TEST REPORT
REACTION TO FIRE TEST

Test Sponsor:

Saudi Industrial Resins Ltd.
Jeddah, Kingdom of Saudi Arabia
Phone: +966 13 358 1169, Fax: +966 13 3583225
Website: www.sir-ltd.com

Test Material/Assembly:

SIROGEL 8050 A - Glass Reinforced Plastic (GRP)

Test Standard:

ASTM E84-19a: Standard Test Method for Surface Burning Characteristics of Building Materials

THOMAS BELL-WRIGHT
INTERNATIONAL CONSULTANTS

Test Date: 11-Nov-19
Issue Date: 21-Nov-19
Test Reference No: TH100-2

PO BOX 26385, DUBAI UAE T +971 (0)4 821 5777 fire@bell-wright.com www.bell-wright.com

DUBAI ABU DHABI DOHA

Accreditation

ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories with:

United Kingdom Accreditation Service (UKAS) – Testing Laboratory: **4439**
www.ukas.com

GCC Accreditation Center (GAC) – Testing Laboratory: **ATL-0017**
www.GCC-accreditation.org

Memberships

Members of European Group of Organization for Fire Testing, Inspection and Certification

www.egolf.org.uk

Member of International Trade Council

www.thetradecouncil.com

Member of Association for Specialist Fire Protection

www.asfp.org.uk

Member of Centre for Window and Cladding Technology

www.cwct.co.uk

The work which is the subject of this report falls wholly or partly under the accreditations of **ISO 17025 UKAS and ISO 17025 GAC.**

Table of Contents

1. INTRODUCTION

Determination of the flame spread index and the smoke developed index of Glass Reinforced Plastic (GRP) as per ASTM E84; Standard Test Method for Surface Burning Characteristics of Building Materials.

2. SPONSOR

Name: Saudi Industrial Resins Ltd.
Address: Jeddah, Kingdom of Saudi Arabia
Phone: +966 13 358 1169, Fax: +966 13 3583225
Website: www.sir-ltd.com

3. TESTING LABORATORY

Name: Thomas Bell-Wright International Consultants (TBWIC)
Address: Corner of 46th and 47th streets, Jebel Ali Industrial Area 1
P.O. Box 26385, Dubai, U.A.E.
T: +971 (0) 4 821 5777
www.bell-wright.com

4. DATE OF TEST

Sample received: 10-Nov-19
Test date: 11-Nov-19

The test had not been witnessed by the sponsor.

5. SPECIMEN DESCRIPTION

Note: The testing laboratory does not hold any responsibility for the information that has been provided by the test sponsor which could not be verified by the testing laboratory, as this could affect the validity of the test result. All information that could not be verified will be indicated by an asterisk (*) mark.

Description		Glass Reinforced Plastic (GRP) Panels	
Manufacturer		Saudi Industrial Resins Ltd.	
Thickness		3mm* (measured by TBWIC)	
Area weight		4 kg/m^2 (measured by TBWIC)	
Product details	**Resin**	Product Name	SIROPOL 8050 A*
		Description	Halogenated resin*
		Manufacturer	Saudi Industrial Resins Ltd.*
		Number of layers	2*
	Fibre reinforcement	Description	E-Glass Chopped Strand Matt*
		Manufacturer	Taishan Fiberglass Inc. China*
		Area weight	450 g/m^2*
		Number of layers	2*
Dimension per panel		8 Nos. of 915 x 600mm, l x w	
Total dimension		7320 x 600mm, l x w	
Specimen placement		The eight panels were butt jointed end-to-end and were placed directly to the tunnel ledges with the smooth surface towards the flame source.	

The choice and design and the definition of the specimen have been made by Saudi Industrial Resins Ltd. and TBWIC testing laboratory has not been involved in the selection or design of the specimen. Similarly, the results of the test apply only to the samples as received.

Note: There are contexts where information has been provided by the sponsor and verification of information has been done through either technical datasheet or other document submission, or as indicated directly by the sponsor. For this reason, materials have been tested in an as-received condition and TBWIC bears no liability for the legitimacy of the submitted information.

6. METHOD OF TEST

6.1. Placing of test specimen

The test specimen consisted of eight GRP panels. The total dimensions of the specimen were 7320 x 600mm (l x w).

Three cement boards of size of 2450 x 600mm butt jointed end-to-end were placed at the back of the sample to protect the furnace lid assembly from direct fire exposure.

6.2. Test Method

The specimen was installed horizontally in the Steiner Tunnel and supported by the ledges. The top smooth surface was subjected to a flaming exposure during the 10minute test duration.

Flame spread and density of the smoke are measured and recorded while the results are computed against the standard calibration materials (cement board and red oak flooring).

6.3. Conditioning

After delivery on 10-Nov-19, the specimen was stored in room temperature for 1 day prior to the test ranging from 20.2 to 25.8°C and 45 to 55% relative humidity.

7. OBSERVATION

Test Data and Observation

Observations	Result
Ignition Time (min:sec)	0:21
Time to maximum flame front advance (min:sec)	1:40
Maximum flame spread (ft)	2.9
Time to end of tunnel reached (min:sec)	Not Reached
Maximum temp recorded at the exposed thermocouple located near the end of the tunnel (°F / °C)	495/257
Dripping (min:sec)	None
Flaming on the floor (min:sec)	None
After flame on the top (min:sec)	None
After flame on the floor (min:sec)	None
Delamination (min:sec)	None
Sagging (min:sec)	None
Shrinkage (min:sec)	None
Fallout (min:sec)	None

FS x Time Area (ft x min)	26.33
Smoke Area (%A x min)	780.30
Red Oak Smoke Area (%A x min)	79.6

8. SUMMARY OF RESULTS

The test specimen has been evaluated in accordance with ASTM E84; Standard Test Method for Surface Burning Characteristics of Building Materials.

The test results are:

FLAME SPREAD INDEX (FSI)	**15**
SMOKE DEVELOPED INDEX (SDI)	**1000**

Results are valid for the tested configuration only.

9. CLASSIFICATIONS

The following information is designed to help put these test results into context. Flame Spread Index and Smoke Developed Index results from an ASTM E84 test are often used by regulatory agencies to approve materials for various applications. For example, the International Building Code 2018, Section 803.1.2 requires that:

Interior wall and ceiling finish materials shall be classified in accordance with ASTM E84 or UL 723-10th Ed. 2008. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes.

Class A: Flame spread index 0 - 25; smoke-developed index 0 - 450.
Class B: Flame spread index 26 - 75; smoke-developed index 0 - 450.
Class C: Flame spread index 76 - 200; smoke-developed index 0 - 450.

Note that the above example is the IBC requirement for interior wall and ceiling finishes only; the application of the tested specimen may differ.

10. LIMITATIONS

Testing of materials that melt, drip, or delaminate to such a degree that the continuity of the flame front is destroyed, results in low flame spread indices that do not relate directly to indices obtained by the testing materials that remain in place.

This report and all records of the test to which it relates may not be retained by TBWIC further than 5 years from the date of testing.

This test report is respectfully submitted by: Thomas Bell-Wright International Consultants

Tested By:

Rachel Marie Novelo
Fire Testing Engineer

Reviewed By:

Fredilyn Paragoso
Fire Testing Support Engineer

Approved By:
For

Suketa Tyagi
Reaction to Fire - Manager

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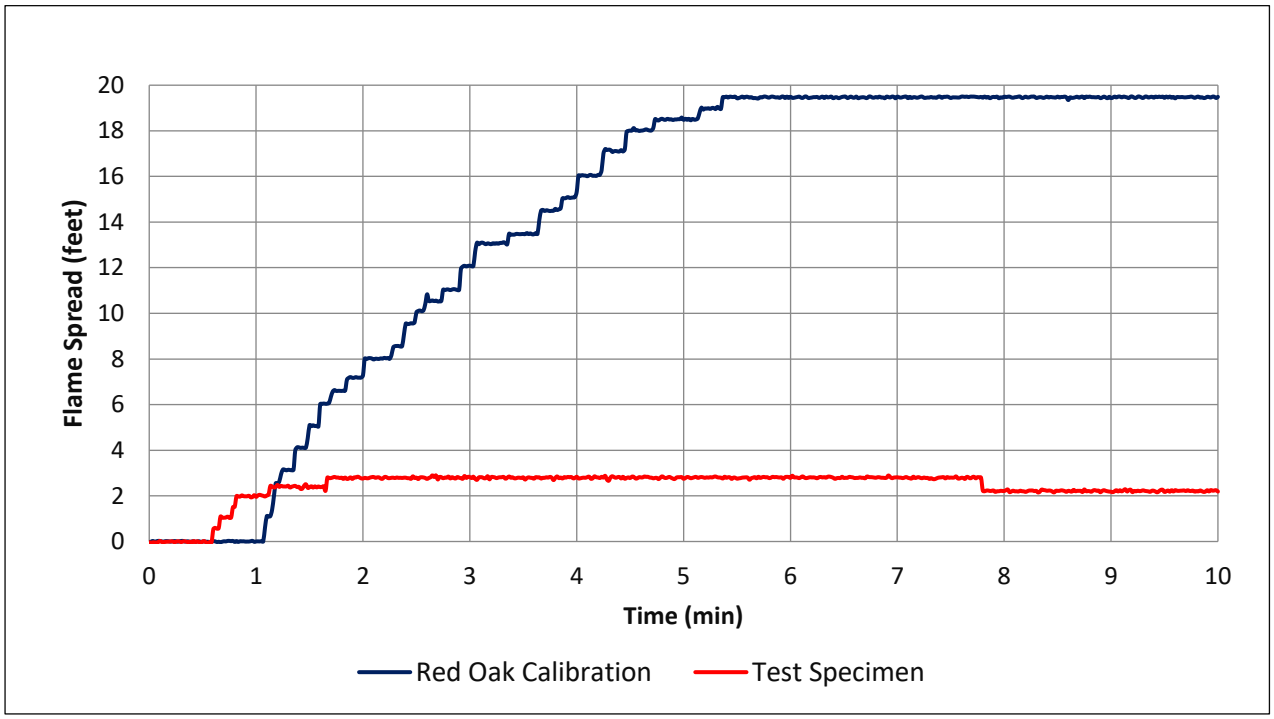
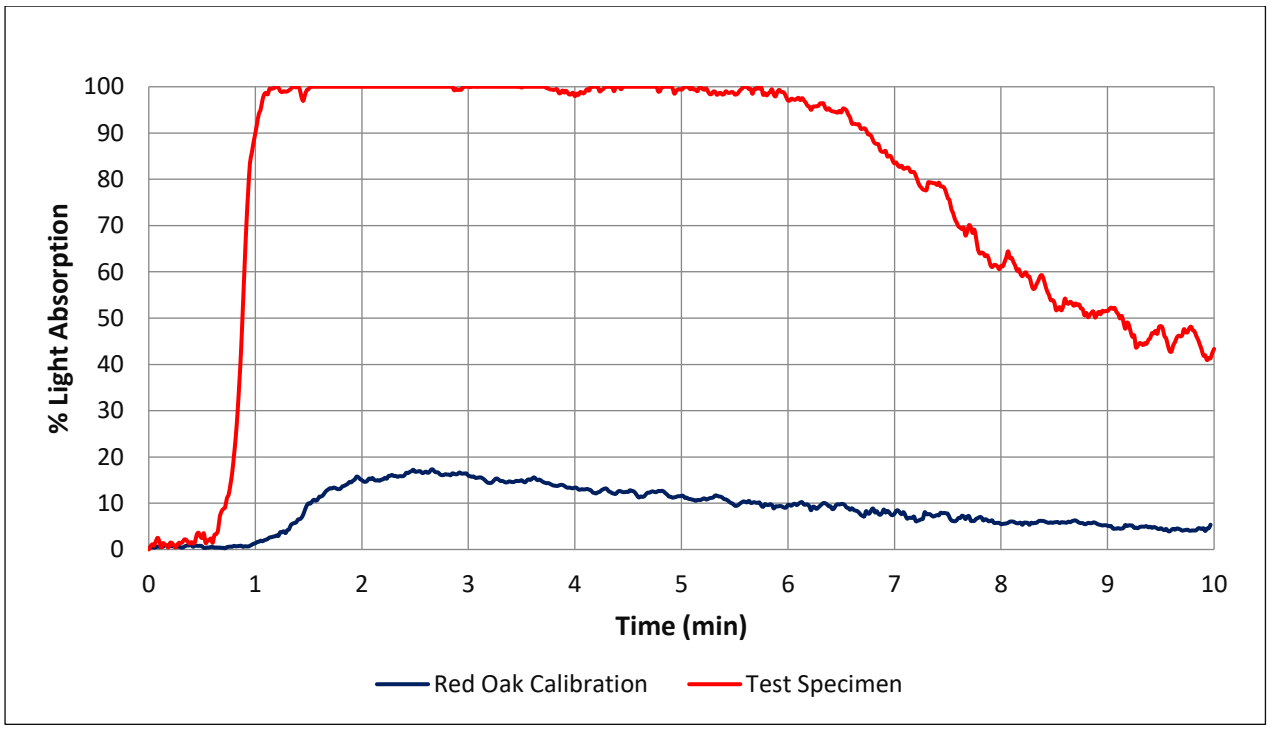
Thomas Bell-Wright Int'l Consultants (Dubai Br.)

11. APPENDIX 1 – GRAPHS



Graph 1: Flame Spread Index (FSI)



Graph 2: Smoke Developed Index (SDI)

12. APPENDIX 2 – PICTURES

Photo 1: Specimen before the test.
(Fire Side)

Photo 2: Specimen after the test.
(As seen from the fire-end)

Photo 3: Specimen after the test.
(As seen from the exhaust end)

----- End of Test Report -----