

UL 94 Horizontal Burning (HB) Testing on "Polyethylene Rotomolded Products"

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Submitted by: Element Fire Testing

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3 pages

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1.0 ACCREDITATION

ISO/IEC 17025 for a defined Scope of Testing by the American Association for Laboratory Accreditation (A2LA), Certificate Number: 6524.03.

2.0 SPECIFICATIONS OF ORDER

Perform flammability classification testing in accordance with Paragraph 7 of UL 94 Sixth Edition, "Test for Flammability of Plastic Materials for Parts in Devices and Appliances" - Horizontal Burning Test; HB, as per Stence Healthcare Inc. reference Purchase Order No. 77946 and Element Quotation No. 23-002-511071 dated December 27, 2023.

2.1 History of Revision

This is the original.

3.0 SAMPLE IDENTIFICATION

Material Identification	"Polyethylene Rotomolded Products"
Supplied Material Description	RESILITY DPDB-3170 NT 7 Medium Density
Date of Material Receipt	2024-03-30
Element Sample Identification No.	24-002-S0136
Test Date	2024-06-13

4.0 SUMMARY OF TEST PROCEDURE

UL 94 Horizontal Burning Test; HB is recognized as equivalent to ASTM D635 and IEC 60695-11-10. Three specimens, each 125 mm in length x 13 mm in width, are individually marked at 25 mm and 100 mm from one end. Each specimen is clamped horizontally at the end nearest the 100 mm mark, with its transverse axis inclined at $45 \pm 2^\circ$ to the horizontal. A 100 mm square wire gauze screen is clamped in a horizontal position, 10 mm below the edge of the specimen, with approximately 13 mm of the specimen extending beyond its edge. Test specimens are conditioned at a temperature of $23 \pm 2^\circ\text{C}$ and $50 \pm 5\%$ relative humidity for a minimum period of 48 hours prior to testing.

A methane-fueled burner is adjusted to yield a blue flame, approximately 20 mm high, producing a 50W test flame. The test flame is then applied to the end of the specimen for a period of 30 seconds, or until flaming progression reaches the 25 mm mark, whichever occurs first. The timer is started, if and when the combustion front reaches the 25 mm mark. Timing is continued until the flame front reaches the 100 mm mark ($L = 75$), or self-extinguishment occurs (damaged length = L). The linear burn rate (V), in millimetres per minute (mm/min) is then calculated using $V = 60 L/t$, where:

V is the linear burning rate in mm/minute

L is the damaged length, in millimeters

t is the time, in seconds

5.0 PERFORMANCE REQUIREMENTS

The behavior of specimens shall be classified as **HB** (HB = Horizontal Burning) if:

- * The burning rate does not exceed 40 mm/min over a 75 mm span for specimens having a thickness of 3.0 to 13 mm, or
- * The burning rate does not exceed 75 mm/min over a 75 mm span for specimens having a thickness less than 3.0 mm, or
- * The specimens cease to burn before the 100 mm reference mark.

6.0 SAMPLE PREPARATION

Specimens were received pre-cut to appropriate dimensions and quantity for testing. Material thickness was measured at approximately 7 mm. In all cases, the specimens were self-supporting during testing.

7.0 TEST RESULTS

UL 94 - Test for Flammability of Plastic Materials for Parts in Devices and Appliances

Horizontal Burning Test - Paragraph 7

SAMPLE: "Polyethylene Rotomolded Products"

Measured Sample Thickness (mm): 7.0

Test	Burning Code	Time of Burning (t) (s)	Damaged Length (L) (mm)	Linear Burn Rate (V) (mm/min)	Continued Burning After Test Flame Removal	Flaming Reached the 25 mm Mark	Flaming Reached 100 mm Mark
1	D	280.0	75.0	16	Yes	Yes	Yes
2	C	197.0	50.0	N/A	Yes	Yes	No
3	D	269.0	75.0	17	Yes	Yes	Yes

Specified Maximum Linear Burn Rate (mm/min)	40
Classification (if applicable)	HB

7.1 Burning Codes

A - No Ignition

B - Self-extinguishes prior to reaching the 25 mm mark (No Burn Rate)

C - Burns past the 25 mm mark and self-extinguishes before reaching the 100 mm mark (No Burn Rate)

D - Burn continued over the entire 75 mm timing zone (Burn Rate)

8.0 CONCLUSIONS

When tested at a measured thickness of approximately 7 mm, the thermoplastic material identified in this report meets the UL 94 criteria to be classified HB (HB = Horizontal Burning).



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