

TEST REPORT

Sponsor's reference:	ACRYSTAL 29 A rue du Maréchal Leclerc 67460 SOUFFELWEYERSHEIM - FRANCE
Application reference:	Mail dated on the June 16 th , 2010
Nature of tests:	Test for surface flammability
Reference documents:	Resolution MSC.61 (67) – part 5 (1996) IMO Resolution A.653 (16) (1993) SOLAS 2000 as amended

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It includes 6 pages.**

1 DESCRIPTION OF TEST SPECIMENS

1.1 CHARACTERISTICS OF THE TEST SPECIMENS

The sponsor supplied on the June 21st, 2010 to the Laboratoire national de métrologie et d'essais specimens of the material referenced "ACRYSTAL PRIMA" and gave the following informations:

- producer : ACRYSTAL
29A rue du Maréchal Leclerc
67460 SOUFFELWEYERSHEIM - FRANCE,
- composition : composite panel composed with calcium sulfate and acrylic polymers, reinforced with two fiberglass layers (200 g/m²) spaced out from 1 to 2 mm at its center,
- flame retardant treatment : none,
- density or weight per unit area : 1700 kg/m³ ± 3 %,
- tested thickness : 6 mm ± 30 % (end-use thickness),
- colour : creamy white,
- end-use : technical or decorative elements.

1.2 CONSTITUTION OF THE TEST SPECIMENS

- constitution of specimen: material "ACRYSTAL PRIMA" has been tested without support,
- exposed face: not relevant,

2 TEST PROCEDURES

International Maritime Organization has defined specific requirements for materials used in bulkhead, ceiling and deck finish. These should be conform to flammability and spread of flame criteria, as well as heat release criteria, when they are evaluated in compliance with the Part 5 of the Annex 1 of the Resolution MSC.61 (67), corresponding to the IMO Resolution A.653 (16).

Prior to the tests, the rectangular specimens (800 mm x 155 mm), have been conditioned at a temperature of (23 ± 2) °C and a relative humidity of (50 ± 10) %.

At least three specimens have been exposed in vertical orientation to a graded radiant flux field (from 1.5 kW/m² to 50.5 kW/m²) supplied by a methane-fired radiant panel. One acetylene/air pilot flame located on the upper exposed edge of the specimen may ignite volatile gases.

Time to ignition, spread of flame, and its final extinguishment distance are measured. Critical flux at extinguishment (CFE) and Heat for sustained burning (Q_{sb}) are given by the heat flux calibration with spread distance.

Moreover, Total heat release (Q_t) and Peak heat release rate (q_p) are given by the heat release data generated during each test. The calibration of the heat release has been carried out by burning variable volumes of pure methane gas.

The test is finished when any one of the following is applicable:

- the specimen fails to ignite after a 10-minute exposure.
- 3 minutes have passed since all flaming from the specimen ceased, with a minimum test period of 10 minutes.
- flaming reaches the end of the specimen or self-extinguishes.
- the combustion with flame is not terminated after 40 minutes.

Tests have been performed on the 6th and the 22nd of July 2010.

3 TEST RESULTS

Expressed in second, time to ignition, surface spread of flame and duration of test are collected in Appendix 1. The final travels, expressed in millimeter, are indicated with possible observations during test.

The heat release data generated during test is given in Appendix 2.

The values calculated for each criterion:

- critical flux at extinguishment (CFE) expressed in kilowatt per square meter (kW/m^2),
- average heat for sustained burning (Q_{sb}) expressed in megajoule per square meter (MJ/m^2),
- total heat release (Q_t) expressed in megajoule (MJ),
- peak heat release rate (q_p) expressed in kilowatt (kW),

as well as the averages of the parameters above are as follows:

ACRYSTAL PRIMA	CFE (kW/m^2)	Q_{sb} (MJ/m^2)	Q_t (MJ)	q_p (kW)
Test 1	43.5	22.98	0.06	0.2
Test 2	48.3	*	0.00	0.0
Test 3	43.9	5.93	0.03	0.3
Mean value	45.23	14.46	< 0.05	0.2

*: unable to calculate due to insufficient flame travel (no ignition of specimens).

4 CONCLUSION

Materials giving average values for all the surface flammability criteria not exceeding those listed below can be considered to meet the requirements of the regulations II-2/3.8, II-2/34 and II-2/49 of the International Convention for the Safety Of Life At Sea (SOLAS), 2000, as amended:

<i>Bulkhead, wall and ceiling linings</i>			
<i>CFE</i> <i>(kW/m²)</i>	<i>Q_{sb}</i> <i>(MJ/m²)</i>	<i>Q_t</i> <i>(MJ)</i>	<i>q_p</i> <i>(kW)</i>
≥ 20.0	≥ 1.5	≤ 0.7	≤ 4.0

Accordingly, the material referenced "**ACRYSTAL PRIMA**" meets all the criteria given in the International Maritime Organization Resolution A.653 (16) and can therefore be considered to have low flame spread in compliance with the International Convention for the Safety of Life at Sea, 2000, as amended.

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

Trappes, the August 5th, 2010

The Operating Director
for Testing

Ronan LE BIHAN



Test Operator
Luc NOBLANC

Responsible for Test

Mélinda AYRAULT

The results specified are only applicable to the samples, products or materials submitted to LNE, such as they are defined in this document.

APPENDIX 1

TEST RESULTS

Material "ACRYSTAL PRIMA"

Time to travel (min,s) :	Specimen 1		Specimen 2		Specimen 3	
	min	s	min	s	min	s
50 mm	8	08	1	10	1	55
100 mm	8	08	1	10	1	55
150 mm	8	08	-	-	2	06
200 mm	-	-	-	-	-	-
250 mm	-	-	-	-	-	-
300 mm	-	-	-	-	-	-
350 mm	-	-	-	-	-	-
400 mm	-	-	-	-	-	-
450 mm	-	-	-	-	-	-
500 mm	-	-	-	-	-	-
550 mm	-	-	-	-	-	-
600 mm	-	-	-	-	-	-
650 mm	-	-	-	-	-	-
700 mm	-	-	-	-	-	-
750 mm	-	-	-	-	-	-
Time to ignition (min,s) :	7	10	1	10	1	55
Time to extinction (min,s) :	31	33	1	24	6	11
Duration of test (min) :	35		10		10	
Final travel (mm) :	195		125		190	

Observations during tests :

The surface of the material splinters on a distance of about 3 meters.

APPENDIX 2

Heat Release from specimen

