Metal Roof

TPO Insulated Roof

Description:

The EverGuard roof recovery system for existing metal roofs has been designed to deliver a lasting solution offering up to a 30-year warranty when using GAF EverGuard Extreme TPO.

This system allows for minimal disruption to the existing building during installation, while using the existing substrate to keep costs down. Due to its light weight design, it is suitable to recover most types of metal profile.

Additionally, roof insulation may be added to achieve greater thermal performance and may include tapered insulation for added fall if required.

Key Features:

- **Lightweight,** Suitable for most types of metal profile installed across New Zealand and is an excellent low-pitch roof solution.
- **Cost Effective,** Reuses the existing structural metal substrate and typically does not require shrink wrap for weather protection during roof installation.
- **Durability,** offering up to 30-years warranty with EverGuard Extreme TPO factory backed by North Americas largest roofing manufacturer.
- **Less Disruption,** As the existing metal roof remains intact during installation, in most cases the building can maintain tenanted operations throughout the installation process.
- **Cooler Roof,** EverGuard TPO reflects solar energy, reducing unwanted radiant heat into the building and reduces air conditioning costs.
- **Warm Roof Insulation,** provides increased thermal resistance with options to add additional roof insulation as a warm roof solution.
- **Flame-Free,** Gas torches use with torch-on membranes, provide a substantial risk of fire to existing buildings and tenants. EverGuard TPO has a 100% flame free installation with the use of digital welding equipment.

CodeMark and BRANZ Appraised

EverGuard TPO has both CodeMark and BRANZ Appraisal for New Zealand

- CodeMark BRANZ CM 1007
- Branz Appraisal 823

CODEMARK BRANZ-CM-1007 BRANZ Appraised Appraisal No. 823 [2015]

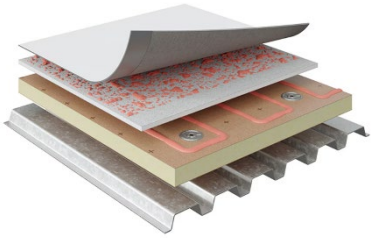
Environmental Benefits:

EverGuard TPO offers up to a 30-year warranty that represents a 50% increase over torch-on and other TPO and KEE PVC solutions. A longer roof lifecycle provides lower overall environmental impact over the lifetime of the building, and reduces dumping waste of old roof products each time the roof is replaced.

Recycling or reusing the existing metal deck as part of the new roofing system further reduces waste while adding insulation increases the thermal resistance capability of the roof.

EverGuard TPO is designed to be reflective of solar energy and greatly reduces unwanted heat radiating through the metal roof which in turn reduces the energy consumption of air conditioning systems.

EverGuard TPO does not contaminate water and can be used with potable rainwater collection systems and contributes to reducing rain noise when coverboard is installed over the existing metal roof deck.



Visit **gafroofing.co.nz**

For additional information, contact GAF Technical Support New Zealand at **0800423355** or **technical@gaf.nz**

GAF Roofing New Zealand

GAF EverGuard® TPO

45-Mil **60**-Mil **80**-Mil

Durable. Efficient. Proven.

GAF knows thermoplastic polyolefin (TPO). Our EverGuard® TPO membrane construction has remained unchanged for decades. It's just one of the reasons we've sold more than 6 billion square feet. EverGuard® TPO offers flexibility, durability, UV reflectivity, and heat-sealable properties. It's inherently fungal resistant* and flexible without using plasticizers.

Competitive pricing and a 20-plus-year track record for performance make TPO the most popular option in the commercial roofing industry and specialized training from GAF Roofing It Right videos and CARE classes add to GAF's unmatched technical support.

Installation:

EverGuard® TPO is suitable for all types of single-ply systems:

- **Mechanically Attached** — for a quick and cost-effective system that can be installed practically year-round.
- **Induction Welded** — can be applied without using adhesives and installed practically year round. Qualifies for the same guarantee length as an adhered system.†
- **Adhered** — can be installed with EverGuard® TPO Quick Spray, EverGuard® TPO Quick Spray LV50, EverGuard® TPO Low VOC Bonding Adhesive, EverGuard® TPO 3 Square Low VOC Bonding Adhesive, EverGuard® TPO SBA 1121 Bonding Adhesive, or EverGuard® WB 181 Bonding Adhesive for the smoothest appearance.

Features:

EverGuard® TPO offers the following:

- Endures 2 to 2.5 times the industry standard, depending on thickness (ASTM D6878 weather resistance test).
- Offers guarantees for eligible systems up to 20 years for 45 mil, 25 years for 60 mil, and 30 years for 80 mil.†
- Available in 12' rolls to cover more area with fewer rolls and seams
- Allows for heat-welded seams that provide greater seam strength to taped and other seams
- Creates a highly reflective and emissive white roof that can help reduce cooling costs‡ and urban heat island effect. (white, energy tan and energy gray only)

TPO Field Study:
As a relatively new roof technology, TPO performance was proven mostly in lab studies. So when real-world TPO systems started approaching 20-year marks, GAF acquired and analyzed EverGuard® TPO samples across the United States. We found 8- to 16-year-old TPO roofs to be performing well and in most instances, meeting the current ASTM D 6878-19 requirements for new membranes. Download the study from GAF.com.

MADE IN THE U.S.A.
WITH DOMESTIC AND IMPORTED MATERIALS.
AMERICAN JOBS IN AMERICAN FACTORIES.

* Meets ASTM G21. GAF warranties and guarantees do not provide coverage against fungi or other biological growth. Refer to gaf.com for more information on warranty and guarantee coverage and restrictions.

† Additional requirements apply. Contact GAF for more information. Refer to sample guarantees, available at gaf.com, for complete coverage and restrictions.

‡ Energy cost savings are not guaranteed and the amount of savings may vary based on climate zone, utility rates, radiative properties of roofing products, insulation levels, HVAC equipment, efficiency and other factors.

Accessories:

EverGuard® TPO prefabricated accessories deliver consistent quality and eliminate the worry and problems often associated with field fabrication. They can also boost productivity while reducing labor.

- **Coated Speedtite™ and Hercules® Drain** — TPO-coated flange for direct hot-air welding of TPO roof membranes.
- **Corner Curb Wrap** — Four standard sizes to flash 24", 36", 48", and 60" curbs.
- **Fluted Corner** — For use in flashing outside corners of base and curb flashing.
- **Inside Corner** — Manufactured to accommodate inside corners of base or curb flashing.
- **Preformed Split Pipe Boot** — Three standard sizes accommodate most pipes and conduits.
- **Preformed Vent Boot** — Accommodates most common pipes and conduits from 1" (25.4 mm) to 6" (152 mm).
- **Scupper** — Heat-welds to the scupper for a strong, secure installation.
- **Split Pourable Sealant Pocket** — Cuts to size and offers a low profile to help seal varying penetrations with less sealant.
- **Square Tube Wrap** — Tube wraps are split with overlaps to wrap around square or rectangular tubing.
- **T-Joint Cover Patches** — Conforming seal for use over T-joints in 60- and 80-mil membrane applications.
- **TPO Cover Tape** — Self-adhered TPO ideal for stripping-in TPO and edge metal.
- **Universal Corner** — Accommodates both inside and outside corners of base and curb flashings.
- **Vent** — For use in venting low-slope mechanically attached roofs.
- **Walkway Roll** — Heat-welds directly to TPO membrane or installs with seam tape. Available in gray and yellow.

For additional information, contact GAF Design Services at **1-877-423-7663** or **designservices@gaf.com**

GAF EverGuard® TPO

45-Mil **60**-Mil **80**-Mil

Physical Properties (ASTM D6878)					
Type	ASTM Test Method	ASTM D 6878 Minimum	EverGuard® TPO Test Values (approx.)*		
			45 mil	60 mil	80 mil
TPO Nominal Thickness	ASTM D751	0.039"	0.045" (1.14 mm)	0.060" (1.52 mm)	0.080" (2.03 mm)
Thickness Over Scrim	ASTM 7635	0.015"	15.8 mil (nominal)	24.1 mil (nominal)	31.4 mil (nominal)
Breaking Strength	ASTM D751 Grab Method MD	220 lbf	375 lbf x 330 lbf (559 x 492 kg/m)	400 lbf x 360 lbf (596 x 536 kg/m)	440 lbf x 390 lbf (656 x 581 kg/m)
Elongation at Break	ASTM D751	15%	30%	30%	30%
Tear Strength	ASTM D751 (8" x 8" sample)	55 lbf	90 lbf x 120 lbf (134 x 179 kg/m)	70 lbf x 130 lbf (104 x 194 kg/m)	100 lbf x 180 lbf (149 x 268 kg/m)
Brittleness Point	ASTM D2137	-40 °F	-40 °F	-40 °F	-40 °F
Ozone Resistance	ASTM D1149	No cracks @ 7x magnification	No visible deterioration @ 7x magnification	No visible deterioration @ 7x magnification	No visible deterioration @ 7x magnification
Properties after Heat Aging	ASTM D573	≤1.5% weight change after 8 weeks @ 275° F, No cracks @ 7x magnification	Pass	Pass	Pass
Properties after Heat Aging, UAWS		Total radiation @ 8400 MJ/m² UV, no cracking	Pass	Pass	Pass
Linear Dimensional Change	ASTM D1204	±1%	0.2%	0.4%	0.4%
Water Absorption	ASTM D471	±3%	0.7%	0.7%	0.7%
Factory Seam Strength	ASTM D751	66 lbf	115 lbf (membrane failure) (171 kg/m)	145 lbf (membrane failure) (216 kg/m)	155 lbf (membrane failure) (231 kg/m)
Weather Resistance	ASTM G155	10,080 kJ(m²•nm) at 340 nm, No cracks @ 7x magnification	>20,000 kJ(m²•nm) at 340 nm	>25,000 kJ(m²•nm) at 340 nm	>25,000 kJ(m²•nm) at 340 nm
Air Permeance	ASTM E2178		<0.02 L/(s • m²)	<0.02 L/(s • m²)	<0.02 L/(s • m²)

Note 1: Certain data is provided in MD (machine direction) x CMD (cross machine direction) format.
Note 2: Values stated are approximate and subject to normal manufacturing variation. These values are not guaranteed and are provided solely as a guide..

Additional Physical Properties					
Puncture Resistance	FTM 101 C Method 2031	Not established	>350 lb. (159 kg)	>380 lb. (172 kg)	>380 lb. (172 kg)
Permeance	ASTM E96	Not established	<0.08 Perms	<0.08 Perms	<0.08 Perms
Guarantee			Up to 20 years	Up to 25 years	Up to 30 years

Sustainability Ratings/Certifications

Cool Roof Rating Council (CRRC)

Color	Rated Product ID#	Initial			Aged		
		Solar Reflectance (ASTM C 1549)	Thermal Emittance (ASTM C 1371)	Solar Reflectance Index (ASTM E 1980)	Solar Reflectance (ASTM C 1549)	Thermal Emittance (ASTM C 1371)	Solar Reflectance Index (ASTM E 1980)
White	0676-0001	0.76	0.90	94	0.68	0.83	81
Energy Gray	0676-0045	0.72	0.87	88	0.67	0.90	82
Energy Tan	0676-0039	0.72	0.89	89	0.66	0.89	80

LEED Information	
Manufacturing Location	Mount Vernon, IN, New Columbia, PA, Cedar City, UT, Gainesville, TX

GAF EverGuard® TPO

45-Mil **60**-Mil **80**-Mil

Applicable Standards/Approvals

MIAMI-DADE COUNTY APPROVED	Miami Dade County Product Control Approved	UL Evaluation Report UL ER1306-01	ICC-ES Evaluation Report ESR-4676 (Cedar City, UT only)
FM APPROVED	FM Approved (Refer to FM RoofNav.com for actual assemblies)	Meets or exceeds the requirements of ASTM D6878.	State of Florida Approved
CLASSIFIED UL	Classified by UL in accordance with ANSI/UL 790. (Refer to UL Product iQ for actual assemblies).	Meets or exceeds the requirements of the Texas Department of Insurance.	CRRC Rated — Can be used to comply with 2022 Title 24, Part 6, Cool Roof Requirements of the California Code of Regulations (White, Energy Tan, and Energy Gray only)

Product Data

Roll Size	12′ Roll Size	12′ Roll Weight (Average)	10′ Roll Size	10′ Roll Weight (Average)	8′ Roll Size	8′ Roll Weight (Average)	6′ Roll Size	6′ Roll Weight (Average)	5′ Roll Size	5′ Roll Weight (Average)
EverGuard® TPO 45	12' x 100' (3.66 x 30.5 m) 1,200 sq. ft. (111.5 sq.m)	307 lb. (139 kg)	10' x 100' (3.05 x 30.5 m) 1,000 sq. ft. (92.9 sq.m)	256 lb. (116 kg)	8′ x 100′ (2.43 x 30.5 m) 800 sq. ft. (74.3 sq.m)	204 lb. (93 kg)	6′ x 100′ (1.83 x 30.5 m) 600 sq. ft. (55.7 sq.m)	153 lb. (70 kg)	5′ x 100′ (1.52 x 30.5 m) 500 sq. ft. (46.5 sq.m)	128 lb. (58 kg)
EverGuard® TPO 60	12' x 100' (3.66 x 30.5 m) 1,200 sq. ft. (111.5 sq.m)	386 lb. (175 kg)	10' x 100' (3.05 x 30.5 m) 1,000 sq. ft. (92.9 sq.m)	322 lb. (146 kg)	8′ x 100′ (2.43 x 30.5 m) 800 sq. ft. (74.3 sq.m)	257 lb. (117 kg)	6′ x 100′ (1.83 x 30.5 m) 600 sq. ft. (55.7 sq.m)	194 lb. (88 kg)	5′ x 100′ (1.52 x 30.5 m) 500 sq. ft. (46.5 sq.m)	162 lb. (74 kg)
EverGuard® TPO 80	12' x 100' (3.66 x 30.5 m) 1,200 sq. ft. (111.5 sq.m)	504 lb. (228 kg)	10' x 100' (3.05 x 30.5 m) 1,000 sq. ft. (92.9 sq.m)	420 lb. (191 kg)	8′ x 100′ (2.43 x 30.5 m) (800 sq. ft. (74.3 sq.m)	336 lb. (152 kg)	6′ x 100′ (1.83 x 30.5 m) 600 sq. ft. (55.7 sq.m)	252 lb. (114 kg)	5′ x 100′ (1.52 x 30.5 m) 500 sq. ft. (46.5 sq.m)	210 lb. (95 kg)
Colors	White, Gray, Energy Gray, Slate Gray, Tan, Energy Tan, Desert Tan, Dark Bronze, Dark Brown, Goldenrod, Sky Blue, Regal Blue, Electric Blue, Hartford Green, Patina Green, Regal Red, Terra Cotta.									
Storage	Store on pallets in a clean, dry area at temperatures below 100 °F (38 °C).									
Safety Warning	Membrane rolls are heavy. Employ at least two people to position and install.									

Visit gaf.com

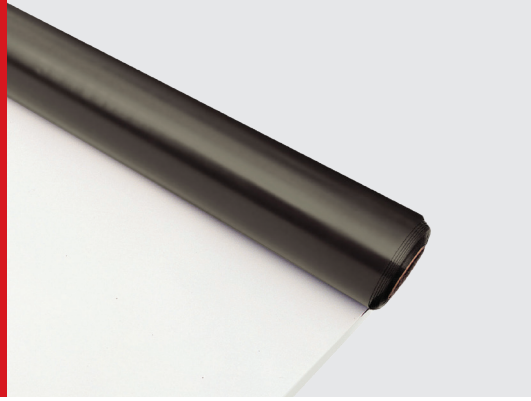
For additional information, contact GAF Design Services at **1-877-423-7663** or **designservices@gaf.com**

We protect what matters most™

EverGuard

GAF Extreme® TPO Membrane

50, 60, 70, 80 mil



Description:

Durable. Efficient. Proven. GAF knows thermoplastic polyolefin (TPO). In fact, we've sold more than 6 billion square feet. GAF has been producing TPO for more than 20 years and operates 5 manufacturing plants around the United States.

GAF EverGuard Extreme® TPO Includes an enhanced weathering package that allows GAF to offer a guarantee of up to 35 years‡ for qualified systems, the longest in the industry.

- Great for high-heat and solar applications.*
- Offers inherent flexibility, excellent heat-sealable properties, long-term heat and UV resistance, and fungal resistance,†
- GAF EverGuard Extreme® TPO is the leader in the industry with the highest reflectivity, emissivity, and SRI of available TPO membranes (white only) based on published CRRC ratings.

EverGuard Extreme® TPO comes in 4 different thicknesses to fit a variety of needs. Guarantee information cited below is for qualified systems only.

- **50 mil** — Get the guarantee coverage of a standard 60 mil TPO with the benefit of the Extreme heat-aging package.
  - **Labor-Saving Tip**: GAF EverGuard Extreme® TPO 50 mil can be installed without T-Joint patches and still qualify for 25-year guarantee, unlike 60 mil TPO membrane
- **60 mil** — Guarantee coverage up to 30 years available when installing with eligible adhered and induction-welded systems
- **70 mil** — Eligible for a 30-year‡ guarantee, the same as a standard 80 mil TPO
- **80 mil** — Eligible for guarantees up to 35 years‡, the longest in the industry

Sustainability:

- Product-specific Environmental Product Declaration (EPD)
- Red List Approved Declare Label
- NSF Protocol P151 Approved for Rainwater Catchment System Components (white only)
- Third-party certified recycled content (3–10% recycled content)

Installation:

EverGuard Extreme® TPO is suitable for all types of single-ply systems:

- **Mechanically Attached** — for a quick and cost-effective system that can be installed practically year-round.
- **Induction Welded** — can be applied without using adhesives and installed practically year round. Qualifies for the same guarantee length as an adhered system.
- **Adhered** — can be installed with EverGuard® TPO Quick Spray, EverGuard® TPO Quick Spray LV50, EverGuard® TPO Low VOC Bonding Adhesive, EverGuard® TPO 3 Square Low VOC Bonding Adhesive, EverGuard® TPO SBA 1121 Bonding Adhesive, or EverGuard® WB 181 Bonding Adhesive for the smoothest appearance.

Specialized training from GAF Roofing It Right videos and CARE classes add to GAF's exceptional technical support.

For TPO membrane rolls only§:

MADE IN THE U.S.A.
WITH DOMESTIC AND IMPORTED MATERIALS.
AMERICAN JOBS IN AMERICAN FACTORIES.

* Per ASTM D573-13.
† Meets ASTM G21. GAF warranties and guarantees do not provide coverage against fungi or other biological growth. Refer to gaf.com for more information on warranty and guarantee coverage and restrictions.
‡ Additional requirements apply. Contact GAF for more information. See applicable guarantee, available at gaf.com, for complete coverage and restrictions.
§ Excludes TPO accessories.

Easy-to-Install Accessories:

Fabricating details on-site can be time-consuming, costly, inconsistent, and even unreliable. EverGuard® TPO prefabricated accessories save you time and labor, deliver consistent performance, and create a uniform aesthetic.

EverGuard Extreme® TPO Split Pourable Sealer Pocket

The low-profile design requires less sealant and can be cut down to size to more tightly fit around penetrations.

EverGuard Extreme® TPO Vent Boot

One standard size of the molded membrane Vent Boot accommodates 1"– 6" (25.4 mm – 152 mm) pipes and conduits. Vent Boots come with stainless steel clamping rings for the top of the penetration.

EverGuard Extreme® TPO Corner Wrap

Constructed from proven, durable EverGuard Extreme® TPO single-ply reinforced membrane and available in four convenient sizes from 13.5" (343 mm) to 31.5" (800 mm).

See our complete line of time-saving prefabricated TPO Accessories

For additional information, contact GAF Design Services at **1-877-423-7663** or **designservices@gaf.com**

We protect what matters most™

EverGuard Extreme® TPO Membrane

50, 60, 70, 80 mil

Physical Properties (ASTM D 6878-21), see notes below

Type	ASTM Test Method	ASTM Minimum Values	EverGuard Extreme® TPO Test Values (approx.)			
			50	60	70	80
TPO Nominal Thickness	ASTM D751	0.039″	0.048" (1.22 mm)	0.055" (1.40 mm)	0.066" (1.68 mm)	0.076" (1.93 mm)
Thickness over Scrim	ASTM D7635	0.015″	20 mil (nominal)	26 mil (nominal)	27 mil (nominal)	33 mil (nominal)
Breaking Strength	ASTM D751 Grab Method MD	220 lbf	360 lbf x 320 lbf (536 x 476 kg/m)	385 lbf x 345 lbf (573 x 513 kg/m)	420 lbf x 375 lbf (625 x 558 kg/m)	445 lbf x 205 lbf (662 x 305 kg/m)
Elongation at Break	ASTM D751	15%	29.40%	29%	29.60%	28.60%
Tear Strength	ASTM D751 (8″ x 8″ Sample)	55 lbf	70 lbf x 140 lbf (104 x 208 kg/m)	71 lbf x 134 lbf (106 x 199 kg/m)	59 lbf x 125 lbf (88 x 186 kg/m)	62 lbf x 155 lbf (92 x 231 kg/m)
Brittleness Point	ASTM D2137	-40°F	-40°F			
Ozone Resistance	ASTM D1149	No cracks @ 7x magnification	Pass	Pass	Pass	Pass
Properties after Heat Aging	ASTM D573	≤1.5% Weight change after 8 weeks @ 275°F; No cracks @ 7x magnification	Pass	Pass	Pass	Pass
Linear Dimensional Change	ASTM D1204	±1%	0.35%	0.34%	0.39%	0.27%
Water Absorption	ASTM D471	±3%	0.15%	0.12%	0.29%	0.14%
Factory Seam Strength (Membrane Failure)	ASTM G751	66 lbf	123 lbf (183 kg/m)	134 lbf (199 kg/m)	149 lbf (222 kg/m)	161 lbf (240 kg/m)
Weather Resistance	ASTM G155	10,080 kJ/m² at 340 nm; No cracks @ 7x magnification	>46,000 kj/m²	>56,000 kj/m²	>56,000 kj/m²	>56,000 kj/m²

1 Certain data is provided in MD (machine direction) x CMD (cross machine direction) format.
2 Values stated are approximate and subject to normal manufacturing variation. These values are not guaranteed and are provided solely as a guide.

Additional Physical Properties: Testing and Aging

Puncture Resistance	FTM 101C Method 2031	Not Established	437 lb. (198 kg)	462 lb. (210 kg)	479 lb. (217 kg)	524 lb. (238 kg)
Accelerated UV Exposure	UAWS	Total radiation @ 8400 MJ/m² UV, no cracking	Pass	Pass	Pass	Pass

Guarantee*

Guarantees up to	25 Years	30 Years	30 Years	35 Years

* Additional requirements apply. Contact GAF for more information. See applicable guarantee, available at gaf.com, for complete coverage and restrictions.

Sustainability Ratings/Certifications

Cool Roof Rating Council (CRRC)							
Color	Rated Product ID#	Initial			Aged		
		Solar Reflectance (ASTM C1549)	Thermal Emittance (ASTM C1371)	Solar Reflectance Index (ASTM E1980)	Solar Reflectance (ASTM C1549)	Thermal Emittance (ASTM C1371)	Solar Reflectance Index (ASTM E1980)
White	0676-0088	0.83	0.84	104	0.72	0.91	90

LEED Information

Manufacturing Locations	Mount Vernon, IN	New Columbia, PA	Cedar City, UT	Gainesville, TX

Note: Product-specific EPD contributes toward satisfying Environmental Product Declaration credit under LEED®. Declare Label contributes toward satisfying Material Ingredients credit under LEED®.

EverGuard Extreme® TPO Membrane

50, 60, 70, 80 mil

Applicable Standards/Approvals

CRRC Rated — Can be used to comply with Title 24, Part 6, Cool Roof Requirements of the California Code of Regulations (white only)	NSF Protocol P151 Approved for Rainwater Catchment System Components (white only). This only applies to membranes produced in the Gainesville TX plant.
FM Approved (Refer to roofnav.com for approved assemblies)	Canadian Construction Materials Centre (CCMC) Evaluation # 14063-L (Cedar City, UT, Gainesville, TX, and New Columbia, PA only)
Miami-Dade County Product Control Approved (Cedar City, UT, Mt Vernon, IN and Gainesville, TX only)	ICC-ES Evaluation Report ESR-4676 (Cedar City, UT and Gainesville, TX only)
Classified by UL in accordance with ANSI/UL 790. Refer to UL Product iQ for specific assemblies.	Texas Department of Insurance Report RC-122
State of Florida Approved	UL ER1306-01

Product Data

Roll Size	10′ Roll Size	10′ Roll Weight (Average)	5′ Roll Size	5′ Roll Weight (Average)
EverGuard Extreme® TPO Membrane 50 mil	10′ x 100′ (3.05 x 30.5 m) (1,000 sq. ft. [92.9 sq.m])	271 lb. (123 kg)	5′ x 100′ (1.52 x 30.5 m) (500 sq. ft. [46.5 sq.m])	136 lb. (61.7 kg)
EverGuard Extreme® TPO Membrane 60 mil	10′ x 100′ (3.05 x 30.5 m) (1,000 sq. ft. [92.9 sq.m])	322 lb. (146 kg)	5′ x 100′ (1.52 x 30.5 m) (500 sq. ft. [46.5 sq.m])	162 lb. (73.5 kg)
EverGuard Extreme® TPO Membrane 70 mil	10′ x 100′ (3.05 x 30.5 m) (1,000 sq. ft. [92.9 sq.m])	373 lb. (163 kg)	5′ x 100′ (1.52 x 30.5 m) (500 sq. ft. [46.5 sq.m])	136 lb. (61.7 kg)
EverGuard Extreme® TPO Membrane 80 mil	10′ x 100′ (3.05 x 30.5 m) (1,000 sq. ft. [92.9 sq.m])	420 lb. (191 kg)	5′ x 100′ (1.52 x 30.5 m) (500 sq. ft. [46.5 sq.m])	210 lb. (95 kg)
Colors	White, Energy Gray (Cedar City only)			
Storage	Store on pallets in a clean, dry area at temperatures below 100°F (38°C).			
Safety Warning	Membrane rolls are heavy. Employ at least two people to position and install.			

Note: Membrane rolls shipped horizontally on pallets, stacked pyramid-style, and banded.

Visit **gaf.com**

For additional information, contact GAF Design Services at 1-877-423-7663 or designservices@gaf.com

We protect what matters most™

Flat Polyiso with GFR Facers

EnergyGuard™
Polyiso Insulation

Description:

EnergyGuard™ Polyiso Insulation board is made of glass fiber-reinforced cellulosic felt (GRF) facers bonded to a core of polyisocyanurate foam.

Features and Benefits:

- Versatile — Approved component in single ply, BUR and modified bitumen systems, with a variety of attachment methods: mechanically attached, fully adhered, loose laid and ballasted
- Approved for direct application to steel decks
- High insulation value — polyiso insulation has the highest R-value per inch compared to any other type of non-polyiso insulation of equivalent thickness
- Because of its light weight, this material is easy to handle on the jobsite and installs quickly. Easy cutting in the field provides the installer with simplified fabricating on the roof deck
- Excellent dimensional stability, high moisture resistance and low water permeability

Panel Characteristics:

- Available in a variety of thicknesses from 1.0" (25.4 mm) to 4.6" (116 mm) to best suit your specifications
- Available in 4' x 4' (1.21 m x 1.21 m) and 4' x 8' (1.21 m x 2.44 m) boards
- Flute Fill and other special sizes are available upon request
- Other EnergyGuard™ products available – tapered, CGF facer and non-halogenated. See individual data sheets for more information

Codes & Compliance:

- Meets the requirements of ASTM C1289 Type II, Class 1, Grade 2 (20 psi) and also available in Grade 3 (25 psi)
- FM 4450 / 4470—consult RoofNav.com for specific assemblies
- UL listed to ANSI / UL 790, UL 263, UL 1256
- UL Evaluation Report UL ER1306-03
- See UL Product iQ for details
- Miami-Dade County Approved
- State of Florida Approved
- For additional information, contact GAF at 1-800-766-3411 or designservices@gaf.com

FM APPROVED · CLASSIFIED UL · PIMA QualityMark The Certified ETR-value · MIAMI-DADE COUNTY APPROVED

State of Florida Approved

EnergyGuard™ Polyiso Thermal Values:

Size*	R-Value**	Max Flute Span (in)
1.0" (25.4 mm)	5.7	2 5/8" (66.7 mm)
1.2" (30.5 mm)	6.8	2 5/8" (66.7 mm)
1.5" (38.1 mm)	8.6	4 3/8" (111 mm)
1.75" (44.5 mm)	10.0	4 3/8" (111 mm)
2.0" (51 mm)	11.4	4 3/8" (111 mm)
2.3" (58 mm)	13.2	4 3/8" (111 mm)
2.5" (64 mm)	14.4	4 3/8" (111 mm)
2.6" (66 mm)	15.0	4 3/8" (111 mm)
2.8" (71 mm)	16.2	4 3/8" (111 mm)
3.0" (76 mm)	17.4	4 3/8" (111 mm)
3.2" (81 mm)	18.6	4 3/8" (111 mm)
3.5" (89 mm)	20.5	4 3/8" (111 mm)
3.7" (94 mm)	21.7	4 3/8" (111 mm)
4.0" (102 mm)	23.6	4 3/8" (111 mm)
4.3" (109 mm)	25.4	4 3/8" (111 mm)
4.5" (114 mm)	26.6	4 3/8" (111 mm)
4.6" (117 mm)	27.1	4 3/8" (111 mm)

* Other thicknesses available upon request.

** Long Term Thermal Resistance Values provide a 15-year time weighted average in accordance with CAN/ULC S770.

For optimal roof performance and to prevent thermal bridging GAF recommends installing two layers of Polyiso with staggered joints.

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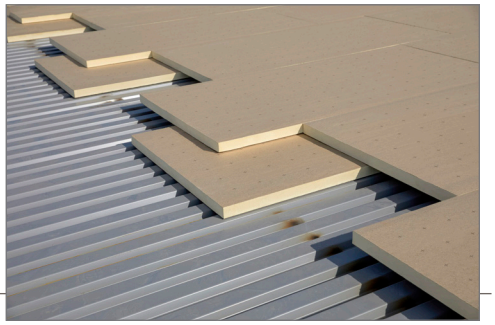
GAF EnergyGuard™ Polyiso Insulation



Sustainability — for more information go to **gaf.com/green**

- Manufactured with EPA-compliant blowing agents containing no CFCs or HCFCs; has zero ozone depletion potential (ODP) and negligible global warming potential (GWP)
- GREENGUARD Gold
- Geen Circle Certified for recycled content
- Potential LEED Credits for Polyiso Use
- Health Product Declaration (HPD)
- Environmental Product Declaration (EPD) (Industry)

Typical Physical Property Data

PROPERTY	TEST METHOD	MINIMUM VALUES
Compressive Strength *(psi (kPa), min)**	ASTM D1621	Grade 2 – 20 psi (138kPa) Grade 3 – 25 psi (172kPa)
Dimensional Stability Change *(length + width, max)***	ASTM D2126	<2% max
Flexural Strength *(psi (kPa), min)*	ASTM C203	40 psi (275kPa)
Tensile Strength *(psi (kPa), min)*	ASTM C209	≥ 500 (24kPa)
Water Absorption *(percent by volume, max)*	ASTM C209	<1.5%
Water Vapor Permeance *(perm, max)*	ASTM E96	<1.5 perm (57.5ng/Pa•s•m²)
Service Temperature		-100° to 250°F (-73.3° to 121.1°C)
Flame Spread† Index	ASTM E84 / UL 723	< 75*
Smoke Developed Index	ASTM E84 / UL 723	< 200*

* Foam Core.

** Stated dimensional stability tolerance: Board thickness shall not diminish by more than 2% max.

† These numerical ratings are not intended to reflect hazards presented by these or any other material under actual fire conditions.

Warnings and Limitations

- EnergyGuard™ Polyiso Insulation is a non-structural, non load-bearing material. It is not designed for direct traffic usage unless adequately protected.
- EnergyGuard™ Polyiso Insulation should be stored protected from the elements. Bundle wrap is not for use as waterproofing for boards. No more insulation should be installed than can be completely covered with roofing on the same day.
- As unprotected polyisocyanurate will burn, fire safety precautions should be observed wherever insulation products are used.
- Direct mopping of modified bitumen roofing or built-up roofing (BUR) to EnergyGuard™ Polyiso Insulation is not approved.
- Refer to PIMA Technical Bulletin No. 109 Storage and Handling Recommendations for Polyiso Roof Insulation at www.polyiso.org
- Refer to the application specifications in the current membrane manufacturer's application and specifications manual for proper installation procedures.

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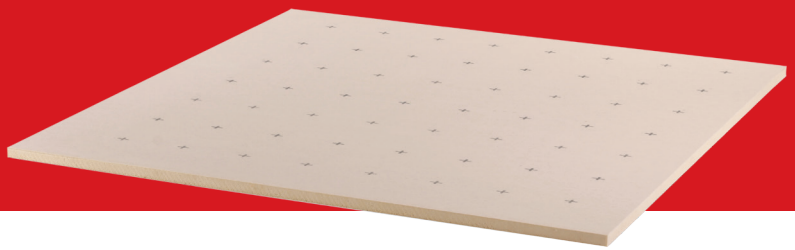
≥80 psi High Density Polyiso Cover Board

EnergyGuard™ HD Polyiso Cover Board



Description:

EnergyGuard™ HD Polyiso Cover Board is made of durable coated glass fiber facers (CGF) bonded to a core of high density polyisocyanurate foam designed to be used as a cover board for low-slope roof systems.

Features and Benefits:

- R-value 2.5. Highest R-value compared to non-polyiso cover boards of equivalent thickness
- High compressive strength 80 psi (551 kPa) minimum up to 109 psi (751 kPa) maximum
- Light weight - only 11 lbs (4.9kg) per 4' x 8' (1.22m x 2.44m) board, easy to cut, easy to install
- Meets the requirements of D3273 for resistance to mold growth [4]
- Excellent dimensional stability, high moisture resistance and low water permeability
- Ideal for low-slope roofs with high foot traffic, hail events and metal retrofit applications [1]

Panel Characteristics:

- Available in 1/2" (12.7mm) thickness
- Available in 4' x 4' (1.22m x 1.22m) and 4' x 8' (1.22m x 2.44m)
- 48 pieces per bundle

Codes & Compliance:

- Meets the requirements of ASTM C1289, Type II, Class 4, Grade 1
- FM Approved, including as a component of a Class 1-SH hail rated assembly. Refer to RoofNav.com for approved assemblies
- Classified by UL in accordance with ANSI/UL 790 and 1256. Refer to UL Product iQ for specific assemblies
- UL Evaluation Report ER1306-03
- Miami Dade County Product Control Approved
- State of Florida Approved
- For additional information, contact GAF at 1-877-423-7663 or designservices@gaf.com

Sustainability:

- Manufactured with EPA-compliant blowing agents containing no CFCs or HCFCs; has zero ozone depletion potential (ODP) and negligible global warming potential (GWP)
- Potential LEED Credits for polyiso use
- GREENGUARD Gold
- Where sold compliant with State HFC regulations. More information available at www.polyiso.org
- Environmental Product Declaration (EPD)

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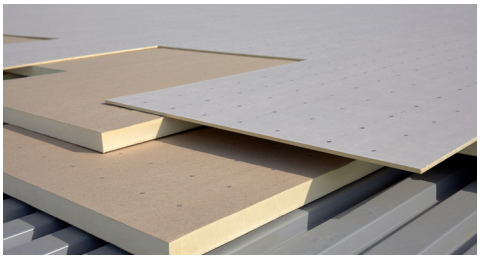
EnergyGuard™ HD Polyiso Cover Board



Typical Physical Property Data:

Property	Test Method	Values
Compressive Strength	ASTM D1621	80 psi min (551 kPa) up to 109 psi max (751 kPa)
Dimensional Stability Change (length + width) [2]	ASTM D2126	< 1% linear change
Flute Spanability	ASTM E661	3.75" (93.5mm)
Flexural Strength	ASTM C203	400 psi min (2,750 kPa)
Tensile Strength	ASTM C209	2,000 psf min (95 kPa)
Water Absorption (percent by volume)	ASTM C209	4% max
Water Vapor Permeance	ASTM E96, Procedure A	1.5 perm max (85.8ng/Pa•s•m²)
Service Temperature [3]		260°F (126.7°C) or less
Resistance to Mold [4]	ASTM D3273	Pass (10)
R-value	ASTM C518	2.5

[1] GAF warranties and guarantees do not provide coverage against traffic except where GAF walkways are applied. Refer to GAF.com for more information on warranty and guarantee coverage and restrictions.

[1] GAF warranties and guarantees do not provide coverage against hail except where additional puncture resistance coverage is purchased on eligible jobs. Refer to GAF.com for more information on warranty and guarantee coverage and restrictions.

[1] Please see applicable manual for retrofit installations.

[2] Stated dimensional stability tolerance: thickness shall not diminish by more than 4% max (at -40° F or 200° F at ambient RH) or by more than 4.5% max (158° F & 97% RH).

[3] These numerical ratings are not intended to reflect hazards presented by these or any other material under actual fire conditions.

[4] GAF warranties and guarantees do not provide coverage against mold or other biological growth. Refer to gaf.com for more information on warranty and guarantee coverage and restrictions.

Warnings and Limitations:

- EnergyGuard™ HD Polyiso Cover Board is a non-structural, non load-bearing material. It is not designed for direct traffic usage unless adequately protected.
- EnergyGuard™ HD Polyiso Cover Board should be stored protected from the elements. Bundle wrap is not for use as waterproofing for boards. No more insulation should be installed than can be completely covered with roofing on the same day.
- As unprotected polyisocyanurate will burn, fire safety precautions should be observed wherever insulation products are used.
- Direct mopping of modified bitumen roofing or built-up roofing (BUR) to EnergyGuard™ HD Polyiso Cover Board is not approved.
- Refer to the application specifications in the current membrane manufacturer's application and specifications manual for proper installation procedures.
- Refer to PIMA Technical Bulletin No.109 Storage and Handling Recommendations for Polyiso Roof Insulation at www.polyiso.org

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SA Vapor Retarder XL

Self-Adhered Vapor Retarder

Description:

GAF SA Vapor Retarder XL is a self-adhered, vapor-inhibiting membrane designed for use in approved roofing membrane assemblies. It's composed of a tri-laminated woven polyethylene facer combined with an advanced, high-tack adhesive. The under-face is applied with a split silicone release film that is removed during installation. This uniquely durable product exhibiting high-tensile strength can be left exposed for up to 180 days when installed in accordance with published GAF specifications and details.*

Application:

GAF SA Vapor Retarder XL can be applied at temperatures as low as 25°F (-3.9°C) provided that the product has been stored in a heated area to ensure it is between 50°F – 100°F (10°C – 37.7°C) at time of installation. It is recommended that GAF SA Vapor Retarder XL be installed with minimum 3" (76.2 mm) side laps and 3" (76.2 mm) end laps.

Applicable Standards:

ASTM D5147, ASTM E2178, ASTM E96

Product Specifications (approximate†)		
	Standard XL roll	**XL 40 roll**
Thickness	31 mils	41 mils
Roll weight	97 lb.	129 lb.
Rolls size	6 Squares	
Roll length	125 ft.	
Rolls Per Pallet	12 rolls	20 rolls
Roll width	58"	
Shelf life	18 Months from the date of manufacture when stored properly	

Property	MD Value	XMD Value	Test Method
Thickness, mils (mm)	31 (.79)		ASTM D1970
Thickness‡, mils (mm)	41 (1.04)		ASTM D1970
Tensile strength, min. lbf/in (kN/m)	70 (12.3)	70 (12.3)	ASTM D5147
Ultimate elongation @ 73.4°F (23°C), min. %	31	31	ASTM D5147
Tear resistance, min. lbf (N)	95 (423)	110 (489)	ASTM D5147
Static puncture, min. lbf (N)	90 (400)	90 (400)	ASTM E154
Lap adhesion, min. lbf/ft (N/m)	24 (350)	24 (350)	ASTM D1876
Water absorption, min. %	0.01	0.01	ASTM D5147
Peel resistance on steel, min. lbf/in (N/m)	25 (4,378)		ASTM D903
Cold bending, max. °F (°C)	-30 (-34.4)		ASTM D5147
Water vapor permeance, max. perm (ng/Pa.s.m²)	0.03 (1.7)		ASTM E96
Air permeability, max. L/s•m²	0.001		ASTM E2178

Features and Benefits:

- ASTM E108 Class A and FM 4470 Class 1 Fire Ratings directly over steel deck.§
- Designed to be self-sealing.
- Increased adhesion performance provides three times the peel strength compared to self-adhered modified bitumen vapor barriers.
- Use of a primer prior to installation is NOT required.
- Slip-resistant embossed walking surface.
- Extra-large roll size (603 square feet) results in fewer rolls and fewer field seams per job.
- Easy-to-peel, split-release film speeds the application process.
- Standard thickness is 31 mils; also available in 41 mils (contact your local GAF representative for details).
- Direct attachment at curbs and walls on TPO applications (refer to application instructions for approved adhesives).

Applicable Substrates:

GAF SA Vapor Retarder XL is designed to be applied to a variety of properly prepared decks or substrates:

- Steel
- Plywood/OSB
- Gypsum Roof Boards
- Concrete

* Refer to the appropriate application and specifications manual for the system being installed. Available at gaf.com.
† Values stated are approximate and subject to normal manufacturing variation. These values are not guaranteed and are provided solely as a guide.
‡ Thicker/heavier product available by special request only and sold as SA Vapor Retarder XL40.
§ Refer to www.RoofNav.com for actual assemblies.

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For additional information, contact GAF Design Services at **1-877-423-7663** or **designservices@gaf.com**

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TPO Spray Adhesive

EverGuard® TPO QuickSpray Adhesive

Description:

EverGuard® TPO Quick Spray Adhesive is a sprayable, solvent-based contact adhesive useful for bonding smooth EverGuard® and EverGuard Extreme® TPO membranes to various substrates.

Features and Benefits:

- Faster installation than traditional bonding adhesive
- High initial tack
- Available in sustainable, reusable canisters

Application:

- Substrate should be dry, clean, and free from oil, grease, and other contaminates
- For TPO Membrane, spraying from 8"– 12" (203 – 305 mm) away, apply adhesive uniformly to both the substrate and the underside of the membrane
- As primer for SA Vapor Retarder, apply to the substrate only
- Allow adhesive to dry to a tacky feel before bonding membrane to substrate
- Apply at an ambient temperature of 20°F (-6.7°C) and above. The cylinders must be kept above 50°F (10°C) for the product to spray properly. Utilize power-heated blankets and hot boxes when necessary. Ensure that cylinder temperatures stay below 150°F (65.6°C).
- Apply pressure with a push broom or weighted roller to ensure complete bonding
- To clean Hose & Gun Kit, attach hose and gun to EverGuard® Quick Spray Cleaning Kit and run cleaner through hose and gun for approximately 10 – 15 seconds. Each cleaner canister should get approximately 9 – 10 cleanings for the 10 square size.
- To arrange for empty large canister returns, call 877-423-7663

Product Details:

EverGuard® TPO Quick Spray Adhesive

- SKU 7806 – 3 squares - 13.65 lb. (6.2 kg)
  SKU 7792 – 10 squares - 40.15 lb. (18.2 kg)
  SKU 7830 – 18 squares - 87 lb. (39.5 kg)
  SKU 7808 – 49 squares - 209.6 lb. (95.1kg)
  SKU 7810 – 105 squares - 448 lb. (203.2 kg)
- VOC: 489 g/L
- Shelf Life: 1 year
- Installation Temperature: 20°F (-6.7°C) and rising
- Cleaner SKU: 7802
- Hose & Gun SKU: 7804 or 7805
- Hose Splitter: 7826
- 25' Hose: 7825

Coverage rates and flash time may vary in colder temperatures.

Codes & Standards:

▪ **UL Classified** Refer to UL Online Certification Directory for actual assemblies.	CLASSIFIED UL
▪ **State of Florida Approved**	FM APPROVED

For additional information, contact GAF Technical Support at 1-800-766-3411 or technicalquestions@gaf.com

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Distributed by:

GAF OlyBond500 Canisters™

Adhesive

Description:

OlyBond500 Canisters™ adhesive adheres a variety of insulation and cover board stocks to most roof substrates in both new and reroof applications, including jobs that require multiple insulation layers. The two-component, low-rise polyurethane foam canister system also secures fleece-back single-ply membranes.

Available in two convenient sizes: Small (SM) and Large (LG)

- **SM kits** — approximately 19 lb. (8.6 g) per canister/39 lb. (17.7 kg) per complete kit — ideal for repair work or small jobs
- **LG kits** — Part 1 – 48 lb. (21. kg) Part 2 – 44 lb. (20 kg),/approximately 100 lb. (45.4 kg) per complete kit

Features and Benefits:

- Low-odor, low-VOC; uses a low GWP (global warming potential), propellant no HFC
- Fast start-up and shutdown to help boost productivity
- Gun assembly trigger lock helps prevent accidental dispensing
- Does not require any additional application equipment
- Accessories Included:
  - **LG:** Disposable 25-ft. (7.62 m) hose and gun assembly
  - **SM:** Disposable 10-ft. (7.62 m) hose and gun assembly
- **BOTH:** Four mixing tips, and three 17-in. (431.8 mm) tip extenders for a wide-reach radius

Application:

When installed in accordance with GAF application instructions:

- **LG:** Can adhere up to 24 squares of fleece-back membrane and up to 35 squares per kit for insulation attachment
- **SM:** Can adhere up to 7 squares of fleece-back membrane and up to 10 squares per kit for insulation attachment

Results may vary depending upon application temperature range, porosity of substrate and insulation boards, type of substrate, bead size, etc.

Surfaces:

(properly evaluated and prepared*)

- Roof decks and substrates
- Structural concrete
- Gypsum
- Cementitious wood fiber plank
- Lightweight insulating concrete
- Steel (22 gauge or thicker with approved cross section)
- Plywood (5/8" [15.9 mm] thick min.)
- Smooth and granule-surfaced BUR
- Smooth and granule-surfaced modified bitumen
- Existing sprayed-in-place polyurethane foam
- Base sheets
- Most vapor barriers (including asphaltic and fleece-top)

Roof insulation and cover board

- Polyisocyanurate and HD polyisocyanurate (4 ft. x 4 ft. [13.1 m x 13.1 m] boards only)
- Expanded polystyrene
- High-density wood fiber
- Gypsum cover boards
- Perlite
- Certain extruded polystyrene

Codes and Compliance:

- **FM Approved per Approval Standard 4470. Refer to RoofNav.com for specific assemblies.**
- **Miami-Dade County Product Control Approved**
- **Classified by UL in accordance with ANSI/UL 790. Refer to UL Product iQ for specific assemblies.**
- **State of Florida Approved**

Optional Accessories:

- Gun and Hose Replacement Kit — 5 lb. (2.27 kg) (LG Canisters only)
- Bag of Ten Mixing Tips — 3 lb. (1.36 kg)
- Bag of Ten Mix Tip Extension Tubes — 2 lb. (0.91 kg)

For safety information, refer to the Safety Data Sheet at gaf.com

For proper set up, storage, handling, and disposal of this product, refer to the product instructions included in the box or at gaf.com.

NOTE: Contains hydrofluoroolefin (HFO).

THIS PRODUCT IS FOR PROFESSIONAL AND OUTDOOR USE ONLY. KEEP ALL ADHESIVE CANISTERS OUT OF REACH OF CHILDREN.

* For complete substrate preparation and application instructions for GAF guarantee-eligible systems, please consult the applicable system installation and specification manual available at gaf.com. Not all uses of this adhesive with these substrates will comply with applicable codes. For installations that comply with applicable codes, refer to agency listings.

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Distributed by:

OlyBond500Canisters™

Adhesive

PROPERTIES/CHARACTERISTICS/PACKAGING:

OlyBond500® Canisters Adhesive	
Ambient/Substrate Install Temperature	40°F – 100°F (4.4°C – 38°C)
Product Install Canister Temperature	70°F – 90°F (21.1°C – 35°C)[1]
Storage Conditions	Cool, dry 60°F – 90°F (16°C – 32°C)
Coverage Rate per Case/Set at 12" (305 mm) o.c. to Insulation / Cover Board & Spatter Pattern to Fleece-back TPO/PVC Membrane (See below)	**LG:** Up to 24 sq. for Fleece-back Membrane[2] Up to 35 sq. for Insulation[2] **SM:** Up to 7 sq. for Fleece-back Membrane[2] Up to 10 sq. for Insulation[2]
Tack Time/Set-Up Time @ approx. 70°F (21.1°C)	1 – 5 mins/10 – 15 mins[3]
Dispensing Unit	Dual Canister (Part 1 & Part 2) with supplied hose and gun applicator
Packaging	**LG: Two boxes:** ▪ Part 1 Canister (Includes 25 ft. Hose/Gun/4 Tips/3 Tip Extenders) ▪ Part 2 Canister **SM: Single box:** ▪ Part 1 & Part 2 Canister kit (includes 10 ft. (3 m) hose and gun/4 tips/3 tip extenders)
VOC Content	25 grams/L (mix using US EPA Test Method 24)
Weight	**LG:** Part 1 + Part 2 Canister Kit: 92 lb. (41.73) **SM:** Part 1 + Part 2 Canister Kit: 39 lb. (17.69 kg)
Shelf Life	16 months from date of manufacture in unopened containers

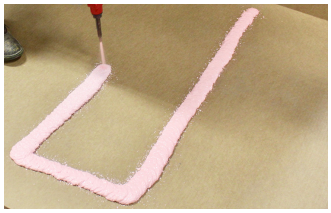
[1] Prior to application, store for approx. 36 to 72 hours at room temperature.
[2] When installed in accordance with GAF's application instructions. Results may vary depending upon application temperature range, porosity of substrate and insulation boards, type of substrate, bead size, etc.
[3] Values stated are approximate and may vary based on ambient temperature. These values are not guaranteed and are provided solely as a guide.

RIBBON SPATTER APPLICATION COVERAGE[4]

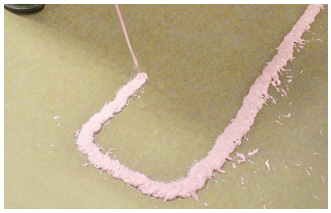
Ribbon Application (Insulation)			Spatter Application[4] (Fleece-Back Membrane)
4" (102 mm) on-center	6" (152 mm) on-center	12" (305 mm) on-center	2.83 lb. (1.36 kg) of adhesive per 100 sq. ft. of area
1,000 sq. ft. (92.9 sq. m) coverage	1,500 sq. ft. (139.35 sq. m) coverage	**LG:** 3,500 sq. ft. (325.15 sq. m) coverage **SM:** 1,000 sq ft. (102.19 sq. m) coverage	**LG:** 2,400 sq. ft. (222.96 sq. m) coverage **SM:** 700 sq. ft. (65.03 sq. m) coverage

[4] When installed in accordance with GAF's application instructions. Results may vary depending upon application temperature range, porosity of substrate and insulation boards, type of substrate, bead size, etc.

EXAMPLES OF PROPER ADHESIVE RATIO FOR BEAD APPLICATIONS FOR INSULATION

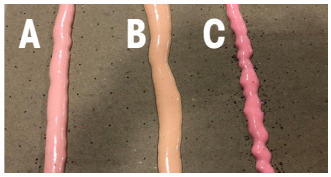


Without tip extension



With tip extention

EXAMPLES OF PROPER ADHESIVE RATIO FOR BEAD APPLICATIONS:

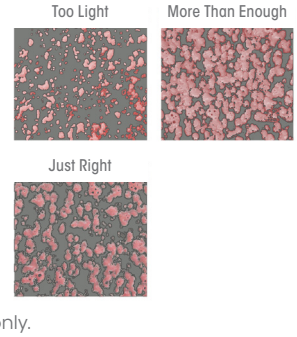


A — On ratio

B — Too much Part 1

C — Too much Part 2

EXAMPLES OF PROPER ADHESIVE RATIO FOR FLEECE-BACK MEMBRANE:



Illustrations are provided for reference only.

For additional information, contact GAF at 877-423-7663 or designservices@gaf.com.

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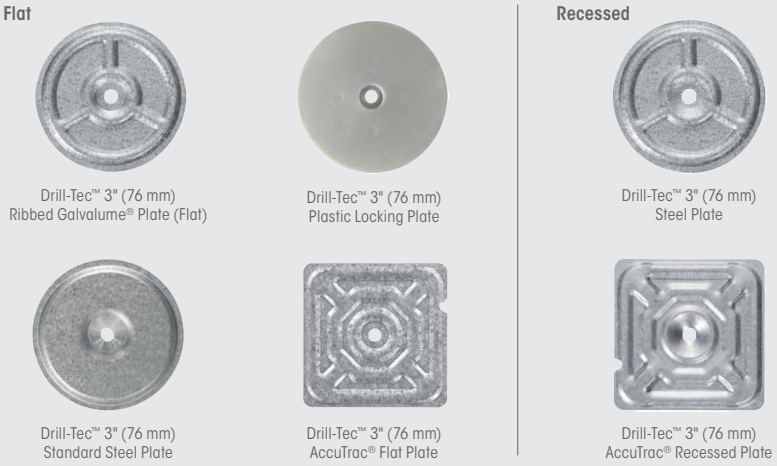
GAF Drill-Tec™ Insulation Plates



Drill-Tec™ 3" (76 mm) Ribbed Galvalume® Plate (Flat)

Drill-Tec™ 3" (76 mm) Plastic Locking Plate

Drill-Tec™ 3" (76 mm) Steel Plate

Drill-Tec™ 3" (76 mm) Standard Steel Plate

Drill-Tec™ 3" (76 mm) AccuTrac® Flat Plate

Drill-Tec™ 3" (76 mm) AccuTrac® Recessed Plate

Description:

Drill-Tec™ insulation plates are made of Galvalume®-coated steel for excellent corrosion protection. Also available in a 3" Plastic Locking Plate made of durable polypropylene to be used with the Drill-Tec™ #12 or Drill-Tec™ #14 fasteners. The plates meet the requirements of ASTM D6294, FM Approval Standard 4470, and DIN 50018. They are ideal for attaching both insulation and cover boards.

Round Plates: The round design distributes loads evenly, eliminates sharp corners that can damage the insulation or cover board, and are available in a flat profile, which is ideal for cover boards, as well as recessed profile. These plates are designed to be used with appropriate Drill-Tec™ fasteners, depending on the substrate type. For details on fasteners and substrates please see the GAF attachment tables for TPO and PVC.

Square Plates: AccuTrac® Plates are designed to be used in the AccuTrac® Stand Up Tool, offering an ergonomic fastening solution for attaching insulation and cover boards. They are available in two designs, recessed and flat. Please refer to GAF-published application instructions for approved substrates and additional information requirements at gaf.com.

For applications not listed or for additional information, contact GAF at 877-423-7663 or designservices@gaf.com.

Galvalume® is a registered trademark of BIEC International Inc. and some of its licensed producers.

AccuTrac® is a registered trademark of OMG.

Codes and Standards:

- **FM Approved per Approval Standard 4470. Refer to RoofNav.com for specific assemblies.**

FM APPROVED

MIAMI-DADE COUNTY APPROVED

State of Florida Approved

GAF Attachment Tables for TPO and PVC

Product Data

Plate	Drill-Tec™ 3" (76 mm) Standard Steel Plate	Drill-Tec™ 3" (76 mm) Steel Plate	Drill-Tec™ 3" (76 mm) Ribbed Galvalume® Plate (Flat)	Drill-Tec™ 3" (76 mm) AccuTrac® Flat Plate	Drill-Tec™ 3" (76 mm) AccuTrac® Recessed Plate	Drill-Tec™ 3" (76 mm) Plastic Locking Plate
Plate Profile						
Material/ Coating	AZ-55 Galvalume®					Polypropylene
Dimensions (Diam./Width)	3" (76 mm)					
Packaging	500 per box	1,000 per bucket	1,000 per bucket	1,000 per bucket	1,000 per bucket	1,000 per box
Weight	37 lb. (16.7 kg)	37 lb. (16.7 kg)	37 lb. (16.7 kg)	43 lb. (19.5 kg)	43 lb. (19.5 kg)	25 lb. (11.34 kg)
FM Approved	✓	✓	✓	✓	✓	✓
Miami-Dade County Product Control Approved	✓	✓	✓	✓	✓	✓
State of Florida Approved	✓	✓	✓	✓	✓	✓

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For additional information, contact GAF Design Services at **1-877-423-7663** or **designservices@gaf.com**

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DRILL-TEC™
XHD FASTENER (#15)

Description
Drill-Tec™ XHD (Extra Heavy Duty) Fastener (#15) is a specialized, high-performance fastener designed to secure insulation and single-ply membrane to steel, O.S.B., or aluminum roof decks.

Application
The Drill-Tec™ XHD Fastener (#15) should always be tested on site by a GAF representative to determine performance and proper installation procedure. Call GAF to schedule testing.

Note: Make sure not to overdrive the fastener. Fastener must be tight enough so that the plate doesn't turn. Factory Mutual requires that the fastener penetrates the steel deck at the top flute.

Advantages
- Oversized heavy shank and thread diameters for enhanced pull-out resistance in steel and aluminum roof decks.
- Deep buttress threads further increase pull-out resistance.
- Miniature drill point penetrates decks quickly and contributes to exceptional resistance to backout as well as pullout.

Plates & Accessories
A variety of plates are available. Contact GAF to determine the appropriate plate for your application.

Specifications
The fastener will be a Drill-Tec™ XHD Fastener (#15) with a thread diameter of .275" (6.99 mm). The fastener must have 13 threads per inch (per 25.4 mm) and a drill point. Also, the fastener must be heat-treated per specification OMG-1. The Drill-Tec™ XHD Fastener (#15) will be used with a Factory Mutual-approved, Drill-Tec™ Round Pressure Plate or Pressure Bar.

Code Approvals
FM APPROVED

MIAMI-DADE COUNTY APPROVED

Coating Requirement
The fastener will be coated with the Drill-Tec™ CR-10 corrosion resistant coating. When subjected to 30 Kesternich cycles (DIN 50018), the fastener must show less than 15% red rust and surpass Factory Mutual Approval Standard 4470.

Product Data	
Head Diameter	.435" (11.04 mm)
Thread Diameter	.275" (6.99 mm)
Head Style	#3 Phillips Truss Head
Coating	CR-10

Length	Thread Length	Packaging	Weight
2" (51 mm)	Full	1,000 Bucket	21 lb (9.53 kg)
3" (76 mm)	Full	1,000 Bucket	30 lb (13.61 kg)
4" (102 mm)	3" (76 mm)	1,000 Bucket	39 lb (17.69 kg)
5" (127 mm)	4" (102 mm)	500 Bucket	25 lb (11.34 kg)
6" (152 mm)	4" (102 mm)	500 Bucket	29 lb (13.15 kg)
7" (178 mm)	4" (102 mm)	500 Bucket	33 lb (14.97 kg)
8" (203 mm)	4" (102 mm)	500 Bucket	38 lb (17.24 kg)
9" (229 mm)	4" (102 mm)	500 Box	41 lb (18.60 kg)
10" (254 mm)	4" (102 mm)	500 Box	46 lb (20.87 kg)
11" (279 mm)	4" (102 mm)	500 Box	52 lb (23.59 kg)
12" (305 mm)	4" (102 mm)	500 Box	55 lb (24.95 kg)
14" (357 mm)	4" (102 mm)	250 Box	33 lb (14.97 kg)
16" (406 mm)	4" (102 mm)	250 Box	38 lb (17.24 kg)
18" (457 mm)	4" (102 mm)	250 Box	42 lb (19.05 kg)
20" (508 mm)	4" (102 mm)	250 Box	45 lb (20.41 kg)
22" (559 mm)	4" (102 mm)	125 Box	50 lb (22.68 kg)

Note: All sizes are nominal.

Drill-Tec™ XHD Fastener (#15)

CODEMARK

Certificate No: BRANZ-CM-1007
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Revision Date: 07 August 2023

CERTIFICATE HOLDER

GAF Roofing

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Jeremy Probett
Distributor
TPO Logistics NZ Ltd

CERTIFICATION BODY

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Cheyldra Percy
Chief Executive Officer
BRANZ Limited

PRODUCT CERTIFICATE

THIS IS TO CERTIFY

EVERGUARD AND EVERGUARD EXTREME TPO ROOF AND DECK MEMBRANES

KEY INFORMATION

1. DESCRIPTION OF PRODUCT

EverGuard® and EverGuard® Extreme TPO Roof and Deck Membranes are fully bonded, single ply, polyester fabric reinforced, thermoplastic polyolefin (TPO) waterproofing sheet membranes. EverGuard® is a standard membrane and EverGuard® Extreme has increased UV inhibitors and both are available in white or grey. The products are identified by a label on the packaging.

2. USE OF PRODUCT

EverGuard® and EverGuard® Extreme TPO Roof and Deck Membranes are for use for waterproofing nominally flat and low pitch roofs and decks on buildings within the following scope:

- buildings with roof and deck membranes substrates of plywood or concrete; and,
- within the limitations of NZBC Acceptable Solution E2/AS1; Paragraph 1.1 with regards to building height and floor plan area and situated in NZS 3604 Wind Zones, up to, and including Extra High; or
- buildings subject to specific structural and weathertighness design up to a maximum design differential ultimate limit state (ULS) of 6 kPa.

3. COMPLIES WITH THE FOLLOWING PROVISIONS OF THE NEW ZEALAND BUILDING CODE (NZBC)

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2, B1.3.3(h) and B1.3.4.

Clause B2 DURABILITY: Performance B2.3.1(b) 15 years and B2.3.2(a).

Clause E2 EXTERNAL MOISTURE: Performance E2.3.1, E2.3.2 and E2.3.7.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1.

4. SUBJECT TO THE FOLLOWING CONDITIONS AND LIMITATIONS

4.1 Plywood substrates shall comply with section 8.5 of NZBC Acceptable Solution E2/AS1 when the product is being used within the scope limitations of E2/AS1. Where the product is being used within the scope of this certificate but outside the scope limitations of E2/AS1, plywood substrates and supporting framing shall be subject to specific engineering design.

4.2 Reinforced concrete substrates shall be subject to specific engineering design.

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This Certificate is issued by BRANZ Limited, an independent certification body accredited by the product certification body appointed by the Chief Executive of the Ministry of Business, Innovation and Employment (MBIE) under the Building Act 2004. MBIE does not in any way warrant, guarantee or represent that the building method or product the subject of this certificate conforms with the New Zealand Building Code, nor accept any liability arising out of the use of the building method or product. MBIE disclaims, to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages and costs arising as a result of the use of the building method(s) or products(s) referred to in this certificate.

It is advised to check that this Product Certificate is currently valid and not withdrawn, suspended or superseded by a later issue, by referring to the MBIE website, www.mbie.govt.nz

Information regarding BRANZ's complaints process can be found at the following link: Complaints Process

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Cheyldra Percy
Chief Executive Officer
BRANZ Limited

4.3 Plywood must be treated to H3 Hazard Class (CCA treatment). LOSP treated plywood must not be used.

4.4 Roof and deck drainage must be designed and constructed to discharge water to gutters and outlets complying with the NZBC.

4.5 The following minimum falls apply:

- Roofs 1:30
- Decks 1:40
- Gutters 1:100

4.6 Deck sizes are limited to 40 m² for buildings within the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1. Deck sizes greater than 40 m² must be subject to specific weathertightness design.

4.7 Decks membranes must be continually protected from physical damage by a suitable pedestal protection system. Where regular foot traffic on a roof is envisaged i.e. maintenance of equipment, a walkway is required to be installed to ensure the membrane is protected. The membranes are intended for limited, irregular pedestrian access only.

4.8 There must be no steps within a deck level.

4.9 There must be no integral gardens on roofs or decks.

4.10 No downpipes are to directly discharge to decks.

4.11 The EverGuard® and EverGuard® Extreme TPO Roof and Deck Membranes must be installed in accordance with manufacturers instructions by TPO Logistics Ltd trained and approved installers.

5. HEALTH AND SAFETY

EverGuard® and EverGuard® Extreme Roof and Deck Membranes are TPO based membranes. Suppliers instructions and typical practices for working with handling and maintaining TPO based membranes should be observed.

6. REFERENCE DOCUMENTS

This Product Certificate must be read in conjunction with:

- EverGuard® and EverGuard® Extreme TPO Roof and Deck Membranes, Version 2019.

SCHEDULE: INFORMATION THAT SUPPORTS KEY INFORMATION

7. SUPPORTING INFORMATION ABOUT DESCRIPTION OF PRODUCTS

PRODUCT SPECIFICATION

EverGuard® and EverGuard® Extreme TPO Roof and Deck Membranes - are thermoplastic polyolefin (TPO) sheet laminated around a woven polyester reinforcement. EverGuard® is the standard product and EverGuard® Extreme has increased UV inhibitors. They are supplied in grey or white colour and in rolls 1.1, 1.5 and 2.0 mm thick, 1.2, 1.5 and 3.0 wide and 30.5 m long. Rolls are wrapped in plastic printed with the GAF mark and EverGuard® TPO. Each roll has a sticker attached which gives the product, factory and colour codes. A manufacturing batch number is also printed on the top edge of the membrane. Packaging or containers identifies other components and materials.

EverGuard® TPO Bonding Adhesive - a solvent based, rubberised contact adhesive.

EverGuard® H20 Bonding Adhesive - water based, rubberised contact adhesive.

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EverGuard® TPO Seam Cleaner - a solvent based liquid for cleaning seams prior to heat welding. It is supplied in 1 US Gallon pails.

Performed Vent Boots - a moulded TPO membrane boot designed to fit 25 - 150 mm diameter pipes.

Preformed Corners - moulded TPO membrane inside and outside corners.

UN-55 Detailing Membrane - an unreinforced TPO membrane flashing/reinforcement material for penetrations and corners.

UN-55 T-Joint Cover Patches - an unreinforced TPO membrane cover patch.

Cut Edge Sealant - is a polymer based sealant.

Preformed Split Pipe Boots - are fabricated TPO membrane boots for various sized penetrations.

Corner Curb Wraps - fabricated corners for flashing curbs or plinths.

Pourable Sealer Pockets - for irregular shaped roof penetrations.

8. SUPPORTING INFORMATION ABOUT INTENDED USE OF PRODUCT

DESIGN REQUIREMENTS

Roofs and decks must be designed and constructed to shed precipitated moisture. They must also take account of snowfalls in snow prone areas.

The Technical Literature includes details for weathertightness within scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1. The design of details outside this scope or not covered by the Technical Literature must be subject to specific weathertightness design and are outside the certification scope.

The minimum fall for roofs is 1:30, for decks 1:40 and for gutters is 1:100. All falls must slope to an outlet. Roof and deck falls must be built into the substrate.

Drainage flanges must be used for any outlet and must be fitted with a grate or cage to reduce potential sources of blockages. An overflow must be provided where the roof does not drain to an external gutter or spouting.

Penetrations and upstands of the membrane must be raised above the level of any possible flooding caused by blockage of roof drainage.

Separation or protection must be provided to EverGuard® and EverGuard® Extreme TPO Roof and Deck Membranes from heat sources such as fire places, heating appliances, flues and chimneys. Part 7 of NZBC Acceptable Solutions C/AS1 and C/AS2 and NZBC Verification Method C/VM1 provide methods for separation and protection of combustible materials from heat sources.

INSTALLATION REQUIREMENTS

EverGuard® and EverGuard® Extreme TPO Roof and Deck Membranes are impermeable; therefore a means of dissipating construction moisture must be provided in the building design and construction to meet code compliance with NZBC Clause E2.3.6.

The effective control of internal moisture must be considered at the design stage due to the impermeability of the membrane. Refer to BRANZ publication Good Practice Guide: Membrane Roofing.

EverGuard® and EverGuard® Extreme TPO Roof and Deck Membranes may be adversely affected by contact with bituminous substances.

Installation of the membranes must be completed by TPO Logistics NZ Ltd approved installers.

MAINTENANCE REQUIREMENTS

In the event of damage to the membrane, it must be repaired by removing the damaged portion and applying a patch as for the new work.

Drainage outlets must be maintained to operate effectively.

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Chief Executive Officer
BRANZ Limited

9. SUPPORTING INFORMATION ABOUT CONDITIONS AND LIMITATIONS OF USE

All conditions and limitations provided as stated in this product certificate.

10. BASIS FOR CODEMARK CERTIFICATION

The following evaluations have been carried out on EverGuard® and EverGuard® Extreme TPO Roof and Deck Membranes to determine compliance with the NZBC:

- Compliance with NZBC Clause B1 (Structure) is determined through compliance of plywood substrates with the requirements of NZBC Acceptable solution E2/AS1, concrete substrates with the requirements of NZS 3101, and of the adhesive with the assessment of the adhesive strength to 6 kPa.
- A durability and hazardous building materials assessment has been undertaken of EverGuard® and EverGuard® Extreme TPO Roof and Deck Membranes by BRANZ technical experts.
- A weathertightness assessment has been undertaken of EverGuard® and EverGuard® Extreme TPO Roof and Deck Membranes by BRANZ technical experts.
- Site visits have been carried out by BRANZ to assess the practicability of installation, and to examine completed installations.
- The referenced Technical Literature has been examined by BRANZ and found to be satisfactory.

11. RESPONSIBILITIES FOR USE OF THE CERTIFIED PRODUCT

- TPO Logistics NZ Ltd is responsible for the quality of supply to the market.
- TPO Logistics NZ Ltd approved installers are responsible for the quality of the membrane system installation.
- Building contractors are responsible for the construction of the supporting structure in accordance with the instructions of TPO Logistics NZ Ltd and the building designer.
- Building owners are responsible for the maintenance of the system in accordance with the instructions of TPO Logistics NZ Ltd.

12. DOCUMENTATION SUPPORTING CERTIFICATION

- AS/NZS 1170:2002 Structural Design action - general principles.
- BRANZ Appraisal 823 (2015) - Everguard and Everguard Extreme TPO Roof and Deck Membranes.
- NZS 3101:2006 The design of concrete structures.
- NZS 3604:2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of Amendments for Compliance Documents and Handbooks.
- The Building Regulations 1992.

13. CONDITIONS RELATING TO NOTIFICATION

The certificate holder (TPO Logistics NZ Ltd) must notify the product certification body (BRANZ) in writing, of any intended change to any of the following particulars:

- The name, address, or contact details of the certificate holder;
- Any address of a location where a certified product is produced or manufactured.

The certificate holder shall notify the product certification body in writing of any intended change, modification, or alteration to any of the following:

- The certified building method or product;
- The method of its production or manufacture;
- The Product Quality Plan prepared in respect of the certified building method or product;

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Chief Executive Officer
BRANZ Limited

- The application or installation instructions for the certified building method or product;
- Any documentation relating to the use and maintenance of the certified building method or product.

If the certificate holder has any reason to suspect that the certified building method or product does not comply with the Building Code, the certificate holder shall notify the product certification body in writing of the reason for that suspicion.

If the certificate holder or the product certification body finds that a certified building method or product that has been released on the market does not comply with the Building Code, the certificate holder shall disclose that fact in a published disclosure statement in a form that is acceptable to the product certification body and to MBIE.

If the certificate is suspended or revoked, the certificate holder—

- Shall notify all customers to whom the building method or product is regularly supplied; and
- Immediately cease using the certificate, the mark of conformity, and any reference to the number of this certificate.

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BRANZ Appraised
Appraisal No. 823 [2020]

EVERGUARD AND EVERGUARD EXTREME TPO ROOF AND DECK MEMBRANES

Appraisal No. 823 (2020)

Amended 28 October 2022

BRANZ Appraisals

Technical Assessments of products for building and construction.

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Product

1.1 Everguard and Everguard Extreme TPO Roof and Deck Membranes are single-ply, polyester fabric reinforced, thermoplastic polyolefin (TPO) fully bonded waterproofing sheet membranes for roofs and decks.

Scope

2.1 Everguard and Everguard Extreme TPO Roof and Deck Membranes have been appraised as roof and deck waterproofing membranes on buildings within the following scope:

- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1; or,
- the scope limitations of NZBC Acceptable Solution E2/AS1, Paragraph 1.1 with regards to building height and floor plan area when subject to specific structural design; and,
- with substrates of plywood, Strandsarking (roofs only), cross-laminated timber (CLT) or suspended concrete slab; and,
- with minimum falls for plywood, CLT and Strandsarking roofs of 1:30, suspended concrete slab of 1:60 and decks of 1:40; and,
- with deck size limited to 40 m^2; and,
- situated in NZS 3604 Wind Zones up to, and including, Extra High.

2.2 Everguard and Everguard Extreme TPO Roof and Deck Membranes have also been appraised as roof and deck waterproofing membranes on buildings within the following scope:

- subject to specific structural and weathertightness design; and,
- with substrates of plywood or suspended concrete slab; and,
- situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 6 kPa; and,
- with the weathertightness design of junctions for each specific structure being the responsibility of the building designer.

2.3 Roofs and decks waterproofed with Everguard and Everguard Extreme TPO Roof and Deck Membranes must be designed and constructed in accordance with the following limitations:

- nominally flat roofs and decks and pitched roofs constructed to drain water to gutters and drainage outlets complying with the NZBC; and,
- with no steps within the deck level, no integral roof gardens and no downpipes directly discharging to decks; and,
- with the deck membranes continually protected from physical damage by a pedestal protection system.

2.4 The design and construction of the substrate and movement and control joints is specific to each building, and therefore is the responsibility of the building designer and building contractor and is outside the scope of this Appraisal.

2.5 The membranes must be installed by TPO Logistics NZ Ltd approved applicators.

Building Regulations

New Zealand Building Code (NZBC)

3.1 **In the opinion of BRANZ, Everguard and Everguard Extreme TPO Roof and Deck Membranes, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:**

Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years. Everguard and Everguard Extreme TPO Roof and Deck Membranes meet this requirement. See Paragraph 10.1.

Clause E2 EXTERNAL MOISTURE: Performance E2.3.1, E2.3.2 and E2.3.6. Roofs incorporating Everguard and Everguard Extreme TPO Roof and Deck Membranes meet these requirements. See Paragraphs 13.1–13.8.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. Everguard and Everguard Extreme TPO Roof and Deck Membranes meet this requirement.

Technical Specification

4.1 Materials supplied by TPO Logistics NZ Ltd are as follows:

- **Everguard and Everguard Extreme TPO Roof and Deck Membranes** – are fully adhered roofing systems based on a TPO sheet laminated around a woven polyester reinforcement. Everguard is the standard product and Everguard Extreme has increased ultraviolet (UV) inhibitors. They are supplied in grey or white (other colours on request), in rolls 1.1, 1.5 and 2 mm thick, 1.2, 1.5 and 3 m wide and 30.5 m long.
- **Everguard TPO Bonding Adhesive** – a solvent-based, rubberised contact adhesive used to bond the membrane to all common substrates. It is supplied in 5 US Gallon pails.
- **Everguard H2O Bonding Adhesive** – a water-based, rubberised contact adhesive used to bond the membrane to all common substrates. It is supplied in 5 US Gallon pails.
- **Everguard TPO Seam Cleaner** – a solvent-based liquid for cleaning seams prior to heat welding. It is supplied in 1 US Gallon pails.
- **Preformed Vent Boots** – moulded TPO membrane boots designed to fit 25–150 mm diameter pipes. They are supplied 1.9 mm thick and with a stainless steel clamping ring.
- **Preformed Corners** – moulded TPO membrane universal style corner for both inside and outside corners. They are supplied 1.5 mm thick with 4 x 100 mm sides and 150 mm flange.
- **UN-55 Detailing Membrane** – an unreinforced TPO membrane flashing/reinforcement material for penetrations and corners, used where preformed boots cannot be used. It is supplied as a 1.3 mm thick membrane, 610 mm wide and 15 m long roll.
- **UN-55 T-Joint Cover Patches** – unreinforced TPO membrane cover patches for sealing over T-Joints. They are supplied as 1.3 mm thick round patches.
- **Cut Edge Sealant** – a polymer-based sealant designed to seal all cut reinforced edges of Everguard and Everguard Extreme TPO Roof and Deck Membranes. It is supplied as a clear liquid in 550 ml squeeze bottles.
- **Preformed Split Pipe Boots** – fabricated TPO membrane boots in three sizes designed to accommodate most common pipes and conduits. They are supplied 1.1 mm thick boots to fit 25–50 mm, 75–125 mm and 150–200 mm penetrations.
- **Corner Curb Wraps** – fabricated corners for flashing curbs or plinths. They are in four standard sizes designed to flash curbs or plinths that are 610, 914, 1,220 or 1,524 mm in size. They are supplied in sizes of 340, 495, 648 and 800 mm.
- **Pourable Sealer Pockets** – moulded TPO membrane pockets used to waterproof irregular shaped roof penetrations. They are supplied as 1.8 mm thick, 225 mm x 150 mm x 100 mm ovals with a 75 mm base and coloured white only.

Handling and Storage

5.1 Handling and storage of all materials, whether on-site or off-site, is under the control of the TPO Logistics NZ Ltd approved applicators. Dry storage must be provided for all products and the rolls of membrane must be lying down on pallets and protected.

Technical Literature

6.1 This Appraisal must be read in conjunction with:

- Everguard and Everguard Extreme TPO Roof and Deck Membranes Details, 06/12/2019.

6.2 All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

General

7.1 Everguard and Everguard Extreme TPO Roof and Deck Membranes are for use on roofs, decks, balconies, gutters and parapets where an impervious waterproof membrane is required to prevent damage to building elements and adjoining areas.

7.2 Everguard and Everguard Extreme TPO Roof and Deck Membranes can be adversely affected by contact with bituminous substances. The membranes' supplier should be contact for advice in this situation.

7.3 The effective control of internal moisture must be considered at the design stage due to the impermeability of the membrane. Refer to the BRANZ Good Practice Guide: Membrane Roofing.

7.4 Where regular foot traffic on the roof is envisaged i.e. maintenance of lift equipment, a walkway should be installed to ensure the membranes are protected. The Everguard and Everguard Extreme TPO Roof and Deck Membranes are designed for limited, irregular pedestrian access only.

7.5 Everguard and Everguard Extreme TPO Roof and Deck Membranes when used on decks require a pedestal protection system. TPO Logistics NZ Ltd should be contacted for the best system to meet design requirements.

7.6 Refer to TPO Logistics NZ Ltd for deck foot traffic protection system specifications.

Structure

8.1 Timber framing systems must comply with NZS 3604, or where specific engineering design is used, the framing shall be of at least equivalent stiffness to the framing provisions of NZS 3604, or comply with the serviceability criteria of AS/NZS 1170. In all cases, framing must be provided so that the maximum span of the substrate as specified by the substrate manufacturer is met and that all sheet edges are fully supported.

8.2 Everguard and Everguard Extreme TPO Roof and Deck Membranes fully bonded are suitable for use in areas subject to maximum wind pressure of 6 kPa ULS, subject to the limitations of the substrate.

Substrates

Plywood

9.1 Plywood must be treated to H3 (CCA treated). LOSP treated plywood must not be used. In all cases, framing must be provided so that the maximum span of the substrate as specified by the substrate manufacturer is met and that all sheet edges are fully supported.

Concrete

9.2 Concrete substrates must be to a specific engineering design meeting the requirements of the NZBC, such as concrete construction to NZS 3101.

Strandsarking

9.3 Strandsarking must be installed in accordance with the manufacturer's instructions and BRANZ Appraisal No. 946.

Cross Laminated Timber (CLT)

9.4 CLT must be installed in accordance with the manufacturer's instructions.

Durability

Serviceable Life

10.1 Everguard and Everguard Extreme TPO Roof and Deck Membranes when subjected to normal conditions of environment and with proper maintenance can expect to have a serviceable life of at least 15 years.

Maintenance

11.1 Maintenance requirements of the membrane are provided by the membrane supplier.

11.2 In the event of damage to the membrane, it must be repaired by removing the damaged portion and applying a patch as for new work.

11.3 Drainage outlets must be maintained to operate effectively.

Prevention of Fire Occurring

12.1 Everguard and Everguard Extreme TPO Roof and Deck Membranes must be separated from fireplaces, heating appliances, flues and chimneys. Part 7 of NZBC Verification Method C/VM1 and Acceptable Solution C/AS1, and NZBC Acceptable Solution C/AS2 provide methods for separation and protection of combustible materials from heat sources.

External Moisture

13.1 Roofs and decks must be designed and constructed to shed precipitated moisture. They must also take account of snowfalls in snow prone areas. A means of meeting code compliance with NZBC Clause E2.3.1 is given by the Technical Literature.

13.2 When installed in accordance with this Appraisal and the Technical Literature, Everguard and Everguard Extreme TPO Roof and Deck Membranes will prevent the penetration of water and will therefore meet code compliance with NZBC Clause E2.3.2. The membranes are impervious to water and will give a weathertight roof or deck.

13.3 The minimum fall for plywood, CLT and Strandsarking roofs is 1 in 30, for suspended concrete slabs 1 in 60, for decks 1 in 40 and for gutters is 1 in 100. All falls must slope to an outlet. Inadequate falls will allow moisture to collect and increase the risk of deterioration of the membrane. *[Note: Where possible, BRANZ recommends a fall of 1 in 60 for gutters.]*

13.4 Everguard and Everguard Extreme TPO Roof and Deck Membranes are impermeable; therefore a means of dissipating construction moisture must be provided in the building design and construction to meet code compliance with NZBC Clause E2.3.6.

13.5 Roof falls must be built into the plywood substrate.

13.6 Drainage flanges must be used for any outlet and must be fitted with a grate or cage to reduce potential sources of blockages. An overflow must be provided where the roof does not drain to an external gutter or spouting.

13.7 Penetrations and upstands of the membrane must be raised above the level of any possible flooding caused by blockage of roof drainage.

13.8 The design of details not covered by the Technical Literature is subject to specific weathertightness design and is outside the scope of this Appraisal.

Water Supplies

14.1 Water is not contaminated by Everguard and Everguard Extreme TPO Roof and Deck Membranes, which comply with AS/NZS 4020.

14.2 The first 25 mm of rainfall from a newly installed Everguard and Everguard Extreme TPO Roof and Deck Membranes roof must be discarded before drinking water collection starts. This is to remove residues which may have developed in the process involved in the production of Everguard and Everguard Extreme TPO Roof and Deck Membranes.

14.3 The Everguard and Everguard Extreme TPO Roof and Deck Membranes have been shown to comply with AS/NZS 4020, but it must be noted that all water collected off roof surfaces made from any material is considered to be non-potable due to possible contamination from other sources. Water collection in this way can only be considered potable if it has been passed through a suitable sterilisation system.

Sterilisation

14.4 Systems such as this have not been assessed and are outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirement

15.1 Installation of the membranes must be completed by TPO Logistics NZ Ltd approved applicators.

15.2 Installation of substrates must be completed by or under the supervision of Licensed Building Practitioners (LBP) with the relevant Licence Class, in accordance with instructions given within the TPO Logistics NZ Ltd Technical Literature and this Appraisal.

Preparation of Substrates

16.1 Substrates must be dry, clean and stable before installation commences. Surfaces must be smooth and free from nibs, sharp edges, dust, dirt or other materials such as oil, grease or concrete formwork release agents. All surface defects must be filled to achieve an even and uniform surface.

16.2 Concrete substrates can be checked for dryness by using a hygrometer, as set out in BRANZ Bulletin No. 585. The relative humidity of the concrete must be 75% or less before membrane application.

16.3 The moisture content of a timber substructure must be a maximum of 20% and plywood sheet must be dry at time of membrane application. This will generally require plywood sheets to be covered until just before the membranes are laid, to prevent rain wetting.

Membrane Installation

17.1 The installation of these membrane systems are very complex and limited to approved applicators only. The Technical Literature should be referred in all instances for the correct procedures.

Inspections

18.1 Critical areas of inspection for waterproofing systems are:

- Construction of substrates, including crack control and installation of bond breakers and movement control joints.
- Moisture content of the substrate prior to the application of the membrane.
- Acceptance of the substrate by the membrane installer prior to application of the membrane.
- Installation of the membrane to the Technical Literature instructions.

Health and Safety

19.1 Safe use and handling procedures for the membrane systems is provided in the Technical Literature. The products must be used in conjunction with the relevant Materials Safety Data Sheet.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

20.1 Testing has been carried out on the membranes by various organisations for shear/joint strength, peel adhesion, resistance to aging, adhesion to plywood, resistance to impact, resistance to frost, resistance to freeze/thaw, resistance to UV, watertightness, artificial ageing by exposure to elevated temperatures, artificial ageing by UV radiation, water vapour properties, resistance to cold bending, tensile properties, resistance to static load and resistance to tearing.

Test methods and results have been reviewed by BRANZ and found to be satisfactory.

Other Investigations

21.1 A durability opinion has been given for the Everguard and Everguard Extreme TPO Roof and Deck Membranes by BRANZ technical experts.

21.2 Site inspections have been carried out by BRANZ to assess the practicability of installation, and to examine completed installations.

21.3 The Technical Literature has been examined by BRANZ and found to be satisfactory.

Quality

22.1 The manufacture of the Everguard and Everguard Extreme TPO Roof and Deck Membranes has not been examined by BRANZ, but details regarding the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.

22.2 The quality of supply of the product to the market is the responsibility of TPO Logistics NZ Ltd.

22.3 Quality on-site is the responsibility of the TPO Logistics NZ Ltd approved applicators.

22.4 Designers are responsible for the substrate design, and building contractors are responsible for the quality of construction of substrate systems in accordance with the instructions of the substrate manufacturer, TPO Logistics NZ Ltd and this Appraisal.

Sources of Information

- AS/NZS 2269:2012 Plywood – Structural.
- AS/NZS 1170:2002 Structural Design action – general principles.
- BRANZ Bulletin No. 585, Measuring Moisture in Timber and Concrete.
- BRANZ Good Practice Guide: Membrane Roofing (Second Edition), October 2015.
- NZS 3101:2006 The design of concrete structures.
- NZS 3604:2011 Timber-framed buildings.
- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 10 March 2022.

This Appraisal has been amended to include Strandsarking and cross-laminated timber (CLT) as suitable substrates.

Amendment No. 2, dated 28 October 2022.

This Appraisal has been amended to clarify roof and deck falls.

BRANZ

In the opinion of BRANZ, Everguard and Everguard Extreme TPO Roof and Deck Membranes are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to TPO Logistics NZ Ltd, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
   a) relates only to the product as described herein;
   b) must be read, considered and used in full together with the Technical Literature;
   c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
   d) is copyright of BRANZ.
2. TPO Logistics NZ Ltd:
   a) continues to have the product reviewed by BRANZ;
   b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
   c) abides by the BRANZ Appraisals Services Terms and Conditions;
   d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
   a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
   b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
   c) any guarantee or warranty offered by TPO Logistics NZ Ltd.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to TPO Logistics NZ Ltd or any third party.

For BRANZ

Chelydra Percy
Chief Executive

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01 October 2020