

# DURO-TECH™ TPO FLEECE 135-MIL (80-MIL) MEMBRANE

**DESCRIPTION:**

Duro-TECH™ TPO Fleece 135-Mil (80-Mil) (“TPOF135”) is a flexible thermoplastic polyolefin (“TPO”) roofing membrane made for use in Duro-TECH TPO roofing systems. TPOF135 meets or exceeds all requirements for ASTM D6878.

TPOF135 is available as roll goods.

In addition to the fleece, TPOF135 is a TPO membrane which incorporates a polyester reinforcement fabric (weft-inserted scrim) within TPO films to provide exceptional strength and waterproofing.

**TPO products are not compatible with PVC products.**

**TPO Film** – Proprietary TPO formulation of resins, thermal, and UV stabilizers, and flame retardants.

- TPO film above scrim – 37 mil (0.94 mm).

**Weft-Inserted Scrim** – A 9 x 9 polyester fabric construction with weft insertion, provides superior tear and puncture resistance. The polyester thread is treated to prevent wicking.

**Fleece** – The 8 oz/yd<sup>2</sup> (0.27 kg/m<sup>2</sup>) needle-punched polypropylene fleece provides excellent properties for adhering to, or mechanically fastening over, a variety of substrates. Each roll of membrane has one selvage edge where the fleece is held back 2.25 in. (57 mm) to provide for hot-air welding to the underlying membrane.

**Total Thickness** – 80 mil (2.03 mm), nominal.

**Overall Thickness (with Fleece)** –135 mil (3.43 mm), nominal.

**Weight** – 0.42 lb/ft<sup>2</sup> (2.05 kg/m<sup>2</sup>)

**Colors** – White, tan, and gray.

ROLL PROPERTIES		
Dimensions ft (m)	Approximate Coverage w/3-In. (76.2-mm) Overlap ft <sup>2</sup> (m <sup>2</sup> )	Approximate Weight lb (kg)
10 x 50 (3 x 15.2)	482 (44.8)	210 (95.25)



**Overlap Line** – A line, 6 in. (152 mm) from the edge of the sheet, is factory-applied to the top of the sheet to assist in maintaining proper overlap between sheets.

**ENERGY EFFICIENCY:**

White TPOF135 is an excellent product for complying with California Title 24, LEED®, and other energy efficiency programs requiring the use of a highly reflective roof membrane.

COOL ROOF RATING COUNCIL (CRRC)							
Colors	CRRC ID	Solar Reflectance		Thermal Emittance		Solar Reflective Index (SRI)	
		Initial	3-yr	Initial	3-yr	Initial	3-yr
White	0610-0022	0.80	0.70	0.78	0.81	97	84
Tan	0610-0029	0.73	0.66	0.90	0.91	90	81
Gray	0610-0028	0.34	0.34	0.89	0.88	37	36

**LEED-NC & LEED-EB CREDITS** – White TPOF135 membrane alone can obtain one credit in either U.S. Green Building Council's LEED-NC or LEED-EB programs. In combination with other design criteria, the membrane may help attain many other credits.

LEED-NC Credit Category	Duro-TECH Attribute
Sustainable Sites Heat Island Reduction	Solar Reflective Index (SRI) = 97

LEED-EB Credit Category	Duro-TECH Attribute
Sustainable Sites Heat Island Reduction	Solar Reflective Index (SRI) = 97

**WARRANTY:**

The following warranties are available for projects utilizing TPOF135. Contact Duro-Last for warranty details.

AVAILABLE DURO-TECH 80-MIL WARRANTIES			
PRODUCT	15-YEAR	20-YEAR	25-YEAR
SUPREME	NOT APPLICABLE		
ULTRA	15-Year High Wind TPO	20-Year High Wind TPO	NOT APPLICABLE
	15-Year Hail TPO		
	15-Year Hail and High Wind TPO		
BASIC	15-Year NDL TPO	20-Year NDL TPO	25-Year NDL TPO
	15-Year Material Only TPO	20-Year Material Only TPO	
RESIDENTIAL	15-Year Residential TPO	20-Year Residential TPO	NOT APPLICABLE

**CODES AND STANDARDS:**

Underwriters Laboratories (US & Canada)<sup>1</sup>, NEMO CERT Evaluation Report<sup>1</sup>, FM Approvals<sup>1</sup>, Canadian Construction Materials Centre<sup>1</sup>, State of Florida<sup>1</sup>, Miami-Dade County<sup>1</sup>, Texas Department of Insurance (TDI)<sup>1</sup>.

<sup>1</sup> Pending

**STORAGE:**

Keep away from ignition sources.

Store rolls lengthwise on pallets. Use tarps to keep rolls dry.

**PRECAUTIONS:**

Keep away from ignition sources. Do not smoke while installing.

Wear proper personal protective equipment, such as gloves and eye protection, per the SDS.

**MEMBRANE ATTACHMENT:**

**Adhered** – TPOF135 may be adhered to a variety of roof decks, walls, insulations, or cover boards. It may be adhered directly to an existing built-up roof (“BUR”) by using approved membrane adhesives. Adhesion pull tests are required prior to adhering to BUR. The tests must be performed on a 1- x 1-ft (0.3- x 0.3-m) area and receive minimum values of 150 lb/ft<sup>2</sup> (732.36 kg/m<sup>2</sup>). Refer to the Duro-TECH TPO Adhered Roofing System Specification for system requirements.

**Mechanically Fastened** – TPOF135 may be mechanically fastened to a variety of roof deck and wall materials. An appropriate slip sheet, insulation or cover board may be required. Refer to the Duro-TECH TPO Mechanically Fastened Roofing System Specification for system requirements.

**PHYSICAL PROPERTIES:**

TPOF135 has been subjected to the tests required by ASTM D6878 “Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing”. The results of each test are listed below. ASTM’s Overall Thickness requirements for the membrane are plus or minus 10% (nominal) of the listed Typical Value.

PHYSICAL PROPERTIES				
Physical Property	Test Method	ASTM D6878 Requirement	Result	Typical Value
Overall Thickness	ASTM D751	≥ 72 mil and ≤ 88 mil (≥ 1.83 mm and ≤ 2.24 mm)	PASS	80 mil (2.03 mm) nominal
Thickness Over Scrim	ASTM D7635	≥ 15 mil (≥ 0.38 mm)	PASS	37 mil (0.94 mm)
Breaking Strength	ASTM D751 grab method	≥ 220 lbf (≥ 978.6 N)	PASS	460 lbf (2,046.2 N)
Elongation at Reinforcement Break	ASTM D751 grab method	≥ 15%	PASS	25%
Tear Strength	ASTM D751	≥ 55 lbf (≥ 244.7 N)	PASS	120 lbf (533.8 N)
Brittleness Point	ASTM D2137	Must pass at -40° F (-40° C)	PASS	PASS
Ozone Resistance, No Cracks	ASTM D1149	PASS (no cracks)	PASS	PASS
Properties After Heat Aging (Retained Values) ASTM D573 – 5,376 Hours (224 Days or 32 Weeks) at 240° F (116° C)				
Breaking Strength	ASTM D751 grab method	90% min	PASS	> 90%
Elongation at Reinforcement Break	ASTM D751 grab method	90% min	PASS	> 90%
Tear Strength	ASTM D751	60% min	PASS	> 60%
Weight of Change	–	± 1% max	PASS	< 1%
Linear Dimension Change	ASTM D1204 6 hours at 158° F (70° C)	± 1% max	PASS	< 1%
Water Absorption	ASTM D471	± 3% max	PASS	< 3%
Weather Resistance	ASTM G155 176° F (80° C) Black Panel, no cracking, crazing when wrapped around a 3-inch (76.2-mm) mandrel and inspected at 7X magnification	10,800 kJ/m <sup>2</sup> min	PASS	> 60,000 kJ/m <sup>2</sup>
Puncture	FTM 101C method 2031	–	PASS	450 lbf (2,001.7 N)
Dynamic Puncture	ASTM D5635	–	PASS	60 J
Static Puncture	ASTM D5602	–	PASS	55 lb (24.95 kg)
Air Permeance (Material)	ASTM E2178	0.004 ft <sup>3</sup> /ft <sup>2</sup> max (0.02 L/(s*m <sup>2</sup> ))	PASS	PASS

**APPROVALS:**



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