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NORGE

Surface flammability of bulkhead, ceiling and deck finish materials according to IMO 2010 FTP Code, part 5

(1 appendix)

Introduction

SP has by request of Fürstenberg Amfi-Top Ltd performed a fire test according to IMO 2010 FTP Code, part 5. The purpose of the test is basis for technical fire classification.

Product

According to the client:

Composite material called "Amfi-Top", consisting of 70% ATH(aluminiumtrihydrate) and 30% modified acrylic polyester. The product has a nominal area weight of 16 kg/m² and a nominal thickness of 20 mm. The product has a white colour.

The material is attached to a 1 mm aluminium sheet.

Manufacturer

Fürstenberg Amfi-Top Ltd, Riga, Latvia.

Sampling

The sample of the product was delivered by the client. It is not known to SP Fire Technology, if the sample received is representative of the mean production characteristics.

The sample was received December 5, 2013 at SP Fire Technology.

Test results

The test results are given in appendix 1.

The test results relate 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.

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Criteria

According to IMO 2010 FTP Code, Annex 1, Part 5, materials used as bulkhead, wall and ceiling linings must have surface flammability values meeting the following limits: $CFE \geq 20.0 \text{ kW/m}^2$, $Q_{sb} \geq 1.5 \text{ MJ/m}^2$, $Q_t \leq 0.7 \text{ MJ}$, $q_p \leq 4.0 \text{ kW}$ and no burning droplets are produced.

The above follows the subsequent nomenclature:

- CFE = critical flux at extinguishment;
 Q_{sb} = average heat for sustained burning;
 Q_t = total heat release;
 q_p = peak heat release rate.

According to IMO 2010 FTP Code, Annex 1, part 5, appendix 4, surface materials and primary deck coverings with both a total heat release (Q_t) of not more than 0.2 MJ and a peak heat release rate (Q_p) of not more than 1.0 kW (both values determined in accordance with part 5 of annex 1) are considered to comply with the requirements of part 2 of annex 1 (criteria for smoke and toxicity given in the same document) without further testing.

Assessment

The tested sample of the product called "Amfi-Top", meets the technical fire requirements for low flame spread of bulkhead, wall and ceilings linings, according to the criteria mentioned above.

Note

The accreditation referred to is valid for IMO 2010 FTP Code, part 5 "Spread of flame test".

SP Technical Research Institute of Sweden Fire Technology - Fire Dynamics

Performed by



Johan Post

Examined by



Per Thureson

Appendix

- 1 Test results

Appendix 1

Test results – IMO 2010 FTP Code, annex 1, part 5

Product

According to the client:

Composite material called “Amfi-Top”, consisting of 70% ATH(aluminiumtrihydrate) and 30% modified acrylic polyester. The product has a nominal area weight of 16 kg/m² and a nominal thickness of 20 mm. The product has a white colour. The material is attached to a 1 mm aluminium sheet.

Application

The aluminium side was exposed.

No other backing than the non-combustible required in the standard.

Test procedure

The pilot flame was placed parallel to the specimen.

Observations made during fire test

Test no	1		2		3	
The flame front reached, mm	Time, min:s	Heat for sustained burning, MJ/m ²	Time, min:s	Heat for sustained burning, MJ/m ²	Time, min:s	Heat for sustained burning, MJ/m ²
50	9:57	-*	NI	-	25:28	-*
Flames at flame front went out	33:20 at 70 mm		-		32:18 at 60 mm	
Burning droplets	No		No		No	

NI = No Ignition

*This value is not calculated since the flame front did not pass 25 mm from a standard position.

Appendix 1

Derived fire characteristics

Test no	1	2	3	Average	Surface flammability criteria
Heat for ignition, MJ/m ²	_*	NI	_*	=	—
Average heat for sustained burning, Q _{sb} , MJ/m ²	_**	_**	_**	=	≥ 1.5
Critical flux at extinguishment, CFE, kW/m ²	49.4	50.0	49.6	<u>49.7</u>	≥ 20.0
Total heat release, Q _t , MJ	0.5	0.1	0.5	<u>0.4</u>	≤ 0.7
Peak heat release rate, Q _p , kW	0.5	< 0.1	0.5	<u>0.4</u>	≤ 4.0

NI = No ignition.

* This value is unknown since the flame front did not reach 150 mm.

** This value is unknown since the flame front did not reach 175 mm.

Heat release rates, graphs

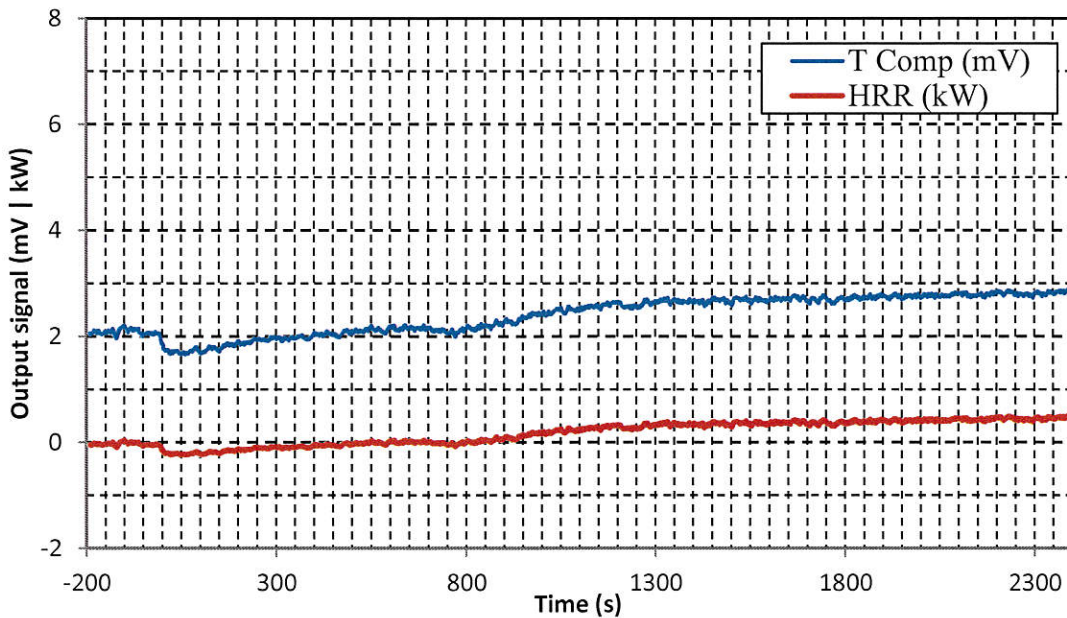


Figure 1 Heat release rate for test no 1

Total heat release: 0.5 MJ. Peak heat release: 0.5 kW.

Appendix 1

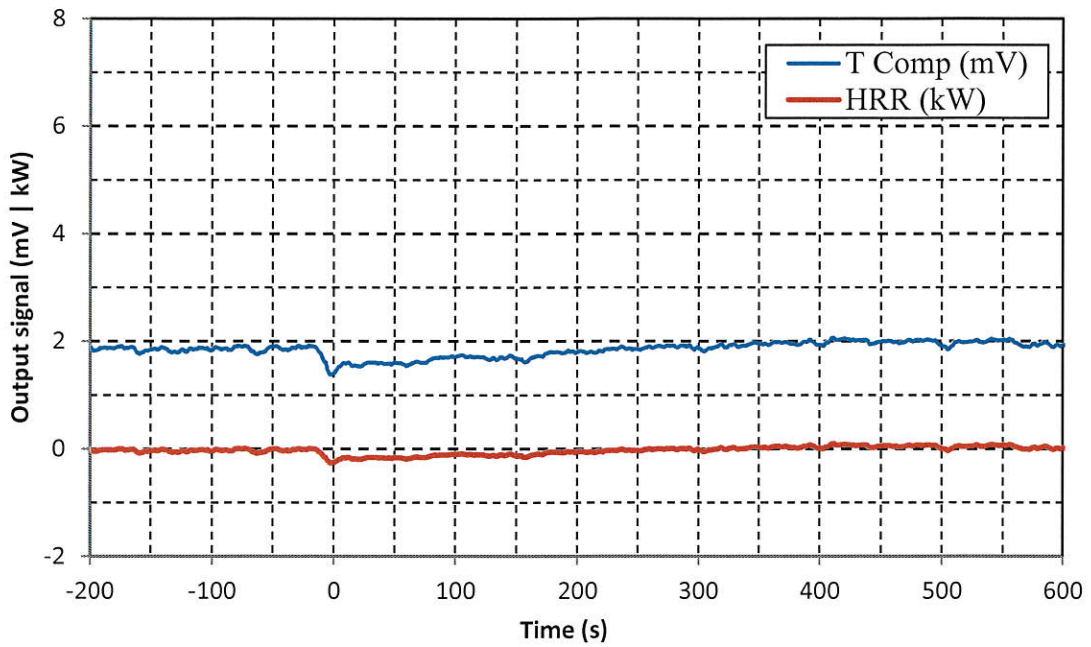


Figure 2 Heat release rate for test no 2

Total heat release: 0.1 MJ. Peak heat release: < 0.1 kW.

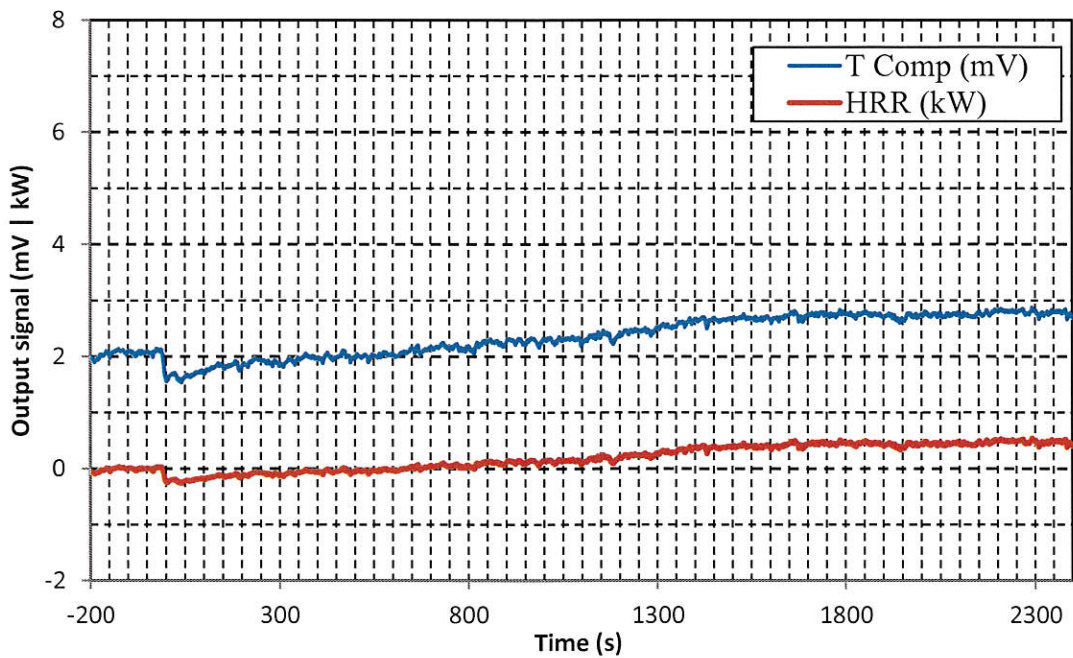


Figure 3 Heat release rate for test no 3

Total heat release: 0.5 MJ. Peak heat release: 0.5 kW.

Appendix 1

Measured data

Thickness 20.1 – 20.3 mm of the total specimen.

Area weight 35.5 – 35.6 kg/m² of the total specimen.

Conditioning

Temperature (23 ± 2) °C.

Relative humidity (50 ± 5) %.

Date of test

December 11, 2013.