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**SINTEF Civil and
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Norwegian Fire Research Laboratory

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Enterprise No.:
NO 948 007 029 MVA

Your ref.:	Our ref.:	Direct line:	Trondheim,
Letter of 1998-04-24, Steinar Dale	bk/98.170 II	+ 47 73 59 10 78	1998-05-26

TEST REPORT

<i>Task no.:</i>	22N010.50/98.170 II
<i>Test method/Standard:</i>	California Technical Bulletin 117, Section A – Part I
<i>Intention of test:</i>	Documentation for approval
<i>Test performed at:</i>	SINTEF Civil and Environmental Engineering, Norwegian Fire Research Laboratory Tiller bru, Tiller N-7034 Trondheim NORWAY
<i>Total number of pages: (Appendices included)</i>	4
<i>Client:</i>	Westnofa Industrier as
<i>Name of product:</i>	Welun
<i>Type of product:</i>	Filling Materials Used in Upholstered Furniture
<i>Product description:</i>	20 specimens of polyurethane foam with dimensions 12 x 3 inches (304,8 x 76,2 mm), thickness approximately 0,5 inches (12,7 mm). Density approximately 38,6 kg/m ³ . Colour light grey.
<i>Manufacturer:</i>	Westnofa Industrier as

The results presented in this test report may only be quoted in full.
Excepts may be quoted only with the written permission of SINTEF Civil and Environmental Engineering - Norwegian Fire Research Laboratory.

The test results referred to in this report relate only to the items tested.

Test reports from SINTEF Civil and Environmental Engineering - Norwegian Fire Research Laboratory form the basis of fire technical classifications, certifications and approvals.

Place of production: Åndalsnes, Norway

Samples received: 1998-04-29

Sampling: The test material was chosen by the client

Number of single tests: 5 tests before ageing and 5 tests after ageing.

Conditioning of the specimen: The specimens were stored in air with a relative humidity of 50 % and at a temperature of 23 °C for a minimum of 24 hours. 5 of the specimens were aged in an oven at 220°F (104°C) for 24 hours before testing.

Date of testing: 1998-05-19

Duration of the test: 12 seconds flame exposure

Operator: Erling Stenhaug, engineer

Test results: See Table 1, Appendix I

Remarks/deviations: The product **Welun** meets the requirements for Resilient Cellular Materials Used in Upholstered Furniture of Bureau of Home Furnishings Technical Bulletin No. 117, Section A – Part I.

Appendices: Appendix I Test results
Appendix II Description of test method and classification criteria

SINTEF Civil and Environmental Engineering - Norwegian Fire Research Laboratory



Anne Steen Hansen
Discipline Manager
Materials Reaction to Fire



Bjarne Kristoffersen
Engineer

DESCRIPTION OF TEST METHOD AND CLASSIFICATION CRITERIA

Test Procedure

A conditioned test specimen with dimensions 12 x 3 inches (304,8 x 76,2 mm), thickness approximately 0,5 inches (12,7 mm) is mounted vertically in a small test enclosure. A stainless steel specimen holder according to California Technical Bulletin 117, Section A – Part I, is used during the testing.

The specimen in its holder is suspended vertically in the cabinet in such a manner that the lower end is 0,75 inches (19,1 mm) above the top of the burner. The burner flame is applied vertically at the middle of the lower edge of the specimen for 12 seconds. The flame is then extinguished, and the fire behaviour of the specimen is observed. After the flame in the specimen has extinguished, the damage is assessed.

Resilient cellular materials shall meet the requirements both before and after ageing for 24 hours in an oven at 220°F (104°C). A minimum of 10 test specimens shall be tested: 5 specimens before ageing and 5 specimens after ageing.

Requirements

According to the regulations from Bureau of Home Furnishings Technical Bulletin No. 117, Section A – Part I, Resilient Filling Materials Used in Upholstered Furniture shall fulfil the following criteria:

1. The average char length of all specimens shall not exceed 6 inches (152,4 mm).
2. The maximum char length of any individual specimen shall not exceed 8 inches (203,2 mm).
3. The average afterflame, including afterflame of molten material or other fragments dropping from specimens, shall not exceed 5 seconds.
4. The maximum afterflame of any individual specimen, including afterflame of molten material or other fragments dropping from the specimen, shall not exceed 10 seconds.
5. The average afterglow, including afterglow of molten material or other fragments dropping from specimens, shall not exceed 15 seconds.
6. Resilient cellular materials shall meet the above requirements both before and after ageing for 24 hours in an oven at 220°F (104°C).
7. A minimum of 10 test specimens shall be tested; 5 specimens before ageing and 5 specimens after ageing.

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Our ref.:

bk/98.170 I2

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Trondheim,

1998-06-04

TEST REPORT

Task no.: 22N010.50/98.170 I2

Test method/Standard: California Technical Bulletin 117,
Section D – Part II

Intention of test: Documentation for approval

Test performed at: **SINTEF Civil and Environmental Engineering,**
Norwegian Fire Research Laboratory
Tiller bru, Tiller
N-7034 Trondheim
NORWAY

Total number of pages: 4
(Appendices included)

Client: Westnofa Industrier as

Name of product: **Welun**

Type of product: Resilient Filling Materials Used in Upholstered Furniture

Product description: A total of 16 specimens of polyurethane foam, 8 with dimensions 7,25 x 8 x 2 inches (184,2 x 203,2 x 5,1 mm) for vertical panels and 8 with dimensions 8 x 4 x 2 inches (203,2 x 101,6 x 5,1 mm) for horizontal panels. Density approximately 38,6 kg/m³. Colour light grey.

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Manufacturer: Westnofa Industrier as

Place of production: Åndalsnes, Norway

Samples received: 1998-04-29

Sampling: The test material was chosen by the client

Number of single tests: 3

Conditioning of the specimen: The specimens were stored in air with a relative humidity of 50 % and at a temperature of 23°C for a minimum of 24 hours.

Date of testing: 1998-05-11

Duration of the test: 5 minutes after all evidence of combustion has ceased.

Operator: Erling Stenhaug, engineer

Test results: See Table 1, Appendix I

Remarks/deviations: The tests were performed in a room essentially free of air currents. A test enclosure, as described in Section 1.2 in the test description, was not used.

The product **Welun** meets the requirements for Resilient Cellular Materials Used in Upholstered Furniture of Bureau of Home Furnishings Technical Bulletin No. 117, Section D – Part II.

Appendices: Appendix I Test results
Appendix II Description of test method and classification criteria

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DESCRIPTION OF TEST METHOD AND CLASSIFICATION CRITERIA

Test Procedure

A weighed conditioned test specimen with dimensions 7,25 x 8 x 2 inches (184,2 x 203,2 x 5,1 mm) for vertical panels and dimensions 8 x 4 x 2 inches (203,2 x 101,6 x 5,1 mm) for horizontal panels is mounted in a test stand constructed as shown in California Technical Bulletin 117, Section D – Part II, Figure 1.

The foam test panels, standard fabric, cigarette and cover fabric are assembled as shown in California Technical Bulletin 117, Section D – Part II, Figure 2. The cigarette is placed at the crevice created by the abutment of the vertical and horizontal panels, such that the cigarette contacts both horizontal and vertical panels. The position of the cigarette is equidistant from the edges of the test panels.

After lighting the cigarette, a finger is run along the length of the covered cigarette to ensure good cover fabric-to-cigarette contact. The test is continued until all evidence of combustion has ceased for at least 5 minutes. Then, the cover fabric and remains of standard test fabric is removed. The foam test panels are removed after all carbonaceous char is removed from their surface.

The post test weight of the panels are measured, and the percent non-smoldered foam is calculated using the formula:

$$\text{Post test weight} \times 100\% / \text{Pre-test weight}$$

Requirements

According to the regulations from Bureau of Home Furnishings Technical Bulletin No. 117, Section D – Part II, Resilient Filling Materials Used in Upholstered Furniture shall fulfil the following criteria:

1. All 3 test specimens shall have a non-smoldered residue greater than 80%