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Sample Info: PRE-1653FR-DTA FLAME RETARDANT HALOGEN FREE THIXOTROPIC FILLED POLYESTER

TEST	METHOD	RESULT
Railway applications — Fire protection on railway vehicles Part 2: Requirements for fire behaviour of materials and components	EN 45545-2:2020 R1	HL 3



Seal

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Environment

The requirements and standards apply to equipment intended for use in;

X	Residential (domestic) environment
X	Commercial and light-industrial environment
X	Industrial environment
X	Medical environment

TEST RESULTS

1. Results according to ISO 5658-2:

Test after conditioning at 23 °C and 50% humidity for at least 48 hours, respectively, until weight constancy is reached:

Specimen No:	1	2	3
Distance, mm	Time to travel distance (sec.)		
50	37	35	34
100	45	47	49
150	77	72	68
200	83	88	80
250	119	135	117
300	159	142	165
350	175	182	188
400	205	194	199
450	-	-	-
500	-	-	-
550	-	-	-
600	-	-	-
650	-	-	-
700	-	-	-
750	-	-	-

Specimen No:	CFE [kW/m ²]
1	33.4
2	34.7
3	35.3
Average	34.46

2. Cone-Calimetry Test Results according to ISO 5660-1:

Conditioning		
Process	Temperature	Relative Humidity
> 48 hour	23 °C	% 50 RH

TEST RESULTS	Unit	Sample 1	Sample 2	Sample 3	Avg.
Sample Mass	g	744	745	744	744
Mass Loss Rate	g/m ² s	39.09	39.40	39.11	39.20
After Marhe Begins	KW/m ²	55.94	56.89	55.44	56.09
Heat Release Rate (180 S)	KW/m ²	-	-	-	-
Heat Release Rate (300 S)	KW/m ²	-	-	-	-
Heat Dissipation Rate	KW/m ²	97.90	95.46	97.61	96.99
Effective Heat Of Combustion	MJ/Kg	16.09	13.87	14.22	14.72
Total Heat Release	MJ/m ²	59.43	58.88	57.31	58.48
Carbon Monoxide	g/g	-	-	-	-
Carbon Dioxide	g/g	-	-	-	-
Total Smoke Production	TSP	26.7	25.8	26.1	26.2
End Of Test	s	1400	1400	1400	1400

3. Test Results according to NBS-Box ISO 5659-2:

Conditioning		
Process	Temperature	Relative Humidity
> 48 hour	23 ° C	% 50 RH

TEST RESULTS	Sample 1	Sample 2	Sample 3	Avg.
D _{S(1,5)}	-	-	-	-
D _{S(4)}	8.51	8.19	8.42	8.37
D _{S(10)}	-	-	-	-
VOF ₄ min	27.9	25.7	26.1	26.56
D _{S(max)}	29.2	28.4	27.8	28.46
T (D _{S(max)}) S	-	-	-	-
CIT _G (4 min)	0.058	0.061	0.055	0.058
CIT _G (8 min)	0.0581	0.0599	0.0590	0.0590

4. Measurement of Toxicity:

Analytical Procedure: Measurement of toxicity with FTIR at 50 kW/m²

Temperature Sample Extraction Point: <40°C

Conditioning Period (23 °C / 50% RH): > 48 hours

Test Chamber Temperature/Humidity: 23°C/35% humidity

Gases	after 4 minutes	after 8 minutes
	ppm	ppm
Carbon Dioxide	1409	8322
Carbon Monoxide	5	237
Hydrogen Fluoride	0	0
Hydrogen Chloride	0	0
Hydrogen Cyanide	3	7
Nitrogenous Gases	14	21
Sulfur Dioxide	6	15
Hydrogen Sulphite	0	9
Hydrogen Bromide	0	0

EVALUATION

The material described in Chapter 1 meets the requirements of class HL3 according to EN 45545-2:2020 for material R1 after tests.

Table 1 - Set of Material Requirements, R1

Requirement Set (used for)	Test Method Reference	Parameter Unit	Requirement Definition	HL 1	HL 2	HL 3	Result
R1 (IN1A; IN1B; IN1D; IN1E; IN4; IN5; IN6A; IN7; IN8; IN9B; IN11; IN1 2A; IN1 2B; IN1 4; EX4A; F5)	T02 ISO 5658-2	CFE KW/m ²	Minimum	20 a	20 a	20 a	34.46
	T03.01 ISO 5660-1: 50 kW/m ²	Marhe KW/m ²	Maximum	-	90	60	56.37
	T10.01 EN ISO 5659- 2: 50 kW/m ²	DS ₍₄₎ dimensionless	Maximum	600	300	150	8.37
	T10.02 EN ISO 5659- 2: 50 kW/m ²	VOF4 min	Maximum	1200	600	300	26.56
	T11.01 EN 17084 Method 1 50 kW/m ²	CIT _G dimensionless	Maximum	1.2	0.9	0.75	CIT_G(4)= 0.058 CIT_G(8)= 0.0590

If flaming droplets/particles are reported according to 5.3.7 EN 45545-2:2020, during the test ISO 5658-2, or the special case of materials which do not ignite in ISO 5658-2 and are additionally reported as unclassifiable, the following requirements shall be added:

Test to the requirements of EN ISO 11925-2 with 30s flame application.

The acceptance requirements are:

--- flame spread < 150 mm within 60s;

--- no burning droplets/particles.

SAMPLE IMAGE



***** End of Report *****