

# FINAL REPORT

## REACTION TO FIRE TEST

### TEST SPONSOR:

**United Mining Industries**

P.O. Box: 31491

Light Industrial City, Yanbu Al-Sinaiyah, 51000 KSA

T: +966 4 396 8777, F: +966 4 396 2666

Website: [www.ugc.com.sa](http://www.ugc.com.sa)

### TESTED MATERIAL/ASSEMBLY:

Fiber Cement Board

### TEST STANDARD:

ASTM E84-15b: Standard Test Method for Surface Burning Characteristics of Building Materials



**THOMAS BELL-WRIGHT  
INTERNATIONAL CONSULTANTS**

Issue Date: 20-Mar-16

File: PL048

File Name: PL048 test report

PO BOX 26385, DUBAI UAE

T +971 (0)4 333 2692

[admin@bell-wright.com](mailto:admin@bell-wright.com)

[www.bell-wright.com](http://www.bell-wright.com)

DUBAI

ABU DHABI

DOHA



## Accreditation

### Testing

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

1. United Kingdom Accreditation Service(UKAS) - Testing Laboratory : **4439**
2. International Accreditation Service (IAS) - Testing Laboratory : **TL-626**
3. GCC Accreditation Center (GAC) – Testing Laboratory :**ATL-0017**  
[www.ukas.com](http://www.ukas.com)[www.iasonline.org](http://www.iasonline.org)[www.GCC-accreditation.org](http://www.GCC-accreditation.org)



## Memberships

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

[www.egolf.org.uk](http://www.egolf.org.uk)

Member of International Trade Council

[www.thetradecouncil.com](http://www.thetradecouncil.com)

Member of Association for Specialist Fire Protection

[www.asfp.org.uk](http://www.asfp.org.uk)

Member of Centre for Window and Cladding Technology

[www.cwct.co.uk](http://www.cwct.co.uk)

The work which is the subject of this report falls wholly or partly under the accreditation marked below:

- |                     |                                     |
|---------------------|-------------------------------------|
| ISO 17025 UKAS      | <input checked="" type="checkbox"/> |
| ISO 17025 IAS       | <input type="checkbox"/>            |
| ISO 17025 GAC       | <input checked="" type="checkbox"/> |
| Non-accredited test | <input type="checkbox"/>            |





## Table of Contents

1. INTRODUCTION .....	4
2. SPONSOR .....	4
3. TESTING LABORATORY .....	4
4. DATE OF TEST .....	4
5. SPECIMEN DESCRIPTION .....	4
6. METHOD OF TEST .....	5
6.1. Placing of test specimen .....	5
6.2. Test Method .....	5
6.3. Conditioning .....	5
7. OBSERVATION .....	5
8. SUMMARY OF RESULTS .....	6
9. CLASSIFICATIONS .....	6
10. LIMITATIONS .....	7
11. APPENDIX 1- GRAPHS .....	8
12. APPENDIX 1- PICTURES .....	9



## 1. INTRODUCTION

Determination of the flame spread index and the smoke developed index of Fiber Cement Board as per ASTM E84; Standard Test Method for Surface Burning Characteristics of Building Materials.

## 2. SPONSOR

### United Mining Industries

P.O. Box: 31491

Light Industrial City, Yanbu Al-Sinaiyah, 51000 KSA

T: +966 4 396 8777, F: +966 4 396 2666

Website: www.ugc.com.sa

## 3. TESTING LABORATORY

Thomas Bell-Wright International Consultants

25b Street Ras Al Khor Industrial Area

P.O. Box 26385

Dubai, U.A.E.

## 4. DATE OF TEST

Sample received: 25-Feb-16

Test date: 28-Feb-16

The test has been witnessed by:

Name	Company	Contact Number
Ahmed Badawy	United Mining Industries	059 078 8829

## 5. SPECIMEN DESCRIPTION

<b>Product Tested</b>	Fiber Cement Board
<b>Fire side</b>	Smooth surface of cement board
<b>Product Description</b>	12mm thick Fiber Cement Board
<b>Dimensions per panel</b>	2400 x 600 x 12mm (l x w x thk) (measured)
<b>No. of panel</b>	3
<b>Total dimension</b>	7200 x 600 x 12mm (l x w x thk) (measured)
<b>Specimen placement</b>	3 sections of Fiber Cement Board were butt jointed end-to-end. The test specimen was placed directly to the tunnel ledges with the smooth surface towards the flame source.

The test specimen was submitted by the client and TBWIC has not been involved in the selection and configuration of the specimen.



## 6. METHOD OF TEST

### 6.1. Placing of test specimen

The test specimen consisted of 3 sections of Fiber Cement Board. The total dimensions of the specimen were 7200 x 600 x 12mm (l x w x thk).

Several sections of cement board butt jointed end-to-end with overall dimensions of 7350 x 600 mm (l x w), were placed at the back of the sample to protect the furnace lid assembly.

### 6.2. Test Method

The specimen was installed horizontally in the Steiner Tunnel and supported by the ledges. The smooth surface of Fiber Cement Board (fire side) was exposed to a flaming exposure during the 10 minute 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 25-Feb-16, the specimen was stored in room temperature for 3 days prior to the test at 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)	548/287
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)	8.79
Red Oak Smoke Area (%A*min)	88.1



## 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:

<b>FLAME SPREAD INDEX (FSI)</b>	<b>0</b>
<b>SMOKE DEVELOPED INDEX (SDI)</b>	<b>10</b>

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 2012, Section 803.1.1 requires that:

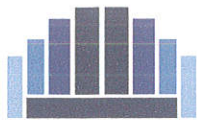
Interior wall and ceiling finish materials shall be classified in accordance with ASTM E84 or UL 723-10th Ed. 2008. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes.

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

Prepared By:

Romano Parungao  
Fire Testing Engineer

Reviewed By:

Fredilyn Paragoso  
Fire Testing Engineer

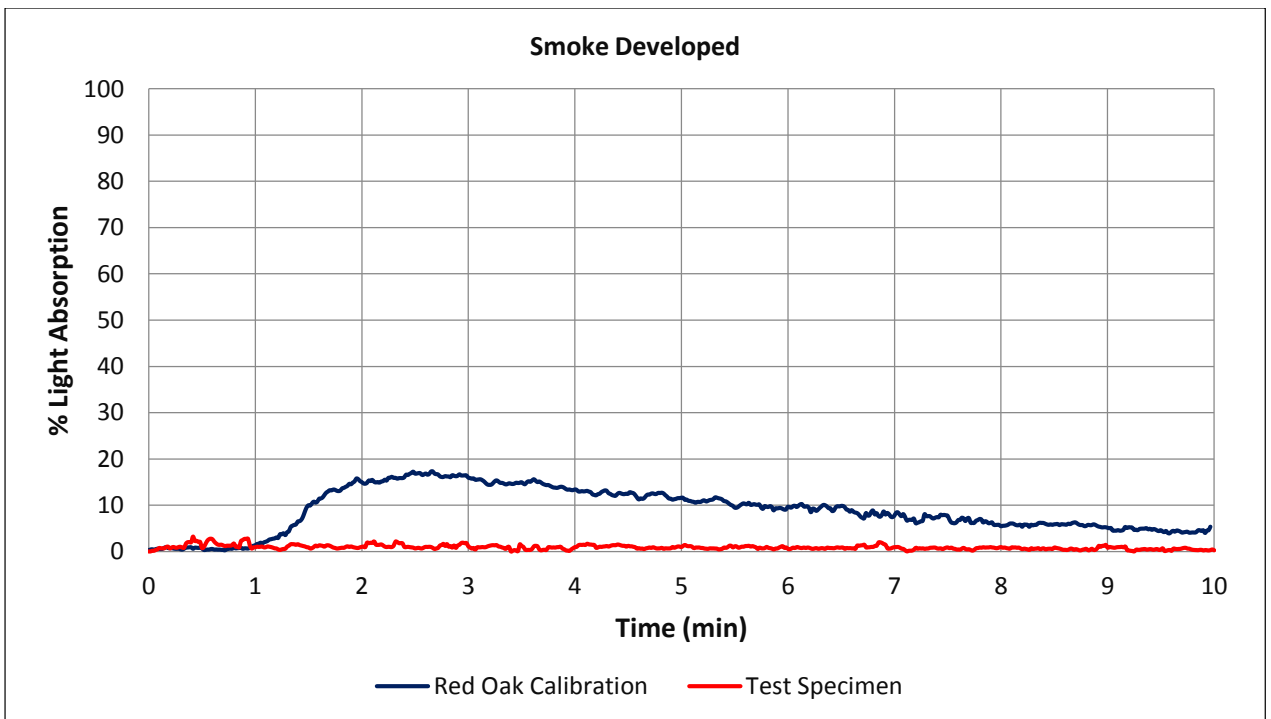
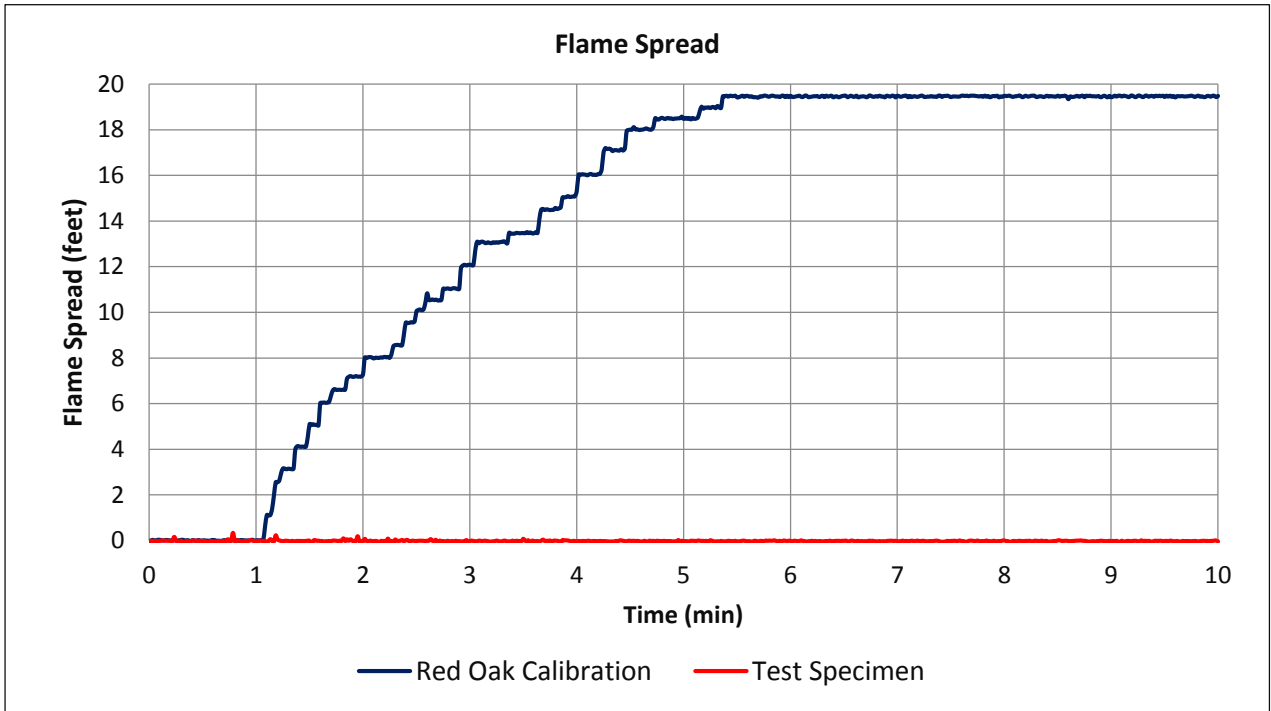
Approved By:

David Campbell, GFireE  
Regional Director of Fire Compliance





## 11. APPENDIX 1- GRAPHS







## 12. APPENDIX 1- PICTURES

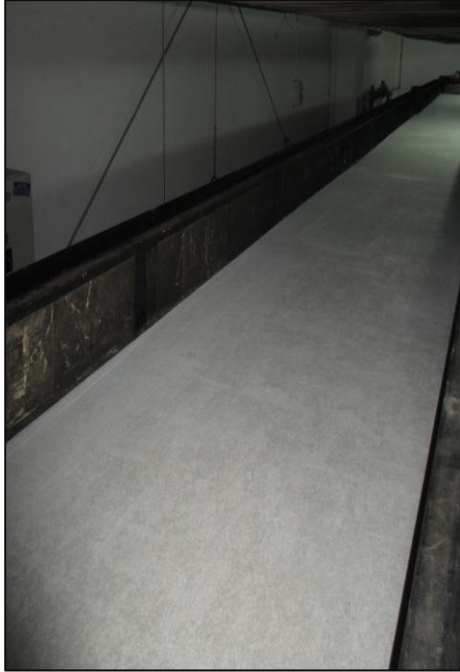


Photo 1: Specimen before the test  
(Non-fire side)



Photo 2: Specimen before the test  
(Fire side)



Photo 3: Specimen after the test  
(located near the fire end)

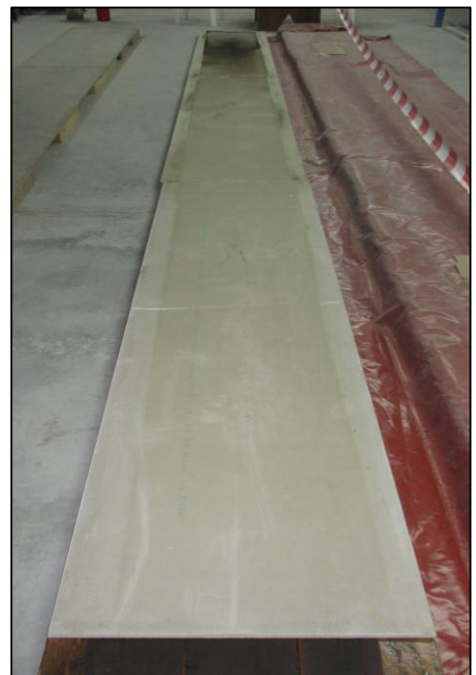


Photo 4: Specimen after the test  
(located near the exhaust end)