



## Evaluation Listing CCMC 13580-L Mule-Hide TPO-c Membrane

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<b>Evaluation issued:</b>	2011-11-03
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### 1. Evaluation

The product conforms to ASTM D 6878/D 6878M-11a, “Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing.”

### 2. Description

Mule-Hide TPO-c is a three-layer sheet roofing membrane composed of a thermoplastic polyolefin (TPO) base layer, a polyester-reinforcing fabric (scrim) layer, and a TPO top layer.

The membrane is 30.4 m long and 1.14 mm, 1.52 mm, or 2.03 mm thick and is available in widths of 2.4 m, 3.0 m or 3.6 m.

### 3. Standard and Regulatory Information

See the Annex appended to this Listing, which summarizes the product standard.

This/these product(s) were evaluated to the product standard referenced in the Annex current as of 2019-02-19. Note that the Annex may have been updated since this Listing was issued to include more recent editions of the applicable product standard. Therefore, this Listing may not reflect the requirements contained in any updated version of this product standard.

### Listing Holder

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### Plant(s)

Senatobia, MS, USA  
Tooele, UT, USA

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**Date modified:**  
2019-06-04



## Thermoplastic Polyolefin-Based Sheet Roofing [Annex]

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### Scope

### Evaluation

These Evaluation Listings apply to thermoplastic-polyolefin (TPO)-based sheet membranes for use in roofing membranes.

The standard referenced below provides a basis for evaluating TPO as the principal polymer, intended for use in single-ply roofing membranes exposed to the weather.

The TPO membranes addressed in the standard include reinforcing fabrics or scrim.

The standard specifies that the membrane must be formulated from ethylene and higher alpha-olefin polymers, copolymers, and mixtures thereof, in amounts greater than 50% by weight of the total polymer content.

The proponent has demonstrated that the product meets the requirements of the following standard:

- ASTM D 6878/D 6878M-11a, “Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing”

The test and property limit values used to characterize the sheet membranes are intended to ensure a minimum level of quality for the intended purpose. In-place roof system design criteria, such as fire resistance, field-seaming strength, material compatibility, and uplift resistance are factors that should be considered.

### Additional Information

If stated in the Listing, the proponent has provided information related to:

- **Fire Classification of Roof Covering**  
The membrane was tested in accordance with CAN/ULC-S107-10, “Standard Methods of Fire Tests of Roof Coverings.”
- **Fire-resistance Rating**  
The membrane used in the roofing assembly was tested in accordance with CAN/ULC-S101-14, “Standard Methods of Fire Endurance Tests of Building Construction and Materials.”
- **Wind Uplift Resistance of Membrane Roofing Assemblies**  
The membrane used in the roofing assembly was tested in accordance with CSA-A123.21-10, “Standard Test Method for the Dynamic Wind Uplift Resistance of Membrane-roofing Systems.”

## Evaluation Standard

Table 1. Physical Requirements for TPO Sheet Membrane

Property		Unit	Requirement
Thickness, sheet-overall <sup>(1)</sup>		mm	≥ 1.0
Coating over fabric or scrim, weathering side only		mm	≥ 0.38
Breaking strength		N	≥ 976
Elongation at reinforcement break		%	≥ 15
Tearing strength		N	≥ 245
Brittleness point <sup>(2)</sup>		°C	≤ -40
Ozone resistance (visual inspection)		n/a	no cracks
Retention of properties after heat aging <sup>(3)</sup>	breaking strength	%	≥ 90
	elongation at reinforcement break		≥ 90
	tearing strength		≥ 60
	weight change (mass)		≤ ±1
Linear dimensional change		%	≤ ±1
Factory seam strength		N	≥ 290
Weather resistance (visual inspection) <sup>(3)</sup>		n/a	no cracks or crazing
Water absorption (mass increase) <sup>(4)</sup>		%	≤ ±3

### Notes to Table 1:

- (1) The thickness tolerance shall be +15%, -10% of the thickness agreed upon by the purchaser and supplier, but in no case shall it be less than the minimum specified in Table 1.
- (2) The tolerance for temperature conditions is ±2°C of the specified temperature, unless otherwise specified.
- (3) The tolerance for time conditions is ±15 min or ±1 % of the period, whichever is greater, unless otherwise specified.
- (4) Test performed on top coating material only. Use ASTM D 471-16a, Standard Test Method for Rubber Property—Effect of Liquids, Section 11, Change in Mass (after immersion).”

## Labelling

The containers holding the rolled material must be suitably marked to show the following information:

- the name of the material;
- the product code;
- the ASTM number;
- size and/or quantity; and
- the name of the manufacturer or supplier.

## **National Building Code of Canada (NBC)**

### **References in Division B of the NBC 2015**

#### **Evaluation Standard**

ASTM D 6878 / D 6878M-11a is referenced in Table 5.9.1.1., Sentence 9.13.3.2.(2), and Table 9.26.2.1.-B.

#### **Standards containing additional information**

CSA-A123.21-10 is referenced in Sentence 5.2.2.2.(4). The CAN/CSA-A123.21-14 is, however, not referenced in the NBC 2015. All products that are compliant with CAN/CSA A123.21-14 are also compliant with CSA A123.21-10.

CAN/ULC-S101-14 is referenced in Sentence 3.1.7.1.(1) and Table 9.10.3.1.-B.

CAN/ULC-S107-10 is referenced in Sentence 3.1.15.1.(1).