A (informative) Annex TR – 010.B (informative) Annex TR – 010.C (normative) |
| EOTA TR – 011 | Exposure procedure for accelerated ageing by heat. |
| EOTA TR – 012 | Exposure procedure for accelerated ageing by hot water. |

# ANNEX A PREPARATION OF FREE SAMPLES

## 1 Scope

This Annex gives guidance on the procedure for the preparation of free samples of (an) assembled system(s) of roof waterproofing kits.

## 2 Introduction

To perform specific tests and/or assessments (e.g. the effects of ageing media on different characteristics of liquid applied waterproofing membranes) it is necessary to prepare free film samples of systems. The method of free film sample preparation may differ with the system under examination and the advice of the manufacturer should be sought on the most appropriate method to be used with the materials.

## 3 Apparatus

**Base**: a rigid support (e.g. of plywood, glass, plastic coated chipboard or MDF etc.) of sufficient size to provide an even and stable substrate on which to prepare the sample(s)

**Release agent**: to avoid adhesion to the base and to allow subsequent removal of the sample. Examples of release agents known to work are siliconised paper, spray furniture polish, spray silicone release agent, micro-crystalline parafin wax, etc.

**Thickness control**: a means of ensuring a constant and controllable thickness of the free film. Examples: wet film gauges, film spreaders, film casters, bar coaters, steel frames, etc.

**Spirit level**: to allow the base plate to be adjusted to a horizontal position.

## 4 FREE SAMPLE

### 4.1 Composition

The free sample is the roof waterproofing kit, applied in accordance with the manufacturer's instructions to the appropriate ratio of constituent parts, or to the specified composition by the Assessment Body.

### 4.2 Number and size of free samples

The number and size of free samples will be stated by the Assessment Body, dependent on the relevant method of assessment.

## 5 PROCEDURE

The base shall be placed on a firm support ensuring that it is horizontal.

The release agent shall be applied and, where necessary, allowed to dry. Where sheet release agents are used, these shall be firmly fixed to the base without creases or wrinkles.

Apply the roof waterproofing kit in the appropriate number of coats, including reinforcement, where appropriate, in accordance with the manufacturer's instructions (by spraying, spreading or brushing) to the prepared base. For two-coat brush-applied roof waterproofing kits the manufacturer's instructions for the direction of brushing shall be followed. The mean thickness of the applied membrane shall be controlled in the appropriate manner.

The sample shall be allowed to fully cure before removal, without straining, from the base. Any area of free film falling outside the manufacturer's thickness specification shall be rejected.