

TEST REPORT

REACTION TO FIRE TEST

Test Sponsor:

Oxide Board Factory
AlKharj Industrial City-Modon,
Kingdom of Saudi Arabia
T: +966 (11) 542 0258
E: info@mgoboards.com.sa

Test Material/Assembly:

12mm thick Magnesium Oxide (MgO) Boards

Test Standard:

ASTM E84-18: Standard Test Method for Surface Burning Characteristics of Building Materials



**THOMAS BELL-WRIGHT
INTERNATIONAL CONSULTANTS**

Test Date: 28-Mar-18
Issue Date: 7-Apr-19
Test Reference No: TC012

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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**.



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1. INTRODUCTION

Determination of the flame spread index and the smoke developed index 12mm thick Magnesium Oxide (MgO) Boards as per ASTM E84; Standard Test Method for Surface Burning Characteristics of Building Materials.

2. SPONSOR

Name: Oxide Board Factory
Address: AlKharj Industrial City-Modon,
Kingdom of Saudi Arabia
T: +966 (11) 542 0258
E: info@mgoboards.com.sa

3. TESTING LABORATORY

Name: Thomas Bell-Wright International Consultants (TBWIC)
Address: Corner of 46th and 47th Streets,
Jebel Ali Industrial Area 1
Dubai, United Arab Emirates
T: +971 4 821 5777
Website: www.bell-wright.com

4. DATE OF TEST

Sample received: 24-Mar-19
Test date: 28-Mar-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.

The description of the specimen given below has been prepared from information provided by the Sponsor.

Description	Made from a mixture of Magnesium Oxide (MgO), non-organic minerals, bonders and fibre mesh composites
Product Name	Magnesium Oxide (MgO) Boards
Manufacturer	Oxide Board Factory
Thickness	12mm (measured by TBWIC)
Area weight	13.50 kg/m ² (measured by TBWIC)
Total dimension	7200 x 600mm (l x w) (measured by TBWIC)
Specimen placement	The three 2400 x 600mm Magnesium Oxide boards were butt jointed end to end and were placed directly to the tunnel ledges with the top smooth surface towards the flame source.



Neither TBWIC testing laboratory nor any certification body were involved in the selection of the materials and the test results apply to the sample as received. The choice and design and the definition of the specimen have been made by Oxide Board Factory.

6. METHOD OF TEST

6.1. Placing of test specimen

The test specimen consisted of three 2400 x 600mm Magnesium Oxide boards. The total dimensions of the specimen were 7200 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 of the specimen 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 24-Mar-19, the specimen was stored in room temperature for 4 days 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	
Ignition Time (min:sec)	None
Time to maximum flame front advance (min:sec)	None
Maximum flame spread (ft)	None
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)	514/268
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*Time Area (ft*min)	0
Smoke Area (%A*min)	13.80
Red Oak Smoke Area (%A*min)	86.0

8. SUMMARY OF RESULTS

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.

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)	0
SMOKE DEVELOPED INDEX (SDI)	15

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 (IBC) 2018, Section 803.1.2 requires that:

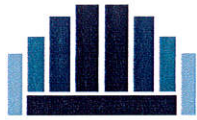
Interior wall and ceiling finish materials shall be classified in accordance with ASTM E84 or UL 723-10th Ed. 2008. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes.

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; your application may be different.



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

Thomas Bell-Wright International Consultants recommend that the relevance of test reports should be considered after a period of five years.

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

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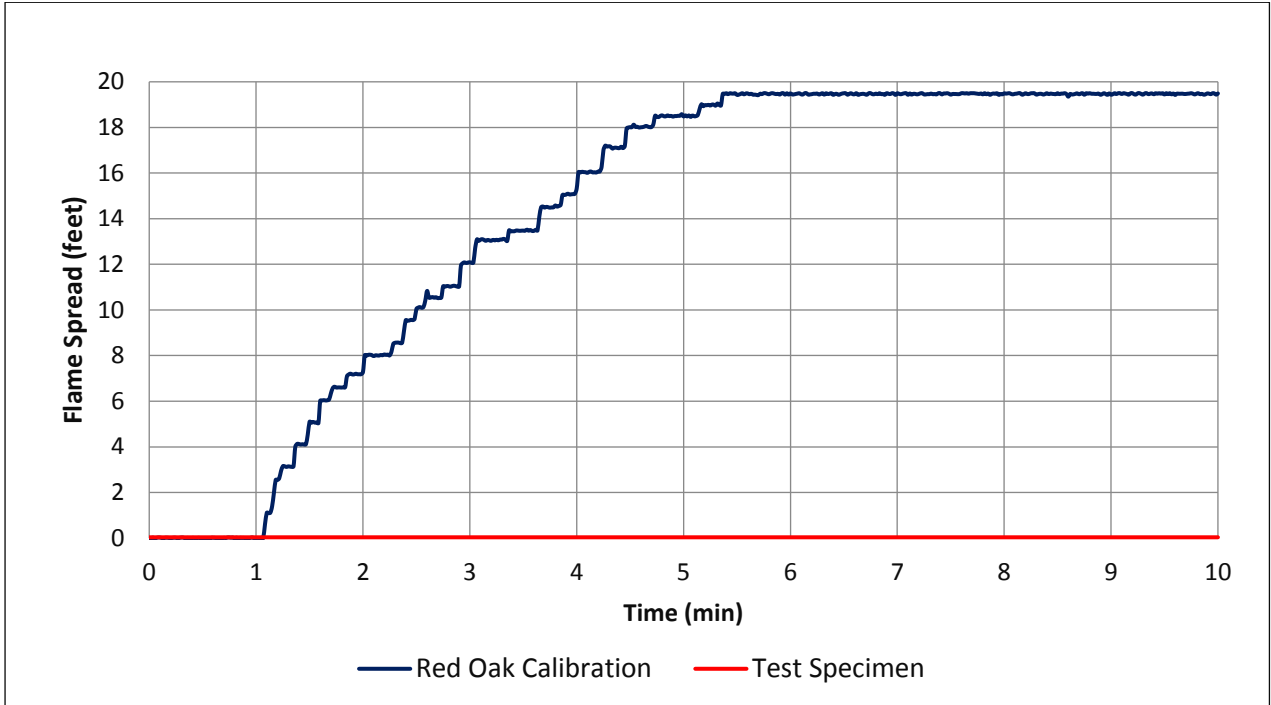
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Reaction to Fire - Manager

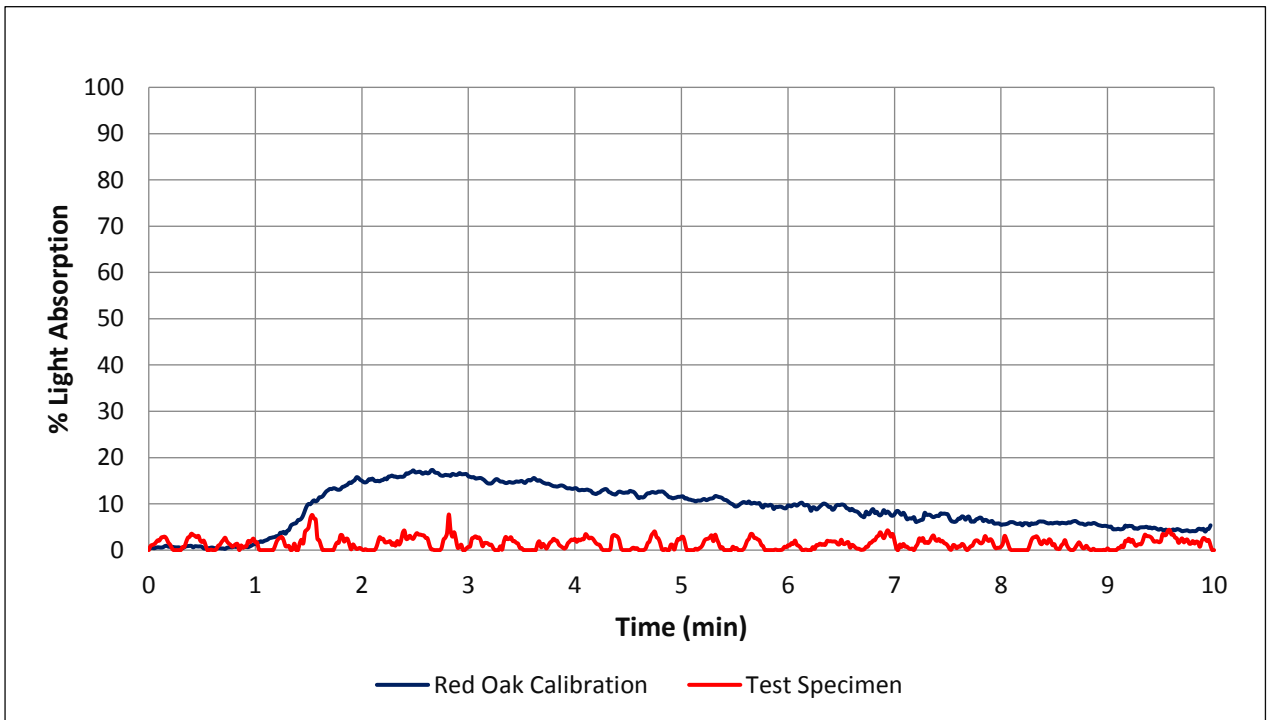




11. APPENDIX 1- GRAPHS



Graph 1: Flame Spread Index (FSI)



Graph 2: Smoke Developed Index (SDI)



12. APPENDIX 2- PICTURES



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



**Photo 2: Specimen before the test.
(Fire Side)**



**Photo 3: Specimen after the test.
(As seen from the fire-end)**



**Photo 4: Specimen after the test.
(As seen from the exhaust end)**

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