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Bellaterra 22nd July, 2008
File 08/32309237 Part 1 English Version
Petitioner's reference KRYPTON CHEMICAL, S.L.
Pol. Ind. Les Tàples
C/Martí Franquès, Nau nº 7
43890 L'Hospitalet de l'infant
TARRAGONA

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TEST REPORT

Date at which the sample was received: 28-05-2008

Date at which test was performed: 25-06-2008

1. - OBJECT OF THE TEST

Testing method for roofs exposed to an outer fire. Test 1: Burning torch method: UNE-ENV 1187:2003 (test 1).

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This document has 14 pages, of which 9 are annexes.

2. - PRODUCT CHARACTERISTICS

Samples were received of a waterproofing membrane with the following characteristics, in accordance with the technical specifications provided by the petitioner:

Waterproofing membrane made of single component polyurethane with the following commercial reference: Impermax

The product consists of two layers:

- Layer 1: 0.8 mm-thick polyurethane, 1.3 Kg/m³ density, brick red colour, with a smooth appearance and no orientability.
- Layer 2: 0.8 mm-thick polyurethane, 1.3 Kg/m³ density, brick red colour, with a smooth appearance.

Measurements of the roof samples: 1800 x 800 mm.

The manufacturer prepared the samples for testing under the supervision of the laboratory at the lab premises.

The application was performed by means of a roller, and a final mass thickness of 2 Kg/m² per square meter of product was obtained. A 10 mm calcium silicate sheet was used by way of support.

3. - CONDITIONING

The conditioning of the product was performed using as a reference Standard UNE-EN 13238:2002: "Fire reaction tests for construction materials. Conditioning procedure and general rules for the selection of substrates."

The samples were stored in a conditioning chamber at 23°C ± 2°C, with a relative humidity of 50% ± 5% .

4. - SOURCE OF IGNITION

The source of ignition used is defined in section 4.1.2 of the test guideline.

The wood shavings comply with the requirements of sections 4.2, Calibration, and 4.5 A, Conditioning.

The humidity content of the wood was determined. The result should range between 8% and 12% in dry weight. In this case, it was 11.1%.

5. - PENDING

In accordance with the petitioner's instructions, the test was performed with a 45° slope.

5.2.3. - RESULTS

6.1. - Zone for measuring and positioning the ignition source:

Photo n° 1 shows the location of the source of ignition, positioned as specified in figure 4 of the test guideline and the measuring zone.

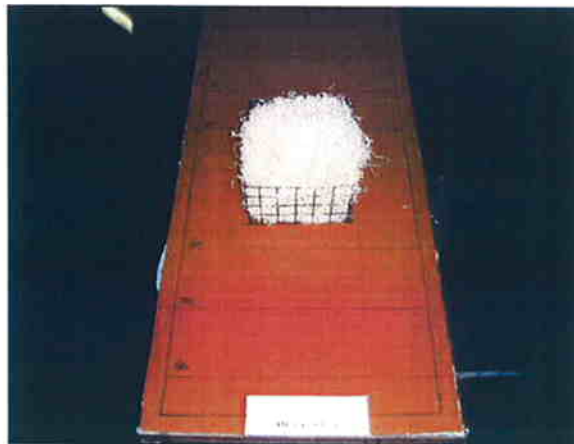


PHOTO N°1 - Test tube N° 1 prior to the test.

6.2. - Preparation of the samples

It was not necessary to protect the edges of the test tube.

During the testing process, the samples were kept away from air draughts.

6.3. - Environmental conditions

The tests were conducted in a room with an approximate volume of 530 m³, and the following environmental conditions:

Temperature: 24.1° C

Relative Humidity: 58 %

6.4. - Records

FIRE PROPAGATION, EXPRESSED IN TERMS OF THE TIME IN WHICH IT OCCURS (SECONDS)					
		TEST TUBE 1	TEST TUBE 2	TEST TUBE 3	TEST TUBE 4
Distance of propagation, upwards	100 mm	198	99	295	443
	300 mm	406	244	933	1032
	500 mm	902	-	-	1667
	700 mm	-	-	-	-
Distance of propagation, downwards	100 mm	683	-	-	496
	300 mm	-	-	-	-
	500 mm	-	-	-	-
Detachment of material, surface		-	-	-	-
Burnt length, upwards (mm.) End of test		680	320	400	620
Burnt length, downwards (mm.) End of test		100	90	40	120
Damaged area End of test		2.2·10 ⁵	1.7·10 ⁵	2.5·10 ⁵	1.9·10 ⁵
FIRE PENETRATION, EXPRESSED IN TERMS OF THE TIME IN WHICH IT OCCURS (SECONDS)					
Detachment of material, lower side		-	-	-	-
Formed openings		-	-	-	-
Penetration of fire		-	-	-	-
DAMAGE					
Propagation without flame		-	-	-	-
Extension of inner damage, upwards		-	-	-	-
Extension of inner damage, downwards		-	-	-	-
Maximum length of burnt material, upwards		680	320	400	620
Maximum length of burnt material, downwards		100	90	40	120
Damaged area (mm ²)		2.2·10 ⁵	1.7·10 ⁵	2.5·10 ⁵	1.9·10 ⁵
OTHER REMARKS					
		TEST TUBE 1	TEST TUBE 2	TEST TUBE 3	TEST TUBE 4
Carbonized inner width (mm.)		-	-	-	-
Carbonized outer width (mm.)		440	430	510	390
Flame radius (horizontal roof)		-	-	-	-
END OF TEST					
Flame extinction time		1800	849	1120	1800
End of test time		3600	3600	3600	3600

(-) Does not occur.

6.5. - Uncertainty associated to the measurement:

Uncertainty associated to the time (in sec): ± 0.3

Uncertainty associated to the distance (in mm.): ± 0.7

In accordance with point 4.10.1, the results obtained at 45° could be applied to roofs with slopes of $\geq 20^\circ$.

According to point 4.10.2.1 c), the results obtained with reinforced calcium silicate sheets, as described in section 4.4.2.2. c) may be applied to:

- Any non-combustible support with a minimum thickness of 10 mm.

The test results pertain to the behaviour of test samples of a product under the testing conditions themselves. They do not intend to be the only evaluation criterion to assess the potential fire hazard involved in the use of the product.

The Euro class to which the tested product belongs is defined in Part 2 of the Classification Report.

LGAI Technological Center, S.A.

Jordi Mirabent
Fire Controller

LGAI Technological Center S. A.

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Vanessa Tutusaus
Chief Technician

LGAI Technological Center S. A.

The results refer exclusively to the samples tested at the time and under the conditions indicated.

The uncertainties expressed in this document pertain to the expanded uncertainty, which has been obtained by multiplying the typical measurement uncertainty by the coverage factor $k=2$ which, for a regular distribution, corresponds to a coverage probability of approximately 95%. The typical measurement uncertainty is determined according to the document EAL-R2 (1996). The current designation of EAL-R2 is EA-4/02.

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In the framework of our improvement programme, we would appreciate any comments you may deem appropriate. These should be addressed to the manager who signs this document, or to the Quality Director of Applus+, at the following address: satisfaccion.cliente@appluscorp.com

In the event of litigation, the Spanish version will be valid

ANNEX

7. - PHOTOGRAPHS