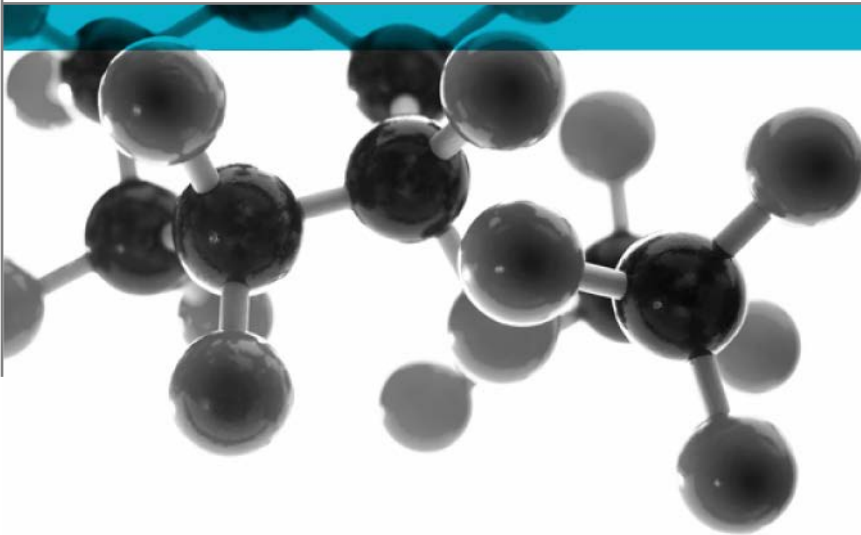


# Federal Motor Vehicle Safety Standard No. 302 (2012)



## Flammability Of Motor Vehicle Interior Materials

A Report To: THS Industrial Textiles Ltd

Document Reference: 538896

Date: 19 December 2023

Issue No.: 1

Page 1



0249

## Executive Summary

**Objective** To determine the performance of the following product when tested in accordance with Federal Motor Vehicle Safety Standard No. 302 (2012).

Generic Description	Product reference	Thickness	Weight per unit area
Silicone coated glass cloth	"8590SR170"	0.4mm	530g/m <sup>2</sup>
<b>Individual components used to manufacture composite:</b>			
Silicone elastomer coating	Unable to provide	Unable to provide	50g/m <sup>2</sup>
E-glass fabric	"8590LS"	0.4mm	430g/m <sup>2</sup>
Silicone elastomer coating	Unable to provide	Unable to provide	50g/m <sup>2</sup>
<b>Please see page 6 &amp; 7 of this test report for the full description of the product tested</b>			

**Test Sponsor** THS Industrial Textiles Ltd, Heathfield Street, Elland, HX5 9AU



**Test Results:** Clause S4.3 of FMVSS No. 302 (2012) specifies that a material "shall not burn, or transmit a flame front across its surface, at a rate of more than 102mm per minute. However, if a material stops burning before it has burned for 60 seconds from the start of timing, and has not burned more than 51mm from the point where timing has started, it shall be considered to meet this requirement".

**The material, as tested, therefore meets the above requirements.**

**An uncertainty of measurement estimation has been conducted in relation to the Burning Rate. The findings are as detailed in Annex A of this report.**

**Date of Test** 05 December 2023

## Signatories

	
Responsible Officer D. Roberts * Testing Officer	Authorised C. Jacques * Senior Technical Officer

\* For and on behalf of [Warringtonfire](#).

Report Issued: 19 December 2023

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Document No.: 538896

Page No.: 2 of 10

Author: D. Roberts

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Issue No.: 1



0249

CONTENTS	PAGE NO.
EXECUTIVE SUMMARY .....	2
SIGNATORIES.....	2
TEST DETAILS.....	4
DESCRIPTION OF TEST SPECIMENS.....	6
TEST RESULTS .....	8
ANNEX A .....	9
REVISION HISTORY .....	10



## Test Details

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<b>Purpose of test</b>	<p>To determine the flammability of the material when it is tested in accordance with Federal Motor Vehicle Safety Standard No. 302 (2012), Flammability of Interior Materials - Passenger Cars, Multi-purpose Passenger Vehicles, Trucks and Buses.</p> <p>The test was performed in accordance with the test procedure specified in section S5 of Motor Vehicle Safety Standard No. 302 (2012) and this test report should be read in conjunction with that Standard.</p>
<b>Fire test study group/EGOLF</b>	<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 have 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>
<b>Instruction to test</b>	<p>The test was conducted on the 05 December 2023 at the request of THS Industrial Textiles Ltd, the sponsor of the test.</p>
<b>Provision of test specimens</b>	<p>The specimens were supplied by the sponsor of the test. Warringtonfire was not involved in any selection or sampling procedure. The results stated in this report apply to the sample as received.</p>
<b>Conditioning of specimens</b>	<p>The specimens were received on the 14 November 2023.</p> <p>Prior to the test the specimens were conditioned for at least 24 hours in an atmosphere having a temperature of 21°C and a relative humidity of 50%.</p>
<b>Test procedure</b>	<p>The specimens were tested with the one of two identical faces downward to the test flame, in accordance with the test procedure specified in the standard, the gas supplied to the Bunsen burner being natural gas.</p>
<b>Specimen orientation</b>	<p>A total of six specimens were tested. Initial tests were carried out on one specimen in the production direction and one specimen in a direction perpendicular to that direction to establish the worse case condition. The results of these tests indicated that the worse case was with the specimens in the direction perpendicular to the direction of production and these test results have been reported.</p>

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Document No.:	538896	Page No.:	4 of 10
Author:	D. Roberts	Issue Date:	19 December 2023
Client:	THS Industrial Textiles Ltd	Issue No.:	1



Photographs of specimens before and after test



## Description of Test Specimens

The description of the test specimens is detailed in below. Prior to conducting the test, [Warringtonfire](#) verified the conformity of the test specimens with the description of the test specimens provided by the sponsor. This verification consisted of the following:

1. Where possible, the construction of the test specimens was checked to ensure that it matched the description of the test specimens provided by the sponsor.
2. Where possible, the thickness, weight per unit area and density measurements of the test specimens were checked to ensure that they matched the description of the test specimens provided by the sponsor. [Warringtonfire](#) ensured that the measurements were within the manufacturing tolerances stated by the sponsor or within a tolerance of  $\pm 10\%$  in the absence of a manufacturing tolerance.

Any areas of discrepancy identified by [Warringtonfire](#) during the verification process were resolved with the sponsor prior to starting the test.

Unless otherwise specified:

- The information including measurements was provided by the test sponsor.
- All measurements taken by [Warringtonfire](#) or the sub-contract laboratory as part of the verification process are clearly identified.
- Where a measurement is listed without a verification measurement by [Warringtonfire](#) or sub-contract laboratory, this indicates that it was not possible for that measurement to be verified and the information supplied by the sponsor has to be relied on.

General description		Silicone coated glass cloth
Product reference of overall composite		"8590SR170"
Name of manufacturer of overall composite		<b>See Note 1 below</b>
Thickness of overall composite		0.4mm (stated by sponsor) 0.41mm (determined by <a href="#">Warringtonfire</a> )
Weight per unit area of overall composite		530g/m <sup>2</sup> (stated by sponsor) 521.18g/m <sup>2</sup> (determined by <a href="#">Warringtonfire</a> )
Coating (Front face)	Generic type	A blend of fire retardant mineral fillers and silicone elastomer
	Product reference	<b>See Note 2 below</b>
	Name of manufacturer	<b>See Note 1 below</b>
	Colour	Grey
	Number of coats	1
	Application rate per coat	50g/m <sup>2</sup>
	Density	Approx. 1.30 g/cm <sup>3</sup>
	Application method	<b>See Note 1 below</b>
	Curing process per coat	<b>See Note 1 below</b>
	Trade name of flame retardant	<b>See Note 2 below</b>
	Generic type of flame retardant	Generic mineral fillers such as calcium carbonate and pyrogenic silica
	Amount of flame retardant	<b>See Note 2 below</b>

Continued on next page.

Glass-cloth	Generic type	E-glass fabric
	Product reference	"8590LS"
	Name of manufacturer	<b>See Note 1 below</b>
	Detailed description	420g/m <sup>2</sup> 4H Satin weave glass cloth
	Thickness	0.4mm
	Weight per unit area	430g/m <sup>2</sup>
	Colour	White
	Flame retardant details	<b>See Note 3 below</b>
Coating (Reverse face)	Generic type	A blend of fire retardant mineral fillers and silicone elastomer
	Product reference	<b>See Note 2 below</b>
	Name of manufacturer	<b>See Note 1 below</b>
	Colour	Grey
	Number of coats	1
	Application rate per coat	50g/m <sup>2</sup>
	Density	Approx. 1.30 g/cm <sup>3</sup>
	Application method	<b>See Note 1 below</b>
	Curing process per coat	<b>See Note 1 below</b>
	Trade name of flame retardant	<b>See Note 2 below</b>
	Generic type of flame retardant	Generic mineral fillers such as calcium carbonate and pyrogenic silica
Amount of flame retardant	<b>See Note 2 below</b>	
Brief description of manufacturing process		<b>See Note 2 below</b>

**Note 1:** The sponsor of the test has provided this information but at the specific request of the sponsor, these details have been omitted from the report and are instead held on the confidential file relating to this investigation.

**Note 2:** The sponsor was unable to provide this information.

**Note 3:** The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of the component.

## Test Results

### Results of test

The burn rate was calculated using the formula:

$$B = 60 D/T$$

where B = Burn rate in mm per minutes  
D = Length of the flame travels in mm, and  
T = Time in seconds for the flame to travel D mm

Specimen No.	Time for flame to reach the first measuring point (seconds)	Time for flame to reach the final measuring point (seconds)	Burning time, T (seconds)	Distance burnt, D (mm)	Burning Rate (mm/min)
1	Did not reach	Did not reach	1	Not applicable	0
2	Did not reach	Did not reach	2	Not applicable	0
3	Did not reach	Did not reach	1	Not applicable	0
4	Did not reach	Did not reach	1	Not applicable	0
5	Did not reach	Did not reach	1	Not applicable	0
6	Did not reach	Did not reach	1	Not applicable	0

### Conclusions

Clause S4.3 of FMVSS No. 302 (2012) specifies that a material "shall not burn, or transmit a flame front across its surface, at a rate of more than 102mm per minute. However, if a material stops burning before it has burned for 60 seconds from the start of timing, and has not burned more than 51mm from the point where timing has started, it shall be considered to meet this requirement".

**The material, as tested, therefore meets the above requirements.**

**An uncertainty of measurement estimation has been conducted in relation to the Burning Rate. The findings are as detailed in Annex A of this report.**

### Applicability of test result

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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Document No.:

538896

Page No.:

8 of 10

Author:

D. Roberts

Issue Date:

19 December 2023

Client:

THS Industrial Textiles Ltd

Issue No.:

1



0249

## Annex A

### Uncertainty of measurement

Specimen No.	1	2	3	4	5	6
Burning Rate	±0	±0	±0	±0	±0	±0

The uncertainty of measurement value is reported as zero when the flame front does not reach either reference mark i.e. 38mm or 292mm.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor  $k=2$ , providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

## Revision History

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Reason for Revision:	

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