EUROPEAN ASSESSMENT DOCUMENT

EAD 030019-00-0402

November 2016

LIQUID APPLIED ROOF WATERPROOFING ON THE BASIS OF POLYSILOXANE

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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 No (EU) 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

A liquid applied roof waterproofing kit is a kit of an in-situ applied liquid roof waterproofing on the basis of a silicone hereinafter referred as roof waterproofing system. The following components can be part of the kit:

- Primer
- Fillers
- Internal layer, reinforcement fibres
- Top coat, finish layer, ballast layer
- Anti-skid additives

The product will be described by the manufacturer taking into account the following characteristics and methods, where relevant, to derive the relevant definitions:

Number	Product characteristic	Methods relevant for the description of the product
Primer		
1	Nature	Declaration
2	Density	EN ISO 2811-1 or EN ISO 1675
3	Viscosity	EN ISO 2555 / EN ISO 3219
4	IR-Spectrum	EN 1767
5	Curing time	Internal method of manufacturer
Liquid applied roof waterproofing		
6	Nature	Declaration
7	Viscosity	EN ISO 2555 / EN ISO 3219
8	Density	EN ISO 2811-1 or EN ISO 1675
9	Gel time	EN ISO 2535
10	Ash content	EN ISO 3451-1
11	Shore A Hardness	Internal method of manufacturer
12	TGA	EN ISO 11358
13	IR Spectrum	EN 1767
Internal layer		
14	Nature	Declaration
15	Mass per unit	EN 29073-1
16	Tensile strength	EN ISO 527 / EN ISO 1798 / EN 29073-3 or ISO
17	Elongation	EN ISO 527 / EN ISO 1798 / EN 29073-3 or ISO
Finish layer/ Top layer		
18	Nature	Declaration
19	Viscosity	EN ISO 2555 / EN ISO 3219
20	Density	EN ISO 2811-1 or EN ISO 1675
21	Gel time	EN ISO 2535
22	Ash content	EN ISO 3451-1
23	TGA	EN ISO 11358
24	IR Spectrum	EN 1767
Anti-skid additives		
25	Nature	
26	Particle size	EN 933-1/-2

It shall be stated in the ETA which components are part of the kit. The minimum layer thickness, the minimum quantity consumed and the weight of the internal layer (if relevant) shall be given in the ETA.

As an assembled system the components form a homogeneous seamless roof waterproofing.

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

The product is not fully covered by the following harmonised technical specification: ETAG 005, March 2004. The basis "silicone" is not covered by any family part of ETAG 005.

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.

This is e.g. concerning:

- installation by appropriately trained personnel,
- installation of only those components which are marked components of the kit,
- installation with the required tools and adjuvants,
- precautions during installation,
- inspecting the roof surface for cleanliness and correct preparation, if need be, applying a primer before applying the product,
- inspecting compliance with suitable weather and curing conditions,
- finding out the mix ratio depending on the ambient temperature,
- ensuring a thickness of the cured waterproofing by processing appropriate minimum quantities of material,
- inspections during installation and of the finished product and documentation of the results.

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

1.2.1 Intended use(s)

The product is used for the waterproofing of roof surfaces against penetration of atmospheric water. The product shows certain classifications (see chapter 2.1) which facilitate the use taking account of national requirements.

Intended use and classifications are taken from ETAG 005.

In the technical documentation of the manufacturer to the European Technical Assessment (ETA) the manufacturer gave information concerning the substrates which the product is suitable for and on how these substrates shall be pre-treated.

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 liquid applied roof waterproofing for the intended use of 5, 10 or 25 years when installed in the works (provided that the liquid applied roof waterproofing is subject to appropriate installation (see 1.1)). These provisions are based upon the current state of the art and the available knowledge and experience.

When assessing the product, the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works[1].

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.

1.3 Specific terms used in this EAD (if necessary in addition to the definitions in CPR, Art 2)

1.3.1 Ballast layer

One or more layers of materials applied on the liquid applied roof waterproofing to serve as ballast against the system being blown away. It may also have additional functions, e.g. protection of the system against ageing, mechanical damage and/or as an aesthetic and/or foot traffic resistant finish.

1.3.2 Finish layer

One or more layers of material (e.g. slate chips, solar protective coating, etc.), applied as a component of the liquid applied roof waterproofing kit, on top of the assembled system. The finish layer may have several functions, e.g. protection of the system against the effects of weathering or as an aesthetic finish.

1.3.3 Internal layer

A layer of fabric scrim, non-woven mat of synthetic material, glass fibres or other material used as a component of kit. This layer may constitute a reinforcement.

1.3.4 Liquid material

A material or a combination of materials which can be poured, spread or sprayed.

1.3.5 Non-accessible

The qualification (in respect of the categorisation according to user load) of any roof only accessible, with the use of specific equipment due to features such as slope, shape, nature of materials used, etc.

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

1.3.6 Protection layer

One or more layers of materials applied on top of the assembled system to control the effects of physical, mechanical and chemical stresses. Examples are ballast layer (see 1.3.1), finish layer (see 1.3.2) and separation sheet (see 1.3.8).

1.3.7 Roof

The structural deck and all the layers on it, including the surface exposed to the weather and including the necessary details

1.3.8 Separation sheet

A layer of material applied between parts of the roof as a protection against mechanical and/or chemical effects.

1.3.9 Structural deck

The part of the roof that, as a construction element, has to transfer both permanent and variable loads to the other parts of the building.

1.3.10 Substrate

The layer of material immediately under the liquid applied roof waterproofing membrane.

1.3.11 User load

The load associated with the accessibility of the roof

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

2.1 Essential characteristics of the product

Table 1 shows how the performance of the liquid applied 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 *(level, class, description)*
Basic Works Requirement 2: Safety in case of fire			
1	Reaction to fire	2.2.1	Class
2	External fire performance	2.2.2	Class
Basic Works Requirement 3: Hygiene, health and the environment			
3	Water vapour permeability	2.2.3	Level
4	Watertightness	2.2.4	Description
5	Resistance to mechanical damage	2.2.5	P1 to P4
6	Resistance to fatigue movement	2.2.6	Description
7	Resistance to the effects of low and high surface temperatures	2.2.7	TL1 to TL 4 and TH 1 to TH 4
8	Effects of application conditions	2.2.8	Level
9	Effects of day joints	2.2.9	Description
Basic Works Requirement 4: Safety and accessibility in use			
10	Resistance to wind load	2.2.10	Description
11	Slipperiness	2.2.11	Level
12	Working Life	2.2.12	Class W1 to W3
13	Resistance to heat aging	2.2.13	Description
14	Resistance to UV-radiation and moisture	2.2.14	Description
15	Resistance to water aging*)	2.2.15	Description
16	Resistance to plant roots	2.2.16	Description

To facilitate the expression of different performances of the product with regard to combinations of essential characteristics referred to in Table 1 distinction is made between the following use categories:

Categorisation according to working life:

Table 2 - Categorisation according to working life

	Category W1	Category W2	Category W3
Expected working life (years)	5	10	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 Moderate Climate	Category S Severe Climate
Annual radiant exposure on horizontal surface	< 5 GJ/m^2 and < 22 °C	≥ 5 GJ/m^2 and/or ≥ 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
P1	Low	non-accessible
P2	Moderate	accessible for maintenance of the roof only
P3	Normal	accessible for maintenance of plant and equipment and to pedestrian traffic
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) - UV/standing water - user loads (accessibility) - effects of standing water - fire behaviour - plant roots (roof gardens and green roofs)
S2	5 - 10	- frost (thickness of ice layer) - UV - user loads (accessibility) - fire behaviour - plant roots (green roofs only)
S3	10 - 30	- sliding - frost (freezing snow) - UV - user loads (accessibility) - fire behaviour - plant roots (green roofs only)
S4	> 30	- sliding - UV - user loads (accessibility) - fire behaviour

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)
TL1	All climatic zones	Inverted roofs and roof gardens (excluding "green" roofs)	+5
TL2	Moderate low temperature	All other protected assembled systems or exposed roofs	-10
TL3	Severe low temperature		-20
TL4	Extreme low temperature *		-30

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
TH3		Exposed, insulated roofs	+80
TH4	Severe high temperature *	Exposed, insulated roofs	+90

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: ./.

This EAD contains provisions on how to declare certain performance characteristics. These provisions only apply if the manufacturer wishes to declare a performance for the relevant product characteristic.

2.2.1 Reaction to fire

The roof waterproofing shall be tested, using the test method(s) relevant for the corresponding reaction to fire class, in order to be classified according to EN 13501-1.

The product shall be classified according to EN 13501-1.

2.2.2 External fire performance of roofs (where relevant)

The roof (including the complete roof covering) in which the roof waterproofing is intended to be incorporated, installed or applied shall be tested using the test method relevant for the corresponding external fire performance roof class, in order to be classified according to EN 13501-5.

The roof (including the complete roof covering) in which the roof waterproofing is intended to be incorporated, installed or applied shall be classified according to EN 13501-5.

2.2.3 Water vapour permeability

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

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

2.2.4 Water tightness

The water tightness of the assembled system shall be determined by testing in accordance with the test method given in EOTA Technical Report TR 003.

The assembled system shall be watertight.

2.2.5 Resistance to mechanical damage

2.2.5.1 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 appropriate to the level of performance required and defined by the relevant user load category (see Table 4). The relationship between the user load category and the levels of resistance to dynamic indentation is given in Table 7.

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

2.2.5.2 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 appropriate to the level of performance required and defined by the relevant user load category (see Table 4). The relationship between the user load category and the levels of resistance to static indentation is given in Table 7.

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

After testing the assembled system(s) shall remain watertight.

Table 7 - Relationship between user load category and levels of performance

User load category (see table 4)	Minimum level of resistance	
	Dynamic indentation	Static indentation
P1	I_1	L_1
P2	I_2	L_2
P3	I_3	L_3
P4	I_4	L_4

For the assessment of the user load category, all minimum level resistances, also according to chapter 2.2.14 to 2.2.16 shall be taking into account. The class maybe has to be reduced after the tests on different classes of temperature and durability tests.

2.2.6 Resistance to fatigue movement

A fully bonded assembled system shall be subjected to fatigue movements at –10 °C, in accordance with the method given in EOTA Technical Report TR-008. The number of cycles to which the assembled system shall be subjected will be determined by the categorization of the kit according to the expected working life (see Table 2 (ETAG 005 Part1)) and is defined in Table 8.

Table 8 – Number of cycles of fatigue movement

Categorisation of expected working life	Number of cycles
W 1	250
W 2	500
W 3	1000

After testing the assembled system(s) shall remain watertight and the debonding, if any, shall not exceed a total of 75 mm and shall not exceed 50 mm on one side of the gap.

2.2.7 Resistance to the effects of low and high surface temperatures

2.2.7.1 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 on the least compressible substrate at the appropriate minimum surface temperature defined by the categorisation of the kit (see Table 6(a).

For kits categorised according to minimum surface temperature TL 4 (see Table 6(a) in addition the crack bridging capability of the assembled system shall be determined according to the method given in EOTA Technical Report TR-013 at a temperature of –30 °C.

After testing dynamic indentation the assembled system(s) shall remain watertight.

Assembled systems categorised according to minimum surface temperatures "TL 4", after testing in crack bridging capability, shall show no visible cracks and no loss of adhesion to the substrate at either side of the gap.

2.2.7.2 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 on the least compressible substrate at the appropriate maximum surface temperature (see Table 6(b) and the level of resistance (see Table 7), defined by the categorisation of the kit.

The assembled system, after testing static indentation, shall remain watertight.

2.2.8 Effects on weather conditions during installation

The assembled system shall be tested over the whole range of weather conditions and variations in proportions of constituent parts quoted by the applicant. The tests shall be performed on free films prepared from the applicant under the conditions defined by the applicant.

The comparative testing of tensile properties shall be performed at 23 °C in accordance with
EN ISO 527-1 and -3 (unreinforced) or -4 (reinforced) with a test peace shape 1B and a test speed of
200 mm/min.
The properties measured shall fall within the accepted limits given by the applicant.

The delamination strength of the assembled systems shall exceed 50 kPa.

2.2.9 Effects on day joints

To check the compatibility of the assembled system, freshly applied to dried assembled system shall be assessed by testing the delamination strength according to TR-004,

The substrate is the assembled system bonded on the most suitable substrate for adherence (generally concrete) and dried for the period given by the applicant at normal conditions. The test specimen is the fresh kit applied on that substrate.

The delamination strength shall contain a minimum value of at least 0,2 N/mm².

2.2.10 Resistance to wind loads

The resistance to wind loads of partially or fully bonded assembled systems shall be verified by measuring the delamination strength at 23 °C in accordance with the test method given in EOTA Technical Report TR-004 for all proposed substrates.

In addition the effect of the maximum surface temperatures on the resistance to wind load shall be determined by performing the delamination strength test in accordance with the method given in EOTA Technical Report TR-004 at a temperature of +40 °C.

The delamination strength of the assembled systems shall exceed 50 kPa.

Note: The value of 50 kPa is derived from the maximum load applied by wind. In practice the delamination strength will be significantly in excess of this load.

2.2.11 Slipperiness

The coefficient of friction is determined in accordance with EN 13893.

The coefficient of friction shall be stated in the ETA.

2.2.12 Working Life

The methods of verification of the resistance to ageing media are given in 2.2.14 to 2.2.16.

In addition an estimated working life of 25 years (W3) shall only be assumed in the case where the applicant can offer, for examination by the Technical Assessment Body, existing examples of satisfactory use of that assembled system for a period of at least 5 years in a relevant situation and/or climate. Such examples of the assembled system shall be:

a) in the same, or more severe categorisation as that required for the kit to be assessed and

b) as old as possible, with a minimum of 5 years and

c) with details (e.g. penetrations, upstand).

For the classification of working life the results of durability tests in characteristics 2.2.13 to 2.2.15 have to be taken into account. The class of working life shall be given in the ETA.

In order for kits to be categorised W3, continued satisfactory performance shall be demonstrated after the use of the assembled system (or similar systems) for a minimum period of 5 years. The Technical Assessment Body shall check that the existing use which forms the basis for this categorization is comparable to the proposed use (e.g. situation, climatic zone, etc.).

2.2.13 Resistance to heat aging

The effects of heat ageing on the resistance to mechanical damage shall be verified by subjecting an assembled system (according to Annex A) to heat ageing in accordance with EOTA Technical Report TR-011 at 80 +/- 2 °C for a period defined by the categorisation according to climatic zone (see Table 3) and the categorisation according to expected working life (see Table 2). The relationship between these aspects and the period of exposure is given in Table 9.

Table 9 - Relationship between climatic zone, working life and period of exposure to heat.

Climatic zone category	Moderate (M)			Severe (S)		
Working life category	W1	W2	W3	W1	W2	W3
Exposure period (days)	25	50	100	50	100	200

Following the heat ageing period the resistance to dynamic indentation at the surface temperature according to the TL categorisation shall be performed.

The effects of heat ageing on the resistance to fatigue movement of fully bonded assembled systems shall be verified.

The resistance to fatigue movement at –10 °C (see 2.1.7) shall be performed. The number of cycles shall be 50 for all categories W1, W2 and W3.

The comparative testing of tensile properties shall be performed on new and aged samples at 23 °C in accordance with EN ISO 527-1 and -3 (non-reinforced) or -4 (reinforced) with a test peace shape 1B and a test speed of 200 mm/min.

The assembled system, after testing dynamic indentation, shall remain watertight.

The assembled system, after testing fatigue movement, shall remain watertight.

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

2.2.14 Resistance to UV radiation in present of moisture

The effects of ageing by UV in the presence of moisture shall be determined by testing the defined characteristics of the assembled system before and after subjecting it to artificial weathering according to the exposure procedure defined in EOTA Technical Report TR-010. The precise exposure conditions are determined by the categorisation to climatic zone of the kit (see Table 10); the radiant exposure is related to the categorisation to expected working life.

Table 10 - Relationship between categorisation to climatic zone and UV-exposure conditions

Categorisation to climatic zone	Exposure conditions
Category "M"	Conditions "M": UV + spraying
Category "S"	Conditions "S": UV + spraying

Note: *The exposure to UV radiation is performed by using artificial weathering apparatuses with either a Xenon-arc or a fluorescent UV lightsource.*

The exposure doses, expressed in a year's equivalent radiant exposure, related to the categorisation to working life of the kit, are given in Table 11.

Table 11 - Relationship between UV radiant exposure doses and estimated working life

UV (300-400 nm)	Category W 1	Category W 2	Category W 3
Radiant exposure (MJ/m^2)	200	400	1000

The UV ageing procedure is not required for assembled systems incorporating a permanent heavy protection layer (see 1.3.1), finished layer (see 1.3.2) or a protection layer (1.3.6) like ballast or tiles.

Following the UV ageing procedure the resistance to dynamic indentation shall be performed at a temperature of - 10º C.

The comparative testing of tensile properties shall be performed on new and aged samples at 23 °C in accordance with EN ISO 527-1 and -3 (non-reinforced) or -4 (reinforced) with a test peace shape 1B and a test speed of 200 mm/min.
The assembled system, after testing dynamic indentation, shall remain watertight.

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

2.2.15 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. The period of exposure will be determined by the categorisation of working life and of the roof slope of the kit.

The relationship between working life categorisation and period of exposure is given in Table 12.

For certain applications (i.e. roof gardens and inverted roofs) the assembled system will be expected to remain wet for a greater proportion of its life, consequently an extended period of exposure is specified.

Related to the nature of different families of products different ageing conditions, defined in the relevant Complementary Part, may apply.

Table 12 - Relationship between application, working life and exposure period

Application	Exposure period (days)		
Category	**W 1**	**W 2**	**W 3**
S1 or S2	15	30	60
P4	Not applicable *	90	180

Note: *The categorisation according to expected working life of kits for application in roof gardens, inverted roofs and green roofs (P4) shall be at least 10 years (W2)*

Following the water ageing period the resistance to static indentation at the surface temperature according to the TH-categorisation shall be performed.

In addition the possible effect of ageing by water on the adhesion to the substrate or on the cohesion, the assembled system shall be determined with the test method given in EOTA Technical Report TR-004.

The assembled system, after testing static indentation, shall remain watertight.

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

2.2.16 Resistance to plant roots

The resistance to plant roots of an assembled system of a kit in user load category P4 (inverted roofs, roof gardens and green roofs) shall be verified according to EN 13948.

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

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

In addition, with regard to reaction to fire for products covered by this EAD the applicable European legal act is: Decision 1998/599/EC.

The systems are: 1, 3 or 4

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 13.

Table 13 Control plan for the manufacturer; cornerstones

No	Subject/type of control *(product, raw/constituent material, component - indicating characteristic concerned)*	Test or control method *(refer to 2.2 or 3.4)*	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	Density	EN ISO 2811-1 / EN ISO 1675			Every 10 batches
2	Viscosity at 23°C	EN ISO 3219 / EN ISO 2555			Every 10 batches
Liquid applied roof waterproofing					
4	Shore A Hardness	Internal method			Every 10 batches
5	Density	EN ISO 2811-1 / EN ISO 1675 / Internal method			Every 10 batches
6	Viscosity at 23°C	EN ISO 3219 / EN ISO 2555			Every 10 batches
7	Curing speed	Internal method of Manufacturer			Each batch
8	Tensile strength	DIN 53504 (internal method)			Twice a year
9	Elongation at break	DIN 53504 (internal method)			Twice a year
10	Tensile strength	EN ISO 527 / EN ISO 1798 / EN ISO 29073-3 / ISO 3342			Twice a year
11	Elongation at break	EN ISO 527 / EN ISO 1798 / EN ISO 9073-3 / ISO 3342			Twice a year
12	Mass per unit	EN ISO 9073-1			Each batch

3.3 Tasks of the notified body

The cornerstones of the actions to be undertaken by the notified body of the product in the procedure of assessment and verification of constancy of performance are laid down in Table 14.

Table 14 Control plan for the notified body; cornerstones

No	Subject/type of control *(product, raw/constituent material, component - indicating characteristic concerned)*	Test or control method *(refer to 2.2 or 3.4)*	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			Once a year
2	Exposure to fire	2.2.2			Once a year
Continuous surveillance, assessment and evaluation of factory production control *(for systems 1+, 1 and 2+ only)*					
6	Reaction to fire	2.2.1			Once a year
7	Exposure to fire	2.2.2			Once a year

A notified certification body should be involved only if clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material.

4 REFERENCE DOCUMENTS

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.

EN 13501-1	Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests
EN 13501-5	Fire classification of construction products and building elements – Part 5: Classification using test data from external fire exposure to roof tests
EN 1931	Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for roof waterproofing – Determination of water vapour transmission properties.
EN 13893	Resilient, laminate and textile floor coverings – Measurement of dynamic coefficient of friction on dry surfaces
EN 527-1	Plastics - Determination of tensile properties - Part 1: General principles
EN 527-3	Plastics - Determination of tensile properties - Part 3: Test conditions for films and sheets
EN 527-4	Plastics – Determination of tensile properties – Part 4: Test conditions for isotropic and anisotropic fibre-reinforced plastic composites
EN 13948	Flexible sheets for waterproofing – Bitumen, plastic and rubber sheets for roof waterproofing – Determination of resistance to root penetration
EN ISO 2811-1	Paints and varnishes - Determination of density – Part 1: Pyknometer method
EN ISO 1675	Plastics - Liquid resins - Determination of density by the pyknometer method
EN ISO 3219	Plastics - Polymers/resins in the liquid state or as emulsions or dispersions - Determination of viscosity using a rotational viscometer with defined shear rate
EN ISO 2555	Plastics - Resins in the liquid state or as emulsions or dispersions - Determination of apparent viscosity by the Brookfield test method
DIN 53504	Testing of rubber - determination of tensile strength at break, tensile stress at yield, elongation at break and stress values in a tensile test
EN ISO 1798	Flexible cellular polymeric materials - Determination of tensile strength and elongation at break
EN 29073-3	Textiles; test method for nonwovens; part 3: determination of tensile strength and elongation
ISO 3342	Textile glass - Mats - Determination of tensile breaking force
EN 29073-1	Textiles; test method for nonwovens; part 1: determination of mass per unit area
EN 1767	Products and systems for the protection and repair of concrete structures - Test methods - Infrared analysis
EN ISO 2535	Plastics - Unsaturated polyester resins - Measurement of gel time at ambient temperature
EN ISO 3451-1	Plastics - Determination of ash - Part 1: General methods

EN ISO 11358	Plastics - Thermogravimetry (TG) of polymers - General principles
EN 933-1	Tests for geometrical properties of aggregates - Part 1: Determination of particle size distribution - Sieving method
EN 933-2	Test for geometrical properties of aggregates - Part 2: Determination of particle size distribution; test sieves, nominal size of apertures
EOTA TR – 003	Determination of the watertigthness.
EOTA TR – 004	Determination of the resistance to delamination.
EOTA TR – 005	Determination of the resistance to wind loads of partially bonded roof waterproofing membranes.
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 – 009	Determination of the resistance to sliding.
EOTA TR – 010	Exposure procedure for artificial weathering 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.
EOTA TR – 013	Determination of crack bridging capability
EOTA TR – 014	Exposure procedure for accelerated ageing by two- hour water boil.

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 (LARWKS).

2 Introduction

To perform specific tests and/or verifications (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 Technical Assessment Body.

4.2 Number and size of free samples

The number and size of free samples will be indicated by the Technical Assessment Body, dependent on the relevant method of verification.

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 (LARWK) 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.