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

(2 appendices)

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.

Product

Partly upholstered chair called "Grade". According to the client the product consists of:

Component	Material content	Manufacturer	Nominal data
Cover fabric, Divina 3	100% New Wool	Kvadrat	560 g/m ²
Foam	Cellgummi	NMC Cellfoam	-*

* Unknown to SP

Sampling

The sample 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 May 21, 2014 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 was 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. A photo of the tested product is shown in appendix 2.

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.

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Criteria

Section 3 in EN 1021-1, 2006 and EN 1021-2, 2006 describing "Criteria of ignition" with regards to "Progressive smouldering ignition" (3.1) and "Flaming ignition" (3.2).

Assessment

The tested chair called "Grade" meets the technical fire requirements according to EN 1021-1 and EN 1021-2.

Deviation from standard

The product was tested in its end-use form. The ignition sources were placed in the junction between the upholstered seat and moulded plastic back.

SP Technical Research Institute of Sweden Fire Research - Fire Dynamics

Performed by



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Examined by



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Appendices

1. Test results
2. Photo of the tested product

Appendix 1

Test results - EN 1021-1, 2006 and EN 1021-2, 2006
Product

Partly upholstered chair called "Grade". According to the client the product consists of:

Component	Material content	Manufacturer	Nominal data
Cover fabric, Divina 3	100% New Wool	Kvadrat	560 g/m ²
Foam	Cellgummi	NMC Cellfoam	-*

* Unknown to 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	26:03	25:10
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 active 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

Measured data of tested product

It was not possible to perform any measurements on the fabric or filling of the product due to lack of material.

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.

Appendix 1

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

June 2 and 3, 2014.

Appendix 2

Photo of the tested product

