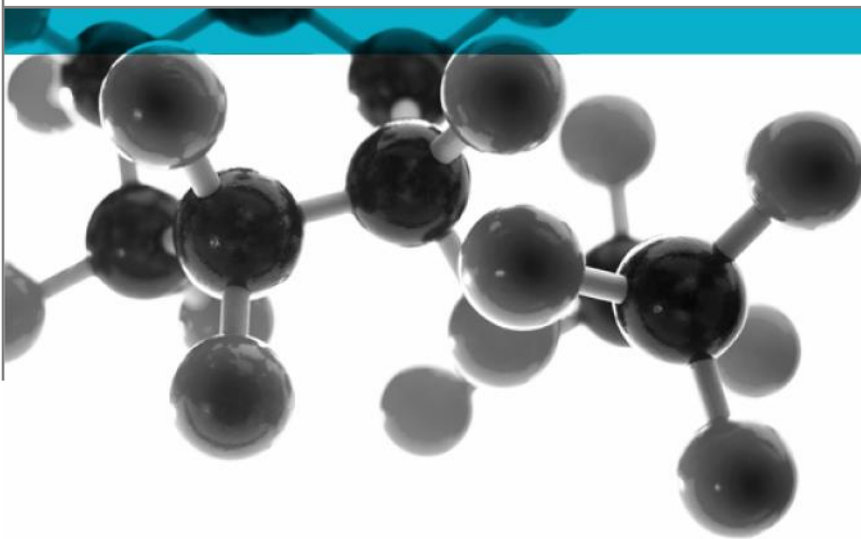


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UL-94



Horizontal Burning Test For Classifying Materials HB

A Report To: Foamalite Limited

Document Reference: 346185

Date: 12th November 2014

Issue No.: 1

Page 1

Testing
Advising
Assuring



Executive Summary

Objective To determine the performance of the following material when tested in accordance with Section 7 - "Horizontal Burning Test for Classifying materials HB" of UL94 - 'Test for Flammability of Plastics Materials for Parts in Devices and Appliances'.


Generic Description	Product reference	Thickness	Density
Polyethylene terephthalate	"Lumex A"	3mm	1.33g/cm ³
Please see page 5 of this test report for the full description of the product tested			

Test Sponsor Foamalite Limited, Lough Gowna, Co. Cavan, Ireland


Test Results: **When the test results are assessed using the test criteria specified in the Standard, the material, when tested at a nominal thickness of 3mm, is classified as "HB".**

Date of Test 5th November 2014

Signatories



Responsible Officer
T. Mort *
Senior Technical Officer



Authorised
S. Deeming *
Operations Manager

* For and on behalf of **Exova Warringtonfire**.

Report Issued: 12th November 2014

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Test Details

Purpose of test	<p>To determine the flammability of a plastics material when it is tested in accordance with the test procedure specified in Section 7 - "Horizontal Burning Test for Classifying materials HB" of UL94 - 'Test for Flammability of Plastics Materials for Parts in Devices and Appliances'.</p> <p>Each specimen was tested in accordance with the test method specified in the Standard, the gas supplied to the Bunsen burner being methane. This report should be read in conjunction with Section 7 of UL94.</p>
Scope of test	<p>The requirements of UL94 cover plastics materials and are intended to serve as a preliminary indication of their suitability with respect to flammability for a particular application. The requirements may be applied to other non-metallic materials, if found to be appropriate.</p> <p>The final acceptance of a material by the Underwriter's Laboratories Inc. is dependant upon its use in complete equipment which conforms with the Standards applicable to such equipment.</p>
Fire test study group/EGOLF	<p>Certain aspects of some fire test specifications are open to different interpretations. The Fire Test Study Group and EGOLF have identified a number of such areas and has agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Groups. Where such Resolutions are applicable to this test they have been followed.</p>
Instruction to test	<p>The test was conducted on the 5th November 2014 at the request of Foamalite Limited, the sponsor of the test.</p>
Provision of test specimens	<p>The specimens were supplied by the sponsor of the test. Exova Warringtonfire was not involved in any selection or sampling procedure.</p>
Conditioning of specimens	<p>The specimens were received on the 27th October 2014..</p> <p>Three specimens were conditioned for at least 48 hours at a temperature of 23 ± 2°C and a relative humidity of 50 ± 5% prior to testing.</p>

Description of Test Specimens

The description of the specimens given below has been prepared from information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

Generic type	Polyethylene terephthalate
Product reference	"Lumex A"
Name of manufacturer	Foamalite Ltd
Thickness	3mm (stated by sponsor) 2.94mm (determined by Exova Warringtonfire)
Density	1.33g/cm ³ (stated by sponsor) 1.36g/cm ³ (determined by Exova Warringtonfire)
Colour reference	"Clear"
Flame retardant details	See Note 1 Below
Brief description of manufacturing process	The material enters the throat of the cylinder on to the flights of a rotating screw and travels through a heated cylinder, during this process the material is compressed to remove any remaining moisture or volatiles and mix the components. The material is then filtered and pumped through the rest of melt pipes before passing through the feed-block and die. The cooled sheet is pulled down the line by a double set of rubber coated rolls and pushes it through the sizing jaws. The required size of the sheet is achieved by the use of longitudinal circular saws for edge trimming and a cross cut circular saw for the required length.

Note 1: The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of the product.

Test Results

Results

The following results were obtained for each of the specimens tested.

Specimen Number	Time for flame front to reach 25mm mark (Seconds)	Time for flame front to reach 100mm mark (Seconds)	If 100mm mark not reached		Burning Rate (mm/minute)
			Time for flaming to cease (Seconds)	Distance Flame reached from test edge (mm)	
1	73	336	Not applicable	Not applicable	17.1
2	Did not reach	Did not reach	55	Did not reach	0.0
3	67	Did not reach	294	67	17.7

Conclusion

UL94 states that a material classed HB shall:

- (a) Not have a burning rate exceeding 40mm per minute over a 75mm span for specimens having a thickness of 3.0-13.0mm, or
- (b) Not have a burning rate exceeding 75mm per minute over a 75mm span for specimens having a thickness less than 3.0mm, or
- (c) Cease to burn before the 100mm reference mark.

When the test results are assessed using the test criteria specified in the Standard, the material, when tested at a nominal thickness of 3mm, is classified as "HB".

Applicability of test results

The test results relate only to the behaviour of the test specimens of the product under the particular conditions of 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 specimens of the product in the form in which they were tested. Small differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product which is supplied or used is fully represented by the specimens which were tested.

Validity

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

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Revision History

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