EverGuard® TPO Brochure

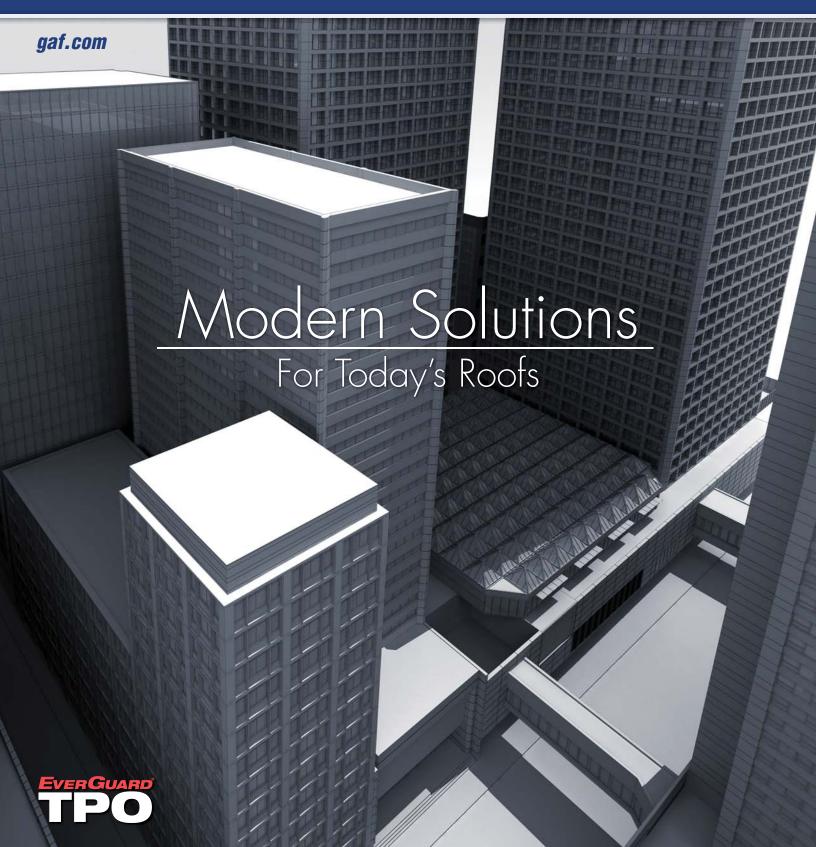
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Updated: 1/17





EVERGUARD®TPO SINGLE-PLY ROOFING SYSTEMS



EVERGUARD® TPO

Single-Ply Roofing Systems



WHY TPO

In the 20+ years that TPO has been in the field, it's become one the most popular products used for low-slope roofing. Over 1 billion sq. ft. are installed annually, making up over 50% of single-ply roofs being installed today.

The rapid rise in popularity can be associated with several of TPO's inherent benefits, includina:

- Great Value...
 - Excellent performance at a costeffective price.
- Excellent Seam Strength...

Heat-welded seams provide greater seam strength to taped and other seams.

Long-term Weathering...
 Excellent long-term heat and UV resistance.

• Energy Saving...

Highly reflective and emissive white surface can help reduce energy costs and urban heat island effect.

- » Check out your potential energy savings by going with a white roof at cool.gaf.com.
- Inherently Flexible...

No need for plasticizers.

- Naturally Fungal Resistant...

 Doesn't require biocides.
- Versatile Application Methods...

Including high-performance roofs requiring high wind uplift, increased puncture resistance, or quick economical systems.



- Over 130 years in business and North America's largest roofing manufacturer.
- Offers a full line of roofing solutions, including TPO and PVC single-ply systems.
- Capital investments of over \$130 million from 2011–2016 in commercial roof manufacturing, giving GAF the most state-of-the-art equipment in the industry.
- Only GAF offers the patent-pending EverGuard Extreme® membrane with the longest warranty in the industry (up to a 35-year guarantee*).

- Leader in sustainability, including having EPDs, HPDs, and being on the red list free listings.
- Commissioned the largest independent study ever conducted on TPO performance among North American manufacturers
 - » Results show GAF has the bestperforming TPO membranes in accelerated aging tests (visit TPOResults.com to learn more).



*See applicable guarantee for complete coverage and restrictions.



TPO RESULTS

The increasing popularity of TPO roofing systems has led to much confusion, exaggerated claims, and misinformation about TPO as a product class. As North America's largest roofing manufacturer, GAF decided to find out the truth about TPO performance.

GAF engaged Structural Research Inc. (SRI), a well-known and highly respected laboratory that has done testing with UL, NRCA, and MRCA to perform the largest independent performance study ever conducted of the 4 major U.S. TPO brands.

SRI procured all of the materials independently, testing over 400 samples that were subjected to over 6,000 individual measurements over the course of the study.

The testing methods included a variety of ASTM physical property tests, including thickness above the scrim and weld strength, which showed that the 4 TPO brands exhibit relatively similar performance on these parameters.

The study also tested accelerated weathering and UV resistance, the key properties that determine membrane performance and longevity. In these critical tests, GAF EverGuard Extreme® TPO proved to be in a performance class by itself, delivering next-generation performance against heat aging and UV degradation using the industry-recognized ASTM D573 accelerated weathering test at 275°F.

Among the standard TPO membranes, GAF EverGuard® TPO was the best-performing standard membrane out of all of the major brands.

Visit **TPOResults.com** for the full data and testing results among the major brands, as well as industry presentations and recommendations on how to specify EverGuard® TPO and EverGuard Extreme® TPO.







FULL LINE OF TPO MEMBRANES



EverGuard® TPO...

Was the best-performing standard TPO in accelerated aging in the largest independent TPO study ever conducted. With over 15 years of proven performance, it can fit many roofing budgets and needs:

- Available in 45, 60, and 80 mil
- Guarantees available up to 30 years*
- 10-ft.-wide sheets can help increase production compared to other roofing technologies
- Different systems available, including mechanically attached, fully adhered, and RhinoBond® Attachment Systems[†]

EverGuard Extreme® TPO is the overall best-performing TPO you can buy for your property

- The best-performing TPO in accelerated aging in the largest independent TPO study ever conducted
- Offers the longest TPO warranty available in the industry (up to 35 years*)
- Available in a variety of thicknesses and can fit most budgets
 - » EverGuard Extreme® 50 mil and 70 mil have virtually the identical weathering characteristics as our standard 60 mil and 80 mil versions
- Can withstand higher heat and UV exposure better than any membrane in the industry

EverGuard Extreme® & EverGuard® TPO Fleece-Back Membrane...

Provides additional protection and offers a variety of benefits, including:

- Does not require a slip sheet when re-covering over a variety of roofs
- Provides enhanced puncture resistance, especially in areas more prone to hail
- Can be installed using a variety of adhesives that install in approximately half the time as traditional bonding adhesives with smooth membrane

EverGuard® TPO Colors...

Can transform a traditional roof into an aesthetic attribute

- Standard colors include White, Tan, Gray, Energy Gray, and Energy Tan
- 17 additional colors are also available to complement your building design

EverGuard® Freedom™ TPO...

Self-adhered TPO:

- Available in both heat-weldable seams and with Rapid Seam[™] Technology
- Warranties available up to 20 years*

The roofing industry is changing.

Just a few years ago, almost all TPO jobs installed were mechanically attached; traditional bonding adhesives made up the remaining installations. Today, new installation methods are becoming increasingly popular.

Traditional systems are tried and true, and are still great solutions, but each roof has unique challenges. At GAF, we have a number of solutions to help overcome all of your roofing challenges.

What factors are most critical for you?

- Lowering labor costs
- Reducing material costs
- Proven methods and consistency
- Wind uplift ratings
- Expanding roofing season during colder weather
- Reducing adhesive odors for occupied buildings
- Increasing hail protection
- VOC content
- Roof aesthetics
- Capital investment costs

If you're looking for ways to increase production, we offer systems that install:

- Faster
- Easier
- In lower temperatures
- Without the need for expensive sprayers or equipment





Take a look at the chart to see which system can best meet your challenges.

		A CANADA	A A A A A	A CANADA	AT AT A A A	A CANADA
	Mechanically Attached Smooth with Drill-Tec™ Fasteners	Fully Adhered Smooth	Fully Adhered Fleece with WB181 Wet Lay-in	Adhered Fleece with Low-Rise Foam	Fully Adhered Fleece with GAF 2-Part Roofing Adhesive	GAF RhinoBond®† System
Install Time						
Material Cost	\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$
Application Temperature Range ²	WIDEST ³	WIDE	WIDE	WIDE	WIDE	WIDEST ³
Wind Uplift Ratings		444	444	444	444	444
Hail Ratings ⁵						
Odor	NO ODOR					NO ODOR
VOC-Compliant Options	YES	YES	YES	YES	YES	YES
Tool Investment Needs	②	0	0	000	©	00
Aesthetics	Ŷ	000	000	000	000	00
Maximum Warranty Length ⁶	UP TO 30 YEARS	UP TO 35 YEARS	UP TO 35 YEARS	UP TO 35 YEARS	UP TO 35 YEARS	UP TO 35 YEARS

 † RhinoBond $^{\otimes}$ is a registered trademark of OMG.





 ¹ Time based on multiple machines.
 ² All membrane rolls and adhesives must be stored for at least overnight at a minimum.
 ³ See the GAF RhinoBond[®] and Mechanically Attached Systems Manuals for information on cold weather installation.
 ⁴ Wind uplift ratings can be improved with 6° on center fastening pattern.
 ⁵ When no cover board is used.
 ⁶ See applicable warranties and/or NDL guarantees for details and restrictions.

MECHANICALLY ATTACHED SMOOTH TPO

with Drill-Tec[™] Fasteners



Installing smooth TPO with fasteners in a mechanically attached system offers several benefits, including:

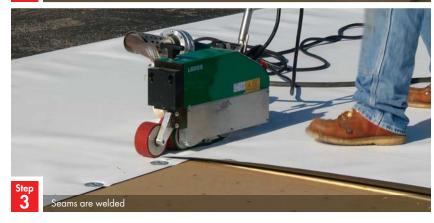
- Up to 50% faster installation compared to fully adhered smooth membrane installations
- Reliability and cost effectiveness
- Familiarity with the industry as the most common installation method in single-ply membranes
- Consistent installation in a wide variety of temperatures
- No sprayers or additional capital investments
- A great option for occupied buildings, as there is no odor from adhesives

While fully adhered systems have better wind uplift ratings, a mechanically attached system's ratings can be increased by modifying the fastening pattern from 12" on center to 6" on center.

Be sure to refer to the GAF Drill-Tec[™] Fastening Guide to choose the correct fasteners and plates for your application.











FULLY ADHERED SMOOTH TPO

with Traditional Bonding Adhesive







Installing fully adhered EverGuard® Smooth TPO Systems offers several benefits, including:

- Longer guarantees compared to mechanically attached systems
- Excellent wind uplift ratings
- A uniform, smooth appearance
- Familiarity with workers, as this installation is common in the industry
- Minimizes thermal drift while acting as a vapor barrier

GAF offers several adhesives that are compatible with EverGuard® Smooth TPO, including:

- SBA 1121... The most frequently used, traditional solvent-based GAF bonding adhesive
- EverGuard® TPO 3 Square and 6 Square Low VOC Bonding Adhesives... For use in areas where there are VOC regulations
- EverGuard® WB181 Bonding Adhesive... A water-based bonding adhesive that is both VOC compliant and low odor
- Install of these systems work best in temperatures above 40°F





FULLY ADHERED FLEECE-BACK TPO

with WB181 Wet Lay-in



Installing fleece-back TPO with EverGuard® WB181 Bonding Adhesive offers several benefits, including:

- Up to 50% faster installation time than traditional smooth, fully adhered systems
- Reduced labor costs
- Low-VOC content with little-to-no odor, which reduces the disruption to building occupants
- Additional puncture resistance due to the fleece backing of EverGuard® membrane

Additionally, this system offers many of the other benefits in fully adhered systems, such as:

- Longer guarantees compared to mechanically attached systems
- Excellent wind uplift ratings
- A uniform, smooth appearance
- Minimized thermal drift while acting as a vapor barrier
- Installation of this system works best in temperatures above 40°F





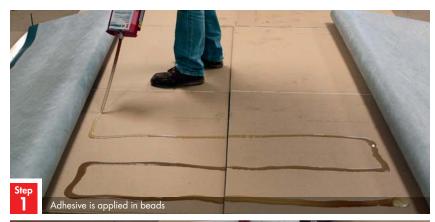


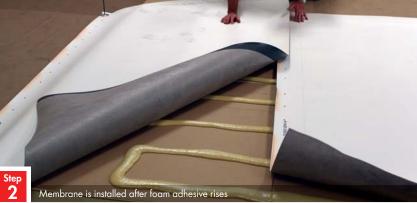




ADHERED FLEECE-BACK TPO

with Low-Rise Foam







Installing fleece-back TPO with low-rise foam roofing adhesive offers several benefits, including:

- Up to 50% faster installation time than traditional smooth, fully adhered systems
- Reduced labor costs
- Low-VOC content with little-to-no odor, which reduces the disruption to building occupants
- Additional puncture resistance due to the fleece backing of EverGuard® membrane

Additionally, this system offers many of the other benefits in fully adhered systems, such as:

- Longer guarantees compared to mechanically attached systems
- Excellent wind uplift ratings
- A uniform, smooth appearance
- Installation of this system works best in temperatures above 40°F
- Refer to the GAF EverGuard® Adhered Roofing Systems Manual for ribbon spacing and guarantee requirements



FULLY ADHERED FLEECE-BACK TPO

with GAF 2-Part Roofing Adhesive



Installing fleece-back TPO with GAF 2-Part Roofing Adhesive offers several benefits, including:

- Up to 50% faster installation than traditional fully adhered, smooth systems (it's as easy as watering your lawn)
- Increased productivity and smaller crews versus other attachment methods
- Up to 20 squares of coverage per set of containers
- Longer guarantees compared to mechanically attached systems
- No expensive equipment or maintenance
- Excellent wind uplift performance
- Increased puncture resistance due to the fleece backing of EverGuard® membrane
- Low-VOC content with low odor
- Installation of this system works best in temperatures above 40°F











GAF RHINOBOND® SYSTEM







Installing smooth TPO with the RhinoBond®† Attachment System offers several benefits, including:

- A fast and easy installation
- Smaller crews and install time, with up to 50% faster installation by adding a second machine
- Quick dry-in, as membrane seams can be welded before RhinoBond® Plates are bonded

RhinoBond® Attachment Systems are eligible for the same warranties as fully adhered systems, and can also be installed:

- In a wide variety of temperatures
- Without waiting for cure time, fumes, mess, empty pails, or VOCs from traditional adhesives

In addition, RhinoBond® Attachment Systems have advantages over traditional mechanically attached systems, including:

- No half sheets and less seams
- Longer warranties
- No fastener penetrations in the field or seams of the membrane

 Less flutter with optimized attachment across the entire sheet







ENERGYGUARD™ POLYISO INSULATION



GAF EnergyGuard™ Polyiso Insulation is manufactured in our state-of-the-art plants using the latest technology and providing the highest-quality products. And our Gainesville, Texas, and Cedar City, Utah, plants can provide full system shipment of both polyiso and TPO products.

EnergyGuard™ Polyiso Insulation is available in thicknesses ranging from 1" to 4.6" in either 4' x 4' or 4' x 8' boards, as well as in tapered panels with slopes of ½6", ¾6", ¼8", ¼4", and ½".

It also offers various facers and compressive strength options depending on your specification needs.

Polyiso offers one of the highest LTTR insulation values compared to any other FM Class 1-rated product of equivalent thickness.

Meets FM 4450/4470 (consult RoofNav.com for specific assemblies) and UL 1256/790/263.

Manufactured with EPA-compliant blowing agents containing no CFCs or HCFCs; has zero ozone depletion potential (ODP) and virtually no global warming potential (GWP).

Its light weight makes it easier and quicker to install; easier cutting in the field provides simplified fabricating on the roof deck.











EnergyGuard[™] Polyiso Insulation offers a complete lineup of products to meet almost any low-slope commercial roofing insulation need. It provides exceptional thermal performance at an economical price.

EnergyGuard™ Polyiso Insulation...
Glass fiber-reinforced cellulosic
felt facers bonded to a core of
isocyanurate foam and available with
a compressive strength of 20 psi or 25
psi. Meets the requirements of ASTM
C1289 Type II, Class 1, Grade 2 (20
psi) and Grade 3 (25 psi).

EnergyGuard[™] Ultra Polyiso Insulation...

Coated glass facers bonded to a core of isocyanurate foam and available with a compressive strength of 20 psi

or 25 psi. Meets the requirements of ASTM C1289 Type II, Class 2, Grade 2 (20 psi) and Grade 3 (25 psi). Ideal to help mitigate mold growth.

EnergyGuard[™] Tapered Polyiso Insulation...

Polyiso Insulation...

Glass fiber-reinforced cellulosic felt facer or coated glass facers bonded to a core of

isocyanurate foam, which helps eliminate ponding water issues. For more information on tapered polyiso insulation, visit gaf.com/EnergyGuard.

EnergyGuard[™] HD & HD PLUS Polyiso Insulation...

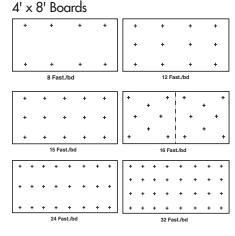
Coated glass facers bonded to a core of isocyanurate with a compressive strength of 80 psi or 110 psi. Meets the requirements of ASTM C1289

Type II, Class 4, Grade 1 (80 psi) and Grade 2 (110 psi). Ideal for protecting your roof against high traffic and the elements.

• EnergyGuard™ Polyiso Insulation Custom Cut...

Available in Ultra as well, it is designed to fill the flutes of a standing seam or lap metal roof retrofit system in order to provide a level surface for TPO or PVC membranes, as well as to provide an increased R-value to the existing structure. It is available in either a straight or bevel-cut edges.

Unique fastening pattern guidelines to help improve speed and accuracy when installing.









GAF PERIMETER EDGE METAL



Perimeter edge metal provides many benefits in addition to aesthetics, such as:

- Functions as the termination and transition between the roof and other building components
- Ensures product consistency and performance
- Increases productivity by eliminating fabrication time
- Provides proper attachment due to prepunched slotted holes
- Allows for thermal movement
- Can be installed with high-torque screws instead of nails
- Factory-fabricated corners and accessories come pre-manufactured, providing a clean look while eliminating field labor

GAF Perimeter Edge Metal offers a full lineup of pre-fabricated coping, fascia, drip edges, gutters, downspouts, and trim in both steel and aluminum in a variety of KYNAR®-coated colors.

All products are FM approved and ES-1 tested since they are the first line of protection in a wind event.









- M-Weld[™] Gravel Stop MB Fascia...
 Pre-punched slotted holes; self-locating cleat
- EverGuard® Snap-On Fascia...
 Economical solution for single-ply membranes that are less than 60 mils.
- M-Weld[™] Snap-On Coping...
 20-gauge cleat designed to improve contractor productivity. No need for caulking or sealing at fasteners or joints; preformed splice channel directs water to the roof.

• EverGuard® EZ Fascia...

High-performance cleat with snap-on cover; reduces labor and enhances roof system integrity.

M-Weld[™] EZ Fascia EX...

Two-piece snap-on fascia system with heavy-duty aluminum retainer to improve contractor productivity and enhance roof system performance.

• M-Weld™ Snap-On Plus Coping...

Heavy 16-gauge cleat for higher wind resistance; no need for caulking or sealing at fasteners or joints; preformed splice channel directs water to the roof.





DRILL-TEC[™] FASTENERS





Flat Plate for Insulation



Double Barbed XHD® Plate for Membrane

Drill-Tec™ Fasteners and Plates offer a comprehensive lineup of insulation and membrane products that can be used on almost any deck type. The fasteners are made with high-quality corrosion-resistant stainless steel alloy and the plates of Galvalume®-coated steel to provide the performance you can rely on.

Drill-Tec[™] Fasteners...

Come in a wide range of lengths and head types.

Insulation Plates...

For both regular, flat polyiso insulation as well as cover board applications.

Membrane Plates...

A wide variety of membrane plates, including double-barbed 2 3/8" plate options, exclusive to GAF, which can increase wind uplift ratings compared to standard single-barbed plates.

GAF Drill-Tec[™] Fasteners and Plates meet all the standards required by Factory Mutual (FM) and Underwriters Laboratories (UL) to reduce your labor cost and increase your productivity. Most all the Drill-Tec[™] Fasteners and Plates are compatible with OMG Accutrac[®], OMG AccuSeam[®], and RhinoBond^{®†} tools.









EVERGUARD® TPO

Prefabricated Accessories

• Watertight • Consistent, field-tested quality • Proven to reduce total installed cost by up to 12%*



Walkway Roll

Heat welds directly to TPO membrane or installed with seam tape; available in gray and yellow



Four standard sizes to flash curbs that are 24", 36", 48", and 60" in size





Pourable Sealer Pocket

Structural foundation for EverGuard®

Pourable Sealant



Fluted Corner

For use in flashing outside corners of base and curb flashings



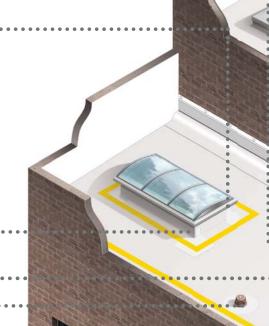
Universal Corner

Accommodates both inside and outside corners of base and curb flashings



Vent

Limits air flow to one direction, avoiding moisture buildup





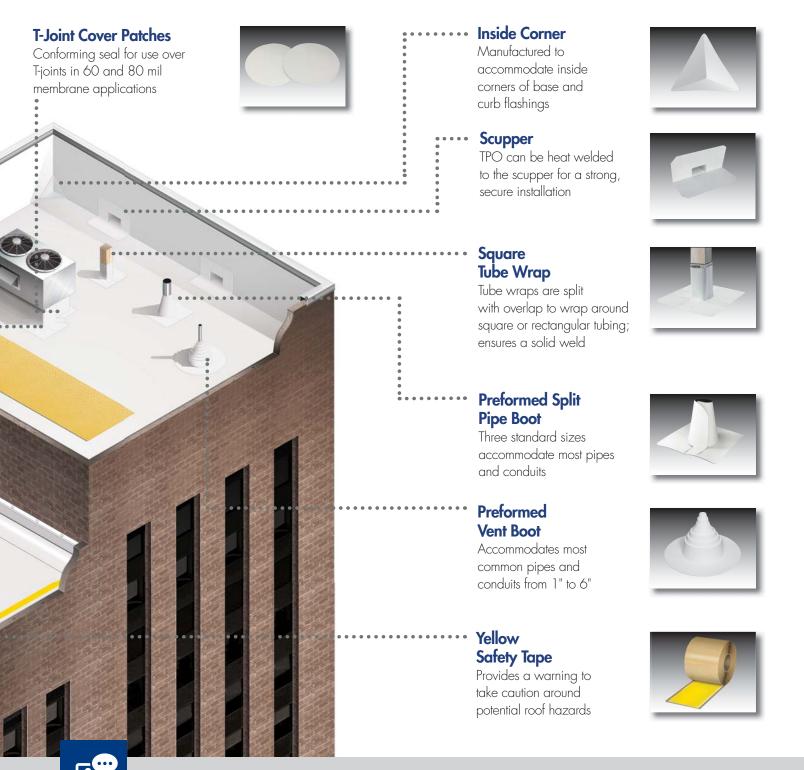
Coated SPEEDTITE™ Drain

TPO or PVC-coated flange for direct hot-air welding of TPO or PVC roof membranes





*Compared to GAF estimate to field-fabricate flashing details.



SUPPORT SERVICES

Can Help To Make Your Roofing Project a Success!



GAF Sustainability Mission Statement

GAF is the only roofing manufacturer to publish Health Product Declarations (HPDs) and Environmental Product Declarations (EPDs) for both TPO and ISO products, which means there are no secrets about the materials you're using on your roofing project.

- The Health Product Declaration (HPD)
 Open Standard consists of a defined Format and Instructions for reporting about the contents of building products along with the associated health and other related information.
- An Environmental Product Declaration (EPD®) is an independently verified and registered document that communicates transparent and comparable information about the life cycle environmental impact of products.



GAF EverGuard
Extreme® TPO is also
the first TPO to receive
the Cradle To Cradle™
Certification (Silver

Level) from the Cradle To Cradle Products Innovation Institute.



The Best Roofing Contractors

GAF selects less than 2 out of every

100 roofing contractors for our factory-certified commercial contractor program. We provide them with extensive training tools and support to help ensure proper material installation, improve their processes, and enhance their capabilities. GAF guarantees that include coverage for workmanship are available through this elite contractor force.



Maintenance Professional (CMP) & Sustainable Roofing Council (SRC) Programs

Certified

Having a maintenance

program in place for your roofing asset is critical for not only optimizing its overall longevity and performance but also helping ensure you have uninterrupted

guarantee coverage if issues arise. GAF Certified Maintenance Professionals (CMPs) are contractors who have not only the expertise to maintain and service your roof but also the exclusive ability to extend your Diamond Pledge™ NDL Roof Guarantee by 25%—via the WellRoof® Guarantee Extension,* at no cost to you. Contact GAF Guarantee Services for details. Also, benefit from working with a member of the Sustainable Roofing Council (SRC). Educated in emerging green practices such as membrane and insulation recycling, LEED®, and the technology behind cool roofing, an SRC member is the right choice to install your new cool roofing system.



Architectural Information Services

Architects and specifiers can access an entire team devoted to assisting you with the specification process. They can answer questions and provide assistance with master specification preparation and other valuable activities at no charge to you. Call them toll free: 800-522-9224 or email AIS@GAF.com.

Full-Time Field Services Team

Our nationwide team of Field Services Professionals helps ensure your new roof is installed right the first time. They are a full-time, professionally trained resource. Our team is a trusted source for information, installation training, and bestpractice sharing to help prevent problems before they happen.







INDUSTRY-LEADING GUARANTEES

Diamond Pledge[™] NDL Roof Guarantee

No dollar amount on your coverage; unlike competitive guarantees, provides true "edge-to-edge" coverage, with additional leak coverage for penetrations and metal components.**

WellRoof® Guarantee Extension

Provides a 25% extension on a Diamond Pledge[™] NDL Roof Guarantee when you participate in an annual inspection and preventative maintenance program with a GAF Certified Maintenance Professional*

All-American Pledge[™] Roof **Guarantee**

The industry's only guarantee that covers both steep- and low-slope roofing projects (in one guarantee) for single-source accountability—and your convenience.**

		GUARD	EXTREME TPO		
MILS	MECHANICALLY Attached	FULLY ADHERED/ RHINOBOND®	MECHANICALLY Attached	FULL ADHERED/ RHINOBOND®†	
45	15 YEARS	20 YEARS			
50			20 YEARS	25 YEARS	
60	20 YEARS	25 YEARS	25 YEARS	30 YEARS	
70			30 YEARS	30 YEARS	
80	25 YEARS	30 YEARS	30 YEARS	35 YEARS	

^{*}Guarantees of 30 and 35 years do not qualify for WellRoof® Guarantee Extension.

**See applicable GAF roof guarantee for complete coverage and restrictions.

Technical Help When It Matters

Our 1-800-ROOF-411 hotline is available to answer technical questions live. Our Technical team can answer questions regarding installation, codes, product approvals, roof system details, and other technical issues. They are a complete technical resource dedicated to supporting proper roof installation.









Because failure is not an option.

GAF EverGuard Extreme® TPO has been named the industry's top-performing TPO membrane (and GAF standard EverGuard® TPO was named the second-best performing)! Visit TPOresults.com to see the independent test results, including how all the major TPO brands compared.



1-800-ROOF-411