



ENGINEERING EVALUATION

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RENDERED TO

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PRODUCT EVALUATED: Titanium UDL 25 (Private Label II), UDL 30 and UDL 50
EVALUATION PROPERTY: CAN/CSA 123.3-05 (R2010)

Engineering Evaluation of Titanium UDL 25, 30 and 50 for compliance with select requirements of the following criteria: CAN/CSA A123.3-05 (R2010), Asphalt Saturated Organic Roofing Felt, Reaffirmed 2010

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2 Introduction

Intertek Testing Services NA Ltd. (Intertek) is conducting an engineering evaluation for InterWrap Inc., on their Titanium UDL 25 (Private Label II), UDL 30 and UDL 50 roofing underlayments to evaluate their conformance with CAN/CSA 123.3-05 (R2010), Asphalt Saturated Organic Roofing Felt. This evaluation is being carried out using past test data in accordance with ASTM D226-09, Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing, and ICC-ES AC188, Acceptance Criteria for Roof Underlayments approved February 2012.

3 Product and Assembly Description

3.1. Product and/or Assembly Description:

Titanium UDL™ 25 (Private Label II) roofing underlayment is a polymer-coated, woven synthetic underlayment comprised of a woven core coated on one side with a polymer coating. A polypropylene filament is used on the top side of the fabric to provide slip resistance. The weight of the underlayment is 2.86 pounds per 100 square feet, and is available in rolls 48 inches wide by min. 250 ft long.

Titanium UDL™ 30 Roofing Underlayment is a polymer-coated, woven synthetic underlayment comprised of a woven core coated on both sides with a polymer coating. The product is produced in a grey colour. The weight of the underlayment is 4 pounds per 100 square feet, and is available in rolls 48 inches wide by 256 feet long.

Titanium UDL™ 50 Roofing Underlayment is a polymer-coated, woven synthetic underlayment comprised of a woven core coated on both sides with a polymer coating. The product is produced in a grey colour. The weight of the underlayment is 4.5 pounds per 100 square feet, and is available in rolls 48 inches wide by 256 feet long. All raw material components and the manufacturing process are identical to that of Titanium UDL™ 30, except the use of a heavier scrim.

3.2. Product and/or Assembly Traceability:

No samples were submitted for this evaluation.

3.3. Product and/or Assembly Certification:

Interwrap is an Intertek Testing and Follow up Service client and Titanium UDL 25 (Private Label II), UDL 30 and UDL 50 are currently under the Intertek Warnock Hersey Certification Program. For full details of certification criteria search the Intertek online Directory of Listed Building Products at https://whdirectory.intertek.com/Pages/DLP_Search.aspx.

4 Reference Documents

As part of this evaluation, Intertek has directly or indirectly used the following referenced documents:

- Intertek Test Report #3146738COQ-003A dated, June 20, 2011
 - Intertek Test Report #3124618COQ-005A dated, September 26, 2007
 - Intertek Test Report #3124618COQ-005B dated, September 26, 2007
 - ICC-ES AC188, Acceptance Criteria for Roof Underlayments approved February 2012
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- ICC-ES Evaluation Report ESR 2154 for Titanium UDL 30 and 50
- ICC-ES Evaluation Report ESR 2391 for Titanium UDL 25
- CAN/CSA A123.3-05 (R2010), Standards for Asphalt Saturated Organic Roofing Felt, Reaffirmed 2010
- ASTM D226/D226M-09, Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing

5 Evaluation

The objective of this evaluation is to show compliance of Titanium UDL 25 (Private Label II), UDL 30 and UDL 50 in accordance with the requirements of CAN/CSA 123.3-05 (R2010). InterWrap Inc. wishes to qualify these products through using past test data in accordance with ASTM D226/D226M-09 and ICC-ES AC188. If additional testing is deemed necessary, this evaluation will outline what is required to show compliance of the product.

This evaluation is being conducted solely for the above referenced project or use or both. Due to the variables that exist from project to project and the fact that each evaluation requires review of the most current existing data and information, this evaluation is not to be used as justification for any other opinion nor used for any other project, without the express written consent of Intertek. This report should serve as Intertek's opinion regarding the use of the certified product in the conditions described herein. The materials used on the project, which are applied in compliance with Intertek Design Listings, must bear the Intertek listing mark. All certified products must be installed in accordance with the details contained in Intertek's Directory of Listed Building Products.

Titanium UDL 25 (Private Label II), UDL 30, and UDL 50 were tested in accordance with ASTM D226/D226M-06 as reported in Intertek Test Reports 3146738COQ-003A dated, June 20, 2011, 3124618COQ-005A dated, September 26, 2007, and 3124618COQ-005B dated, September 26, 2007. These test reports show the products met the performance requirements of a Type I and Type II *Asphalt-Saturated Organic Felt* per ASTM D226. See tables below for test results:

Table 1- Titanium UDL 25 (Private Label II), ASTM D226 Results

| Table 1. UDL II Test Results | | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------|----------------------------|-----------|
| Property | Test Result | Requirement | | Pass/Fail |
| | | Type I | Type II | |
| Unroll-Ability <ul style="list-style-type: none"> • At a temperature of 10°C (50°F) • At a temperature of 60°C (140°F) | No cracking or sticking | No cracking or sticking | No cracking or sticking | Pass |
| Breaking Strength, lbs/in. <ul style="list-style-type: none"> • With Fiber Grain • Across Fiber Grain | 143 109 | 30 min. 15 min. | 40 min. 20 min. | Pass |
| Pliability over a 12.7 mm (½ in.) radius <ul style="list-style-type: none"> • With Fiber Grain • Across Fiber Grain | No cracking No cracking | No cracking No cracking | No cracking No cracking | Pass |
| Loss on Heating, % | 1 | 4 max. | 4 max. | Pass |

Table 2- Titanium UDL 30, ASTM D226 Results

| Table 1. Test Results | | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------|-------------------------|-----------|
| Property | Test Result | Requirement | | Pass/Fail |
| | | Type I | Type II | |
| Unroll-Ability <ul style="list-style-type: none"> • At a temperature of 10°C (50°F) • At a temperature of 60°C (140°F) | No cracking or sticking | No cracking or sticking | No cracking or sticking | Pass |

| | | | | |
|----------------------------------------------------------------------------------------|----------------------------|----------------------------|----------------------------|------|
| Breaking Strength, lbs/in. • With Fiber Grain • Across Fiber Grain | 44 45 | 30 min. 15 min. | 40 min. 20 min. | Pass |
| Pliability over a 12.7 mm (½ in.) radius • With Fiber Grain • Across Fiber Grain | No cracking No cracking | No cracking No cracking | No cracking No cracking | Pass |
| Loss on Heating, % | 0.4 | 4 max. | 4 max. | Pass |

Table 3- Titanium UDL 50, ASTM D226 Results

| Table 1. Test Results | | | | |
|-------------------------------------------------------------------------------------------|----------------------------|----------------------------|----------------------------|-----------|
| Property | Test Result | Requirement | | Pass/Fail |
| | | Type I | Type II | |
| Unroll-Ability • At a temperature of 10°C (50°F) • At a temperature of 60°C (140°F) | No cracking or sticking | No cracking or sticking | No cracking or sticking | Pass |
| Breaking Strength, lbs/in. • With Fiber Grain • Across Fiber Grain | 64 64 | 30 min. 15 min. | 40 min. 20 min. | Pass |
| Pliability over a 12.7 mm (½ in.) radius • With Fiber Grain • Across Fiber Grain | No cracking No cracking | No cracking No cracking | No cracking No cracking | Pass |
| Loss on Heating, % | 0.2 | 4 max. | 4 max. | Pass |

Intertek did not evaluate the following properties with ASTM D226, moisture, the mass of felt (net mass, saturated and desaturated), ash, perforated felt and venting area, as these tests are not applicable to synthetic roofing underlayments.

Table 4 summarizes and compares the requirements for roofing felt in accordance with CAN/CSA A123.3-05(R2010) to those requirements evaluated in ASTM D226/D226M-06.

Table 4 – CAN/CSA A123.3-05(R2010)

| | CAN/CSA A123.3-05(R2010) Requirements | ASTM D226/D226M-06 Requirements | Comments |
|---------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------|
| Unrollability | No cracking or stickiness @ 10°C permitted | No cracking or stickiness observed @ 10°C or 60°C | Pass |
| Tolerance of stated width and length% | Not applicable | Not applicable | Not applicable |
| Loss on Heating (%) | Type 1, 2, and 3: Max. 4 | Type I and II – Max 4 | Pass |
| Saturation percentage min (%) by mass | Not applicable | Not applicable | Not applicable |
| Saturation Efficiency Min. (%) | Not applicable | Not applicable | Not applicable |
| Pliability (10 out of 10 must pass) | 12.7 mm radius - Type 1, and 2 19.1mm radius – Type 3 No cracking, MD No cracking, CD | 12.7 mm radius – Type I 19.1mm radius – Type II No cracking, MD No cracking, CD | Pass |
| Breaking Strength Min. (lbs/in) | Type 1: 5.2 MD 2.6 CD Type 2: 5.2 MD 2.6 CD Type 3: 7.0 MD 3.5 CD | Type I: 5.2 MD 2.6 CD Type II: 7.0 MD 3.5 CD | Pass |

| | | | |
|------------------------------------------------------------------------------------------|--------------------------------|-----------------|----------------|
| Number of Holes (per m ²) | Not applicable | Not applicable | Not applicable |
| Openness of Holes (%) | Not applicable | Not applicable | Not applicable |
| Water Shower Exposure Test (min. number of samples passed out of 5) | Type 1: n/a Type 2 and 3: 4 | Not Applicable. | Note 1 |
| Mass per unit area of saturated felt, min. (g/ m ²) | Not applicable | Not applicable | Not applicable |
| Mass per unit area of moisture-free desaturated felt, min. (g/ m ²) | Not applicable | Not applicable | Not applicable |
| Moisture, max. (% by mass) | Not applicable | Not applicable | Not applicable |

Note 1: Titanium UDL 25 (Private Label II), UDL 30 and UDL 50 have valid ICC-ES ESR Evaluation Reports which have been evaluated in accordance with ICC-ES AC188. One of the test requirements within ICC-ES AC188 is the water shower exposure, which is conducted using the same test methods as CAN/CSA A123.3-05 (R2010). Based on this information, the products meet the requirements of the water shower exposure test.

After a review of the above results, the synthetic Titanium UDL 25 (Private Label II), UDL 30, and UDL 50 underlayment meets the performance requirements in accordance with CAN/CSA A123.3-05(R2010), with the exception of those test intended for asphalt felt products.

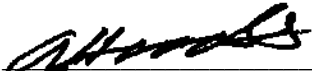
6 Conclusion

Intertek has conducted an engineering evaluation for InterWrap Inc., on their Titanium UDL 25 (Private Label II), UDL 30 and UDL 50 roofing underlayments to evaluate their conformance with CAN/CSA 123.3-05 (R2010), Asphalt Saturated Organic Roofing Felt. This evaluation was carried out using past test data in accordance with ASTM D226-09, Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing, and ICC-ES AC188, Acceptance Criteria for Roof Underlayments approved February 2012.

Based on the information contained and referenced herein, it is Intertek's professional judgment based on sound engineering principles that the following is true:

- Titanium UDL 25 (Private Label II), UDL 30 and UDL 50 roofing underlayments meet the performance requirements of CAN/CSA 123.3-05 (R2010)

INTERTEK TESTING SERVICES NA LTD.

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7 LAST PAGE & REVISION SUMMARY

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|-----------------|----------------|
| August 30, 2013 | Original |
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