

# TEST REPORT



**Intertek**

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## EVALUATION CENTER

INTERTEK TESTING SERVICES NA LTD.  
1500 BRIGANTINE DRIVE  
COQUITLAM, BC V3K 7C1

## RENDERED TO

DEKSMART PRODUCTS  
375 WARREN AVENUE EAST  
PENTICTON, BC V2A 3M1

**PRODUCT EVALUATED:** Polyester Scrim Ultra Vinyl Membrane  
**EVALUATION PROPERTY:** Confirmatory Testing

**Report of a Vinyl Decking product for compliance with the selected requirements of the following criteria: Canadian General Standards Board's CAN/CGSB-37.54-95 "Polyvinyl Chloride Roofing and Waterproofing Membrane"**

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## 2 Introduction

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Intertek Testing Services NA Ltd. (Intertek) has conducted a confirmatory test program for DekSmart Products on a new Polyester Scrim Ultra Vinyl Membrane product in accordance with Canadian General Standards Board's CAN/CGSB-37.54-95 "*Polyvinyl Chloride Roofing and Waterproofing Membrane*". The program is intended to verify that the manufactured product with new fabric backing, compared to DekSmart 60 mil Ultra Vinyl Decking, is consistent and complies with CAN/CGSB-37.54-95. This evaluation was completed in the month of December 2008.

## 3 Test Samples

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### 3.1. SAMPLE SELECTION

The Polyester Scrim Ultra Vinyl Membrane product was submitted by a DekSmart representative, Marshall Mcllellant, and was received at the Evaluation Center on November 26, 2008.

### 3.2. SAMPLE AND ASSEMBLY DESCRIPTION

Polyester Scrim Ultra Vinyl Membrane is a polyester roofing membrane consisting of 3 layers with anti-wicking polyester scrim sandwiched in the middle as support fabric. The thickness of the product is 1.41mm.

## 4 Testing and Evaluation Methods

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### 4.1. CONDITIONING

Before testing, prepared specimens were held in standard laboratory conditions for at least 40 hours at a temperature of  $23 \pm 2^{\circ}\text{C}$  and relative humidity of  $50 \pm 5\%$  in accordance with Section 7.2 of CAN/CGSB-37.54-95, and ASTM D618-05 *Standard Practice for Conditioning Plastics for Testing*.

### 4.2. OVERALL THICKNESS

The overall thickness was measured in accordance with Section 7.3.1 of CAN/CGSB-37.54-95, and ASTM D751-06 *Standard Test Method for Coated Fabrics*. Three determinations for thickness were made to an accuracy of 0.001mm (0.0004 in.). A 25.4 mm (1 in.) diameter plastic presser foot was used to ensure that a uniform pressure was applied to the material during each measurement.

### 4.3. BREAKING STRENGTH AND ELONGATION

Breaking strength and elongation tests were performed as specified in Section 7.3.4 of CAN/CGSB-37.54-95, using the grab method as described in ASTM D751-06. Five specimens measuring 100 × 150 mm (4 × 6 in.) were prepared in both the machine and cross-machine directions of the roll.

Each specimen was tested using a tensile testing machine equipped with self-aligning grips, with an initial separation of 75 mm (3 in.). The dimension of the gripping surfaces parallel to the direction of application of the load was 25 mm (1 in.); the dimension perpendicular to this was 25 mm (1 in.) for the face jaw, and 50 mm (2 in.) for the other. The jaw separation speed was  $5 \pm 0.2$  mm ( $12 \pm \frac{1}{2}$  in.)/min.

The breaking strength was calculated based on the width of the grips and the load after the first break as noted on the chart recorder. Elongation at break was based on the extension at that point. In addition, an observation was made to determine whether the break was restricted to the reinforcement, or whether the PVC matrix had also broken. The calculations were summarized as follows:

$$BS = F / w \quad \text{where:} \quad \begin{array}{ll} F & = \text{load at first break, kN} \\ w & = \text{width of jaw, m} \\ BS & = \text{Breaking strength, kN/m} \end{array}$$

#### 4.4. LAP JOINT STRENGTH

Lap-jointed samples were prepared by the manufacturer using the manufacturer's welding instructions. These samples were then used to perform break strength tests as described in section 4.3 before and after boiling in water for 7 days.

#### 4.5. LOW TEMPERATURE IMPACT

Low temperature flexibility was determined as per Section 7.3.6 of CAN/CGSB-37.54-95, and ASTM D1790-08 *Standard Test Method for Brittleness Temperature of Plastic Sheeting by Impact*. Ten specimens measuring 51 x 146 mm (2 x 5  $\frac{3}{4}$  in.) were prepared in the cross-machine direction of the roll. Each sample was folded over with the backing exposed and stapled along the 51 mm edge to an index card stock. The samples were then placed in a cold chamber for 90 minutes at a temperature of  $30 \pm 1^\circ\text{C}$  and then tested using a steel Brittleness Impact tester.

#### 4.6. DIMENSIONAL CHANGE (Without Loading)

Dimensional change was carried out as required by Section 7.3.12 of CAN/CGSB-37.54-95. Five strips of membrane 25 x 250 mm (1 x 10 in.) in the machine and cross machine direction were cut and measured in length. The strips were placed horizontally on a flat smooth surface in an air-circulating oven at  $80 \pm 1^\circ\text{C}$  for 6 hours. The strips were removed and allowed to condition for 5 hours before the lengths were measured again for dimensional change.

#### 4.7. DIMENSIONAL CHANGE (With Loading)

Dimensional change was carried out as required by Section 7.3.13 of CAN/CGSB-37.54-95. A 300 x 300 mm (12 x 12 in) specimen of membrane was cut with the machine direction marked. Within the specimen a 250 x 250 mm (10 x 10 in.) square was marked out accurately on the center of the sample. Measurements were taken of the marked out square and the sample was placed on a smooth flat sheet of 4.5 mm thick asbestos-cement board. A 250 x 250 mm (10 x 10 in.) sheet of 4.5 mm thick asbestos-cement board is placed exactly over the square sheet of membrane. A 250 x 250 mm (10 x 10 in.) concrete patio slab is placed exactly over the asbestos-cement board. This sample as described above was placed in an air-circulating oven at  $80 \pm 1^\circ\text{C}$  for 6 hours. It was then removed from the oven and conditioned for five hours, the patio slab and asbestos-board removed and the measurements of the marked out square were taken again for dimensional change.

#### 4.8. CONE PENETRATION

Cone penetration was carried out as required by Section 7.3.14 of CAN/CGSB-37.54-95. Five 50 x 50 mm (2 x 2 in.) specimens of membrane were cut. A stainless steel 60° cone penetration needle was attached to a load cell and placed on a tensile testing machine. An aluminum plate was used as a base and connected electrically so that when steel cone penetrate the sample the machine turns off and records the force required to puncture the specimen. The crosshead speed used for the test was 1.27 mm/min.

## 5 Testing and Evaluation Results

### 5.1. RESULTS AND OBSERVATIONS

The PVC membrane test results, together with the applicable requirements of CAN/CGSB-37.54-95 for a Type 4, Class B product are shown in the following table. A full set of test results is available upon request.

Table 1. Test Results for Polyester Scrim Ultra Vinyl Membrane			
Property	Test Result	Requirement	Pass/Fail
Overall Thickness, mm	1.4	1.2 min	Pass
Breaking Strength, kN/m • Machine Direction • Cross-Machine Direction	62 57	35 min	Pass
Elongation, % • Machine Direction • Cross-Machine Direction	35 64	15 min <sup>b</sup>	Pass
Lap Joint Strength, % Initial ➤ MD ➤ CD	99 106	75	Pass Pass
Lap Joint Strength, % After 7d in boiling water ➤ MD ➤ CD	100 91	70	Pass Pass
Low Temperature Impact	10 Pass	8 out 10 Pass	Pass
Dimensional Change, max.% ○ Without Loading ○ With Loading ▪ MD ▪ XD	0.01 -0.1 -0.2	0.5 0.5 0.2	Pass Pass Pass
Cone Penetration, N	212	30	Pass

<sup>b</sup>The PVC matrix must not break before the reinforcement

## 6 Conclusion

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The PVC membrane product identified and evaluated in this report has been tested as required set forth by Intertek Report No. 3163797COQ-001. The product has met the thickness/mass, breaking strength/elongation, lap joint strength, dimensional change after stress relaxation with and without loading, and cone penetration requirements of Canadian General Standards Board's CAN/CGSB-37.54-95 *Polyvinyl Chloride Roofing and Waterproofing Membrane* as presented in Section 5 of this report.

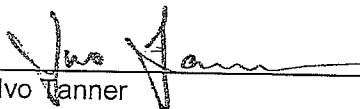
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