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Ignitability of upholstered furniture according to EN 1021-1 and EN 1021-2

(1 appendix)

Introduction

SP has by request of Lammhults Möbel AB performed a fire test according to EN 1021-1 and EN 1021-2. The purpose of the test is to form a basis for technical fire classification.

Products

According to the client:

Upholstered furniture called "Area Radius" and "Area".

Both articles have the same material composition and only differs in design.

Component	Material content	Manufacturer	Nominal data
Cover fabric "GAJA classic"	100 % pure new wool	Gabriel	530 g/lm (379 g/m ²)
Moulded foam slab (back)	100 % PUR	-*	260 Newton
Moulded foam slab (seat)	100 % PUR	-*	310 Newton

* Filed at SP.

Sampling

The sample (Area Radius) was delivered by the client. It is not known to SP Fire Research if the product received is representative of the mean production characteristics.

The sample was received on March 10, 2016 at SP Fire Research.

Test results

The upholstery combination was tested with cigarette (EN 1021-1) and match flame equivalent (EN 1021-2) as ignition sources.

The ignition sources were applied in a position along the junction between seat and back. Special care was taken to note any progressive smouldering and/or flaming combustion in the combination.

No progressive smouldering or flaming occurred within the 60 minute test time (non-ignition). The test results are given in appendix 1.

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The test results relate only to the ignitability of the combination of upholstery composites under the particular conditions of the test; they are not intended as a means of assessing the potential fire hazard of the materials or products in use.

Criteria

Section 3 in EN 1021-1, 2014 and EN 1021-2, 2014 describing "Criteria of ignition" with regards to "Progressive smouldering ignition" (3.1) and "Flaming ignition" (3.2).

Assessment

The tested armchair called "Area Radius", as well as "Area" meet the technical fire requirements according to EN 1021-1 and EN 1021-2.

Deviation from standard

The end-use armchair was tested instead of using the test rig described by the standard. This means that the two different foams in seat and back has not been tested separately according to standard procedure.

SP Technical Research Institute of Sweden Fire Research - Fire Dynamics

Performed by

Examined by

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Appendix

1. Test results

Appendix 1

Test results - EN 1021-1, 2014 and EN 1021-2, 2014

Product

According to the client:

Upholstered furniture called “Area Radius” consisting of the following:

Component	Material content	Manufacturer	Nominal data
Cover fabric “GAJA classic”	100 % pure new wool	Gabriel	530 g/lm (379 g/m ²)
Moulded foam slab (back)	100 % PUR	-*	260 Newton
Moulded foam slab (seat)	100 % PUR	-*	310 Newton

* Filed at SP.

Observations, EN 1021-1, ignition source cigarette

Table 1. Observations during the cigarette tests.

Test no	1	2
The cigarette was applied in a position along the junction between seat and back, min:s	00:00	00:00
Cover ignited, min:s	-*	-*
Filling ignited, min:s	-*	-*
The cigarette died out, min:s	18:59	19:59
The test was finished, min:s	60:00	60:00

* Ignition/Flaming ignition of the materials was not observed.

Table 2. Test criteria and assessment, cigarette test.

	Test no	
	1	2
<i>Smouldering criteria</i>	Yes/No	
Unsafe escalating combustion (3.1 a)	No	No
Test assembly consumed (3.1 b)	No	No
Smoulders to extremities (3.1 c)	No	No
Smoulders through thickness (3.1 c)	No	No
Smoulders more than 1 h (3.1 d)	No	No
In final examination, presence of progressive smouldering (3.1 e)	No	No
<i>Flaming criteria</i>		
Occurrence of flames (3.2)	No	No

Appendix 1

Observations, EN 1021-2, ignition source small flame

Table 3. Observations during the match flame tests.

Test no	1	2	3
The ignition source was applied in a position along the junction between seat and back, min:s	00:00	00:00	00:00
Cover ignited, min:s	-*	-*	-*
Filling ignited, min:s	-*	-*	-*
The ignition source was removed, min:s	00:15	00:15	00:15
The test was finished, min:s	60:00	60:00	60:00

* Ignition/Flaming ignition of the materials was not observed.

Table 4. Test criteria and assessment, match flame test.

	Match flame equivalent		
	1	2	3
<i>"Smouldering criteria"</i>	Yes/No		
Unsafe escalating combustion (3.1 a)	No	No	No
Test assembly consumed (3.1 b)	No	No	No
Smoulders to extremities (3.1 c)	No	No	No
Smoulders through thickness (3.1 c)	No	No	No
Smoulders more than 1 h (3.1 d)	No	No	No
In the final examination, presence of active smouldering (3.1 e)	No	No	No
<i>"Flaming criteria"</i>			
Unsafe escalating combustion (3.2 a)	No	No	No
Test assembly consumed (3.2 b)	No	No	No
Flames to extremities (3.2 c)	No	No	No
Flames through thickness (3.1 c)	No	No	No
Flames longer than 120 s (3.2 d)	No	No	No

Appendix 1

Measured data of tested product

Fabric

Thickness 0.9 – 1.1 mm.
Area weight 370 – 400 g/m².

Moulded foam slab seat

Thickness 68 – 74 mm.
Density 60 kg/m³ approx.

Moulded foam slab back

Thickness 19 – 20 mm.
Density 100 kg/m³ approx.

Pre treatment

According to the client, the cover material has not been chemically treated to reduce ignitability. The cover material has therefore not been subjected to the water soaking and drying procedure described in Annex D before testing.

Conditioning

The tested product was conditioned for a minimum of 24 h at a temperature of (23 ± 2) °C and a relative humidity of (50 ± 5) %.

Date of test

March 29, 2016.