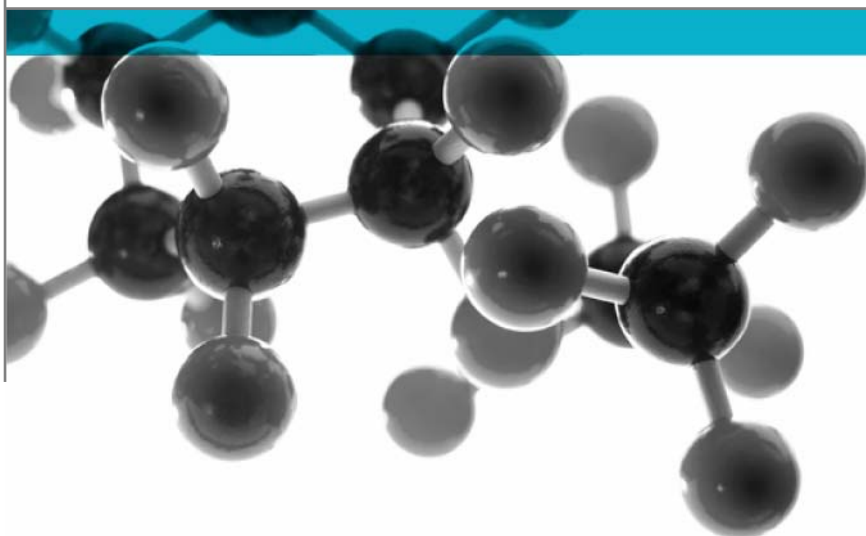


DD CEN/TS 1187: 2012 Test 4



Incorporating Amendment No.1 – Test 4 – Two stage test method incorporating burning brands, wind and supplementary radiant heat

A Report To: KVT Dichtungssysteme GmbH

Document Reference: 341096

Date: 29th May 2014

Issue No.: 1

Page 1

Executive Summary

Objective To determine the fire performance of the following product when tested in accordance with DD CEN/TS 1187 Test 4.

Generic Description	Product reference	Thickness	Weight per unit area or density
Apha Hybrid Silane terminated polyether liquid waterproofing system applied to a calcium silicate based substrate	"The system comprising 1.2 L.m2 Hydrostoeu AH-25 with an embedded 110 gsm polyester reinforcing fabric and overcoated with .8 L.m2 Hydrostoeu AH-25 applied to a substructure comprising a 12mm Promotech HD calcium silicate board (unprimed)"	14.5mm	17.4kg/m ²
Individual components used to manufacture composite:			
Final coating product	"Hydrostoeu AH – 25 Liquid Waterproofing System"	Not stated	0.8l/m ²
Polyester reinforcing fabric	"110gsm 100% Polyester Reinforcing Fabric"	0.65mm	110g/m ²
First coating product	"Hydrostoeu AH – 25 Liquid Waterproofing System"	Not stated	1.2l/m ²
Substrate	"Promatect –HD"	12mm	15.6kg/m ²
Please see page 5 of this test report for the full description of the product tested			

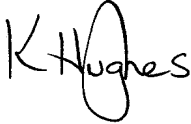
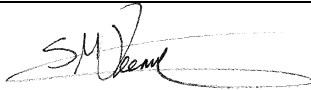
Test Sponsor KVT Dichtungssysteme GmbH, Rugenberger Strasse 2a, Ellerbek 25474, Germany

Test Results

	Specimen number	Time to fire penetration (min:sec)	Duration of flaming after withdrawal of test flame (min:sec)	Maximum flame spread distance (mm)
Stage 1	1	Did not penetrate	Nil	Zero
Stage 2	2	Did not penetrate	N/A	N/A
	3	Did not penetrate	N/A	N/A
	4	Did not penetrate	N/A	N/A

Date of Test: 28th May 2014

Signatories

	
Responsible Officer K. Hughes * Technical Officer	Authorised S Deeming* Operations Manager

* For and on behalf of **Exova Warringtonfire**.

Report Issued: 29th May 2014

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Author: S Deeming

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Test Details

Purpose of test

To determine the performance of specimens of a roof construction when they are subjected to the conditions of the test specified in DD CEN/TS 1187:2012 Incorporating Amendment No.1 - Test 4 – Two stage test method incorporating burning brands, wind and supplementary radiant heat. This report should be read in conjunction with that European Standard.

Scope of test

A two stage test method incorporating burning brands, wind and supplementary radiant heat which is designed to assess:

- a) the capacity of the roof construction to withstand fire penetration
- b) the capacity of the roof construction to produce flaming droplets or debris which fall from the underside or from the exposed surface

The test specimens are tested at an angle of 45° to the horizontal (sloping position) unless the roof construction is used at an angle of 10° or less to the horizontal, in which case the specimens are tested horizontally (flat position).

Fire test study group

Certain aspects of some fire test specifications are open to different interpretations. The Fire Test Study Group and EGOLF have identified a number of such areas and have agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Groups. Where such Resolutions are applicable to this test they have been followed.

Instruction to test

The test was conducted on the 28th May 2014 at the request of KVT Dichtungssysteme GmbH, the sponsor of the test.

Provision of test specimens

The specimens were supplied by the sponsor of the test. **Exova Warringtonfire** was not involved in any selection or sampling procedure.

Conditioning of specimens

The specimens were received on the 22nd May 2014. Prior to testing the specimens were conditioned to equilibrium in an atmosphere having a temperature of 23 ±2°C and a relative humidity of 45 to 55%.

Orientation of specimens

The specimens were tested in the flat position.

Description of Test Specimens

The description of the specimens given below has been prepared from information provided by a representative of the sponsor of the test. All values quoted are nominal, unless tolerances are given.

General description		Apha Hybrid Silane terminated polyether liquid waterproofing system applied to a calcium silicate based substrate
Product reference of composite		"The system comprising 1.2 L.m2 Hydrostoeu AH-25 with an embedded 110 gsm polyester reinforcing fabric and overcoated with .8 L.m2 Hydrostoeu AH-25 applied to a substructure comprising a 12mm Promotech HD calcium silicate board (unprimed)"
Name of manufacturer		KVT Dichtungssysteme GmbH, Promat GmbH
Thickness of composite		14.5mm (stated by sponsor) 15mm (determined by Exova Warringtonfire)
Weight per unit area of composite		17.4kg/m ² (stated by sponsor) 17.0kg/m ² (determined by Exova Warringtonfire)
Final coating product (test face)	Generic type	Silane terminated polyether
	Product reference	"Hydrostoeu AH – 25 Liquid Waterproofing System"
	Name of manufacturer	KVT Dichtungssysteme GmbH
	Colour reference	"Grey"
	Number of coats	One
	Application rate	0.8l/m ²
	Weight per unit area	1.8kg/m ²
	Application method	Brush
	Trade name of flame retardant	"Portaflame SG 50"
	Generic type of flame retardant	Aluminium hydroxide
	Amount of flame retardant	25.67%
Curing process per coat		Moisture triggered
Polyester reinforcing fabric (embedded into first coating product)	Generic type	Polyester reinforcing fabric
	Product reference	"110gsm 100% Polyester Reinforcing Fabric"
	Name of manufacturer	BCA Vertireb, GmbH
	Colour reference	"White"
	Type of weave	Non-woven, stitch-bonded and heat
	Thickness	0.65mm
	Weight per unit area	110g/m ²
	Flame retardant details	See Note 1 below

Continued on next page

First coating product	Generic type	Silane terminated polyether
	Product reference	"Hydrostopeu AH – 25 Liquid Waterproofing System"
	Name of manufacturer	KVT Dichtungssysteme GmbH
	Colour reference	"Grey"
	Number of coats	One
	Application rate	1.2l/m ²
	Weight per unit area	1.8kg/m ²
	Application method	Brush
	Trade name of flame retardant	"Portaflame SG 50"
	Generic type of flame retardant	Aluminium hydroxide
	Amount of flame retardant	25.67%
Curing process per coat	Moisture triggered	
Substrate	Generic type	Calcium silicate
	Product reference	"Promatect –HD"
	Detailed description / composition details	Homogeneous mixture of Portland cement, organic fibres and selected mineral fillers
	Name of manufacturer	Promat GmbH
	Thickness	12mm
	Weight per unit area	15.6kg/m ²
	Colour reference	"Sand"
Flame retardant details	See Note 1 below	
Brief description of manufacturing process		<p>The coating system components are manufactured by batch blending processes resulting in a single component liquid-applied silane terminated polyether, solvent-free membrane reinforced with a 110 g/m² polyester fleece to provide a seamless waterproofing layer. The substrate is a non-combustible matrix engineered mineral board reinforced with selected fibres and fillers.</p> <p>The system tested comprised of 1.2 L/m² Hydrostopeu AH-25 applied by brush as a base coat, with 110 gsm polyester reinforcing fabric embedded into this coat and then overcoated with 0.8 L/m² Hydrostopeu AH-25 applied by brush, wet – on - wet to a substructure comprising a 12mm Promotech H non – flammable calcium silicate board (unprimed)"</p>

Note 1. The sponsor of the test was unable to provide this information.

Test Results

Results of test

The test results relate only to the behaviour of the test specimens of the construction under the particular conditions of test, they are not intended to be the sole criterion for assessing the potential fire hazard of the construction in use.

The test results relate only to the specimens of the roof construction which were tested. Small differences in the composition or thickness of the construction may significantly affect the results of the test and may therefore invalidate the test results. Care should be taken to ensure that any construction which is supplied or used is fully represented by the specimens which were tested.

The results of the tests on each of the specimens are given in Table 1.

Validity

The specification and interpretation of fire test methods is the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

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Table 1

PRELIMINARY IGNITION TEST WITH BURNING BRANDS (STAGE 1)	Specimen No:
Room temperature at start of test (°C)	22
Time to fire penetration (if applicable) (min:sec)	Did not penetrate
Duration of flaming after withdrawal of the test flame (if applicable) (min:sec)	Nil
Maximum flame spread distance (if applicable) (mm)	Nil

PENETRATION TEST WITH BURNING BRANDS, WIND AND SUPPLEMENTARY RADIANT HEAT (STAGE 2)	Specimen No:		
	2	3	4
Room temperature at start of test (°C)	24	26	26
Time to fire penetration (if applicable) (min:sec)	Did not penetrate	Did not penetrate	Did not penetrate
Additional observations:			
In the case of each specimen tested, ignition was observed within the first 20 seconds of the test.			
No penetration was observed throughout the test duration.			

Table 2 Classes of External Fire Performance for Roofs/Roof Coverings In Accordance With 13501-5: 2005

Test Method	Class	Classification criteria
DD CEN/TS 1187: 2012, Test 1	B _{Roof} (t1)	All of the following conditions shall be satisfied for any one test: <ul style="list-style-type: none"> - external and internal fire spread upwards <0.700m; - external and internal fire spread downwards<0.600m; - maximum burned length external and internal<0.800m; - no burning material (droplets or debris)falling from exposed side; - no burning/glowing particles penetrating the roof construction; - no single through opening>25mm² - sum of all through openings,4500mm² - lateral fire spread does not reach the edges of the measuring zone; - no internal glowing combustion; - maximum radius of fire spread on 'horizontal' roofs, external and internal <0.200m
	F _{Roof} (t1)	No performance determined
DD CEN/TS 1187: 2012, Test 2	B _{Roof} (t2)	For both test series at 2m/s and 4m/s wind speed: <ul style="list-style-type: none"> - mean damaged length of the roof covering and substrate ≤ 0.550m; - max damaged length of the roof covering and substrate ≤ 0.800m.
	F _{Roof} (t2)	No performance determined
DD CEN/TS 1187: 2012, Test 3	B _{Roof} (t3)	T _E ≥ 30 min and T _p ≥ 30 min
	C _{Roof} (t3)	T _E ≥ 10 min and T _p ≥ 15 min
	D _{Roof} (t3)	T _p > 5 min
	F _{Roof} (t3)	No performance determined
DD CEN/TS 1187: 2012, Test 4	B _{Roof} (t4)	<ul style="list-style-type: none"> - No penetration of roof system within 1 h - In preliminary test after withdrawal of the test flame, specimens burn for <5 min - In preliminary test, flame spread <0.38m across region of burning.
	C _{Roof} (t4)	<ul style="list-style-type: none"> - No penetration of roof system within 30 min - In preliminary test after withdrawal of the test flame, specimens burn for <5 min - In preliminary test, flame spread <0.38m across region of burning.
	D _{Roof} (t4)	<ul style="list-style-type: none"> - Roof system is penetrated within 30 min but is not penetrated in the preliminary test. - In preliminary test after withdrawal of the test flame, specimens burn for <5 min - In preliminary test, flame spread <0.38m across region of burning.
	E _{Roof} (t4)	<ul style="list-style-type: none"> - Roof system is penetrated within 30 min but is not penetrated in the preliminary test. - Flame spread is not controlled

	F _{Roof} (t4)	No performance determined
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Revision History

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Revised By:	Approved By:
Reason for Revision:	

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