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Materials Science & Technology

Flamentek Limited
Rannoch House, Hall Drive, Oulton Broad
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Test Report No. 5214008729_E

Test assignment	**Determination of the Fire code (BKZ) according to Guidelines for fire regulations, building materials and components, test specifications, Part B, 1988 edition (with supplements). Flammability test in accordance with SN 198 898 (1987) and smoke determination according to VKF**
Client	Flamentek Limited, Lowestoft, Suffolk, NR32 3PU, England UK
Sampling	of client
Test object	**Tonus 4/ Tonus Meadow**
Client ref.	Mrs. Donna Barber
Order dated	23 February 2015
Test object received	26 February 2015
Test performed	03 March 2015 and 16 March 2015
Number of pages	6
Attachments	no
Archival material	The remaining test material will be archived for 1 year

This report has a validity of five years 16 March 2020.

401 - ell - controlled by:

Swiss Federal Laboratories for Materials Science and Technology
St. Gallen, 16 March 2015

Expert

El Issawi-Frischknecht Leonie

SWISS TESTING
401: STS 083

Contents

1. Test sample (decl.)

Object	**Tonus 4/ Tonus Meadow**
Material composition	90% new wool / 10% Helanca Duraflam® Flame retardant formulation by Fabric Flare Solutions Limited
Client Reference	21430 - KV0385.15 - Kvadrat A/S
Weight approx (g/m^2)	900 g/m^2 (measured 1273 g/m^2)
Thickness approx (mm)	1-2 mm
Colour	grey
Resulting material	(3 x 1.27) m (two samples)

1.1 Pictures

2. Normative references

- SNV 95150 *(Record is withdrawn 1993-01-01)*

3. Determination of the flammability in accordance with SN 198'898 (1987)

(Record is withdrawn 1999-07-01)

3.1 Test procedure

The conditioned samples at a climate according to SNV 95150 are hung in a defined burning chamber and are put into contact at the lower edge with a defined (40 ± 2) mm long Propane gas flame during 3 s and 15 s. The burner is inclined by 30° relatively to the vertical line. The damaged length and the afterglow time are assessed for samples which do not ignite; for those which extinct in the measuring length, the afterflame time is also assessed. For all other samples, the rate of flame spread between two markings is determined.

3.2 Test conditions

Acclimatization	≥ 24 h at (20 ± 2) °C / (65 ± 4) % rH.	
Marker threads	cotton 50/3 dtex	
Propane	calorific value approx 46 mJ/kg	
Air movement	0.1 till 0.2 m/s	
Test room climate Ø	22.4°C / 25.4 % rH.	
Numbers of samples	total 20 samples from 3 lfm taken (minimum fabric width 1.5 m) (10 in the longitudinal and 10 in the transverse direction)	
Size of specimen	(105 x 450) mm	
Weights	area specific mass (g/m^2)	weights (g)
	≤ 200	100
	201 - 500	250
	501 - 750	350
	> 750	450
Specimen	original state	

3.3 Deviation

without pre-treatment, specimen wash durability not tested

3.4 Requirements

The **flammability 5** is reached when **18 of the 20 samples** meet all the requirements.

Peak of flame	≤ 400 mm
Afterflame time max.	< 5 s
Afterglow time max.	≤ 300 s
Damaged length max	≤ 150 mm

3.5 Results

No.	Flamespread time. [mm/s]	Afterflame time [s]	Afterglow time [s]	Damaged length [mm]	melt and / or drop off
Lengthwise: Ignition time 3 s					
1	-	**1**	-	**1**	-
2	-	**1**	-	**1**	-
3	-	**1**	-	**1**	-
4	-	**1**	-	-	-
5	-	**0**	-	-	-
Lengthwise: Ignition time 15 s					
1	-	**1**	-	**2**	-
2	-	**1**	-	**3**	-
3	-	**1**	-	**2**	-
4	-	**1**	-	**1**	-
5	-	**1**	-	**3**	-
Crosswise: Ignition time 3 s					
1	-	**1**	-	**1**	-
2	-	**1**	-	-	-
3	-	**1**	-	**2**	-
4	-	**0**	-	-	-
5	-	**1**	-	**4**	-
Crosswise: Ignition time 15 s					
1	-	**0**	-	**4**	-
2	-	**1**	-	**1**	-
3	-	**1**	-	**1**	-
4	-	**1**	-	**1**	-
5	-	**1**	-	**1**	-

The tested article >> Tonus 4/Tonus Meadow << fulfils the requirements acc. SN 198898.

4. Determination of the Smoke Density Following VKF

4.1 Test procedure

The test procedure for determining the smoke density consists in exposing a defined test body of (30 x 30 x 4) mm at least 2 g to a defined flame in a standardized device with a defined air flow, and that till the sample has been burnt down. In the course of this test, the maximum measurable light absorption of the so generated smoke is determined by photometry. The smoke density is determined in three tests. Should the results not agree, up to six tests will be effected and the maximum and minimum values crossed off; the average of the results is indeed decisive for the classification.

4.2 Test conditions

Propane	pressure approx. 0.5 bar
Flame height	150 mm
Air influx	6.0 till 6.5 l/s
Sample holder	bowl / grating
Number of specimens	total 3 (perhaps 6)
Specimen size	length 30 mm
	wide 30 mm
	thickness (4 mm ± 10% tolerance) or 2 g
Specimen	original state

4.3 Deviation

3 piece (instead of thickness (4 mm ± 10 % tolerance))
Without pre-treatment, specimen wash durability not tested

4.4 Requirements

The smoke density is determined in three tests. Should the results not agree, up to six tests will be effected and the maximum and minimum values crossed off; the average of the results is indeed decisive for the classification.

4.5 Classification

Criterion for the classification is the light absorption

Classification		**demand**	
smoke generation 1	(strong smoke generation)	Maximum light Absorption	> 90%
smoke generation 2	(medium smoke generation)	Maximum light Absorption	> 50 - 90%
smoke generation 3	(slight smoke generation)	Maximum light Absorption	0 - 50%

4.6 Results Maximale light absorption

1 % (individual values 2 / 1 / 1) %
(Average value of 3 samples, Sample holder grating)

1 % ≙ *smoke generation 3 (slight smoke generation)*

5. Classification Following the Directive for Fire Police Prescriptions, Building Materials and Building Elements, Part B (Test Conditions), Edition 1988[1]

Fire Protection Classification : 5.3

(Class 5.3 stands for „low combustible / slight smoke generation")[2]

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[1] Association of Swiss Canton Fire Insurance Companies (VKF) / Bundesgasse 20 / CH-3001 Bern / Phone: +41 (0)31 320 22 22
[2] specimen in original state / without pre-treatment tested