Intertek ETL SEMKO

**REPORT OF**

# PERFORMANCE TESTING TO ASTM E283-04 "STANDARD TEST METHOD OF AIR LEAKAGE THROUGH EXTERIOR WINDOWS, CURTAIN WALLS, AND DOORS UNDER SPECIFIED PRESSURE DIFFERENCES ACROSS THE SPECIMEN"

## CONDUCTED ON A 4' x 4' SEALECTION™ 500 SPRAY FOAM INSULATION (VARIOUS THICKNESSES) AND FIBERGLASS INSULATION STUD WALL ASSEMBLIES

**3-1/2" THICK SEALECTION™ 500 SPRAY FOAM INSULATION (2" X 4" FRAMING)**
**5-1/2" THICK SEALECTION™ 500 SPRAY FOAM INSULATION (2" X 6"FRAMING)**
**7-1/2" THICK SEALECTION™ 500 SPRAY FOAM INSULATION (2" X 8" FRAMING)**
**5-1/2" THICK OWENS CORNING R19 FIBERGLASS WITHOUT KRAFT PAPER VAPOUR BARRIER (2" X 6" FRAMING)**
**5-1/2" THICK OWENS CORNING R19 FIBERGLASS WITH KRAFT PAPER VAPOUR BARRIER (2" X 6" FRAMING)**

**FOR**

**DEMILEC USA, LLC**
**2925 GALLERIA DRIVE**
**ARLINGTON, TEXAS, USA**
**76011**

**REPORT PREPARED BY RON PRENTICE**

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# PREFACE

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## INTRODUCTION

Intertek Testing Services N.A. Ltd. (Intertek) has conducted performance tests on nominal 4' x 4' Sealection™ 500 polyurethane spray foam insulation (various thicknesses) and fibreglass insulation stud wall assemblies submitted to our laboratory on July 6th 2006. The Sealection™ 500 liquid components were randomly sampled from Demilec stock by an Intertek representative on June 6th 2006. Installation of the Sealection™ 500 spray foam insulation into the 4' x 4' stud wall cavities was witnessed and inspected by an Intertek representative on June 26th 2006. FRP panels were used as backing for the application process and were removed after the foam had cured properly. This left the foam adhered only to the wood framework supporting the foam at its edges. Testing on the insulated wall assemblies was carried out on July 17, 2006. All tests were performed in accordance with the test standard ASTM E283-04.

## PRODUCT DESCRIPTIONs

| | |
|---|---|
| **Series** | • Demilec USA LLC, Sealection ™ 500 |
| **Designation** | • 0.5 pcf Open Cell Spray Foam Insulation |
| **Type (general)** | • Open Cell Polyurethane Spray Foam Insulation |
| **Material** | • Sealection ™ 500 Open Cell Spray Foam Insulation. |
| **Samples tested** | • 3-1/2" thick Sealection ™ 500 (2" x 4" Framing)<br>• 5-1/2" thick Sealection ™ 500 (2" x 6" Framing)<br>• 7-1/2" thick Sealection ™ 500 (2" x 8" Framing) |
| **Test Boxes** | • Foam spray was tested in 4' x 4'wood test bucks with wood studs on 16" centres. |
| **Series** | • Owen Corning R19 Fiberglass ™ |
| **Designation** | • Fiberglass |
| **Type (general)** | • Fiberglass |
| **Material** | • Owen Corning R19 Fiberglass |
| **Samples tested** | • 5-1/2" Thick Owen Corning R19 Fibreglass with Kraft Paper vapour barrier on interior (2" x 6" Framing).<br>• 5-1/2" Thick Owen Corning R19 Fiberglass without Kraft Paper vapour barrier (2" x 6" Framing). |
| **Test Boxes** | • Fiberglass was tested in a 4' x 4'wood test bucks with wood studs on 16" centres. |

## TEST PROGRAM

### Air Leakage Test

The Air leakage tests were conducted in accordance with ASTM E283-04, "Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen,"

The Air leakage tests were performed using different test pressures ranging from 75 Pa (1.57 psf), to 2000 Pa (41.77 psf). The air leakage rate was calculated in units of L/s/m$^2$.

## TEST APPARATUS

The test equipment used to determine air leakage through stud wall assemblies described in this report was as shown in the following table:

| Test | Application | Equipment | Intertek ID# |
|---|---|---|---|
| Air Leakage | To develop the test pressures | Air blower | -- |
| | Air infiltration testing | Meriam Instrument Co. laminar flow element, Model No. 50MW20-2F, Serial No. 74690-K1 | 280-01-0059 |
| | | Ashcroft 0-0.5" W.C to 0-5 VDC pressure transducer Model No. XLDP, Serial No. 20226-123 | 280-01-0573 |
| | | Sciemetric Instruments System 200 analog to digital converter. | 280-01-0018 |
| | Test Pressure between wall and sample<br>To measure the laminar flow element inlet pressure | Vacuum Motor | |
| | | Ashcroft pressure transducer Model No. XLDP | |
| | | Sciemetric Instruments System 200 analog digital converter | 280-01-0018 |
| | | Calibrated 0-0.5" W.C Mechanical manometer | 280-01-0723 |
| | | Calibrated 0-15" W.C Mechanical manometer | 280-02-0081 |
| | | Calibrated 0-30" W.C Mechanical manometer | 280-01-0628 |

## TEST RESULTS

1. Air Leakage Tests

| | |
|---|---|
| Test Sample No. 1; Sealection™ 500 | 3-1/2" Thick (2" x 4" Framing) |
| Pressure Differential: | 75 Pa |
| Air Leakage: | 0.000 L/s/m$^2$ (No air leakage detected) |

2. Air Leakage Tests

| | |
|---|---|
| Test Sample No. 2; Sealection™ 500 | 5-1/2" Thick (2" x 6" Framing) |
| Pressure Differential: | 75 Pa |
| Air Leakage: | 0.000 L/s/m$^2$ (No air leakage detected) |

3. Air Leakage Tests

| | |
|---|---|
| Test Sample No. 3; Sealection™ 500 | 7-1/2" Thick (2" x 8" Framing) |
| Pressure Differential: | 75 Pa |
| Air Leakage: | 0.000 L/s/m$^2$ (No air leakage detected) |
| Pressure Differential: | 140 Pa |
| Air Leakage: | 0.000 L/s/m$^2$ (No air leakage detected) |
| Pressure Differential: | 1200 Pa |
| Air Leakage: | 0.000 L/s/m$^2$ (No air leakage detected) |
| Pressure Differential: | 1500 Pa |
| Air Leakage: | 0.028 L/s/m$^2$ |
| Pressure Differential: | 2000 Pa |
| Air Leakage: | 0.028 L/s/m$^2$ |

4. Air Leakage Tests

| | |
|---|---|
| Test Sample No. 4;<br>Owen Corning R19 Fibreglass<br>With out Kraft Vapour Barrier<br>Paper backing | 5-1/2" Thick (2" x 6" Framing) |
| Pressure Differential: | 75 Pa |
| Air Leakage: | (Above Upper Limits of Equipment) L/s/m$^2$ |

5. Air Leakage Tests

| | |
|---|---|
| Test Sample No. 5;<br>Owen Corning R19 Fibreglass<br>With Kraft Vapour Barrier<br>Paper backing | 5-1/2" Thick (2" x 6" Framing) |
| Pressure Differential: | 75 Pa |
| Air Leakage: | 34.31 L/s/m$^2$ |

## CONCLUSION

Sealection™ 500 spray foam insulation; when tested in accordance with ASTM E283-04, for thicknesses of 3.5", 5.5", and 7.5", measured at pressure differential of 75 Pa; has an air leakage rate of less than 0.02 L/s/m$^2$. These tests were conducted on the bare foam adhering only to the edges of the wood framework.

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