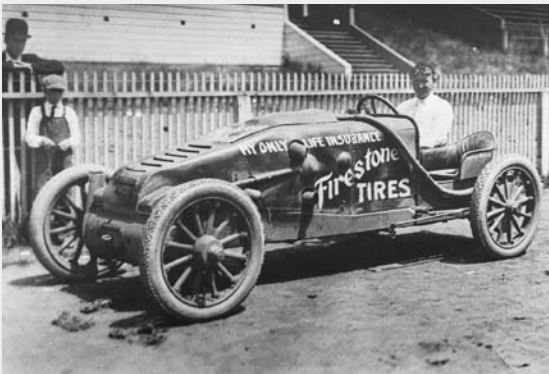


Firestone RubberGard® The EPDM reference



EPDM Roofing Systems

Firestone
BUILDING PRODUCTS
NOBODY COVERS YOU BETTER.®



Firestone: A Century of Experience in Rubber

For over a century, Firestone has been a pioneer and innovator in rubber technology. It all started in 1903 when Harvey S. Firestone manufactured the first set of Firestone rubber tyres. By the late 1920's Firestone had become a world leader in rubber polymer technology with operations on six continents. Today, the Firestone name is synonymous with quality, innovation and leadership.

1.000.000.000 m² of proven performance

The Firestone heritage of success and quality is extended to the construction industry through the Firestone Building Products division who manufactures high-quality EPDM rubber membranes for flat roofing applications. Firestone Building Products entered the commercial roofing industry in 1980 starting with a single EPDM manufacturing facility in Prescott, USA. Today, the company has produced and installed over 1.000.000.000 m² of RubberGard® EPDM. This performance record has made Firestone Building Products a leading manufacturer of EPDM rubber membranes worldwide.

RubberGard®: the EPDM reference

The main component of Firestone RubberGard® Roofing Systems is EPDM, a single-ply synthetic rubber membrane made of ethylene propylene diene terpolymer mixed with carbon black, oils, curing agents and processing aids. It is calendered into large sheets and vulcanized. A polyester scrim Reinforced EPDM and a Fire Retardant grade EPDM are also available.

The first Firestone RubberGard® EPDM roof was installed in Wisconsin, USA in 1980 and still remains in service today. Since then, Firestone RubberGard® EPDM membranes have been successfully installed on hundreds of thousands of rooftops worldwide, from the cold climates of Alaska to the desert sun of the Arabian Gulf.



Superior roofing solution

The use of EPDM membranes in low slope roofing applications on new building or refurbishment has increased significantly due to their ability to meet the high performance criteria demanded by modern building standards.

Firestone RubberGard® EPDM membranes offer a unique combination of features and benefits which have been demonstrated on countless commercial, industrial and residential rooftops around the world.

✓ Quick and easy installation

Firestone RubberGard® EPDM is available in panel sizes up to 15 m in width and 61 m in length resulting in fewer field seams and less installation time.

✓ Superior weatherability and durability

Firestone RubberGard® EPDM is a fully cured membrane composed of essentially EPDM polymer and carbon black offering unmatched resistance to ozone and UV radiation. As the membrane does not contain any plasticizers or flame retardants, its characteristics remain stable and unchanged over time thus providing a sustainable roofing solution.

✓ High flexibility and elongation

Firestone RubberGard® EPDM remains flexible at temperatures down to - 45°C and can elongate over 300% to accommodate building movements and temperature fluctuations.

✓ Low life-cycle cost

Firestone RubberGard® EPDM requires little or no maintenance. Even after years of exposure, if needed the membrane can simply be repaired using the Firestone QuickSeam® Tape products. This feature combined with the inherent durability and competitive installed cost of EPDM roofing systems result in a very low life-cycle cost.



Firestone RubberGard® EPDM - Specifications

| Product Line | | | |
|---|--|----------------------------|-----------------------------|
| Membrane | Width in m | Length in m | Weight in kg/m ² |
| .045" STD / 1.1 mm | 2.28 - 2.75 - 3.05 - 5.08 - 6.10 - 7.62 - 9.15 - 12.20 - 15.25 | 15.25 - 30.50 - 45.75 - 61 | 1.4 |
| .060" STD / 1.5 mm | 2.28 - 2.75 - 3.05 - 5.08 - 6.10 - 7.62 - 9.15 - 12.20 - 15.25 | 15.25 - 30.50 | 2.0 |
| .045" LSF / 1.1 mm | 3.05 - 5.08 - 6.10 - 7.62 - 9.15 - 12.20 | 30.50 | 1.5 |
| .060" LSF / 1.5 mm | 3.05 - 5.08 - 6.10 - 7.62 - 9.15 - 12.20 | 30.50 | 2.1 |
| .045" FR / 1.1 mm | 2.28 - 3.05 - 6.10 | 15.25 - 30.50 | 1.5 |
| .060" FR / 1.5 mm | 2.28 - 3.05 - 6.10 | 15.25 - 30.50 | 2.1 |
| Physical Properties (*) | | | |
| Property | Test Method | Typical Value | Unit |
| Watertightness | EN 1928 (B) | pass | |
| Tensile strength (both directions) | EN 12311-2 | ≥ 8 | MPa |
| Elongation | EN 12311-2 | ≥ 300 | % |
| Resistance to static loading (EPS & concrete) | EN 12730 (B) | ≥ 25 | kg |
| Resistance to impact EPS | EN 12691 | ≥ 15 | mm |
| Resistance to impact concrete | EN 12691 | ≥ 10 | mm |
| Tear resistance | EN 12310-2 | ≥ 40 | N |
| Joint peel resistance | EN 12316-2 | ≥ 25 | N/50mm |
| Joint shear resistance | EN 12317-2 | ≥ 200 | N/50mm |
| UV exposure | EN 1297 | pass | |
| Foldability at low temperature | EN 495-5 | ≤ -45 | °C |
| External fire performance | | | |
| • LSF & FR | EN 13501-5 | B _{ROOF} (t1) | |
| • MAX FR | EN 13501-5 | B _{ROOF} (t2) | |
| • MAX FR | EN 13501-5 | B _{ROOF} (t3) | |
| • FR | EN 13501-5 | B _{ROOF} (t4) | |
| Reaction to fire (LSFR & FR only) | EN 13501-1 | E | |
| Root resistance | prEN 13948 | pass | |

(*) Typical physical properties for .045" (1.1 mm) standard membrane. Testing results and/or copies of Agreement Certificates for above mentioned membranes are available upon request.
For latest updates and additional info, please consult our website at www.firestonebpe.com.



Because the environment matters

Firestone Building Products is committed to operate in an environmentally responsible matter. An environmental management system, which complies with the ISO 14001 requirements, has been implemented throughout the company's manufacturing facilities. This certification is a testimony of the company's environmental awareness.



Eco-friendly membrane

Firestone RubberGard® EPDM is an inert material with limited environmental impact during manufacturing, installation and use. No toxic substances are released from the membrane, allowing collection and use of run-off rainwater. Firestone RubberGard® EPDM can also be recycled and re-used in walkway pads and road asphalt. These ecological benefits in combination with the membrane's life expectancy up to 50 years make Firestone RubberGard® EPDM a green roofing solution.

Green Roof System

Due to ever increasing concern for the environment, green roofs are becoming regular a part of our landscape. Firestone RubberGard® EPDM has successfully passed the FLL test for root penetration resistance in green roofs. It is an ideal membrane for combination with extensive green roof systems using lightweight and low maintenance sedum vegetation.

The ecological benefits of a green roof system are numerous:

- **Reduction of the urban heat island effect**
- **Reduction of energy costs**
- **Storm water management**
- **New habitats for plants & animals**
- **Improved air quality**
- **Reduction of noise pollution**

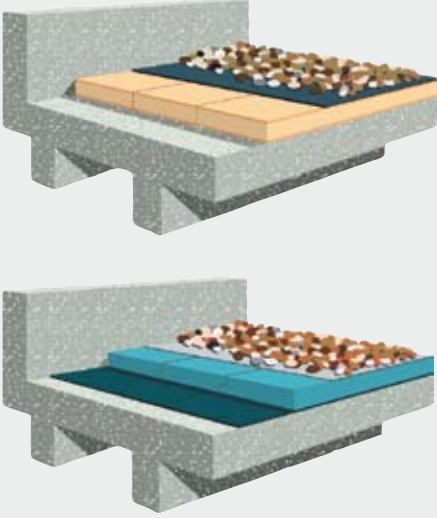
Solar Roof System

Firestone RubberGard® EPDM Roofing Systems can easily be combined with any type of solar system. The conventional photovoltaic modules are simply installed onto the EPDM membrane and the rooftop penetrations are made watertight using the Firestone EPDM accessories. The new generation of thin photovoltaic films can be adhered to the EPDM membrane using the Firestone QuickSeam® Tape System.

Solar Roofing Systems provide savings on energy costs and reduction of carbon emissions helping towards a sustainable environment.

Roofing systems for every need

Firestone RubberGard® EPDM Roofing Systems offer a variety of installation options including installing the EPDM membrane as a ballasted system with stones or pavers, fully adhering the EPDM membrane to the substrate, and mechanical attachment of the EPDM membrane with various fastening devices. Building owners and specifiers can select the system that best suits the nature of their roofing project.



Firestone Ballasted System (B)

In the **Firestone Ballasted System**, the EPDM sheets are loose laid over an acceptable substrate. Adjoining sheets are overlapped at least 100 mm and spliced with Firestone QuickSeam® Splice Tape. Roof perimeters and penetrations are flashed in accordance with Firestone specifications. Once completed, the EPDM membrane is held in place using approved river washed ballast or smooth paving stones, with a minimum weight of 50 kg/m².

The **Firestone Inverted System** is a variation of the conventional Ballasted System and is ideal for roofs with regular traffic and/or in very severe climates. The large EPDM sheets are separated from the ballast by a layer of moisture-resistant insulation boards and a geotextile, loose laid on top of the membrane.



The Ballasted or Inverted System can be applied on any building that can accommodate the extra load of the ballast and where the roof slope does not exceed 1:6.



System Features:

- **Low installation cost**
- **Use of large EPDM sheets**
- **Fewer seams**
- **Fast installation**





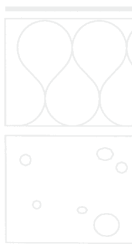
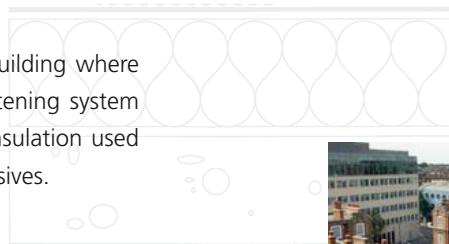
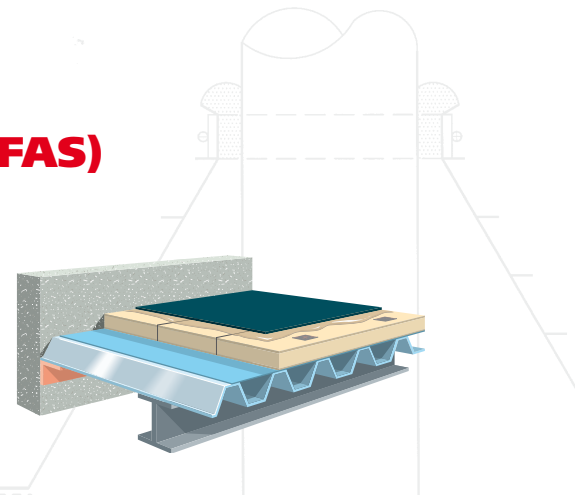
Firestone Fully Adhered System (FAS)

In the **Firestone Fully Adhered System**, the EPDM sheets are fully adhered directly to an acceptable substrate using Firestone Bonding Adhesive. Adjoining sheets are overlapped at least 100 mm and the seams spliced with Firestone QuickSeam® Splice Tape to form a continuous, watertight membrane. All flashings around roof perimeters and penetrations should be installed in accordance with Firestone details.

The Fully Adhered System can be applied on any building where the roof deck is compatible with the insulation fastening system and will provide sufficient pull-out resistance. The insulation used must be compatible with the Firestone contact adhesives.

System Features:

- Application on any slope
- Application for unusual roof configurations
- Lightweight system
- High wind uplift performance



Firestone Mechanically Attached Systems

Firestone's Mechanically Attached Roofing Systems are an economical installation method on buildings where the roof deck provides sufficient pull-out resistance for the fastening system and the roof slope does not exceed 1:3. Firestone offers three system options for mechanical attachment of the RubberGard® EPDM membranes: the **RMA, MAS and BIS System**. A combination of these methods can also be considered. In perimeter zones, membrane panels can be fully adhered to the substrate.

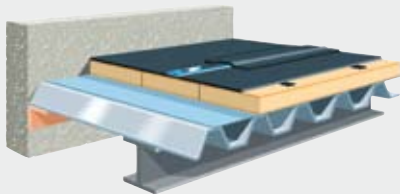
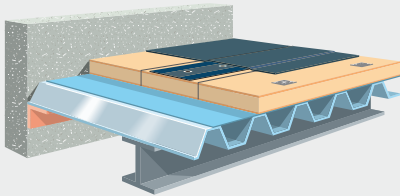
Firestone RMA System

The **Firestone RMA System** is a lightweight, non-penetrating, mechanically attached system developed around the QuickSeam® RMA strip: a strip of reinforced EPDM membrane incorporating self-adhesive QuickSeam® Splice Tape laminated along each edge over the length of the strip. These RMA strips are laid out over an acceptable substrate and mechanically secured to the roof deck. Spacing of the strips and/or fasteners differs to accommodate for wind loadings. Large EPDM panels are then adhered to the RMA strips using standard QuickSeam® Splice Tape seaming techniques.



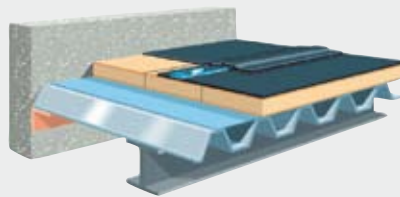
System Features:

- **Non-penetration of EPDM membrane**
- **Use of large EPDM sheets**
- **Fewer seams**
- **Lightweight system**
- **Aesthetics**



Firestone MAS System

In the **Firestone MAS System**, EPDM panels are loose laid on an acceptable substrate and mechanically attached with batten bars placed on top of the sheets. The batten bars are protected with Firestone QuickSeam® Batten Cover strips. This system offers an alternative to the RMA system in case of unusual roof configurations.



Firestone BIS System

In the **Firestone BIS System**, EPDM panels are loose laid on an acceptable substrate and mechanically attached with batten bars placed in the middle of the seams of adjoining sheets. Side laps between adjoining membranes are overlapped a minimum of 200 mm.



A wide range of accessories for total roofing systems

Firestone has developed a complete range of accessories for its RubberGard® EPDM membranes to meet the requirements of various roofing applications and installation details. All components necessary for Total Roofing Systems are available from one single source: Firestone Building Products.



Adhesives, Sealants, Cleaning Agents and Coatings

Firestone Bonding Adhesive is a neoprene-based contact adhesive for bonding EPDM to wood, metal, masonry and other (non EPDM) acceptable substrates.

Firestone Water Based Bonding Adhesive is a latex based adhesive designed for bonding EPDM onto wood but can also be used onto metal, masonry and other acceptable substrates.

Firestone Splice Adhesive is a water repellent butyl-based adhesive for bonding EPDM to metal substrates (e.g. gutters) and other acceptable substrates.

Firestone Lap Sealant HS is an EPDM sealant used for protecting exposed cut edges of QuickSeam® products and as a general purpose sealant.

Firestone WaterBlock Sealant is a butyl-based sealant used for watertight seals when applied under compression e.g. under roof drains or behind termination profiles.

Firestone Pourable Sealer is a two-part polyurethane sealer used to fill and seal penetration pockets.

Firestone Splice Wash is a highly volatile solvent used for pre-cleaning contaminated EPDM membranes prior to the application of QuickPrime Plus.

Firestone AcryliTop Coating is an aesthetic acrylic coating that can be applied over the EPDM membranes.



Attachment

Firestone Coiled Metal Batten Strip is a 25 mm wide prepunched (76 mm centers) galvanized steel strip for anchoring EPDM membrane sheets. The strip also exists in bars with lengths of 3.05 m.

Firestone Termination Bar is an extruded aluminum profile to attach and seal flashing terminations e.g. parapets and upstands.

Firestone Fasteners (various) are used to mechanically secure batten bars, seam plates, termination bars and/or insulation boards to the substrate.

Firestone V-Plates are 57 mm wide galvanized steel plates used for anchoring Firestone Reinforced Perimeter Fastening Strips.

Firestone Insulation Plates are designed for attaching insulation boards to the structure.



QuickSeam® Products

Firestone 3" (76 mm) QuickSeam Splice Tape is an EPDM/Butyl based, self-adhesive tape designed for field splicing of Firestone EPDM membrane panels. It is fully cured and provides consistent adhesive thickness within the seam. A 6" (152 mm) wide tape is also available for BIS applications.

Firestone QuickPrime Plus is a high solids primer designed to clean and prepare the EPDM membrane in seaming areas to receive QuickSeam products. It is applied with the specially designed Quick-Scrubber or QuickScrubber Plus tool.

Firestone QuickSeam RMA Strip is a strip of reinforced EPDM incorporating two strips of QuickSeam Splice Tape, used for EPDM membrane attachment in Firestone RMA Systems.

Firestone QuickSeam Batten Cover Strip is used to cover, protect and seal batten bars in Firestone MAS systems.

Firestone QuickSeam Reinforced Perimeter Fastening Strip is used to execute base tie-in details.

Firestone 9" (229 mm) and 12" (305 mm) QuickSeam FormFlash are designed to flash inside and outside corners, penetration pockets and other roof penetrations.

Firestone QuickSeam SA Flashing is a 450 mm wide strip of fully cured EPDM membrane laminated over its entire width to a QuickSeam Splice Tape, used to wrap curbs, flash parapets, line gutters, carry out general roof repairs where cured EPDM is required and flash in drain insert pieces.

Firestone 5" (127 mm) QuickSeam Flashing is used to flash edge profiles and other details.

Firestone QuickSeam Pipe Flashing is a "one size fits all" preformed EPDM pipe boot used for flashing of round, accessible penetrations.

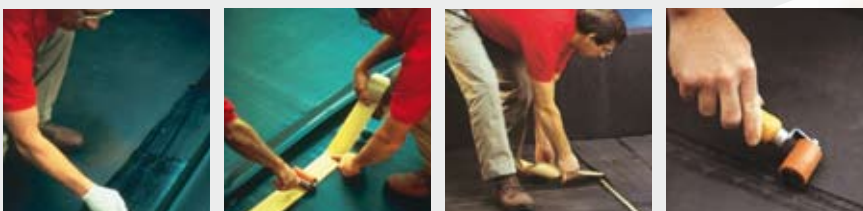
Firestone QuickSeam Walkway Pads are used for protection of EPDM membranes in areas of regular traffic.



High strength seam tape technology

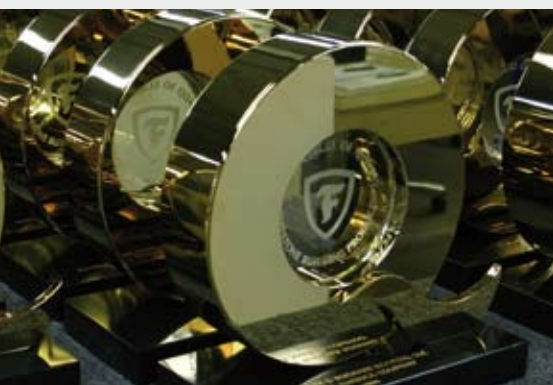
The large RubberGard® EPDM panels are assembled on site using the highly effective Firestone QuickSeam® Tape System.

This technology of EPDM field seaming offers a significant reduction in the number of seaming procedures, is easy to install and shows superior long-term performance. Since its first roofing application in 1987, millions of linear meters of Firestone QuickSeam® Tape have been successfully installed on rooftops worldwide.



A tradition of quality and excellence

Firestone Building Products is committed to carry on the tradition of quality and excellence established by its company founder, Harvey S. Firestone.



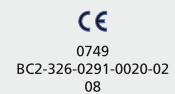
Research and development

In order to ensure a superior product even before the manufacturing process, each component of Firestone's EPDM Roofing Systems is designed and tested by skilled engineers and chemists in the company's R&D department.

Quality manufacturing

Firestone Building Products operates plants with state-of-the-art equipment. Its two EPDM plants have achieved **ISO 9001:2000 and ISO 14001:2004 certifications**, which are a testimony of the company's commitment to quality management and environmental management systems.

The Firestone RubberGard® EPDM membranes have obtained the **European CE-mark**, proving that these products and associated production methods are meeting today's requirements in terms of mechanical resistance and stability, safety in case of fire, hygiene, health and environmental protection, safety in use, protection against noise, energy economy and heat retention, aspects of durability, serviceability and identification.



Quality installation

Firestone EPDM Roofing Systems are installed only by professional and trained Firestone Licensed Roofing Contractors who share our commitment to quality roof installations.

To encourage commitment to quality, Firestone is presenting the Master Contractor Award to a select group of roofing contractors for their consistent installation excellence and quality workmanship.



Training & education

Firestone offers its contractors a variety of educational programs both at its training center in Brussels as well as at numerous regional locations. The objective of these training programs is to educate and familiarize roofing contractors with all aspects of EPDM roofing system installations. In addition Firestone also organizes specification and calculation seminars for specifiers and building owners.

Field support services

Firestone's support and training extends onto the roof. Our field technicians provide professional assistance at job start-up, make installation inspections and offer on-site training to the roofing crew.

Technical tools

Firestone offers a comprehensive range of technical documents and tools, such as a technical manual including system design and installation guidelines, CAD installation detail drawings, product information sheets, material safety data sheets and a bill of quantity calculation program. In short, Firestone provides all that is needed to correctly specify, estimate and install a quality Firestone RubberGard® EPDM Roofing System.



Code approvals

Firestone EPDM Roofing Systems meet or exceed a variety of international building code approvals and classifications.



Nobody Covers You Better®

Firestone's commitment to quality services combined with the history of performance of RubberGard® EPDM Roofing Systems are proof that when it comes to flat roofing, Nobody Covers You Better than Firestone!

Firestone
 BUILDING PRODUCTS
 NOBODY COVERS YOU BETTER.®

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