REPORT

issued by an Accredited Testing Laboratory

Contact person RISE
Anna Bergstrand
Safety
+46 10 516 58 54
anna.bergstrand@ri.se

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AB Ludvig Svensson
511 82 KINNA

Reaction to fire tests – Spread of flame – Part 2: Lateral spread on building products in vertical configuration according to ISO 5658-2

(3 appendices)

Introduction

RISE has by request of AB Ludvig Svensson performed a fire test according to ISO 5658-2. The purpose of the test is to form a basis for technical fire classification according to EN 45545-2:2013+A1:2015.

Product

According to the client: Roller blind called “Incendo”, consisting of 100 % Trevira CS. The product has a nominal thickness of 0.5 ± 0.1 mm, a nominal area weight of 170 g/m^2 and the colour is grey (8400). Detailed product description is filed at RISE. A photograph of a specimen of the tested product is shown in appendix 3.

According to the standard EN 45545-2, table 2, the product is defined as a “Listed Product” to which the following parameters apply:

Product No:	IN8
Location:	Interior
Description:	Interiors
Product name:	Curtains and sunblind in passenger and staff area, staff compartments
Requirement Set:	R1

Manufacturer

AB Ludvig Svensson.

Sampling

The sample was delivered by the client. It is not known to RISE Safety – Fire Research if the product received is representative of the mean production characteristics. The sample was received on February 2, 2018 at RISE Safety – Fire Research.

Accred. No. 1002
Testing
ISO/IEC 17025

Test procedure

The specimen is placed in a vertical position adjacent to a gas-fired radiant panel where the surface of the specimen is exposed to a well-defined gradient field of radiant heat flux. A pilot flame is applied in an impinging mode towards the specimen, propane gas is used in the pilot flame. Time to ignition, lateral spread of flame and time to flame extinguishment are measured. During the test a retainer frame of steel covers the edges and periphery of the specimen.

Test results

A summary of the test results is shown in the table below. Detailed test results are given in appendices 1 - 2. A photograph of a specimen of the tested product is shown in appendix 3.

Mean value for CFE (kW/m^2) (three tests)
47

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.

Classification criteria

According to EN 45545-2 table 5, requirement set No. R1, classification criteria regarding test results from test according to EN ISO 5658-2 are tabulated below.

In order to achieve reaction to fire classification according to EN 45545-2, the product should be tested according to several test methods listed by requirement set No. R1.

Test method, Parameter (Unit)	Requirement Definition	HL1	HL2	HL3
ISO 5658-2: CFE (kW/m^2)	Minimum	20*	20*	20*

* If flaming droplets/particles are reported according to EN 45545-2 section 5.3.7 or for the special case of materials that are reported as unclassifiable, the following requirements are added:
- criteria when tested according to EN ISO 11925-2 with the request 30 s flame application, is no flame spread > 150 mm within 60 s and no burning droplets/particles.

Note

The accreditation referred to is valid for ISO 5658-2.

RISE Research Institutes of Sweden AB
Safety - Fire Research, Fire Dynamics

Performed by

Signed by: Anna Bergstrand
Reason: I am the author of this document
Date & Time: 2018-03-21 12:41:06 +01:00

Anna Bergstrand

Examined by

Signed by: Per Thureson
Reason: I have reviewed this document
Date & Time: 2018-03-21 12:33:21 +01:00

Per Thureson

Appendices

1. Test results – ISO 5658-2:2006 – weft direction
2. Test results – ISO 5658-2:2006 – warp direction
3. Photograph of a specimen of the tested product

Laboratory approved by CERTIFER Railway Certification

Appendix 1

Test results – ISO 5658-2:2006 – Weft direction

Product

According to the client: Roller blind called “Incendo”, consisting of 100 % Trevira CS. The product has a nominal thickness of 0.5 ± 0.1 mm, a nominal area weight of 170 g/m^2 and the colour is grey (8400). Detailed product description is filed at RISE. A photographs of a specimen of the tested product is shown in appendix 3.

Application

Test specimen is, as stipulated by the standard, wrapped with aluminium foil which is cut away from the front side of the specimen. The specimen is loosely placed in front of a backing of a non-combustible board, type ”Promatect H” with a nominal density of 800 kg/m^3.

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	0:19	1.0	-	-	-	-
Ignition time, (s)	13		-		-	
Flames at flame front went out	0:21 at 75 mm		-		-	
Burning droplets	No		-		-	

Note

At 2 seconds the material starts to melt away from the pilot flame.
At 23 seconds the material self-extinguish.
At 80 seconds the material reignites but not at the centre line.
At 88 seconds the material self-extinguish.

The length of the melt damage is approx. 530 mm.

Derived fire characteristics

Test no	1	2	3	Average
Average heat for sustained burning, Q_{sb}, MJ/m^2	-*	-	-	-
Critical flux at extinguishment, CFE, kW/m^2	49.8	-	-	-

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

Appendix 1

Measured data

Thickness 0.6 mm approx.
Area weight 180 g/m^2 approx.

Conditioning

According to ISO 5658-2

Temperature (23 ± 2) °C.
Relative humidity (50 ± 5) %.

Date of test

February 28, 2018.

Appendix 2

Test results – ISO 5658-2:2006 – Warp direction

Product

According to the client: Roller blind called “Incendo”, consisting of 100 % Trevira CS. The product has a nominal thickness of 0.5 ± 0.1 mm, a nominal area weight of 170 g/m^2 and the colour is grey (8400). Detailed product description is filed at RISE. A photograph of a specimen of the tested product is shown in appendix 3.

Application

Test specimen is, as stipulated by the standard, wrapped with aluminium foil which is cut away from the front side of the specimen. The specimen is loosely placed in front of a backing of a non-combustible board, type ”Promatect H” with a nominal density of 800 kg/m^3.

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	0:18	0.9	0:17	0.9	0:15	0.8
100	0:31	1.5	0:19	0.9	0:25	1.5
150	-	-	0:33	1.6	-	-
Ignition time, (s)	12		5		6	
Flames at flame front went out	0:32 at 135 mm		0:41 at 190 mm		0:27 at 110 mm	
Burning droplets	No		Yes*		No	

* Flaming for approx. 1 second. Not qualified as flaming droplets/particles as described by section 5.3.7 in EN 45545-2.

Note

At 2 seconds the material starts to melt away from the pilot flame in all three tests.

The length of the melt damage is 520 – 530 mm for all three tests.

Derived fire characteristics

Test no	1	2	3	Average
Average heat for sustained burning, Q_{sb}, MJ/m^2	-*	1.6	-*	1.6**
Critical flux at extinguishment, CFE, kW/m^2	47.8	43.9	49.0	46.9

* This value is unknown since the flame front did not reach 150 mm.
** Average based on one test.

Appendix 2

Measured data

Thickness 0.6 mm approx.
Area weight 180 g/m^2 approx.

Conditioning

According to ISO 5658-2

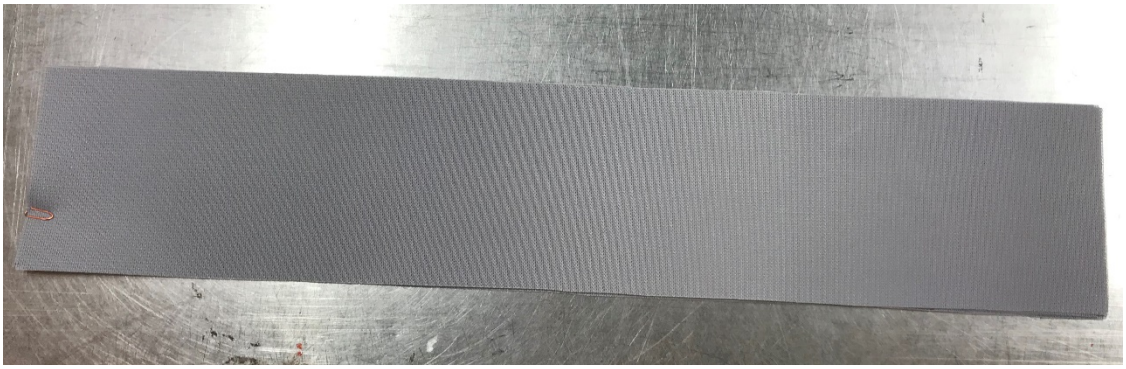
Temperature (23 ± 2) °C.
Relative humidity (50 ± 5) %.

Date of test

February 28, 2018.

Appendix 3

Photograph of a specimen of the tested product



Specimen dimensions are 155 x 795 [mm].