EUROLAB®
Laboratory Services

TEST / INSPECTION REPORT

EUROLAB LABORATORY SERVICES

TÜRCERT TEKNİK KONTROL VE BELGELENDİRME A.Ş.

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Sample ID: **RIO FR**

	TEST	METHOD	Specimen	RESULT
	CAL 117 STANDARD FOR UPHOLSTERED SEATING	**CAL 117**	**RIO FR**	**PASS**

EUROLAB LABORATORY SERVICES APPROVED

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

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CAL 117 (California Bureau of Home Furnishings and Thermal Insulation Technical Bulletin 117)

Scope

The intent of this standard is to produce upholstered furniture which is safer from the hazards associated with smoldering ignition. This standard provides methods for smolder resistance of cover fabrics, barrier materials and resilient filling materials for use in upholstered furniture.

These test methods are designed for the assessment of the resistance of upholstered furniture component assemblies to combustion after exposure to smoldering cigarettes under specified conditions.

Summary Of Method

These test methods consist of three tests used to evaluate the cigarette ignition resistance of upholstery cover fabrics, barrier (interliner) materials and resilient filling materials used in the manufacture of upholstered furniture. Each test involves a miniature assembly consisting of the component to be tested along with other specified materials, mounted on a plywood mock-up that resembles a small chair seat and back. The assembly is exposed to a lighted cigarette as an ignition source.

Test Conditioning			
Temperature	21± 3 °C	**Relative Humidity**	55%
*Condition test specimens and cigarettes prior to the test for a minimum of 24 hours at 21° ± 3 °C (70° ± 5 °F) and less than 55% relative humidity. If conditions in the test area are not the same as in the conditioning area, tests should begin within 10 minutes of removal of samples from conditioning area.			

SECTION 1: COVER FABRIC TEST

Scope

For cover fabrics that pass this section, the first layer of filling materials located below the cover fabric shall also meet the test requirements of section 3 of this test method.

Procedure

-Place each assembled vertical and horizontal panel in a mini-mock-up tester

-Light three cigarettes and place a lighted cigarette on each of the three test assemblies so that the cigarette lies in the crevice and against the vertical panel with equal distance of cigarette ends from either side of the assembly.

-Place a piece of sheeting material over each cigarette, smoothing it over the cigarette to ensure intimate contact. Pin the sheeting to the vertical panel about 2.5 in. (63 mm) above the crevice.

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-Allow the cigarettes to burn their full lengths unless an obvious ignition of the polyurethane substrate occurs. If a cigarette extinguishes before burning its entire length, place a fresh cigarette on a new test assembly and cover with sheeting fabric until either (1) three cigarettes have burned their entire length on three individual test specimens, or (2) three cigarettes have self-extinguished on the specimen.

- If continuing ignition occurs (that is, fabric and filling materials are ignited and are smoldering and generating smoke at a rapid rate), there is no need to wait until a cigarette has burned its full length. Stop the test and extinguish the burning material. Ventilate the test room and record an ignition for the cigarette test location.

- If no obvious ignition occurs, record the vertical char on the vertical panel, to the nearest 0.1 in. (2.5 mm), measured from the original crevice position to the highest part of the destroyed or degraded fabric. Determine the original crevice position by laying a straightedge or ruler between the two marks previously marked on the edges of the vertical panel. The highest point of destroyed or degraded fabric is defined as the highest point at which any of the fabric is charred from front to back.

-Classify those fabrics that do not develop obvious ignition and exhibit a vertical char of less than 1.8 in. (45 mm) as Class I. Classify fabrics developing obvious ignition or vertical char of 1.8 in. or more as Class II.

Accepted Criteria

1. A single mock-up test specimen fails to meet the requirements of this test procedure if any of the following criteria occurs:

a) The mock-up test specimen continues to smolder after the 45 minute test duration;

b) A char develops more than 1.8 inches (45 mm) in any direction from the cigarette on the cover fabric measured from its nearest point.

c) The mock-up test specimen transitions to open flaming.

2. The cover fabric passes the test if three initial mock-up specimens pass the test, i.e., the cigarettes burn their full length and the mock-ups are no longer smoldering.

3. If more than one initial specimen fails, the cover fabric fails the test.

4. If any one of the three initial specimens fails, repeat the test on additional three specimens.

5. If all three additional specimens pass the test, the cover fabric passes the test. If any one of the additional three specimens fails, the cover fabric fails the test.

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Test Results

Specimen	Smouldering after 45 minutes	Vertical char length in inches	Cigarette burned entire length	Occurrence of flames	Result
#1	No	1,57 (40 mm)	Yes	No	PASS
#2	No	1,45 (38 mm)	Yes	No	PASS

SECTION 2: BARRIER MATERIALS TEST

Scope

This test method measures the tendency of the barrier material to smolder after exposure to smoldering cigarettes under specified conditions.

Upholstery cover fabrics that fail the cover fabric test described in Section 1 can be used in upholstered furniture if a barrier (interliner) material that passes this test method is used. When a barrier is required, the barrier material must cover all sides and top of the seating cushion(s).

If a test fabric fails, it must be used in a furniture structure that requires a flame-resistant barrier material inside between the outer fabric and the padding. Barrier material should be tested. The barrier material must cover all edges and tops of the padding (there are exceptions for non-detachable or irreversible cushions). Barrier materials testing is performed in much the same way as cover fabric testing. A composite assembly of standard Type 2 fabric, barrier material and standard flexible polyurethane foam is subjected to smoldering tests for smoking.

Procedure

- Mark the position of the crevice on the side of the vertical polyurethane substrate.

- Light three cigarettes and place a lighted cigarette on each of the test assemblies so that the cigarette lies in the crevice and against the vertical panel with equal distance of cigarette ends from either side of the assembly.

- Place a piece of sheeting material over each cigarette, smoothing it over the cigarette to ensure intimate contact. Pin the sheeting to the vertical panel about 2.5 in. (63 mm) above the crevice .

-Allow the cigarettes to burn their full lengths unless an obvious ignition of the substrate occurs. If a cigarette extinguishes before burning its entire length, place a fresh cigarette on a fresh area of the test assembly and cover with sheeting fabric until either (1) three cigarettes have burned their entire length on three individual test specimens or (2) three cigarettes have self-extinguished on the sample.

- If continuing ignition occurs (that is, fabric and filling materials are ignited and are smoldering and generating smoke at a rapid rate), there is no need to wait until a cigarette has burned its full length. Stop the test and extinguish the burning material. Ventilate the test room and record an ignition for the cigarette test location.

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- If no obvious ignition occurs, record the vertical char on the vertical panel to the nearest 0.1 in. (2.5 mm), measured from the original crevice position to the highest part of the destroyed or degraded cover fabric. Determine the original crevice position by laying a straightedge or ruler between the two marks previously marked on the edges of the vertical panel. The highest point of destroyed or degraded fabric is defined as the highest point at which any of the fabric is charred from front to back.

- Classify barrier materials that do not develop obvious ignition and exhibit a char length of less than 2.0 in. (51 mm) as Class A. Classify materials that develop obvious ignition or exhibit a char length of greater than 2.0 in. (51 mm) as Class B.

Accecpted Criteria

1. A single mock-up test specimen fails to meet the requirements of this test procedure if any of the following criteria occurs:

a) The mock-up test specimen continues to smolder after the 45 minute test duration;

b) A char develops more than two inches (50 mm) in any direction from the cigarette on the Standard Type II cover fabric measured from its nearest point.

c) The mock-up test specimen transitions to open flaming.

2. A barrier material passes the test if three initial mock-up specimens pass the test, i.e., the cigarettes burn their full length and the mock-ups are no longer smoldering.

3. If more than one initial specimen fails, the barrier material fails the test.

4. If any one of the three initial specimens fails, repeat the test on additional three specimens. If all three additional specimens pass the test, the barrier material passes the test. If any one of the additional three specimens fails, the barrier material sample fails the test.

Test Results

Specimen	Smouldering after 45 minutes	Vertical char length in inches	Cigarette burned entire length	Occurrence of flames	Result
#1	No	1,57 (40 mm)	Yes	No	PASS
#2	No	1,45 (38 mm)	Yes	No	PASS

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SECTION 3. RESILIENT FILLING MATERIAL TEST

Scope

This test method measures the tendency of resilient filling materials to smolder and contribute to fire propagation, when covered with smolder resistant fabric and subjected to a smoldering ignition source. The materials covered by this test method include, but not limited to:

1. Resilient foams or other filling materials,
2. Batting of natural and man-made fibers
3. Resilient pads of natural or man-made fibers.

Resilient filling materials that fail the test described in this section can be used in upholstered furniture if a barrier (interliner) material that passes Section 2 of this test method is used between the cover fabric and the filling materials.

Procedure

- Light three cigarettes and place a lighted cigarette on each of the three test assemblies so that the cigarette lies in the crevice and against the vertical panel with equal distance of cigarette ends from either side of the assembly.

- Place a piece of sheeting material over each cigarette, smoothing it over the cigarette to ensure intimate contact. Pin the sheeting to the vertical panel about 2.5 in. (63 mm) above the crevice.

- Allow the cigarettes to burn their full lengths unless an obvious ignition of the substrate occurs. If a cigarette extinguishes before burning its entire length, place a fresh cigarette on a new test assembly and cover with sheeting fabric until either (1) three cigarettes have burned their entire length on three individual test specimens, or (2) three cigarettes have self-extinguished on the sample.

- If continuing ignition occurs (that is, fabric and filling materials are ignited and are smoldering and generating smoke at a rapid rate), there is no need to wait until a cigarette has burned its full length. Stop the test and extinguish the burning material. Ventilate the test room and record an ignition for the cigarette test location.

- If no obvious ignition occurs, record the vertical char on the vertical panel measured from the original crevice position to the highest part of the destroyed or degraded fabric. Determine the original crevice by laying a straightedge or ruler between the two marks previously marked on the edges of the cover fabric.

- Classify fillings/paddings that do not develop obvious ignition and exhibit a vertical char length of less than 1.5 in. (38 mm) as Class A. Classify fillings/ paddings that develop obvious ignition or exhibit a vertical char length of greater than 1.5 in. (38 mm) as Class B.

Accepted Criteria

1. A single mock-up test specimen fails the requirements of this test procedure if any of the following criteria occurs:

a) The mock-up specimen continues to smolder and the test must be terminated due to intensifying smoldering.

b) The mock-up specimen transitions to open flaming;

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c) The resilient filling material substrate (i.e., sum of both horizontal and vertical pieces) of the mock-up test specimen has more than 20% mass loss.
- Calculate the percentage of mass loss for each test specimen substrate piece from each mock-up as: Percentage mass loss = ((pre-weight (A) – post-weight (B))/pre-weight (A)) x 100%.

2. The resilient filling material passes the test if three mock-up specimens pass the test.

3. If more than one specimen fails, the resilient filling material fails the test.

4. If any one of the three initial specimens fails, repeat the test on additional three specimens. If all three additional specimens pass the test, the resilient filling material passes the test. If any one of the additional three specimens fails, the resilient filling material fails the test.

Test Results

Specimen	Smouldering after 45 minutes	Pre-Weight (g)	Post-weight (g)	Cigarette burned entire length	Occurrence of flames	Loss Of Mass (%)	Result
#1	-	-	-	-	-	-	-
#2	-	-	-	-	-	-	-

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IMAGE

END OF TEST REPORT

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