Determination of the ignitability class according to UL 94 Vertical Burning Test

LTC-silicone profile

Requested by: FP FinnProfiles Oy

VTT TECHNICAL RESEARCH CENTRE OF FINLAND

Requested by	FP FinnProfiles Oy Lieksentie 10 FI-91100 Ii, Finland
Order	Email 4 July 2008 / Kristiina Inkeröinen
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Assignment **Determination of the ignitability class of a product**

Product

The customer gave following information about the product:

Product name: **LTC-silicone profile**
Manufacturer: FP FinnProfiles Oy, Finland
Product description: grey silicone profile, thickness 10 mm

Sample

Date of delivery: 12 November 2008
Type of sample: test specimens of the product
Size: about 125 mm x 13 mm x 10 mm

The sample was chosen and the test specimens were made by the customer.

Date of test 24 November 2008

Test method

UL 94 (June 8, 2000) *Tests for Flammability of Plastic Materials for Parts in Devices and Appliances* paragraph 8: *20 mm Vertical Burning Test; 94V-0, 94V-1, or 94V-2.*

The description of the test method is presented in Appendix 1.

Results The test results are shown in Appendix 2.

Note The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

The test results relate only to the sample tested.

Summary The tested product **LTC-silicone profile,** thickness about 10 mm, meets the requirements on class 94V-0 presented in the standard UL 94.

Espoo, 26 November 2008

Tiina Ala-Outinen
Service Manager

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APPENDICES
Appendix 1, method description
Appendix 2, test results

DISTRIPUTION
Customer — Original (2)
VTT / Register Office — Original

The test results relate only to the sample tested.

DESCRIPTION OF METHOD AND SPECIFICATIONS

UL 94 *Tests for Flammability of Plastic Materials for Parts in Devices and Appliances* paragraph 8: *20 mm Vertical Burning Test for V-0, V-1, or V-2 classification.* (June 8, 2000)

The specimens

Specimens are to be 125 ± 5 mm long by 13.0 ± 0.5 mm wide, and provided in the minimum and maximum thicknesses. The maximum thickness is not exceed 13 mm. Specimens in intermediate thicknesses are also to be tested if the results obtained on the minimum or maximum thickness indicate a need. It a material is to be considered in a range of colours, densities, melt flows or reinforcement, specimens representing these ranges are also to be tested.

Conditioning

Two sets of five specimens are to be preconditioned at 23 ± 2 °C and 50 ± 5 RH for 48 hours and two sets of five specimens are to be preconditioned in an air-circulating oven for 168 hours at 70 ± 1 °C and then cooled in the desiccator for at least 4 hours at room temperature.

Test procedure

The specimen is clamped from the upper with the longitudinal axis vertical, so that the lower end of the specimen is 300 mm above a surgical cotton. The specimen is ignited with a 20 mm high methane gas flame. The top of the burner is 10 mm below the lower end of the specimen. After the application of the flame for 10 s the burner is withdrawn and the afterflame time t_1 is measured. When afterflaming of the specimen ceases, the burner is placed again under the specimen 10 mm below the lower end of the specimen for an additional 10 s and the afterflame time t_2 and afterglow time t_3 are measured. If the specimen drips molten or flaming material during the flame application, the burner is tilted at an angle of up to 45 degrees. It is observed whether or not specimens burn up to the holding clamp and whether or not specimens drip flaming particles that ignited the cotton indicator. Five specimens are to be tested.

Classifications

Criteria Conditions	94V-0	94V-1	94V-2
1.Afterflame time for each individual specimen t_1 or t_2	≤ 10 s	≤ 30 s	≤ 30 s
2.Total afterflame time for any condition set ($t_1 + t_2$ for the 5 spec.)	≤ 50 s	≤ 250 s	≤ 250 s
3. Afterflame t_2 + afterglow t_3 for each individual specimen	≤ 30 s	≤ 60 s	≤ 60 s
4. Afterflame or afterglow of any specimen up to holding clamp	no	no	no
5. Cotton indicator ignited	no	no	yes

If only one specimen from a set of five specimens does not comply with the requirements 1, 3, 4 and 5 another set of five specimens is to be tested. An additional set of five specimens are also to be tested if the totals (criteria 2) are in the range of 51...55 s for 94V-0 and 251...255 s for 94V-1 and 94V-2.

TRY: 22..3.2002

TEST RESULTS

Method: UL 94 paragraph 8: 20 mm Vertical Burning Test; 94V-0, 94V-1 or 94V-2

Sample: LTC-silicone profile

Preconditioned 48 hours in 23 °C and 50 % RH:

Specimen	Afterflame time t1 s	Afterflame time t2 s	Afterglow time t3 s	t1+t2 s	t2+t3 s
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0

There was no dripping of molten or flaming particles in any of the specimens. Only the lower part of the specimens was damaged.

Preconditioned 168 hours in 70 °C:

Specimen	Afterflame time t1 s	Afterflame time t2 s	Afterglow time t3 s	t1+t2 s	t2+t3 s
1	0	0	6	0	6
2	0	0	6	0	6
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0

There was no dripping of molten or flaming particles in any of the specimens. Only the lower part of the specimens was damaged.