

# EBP

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## Residential Flat Roof **EPDM** Membrane

# TECHNICAL MANUAL



# EBP

## ROOFING

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# WE MAKE IT HAPPEN



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# INTRODUCING **FIRESTONE** **RUBBERCOVER™**



EPB, one of the UK's leading suppliers to trade professionals, are proud to introduce Firestone RubberCover EPDM membrane.

Successfully installed worldwide - from the arctic conditions of Siberia to the blistering heat of the Middle East. Firestone EPDM membranes ensure the water-tightness of tens of thousands of buildings having become the most popular synthetic material of its generation.

On the strength of this success, the Firestone RubberCover EPDM membrane can now be found on residential roofs which require exceptional performance.

## **KEY FEATURE/BENEFITS**

- **Excellent resistance to ageing (UV and ozone)**
- **Highly elastic (> 300% elongation)**
- **Excellent flexibility at low temperatures (-45°C)**
- **High puncture resistance**
- **Membrane and seams display high resistance to hydrostatic pressure**
- **Fire resistance to external sources (Low-Slope-Fire-Retardant EPDM)**
- **Inert (no solvents or plasticizers). The membrane composition remains constant over time**
- **Compatible with the collection of rainwater**
- **Resistant to micro-organisms**
- **Large dimension membranes significantly decrease installation time**
- **Reduced environmental impact compared to other waterproof membranes and inline with ecological requirements**
- **Compatible with green roofing systems and photovoltaics**
- **Easy installation and repair even after several years exposure**

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## FIRESTONE RUBBERCOVER™ EPDM MEMBRANE



### 1 DESCRIPTION

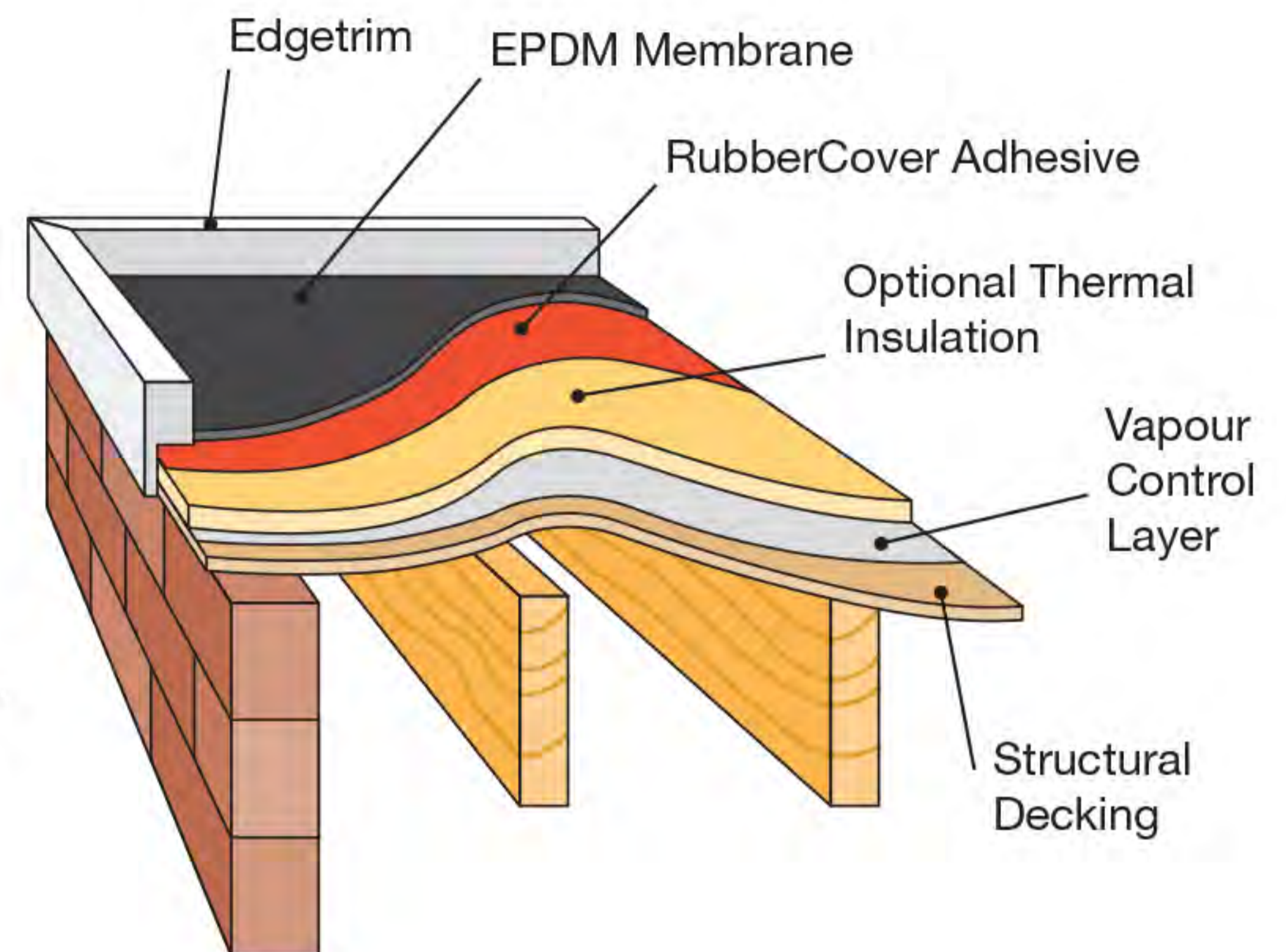
The Firestone RubberCover EPDM membrane is a cured single-ply roofing membrane made of a synthetic rubber Ethylene-Propylene-Diene Terpolymer.

### 2 PREPARATION

Substrates need to be clean, smooth, dry and free of sharp edges, loose or foreign materials, oil, grease and other materials that may damage the membrane. All surface voids greater than 5 mm wide shall be properly filled with an acceptable fill material.

### 3 APPLICATION

Allow the RubberCover EPDM membrane to relax for approximately 30 minutes before adhering it to the substrate. Install the RubberCover EPDM membrane in accordance with the installation instructions and guidelines.



### 4 COVERAGE

The dimensions of the membrane are calculated to cover the substrate and possible upstands. Provides an additional length (150 mm) at upstands for easy manipulation.

### 5 CHARACTERISTICS

#### PHYSICAL

- Elastomer membrane with a good combination of high elasticity and tensile strength
- Excellent resistance to UV and ozone
- Retains its flexibility at low temperature (-45°C)
- Resists to temperature shocks up to 250°C
- Excellent resistance to alkali rains
- Less resistant to oil products. Contact with mineral and vegetable oils, petroleum based products, hot bitumen and grease must be avoided

#### TECHNICAL

##### Property

- Thickness
- Watertightness
- Tensile strength (L/T)
- Elongation (L/T)
- Resistance to impact - hard substrate
- Resistance to static load - hard substrate
- Tear resistance (L/T)
- Dimensional stability
- Foldability at low temperature
- UV exposure

##### Test Method

- EN 1849-2
- EN 1928 (B)
- EN 12311-2 (B)
- EN 12311-2 (B)
- EN 12691 (A)
- EN 12730 (B)
- EN 12310-2
- EN 1107-2
- EN 495-5
- EN 1297

##### Declared Value

- 1.1 mm
- Pass
- ≥ 6 N/mm<sup>2</sup>
- ≥ 300 %
- ≥ 20 mm
- ≥ 25 kg
- ≥ 30 N
- ≤ 0.5 %
- ≤ -45°C
- Pass

Note: As European standards continue to develop, please contact Firestone's Technical Services or check the Firestone RubberCover Website for latest updates on physical properties.

### 6 PACKING / STORAGE / SHELF LIFE

Thickness (mm)	Width (m)	Length (m)	Weight (kg/m <sup>2</sup> )
1.1	3.05 - 4.57 - 6.10	7.62	1.17

Note: Special sizes are available upon request.

**Storage:** Store away from sources of punctures and physical damage. Store away from ignition sources and open flame  
**Shelf Life:** Unlimited

## ROOFING

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# FIRESTONE RUBBERCOVER™ EPDM MEMBRANES OFFER A UNIQUE COMBINATION OF FEATURES & BENEFITS

- **SUPERIOR DURABILITY**

Firestone RubberCover EPDM membranes offer unmatched resistance to ozone, UV radiation and high or low temperatures. They have a life expectancy of up to 50 years. Over a billion square meters of roof installations worldwide are a testimony of Firestone EPDM membrane's proven performance.

- **SEAMLESS SHEETS IN 1 PIECE**

Firestone RubberCover EPDM membranes are available in large, seamless sheets up to 6.10 m in width. Most small residential roofs can therefore be covered with one single sheet without any field seaming.

- **VERY LOW LIFE-CYCLE COST**

Firestone RubberCover EPDM membranes require no or only little maintenance once installed. This feature, combined with the membrane's inherent durability and competitive installed cost, result in a very low lifecycle cost.

- **FLAME-FREE AND EASY INSTALLATION**

Installation of Firestone RubberCover EPDM membranes is easy. It requires no flame as the membrane is always fully adhered to the substrate using a cold applied adhesive.

- **HIGH FLEXIBILITY AND ELONGATION**

Firestone RubberCover EPDM membranes remain highly flexible even at low temperatures, enabling year round installation. The membrane can also elongate over 300% to accommodate building movements.

- **ENVIRONMENTALLY FRIENDLY**

Firestone RubberCover EPDM is an inert material with limited environmental impact, both during manufacture and installation, and high durability compared to other roofing membranes. In addition, Firestone's EPDM manufacturing facilities have received ISO 14001 certification for their environmental management system.

## FIRESTONE RUBBERCOVER™ EPDM MEMBRANE

### HIGH QUALITY EPDM MEMBRANE

Firestone RubberCover EPDM membrane is a 100% cured single-ply roofing membrane made of a Ethylene-Propylene-Diene Terpolymer offering unique features and benefits.

For decades Firestone EPDM rubber roofing membranes have been successfully installed on hundreds of thousands of commercial and industrial roofs worldwide. Today, the high performing Firestone EPDM membranes are also available to cover small residential flat roofs.

### STANDARD SIZES

Firestone RubberCover EPDM membranes are available in large, seamless sheets up to 6.10 m in width.

<b>Sizes</b>	3.05 m x 7.62 m 4.57 m x 7.62 m 6.10 m x 7.62 m	Packed on 1.80 m long cores
<b>Thickness</b>	1.1 mm	
<b>Weight</b>	1.27 kg/m <sup>2</sup>	



*Note: Special sizes are available upon request.*

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### EXCEPTIONAL DURABILITY

The chemical composition of Firestone’s RubberCover EPDM membrane (high proportion of carbon black (> 25%) and saturated carbon chains) and the fact that it is vulcanized (strongly cross-linked chains) mean that the membrane benefits from an unmatched resistance to UV, ozone, micro-organisms and extreme weather conditions.

Unlike some thermoplastic membranes, the membrane does not contain any plasticizers or antioxidants likely to migrate or degrade and cause the membrane to age prematurely.

Tests conducted on the Firestone RubberCover EPDM membrane and the observations made on membranes exposed to several years’ worth of actual weather conditions (exposure to rain, UV, ozone, heat, thermal variations and microorganisms etc.) have shown that under normal exposure in western Europe and when fitted according to good engineering practice the Firestone RubberCover EPDM membrane has **a service life of more than 50 years**, without any apparent sign of ageing such as cracks, crazing and bleaching etc.

The **EMMA test** (Equatorial Mount with Mirrors for Acceleration) consists of concentrating sunlight under a tropical climate by using mirrors. The Firestone RubberCover EPDM membranes were exposed to more than 2,000,000 Langley under this test, without sustaining any cracking or crazing.



#### STANDARD TESTS

	Standard	1.1 mm
Ozone resistance	EN 14575	Compliant
Durability – UV Ageing	EN 1297	Compliant

#### SKZ STUDY

In 2004, a study was conducted by the German Institute of Synthetic Materials (SKZ) to determine the minimum service life of EPDM rubber membranes. Thirty-nine samples of EPDM membranes were taken from roofs in Western Europe that were 20-30 years old. Over a period of 2 years, these samples were subjected to tests for artificial ageing at high temperatures in laboratory conditions.

The results of the study are as follows:

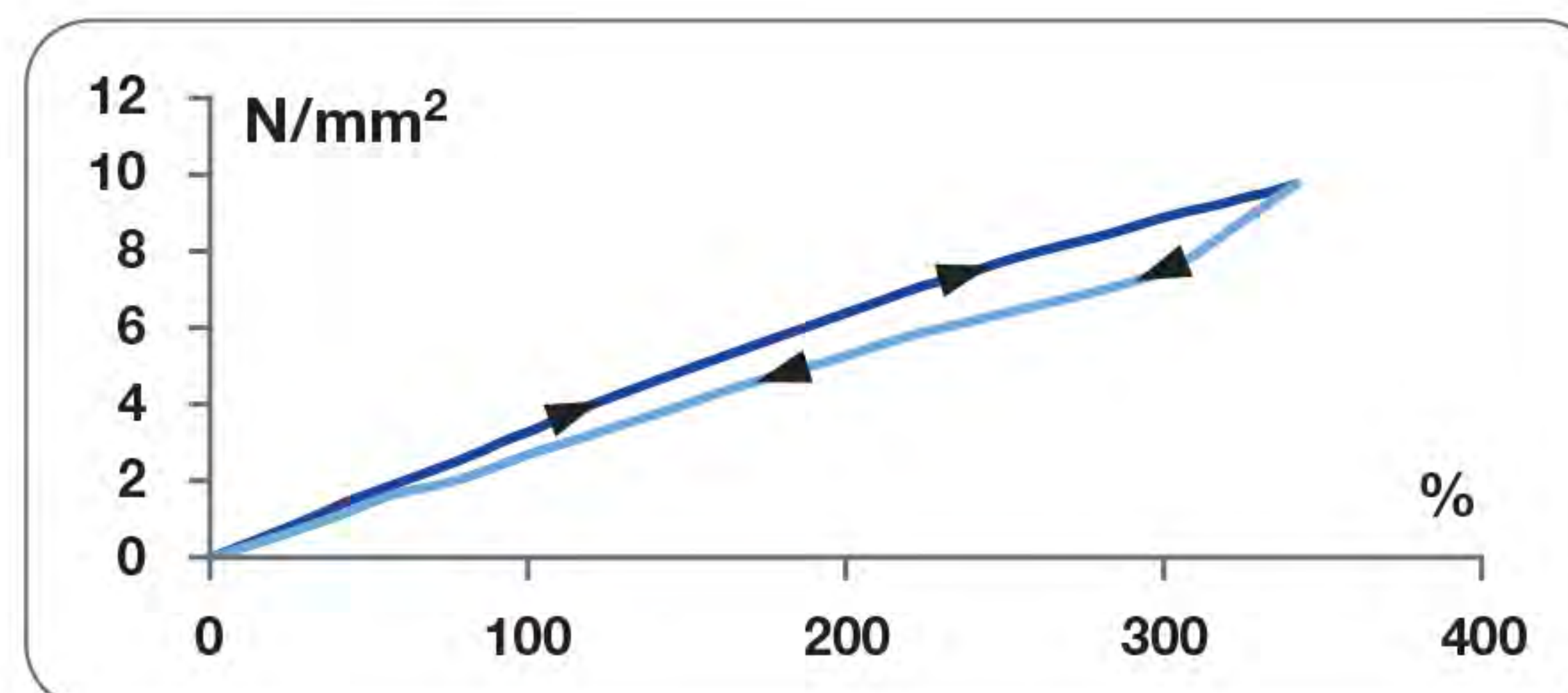
- All the roofs visited were in a perfect condition and operating as intended.
- No external signs of ageing were noted (crazing or cracking)
- None of the elongation at break values obtained were less than 300%.
- Each sample was artificially aged up to the lower threshold of 150% elongation to obtain the values for remaining life span. All results obtained have exceeded the 70 year life span.

Study conclusions: **The life span of EPDM membranes is clearly evaluated at over 50 years** in normal west European climate conditions.

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## HIGH ELASTICITY AND TENSILE STRENGTH

Given the significant level of cross-linking in its carbon chains, the RubberCover EPDM membrane can be elongated **over 300%** in all directions and return to its initial form afterwards. This high elasticity allows the RubberCover membrane to accommodate any substrate irregularities without its physical properties being affected.



### STANDARD TEST

	Standard	1.1 mm	Unit
Tensile strength	EN 12311-2 (B)	≥ 7	N/mm <sup>2</sup>
Elongation at break	EN 12311-2 (B)	≥ 300	%

## HIGHLY FLEXIBLE, EVEN AT LOW TEMPERATURES

Firestone's RubberCover EPDM membrane is highly flexible even at **low temperatures down to -45°C**. Installation is therefore easily facilitated as it adapts to irregular shapes of the substrate, whatever the outside temperature.

When mechanically stressed at low temperatures, the membrane retains all of its flexibility and its characteristics remain unchanged. Please note that application at low temperatures requires certain precautions to be taken to achieve a high quality result.



### STANDARD TESTS

	Standard	1.1 mm	Unit
Flexible, even at low temperature	EN 495-5	≥ - 45	°C

## HIGH PUNCTURE RESISTANCE

In view of its highly flexible and elastic nature, Firestone RubberCover EPDM membrane also provides excellent puncture resistance. This is a very important characteristic in withstanding the mechanical stresses which the membrane sustains during installation and commissioning or under climatic stresses such as hail.

Consequently, the membrane allows for long term water-tightness to be guaranteed.

In France, waterproof surfaces benefit from a performance classification known as "**F.I.T. Classification**" which measures fatigue, resistance to puncture and resistance to heat. The Firestone RubberCover EPDM membrane: obtained F.I.T. classification: **F5 I5 T4**.

### STANDARD TESTS

	Standard	1.1 mm	Unit
Resistance to static puncture	EN 12730	≥ 20	kg
		≥ 1700	mm

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## HIGH RESISTANCE TO HYDROSTATIC PRESSURES

The Firestone RubberCover EPDM membrane has an unmatched resistance to hydrostatic pressure. Firestone has conducted laboratory pressure tests which have shown that the membrane can withstand pressure up to 35 kg/cm<sup>2</sup> (equivalent to 350 m water column or 3.4 MPa) without causing a permeability defect in the membrane.

These tests conducted according to EN 1928 standard showed that when a pressure is applied equivalent to 40 m water column (400 kPa), the Firestone RubberCover EPDM membrane and its seams remain impermeable.

Although Firestone recommends an incline allowing adequate runoff, stagnant water does not contribute to an acceleration in the ageing process of the membrane or the seam.

### STANDARD TEST

	Standard	1.1 mm + seams
Water tightness under water pressure	EN 1928	Compliant

## FIRE RESISTANCE

Firestone RubberCover membranes which are composed of 1.1mm thick Low-Slope-Fire-Retardent (LSFR) EPDM synthetic rubber have been tested for resistance to external exposure to fire.



### STANDARD TEST

	Standard	1.1 mm + Polyiso Insulation + VCL & Plywood
External fire resistance	BS476-3:2004	Ext. F.AC

	Standard	1.1 mm with 50 mm stone ballast covering
External fire resistance	BS476-3:2004	Ext. F.AA ( <i>deemed to achieve</i> )

In accordance with The Building Regulations Part B (England & Wales), Building Regulations (Northern Ireland) Technical Booklet E, and Building Regulations Part B4 (Republic of Ireland) there are **no restrictions** on the use of flat roof coverings designated AA, AB or AC.

Similarly, The Building (Scotland) Regulations classifies roof coverings with a designation AA, AB or AC as 'Low Vulnerability'.

Consult Firestone Technical Services for the external fire resistance performance for other roof construction types.



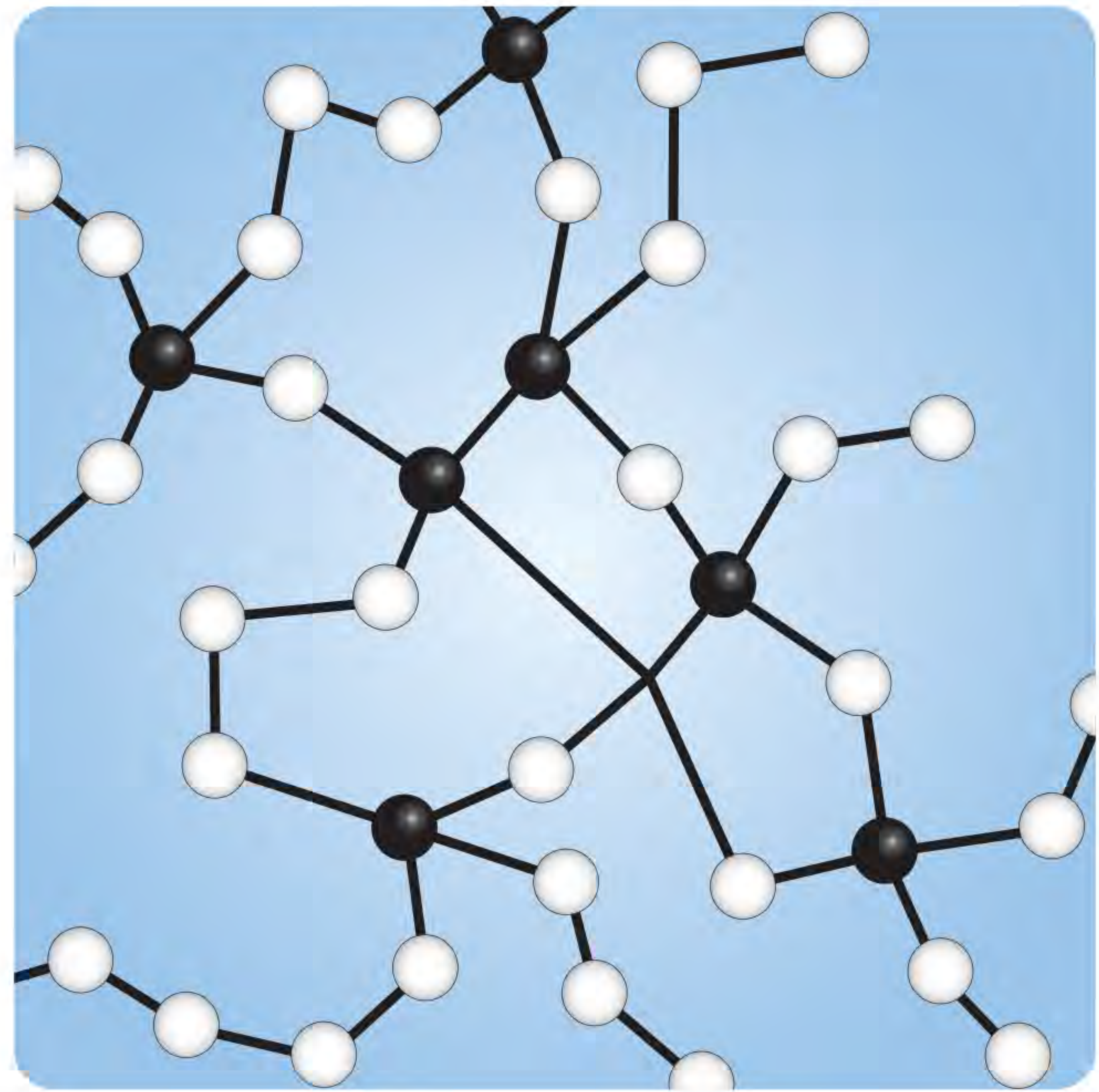
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## STABLE CHEMICAL COMPOSITION

As a result of its chemical composition (saturated highly cross-linked carbon chains, without plasticizers) and its production method (heat vulcanized), the Firestone RubberCover EPDM membrane is considered an inert material as its chemical composition is very stable over time (when in contact with authorized products).

A stable chemical composition is vital in guaranteeing the mechanical properties of the membrane on a long term basis. Chemical damage related to climate conditions such as acid rain, have no negative impact on the membrane.

Unlike some thermoplastic membranes, no reduction in density has been noted following loss of membrane components.



## COLLECTION OF RAINWATER

Owing to its very stable chemical composition, Firestone's RubberCover EPDM membrane does not release components when in contact with water.

Physical tests have demonstrated that the Firestone RubberCover membrane and its assembly system are compatible with the collection of rainwater.

It is therefore possible to reuse the water collected as domestic water. Note that provision must be made for a filtering system for dusty residues.



## ENVIRONMENTAL SUITABILITY

Numerous studies have shown the inherent advantages of EPDM membranes with regard to environmental suitability in providing an optimum solution for "durable" waterproof roofing systems.

Reduced environmental impact and environmentally-sound membrane.

- A.** The environmental impact of a membrane expressed in GWP (global warming potential) or equivalent CO<sub>2</sub> takes place predominantly in its production and disposal. **The exceptional durability** of the Firestone RubberCover EPDM membrane compared to other waterproof membranes, along with its numerous **opportunities for recycling** and **easy repairs**, means that its life span is extended. The membrane is recycled into rubber by-products or devulcanized to be reintroduced into the production chain. The environmental impact of the EPDM membranes is therefore significantly reduced.

GreenTeam<sup>1</sup> Inc. conducted a Life Cycle study analysing the impact on climate, atmosphere, water and the toxicity of various membranes including modified bitumen.

<sup>1</sup> GreenTeam Inc. is a group of strategic consultants specialising in issues concerning the construction industry and more specifically sustainable construction and environmental matters.

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### ROOT PENETRATION RESISTANCE (GARDEN ROOF)

Garden roofs consisting of vegetation planted above a waterproof membrane have become a common feature in recent years.

Firestone’s RubberCover EPDM membrane has successfully passed various root penetration resistance tests (DIN 4062, CEN/TS 14416: 2005, FLL & EN 13948).



The Firestone RubberCover EPDM membrane is therefore **compatible with extensive green roofing systems**, using sedum which requires little maintenance.

Nevertheless, it is necessary to remain extremely careful with regard to certain plants which develop particularly aggressive root systems (a non exhaustive list of plants which develop aggressive root systems can be obtained on request or from the website [www.fbb.de](http://www.fbb.de)). When confronted with plants which develop aggressive root systems or rhizomes, a protection barrier must be implemented to protect the waterproofing system. Further information on garden roof systems is available on the Firestone website [www.firestonebpe.com](http://www.firestonebpe.com)

#### STANDARD TEST

	Standard	1.1 mm
Resistance to root penetration	EN 13948	Compliant

### BROAD RANGE CHEMICAL RESISTANCE

The Firestone RubberCover EPDM membrane has a relatively broad-spectrum chemical resistance (pH 4 to 10). Nevertheless, some products are not compatible with EPDM membranes, such as hydrocarbons, grease and oils. A list of chemical compounds compatible with the Firestone RubberCover EPDM membrane is available on request.



Unlike some waterproofing membranes, the Firestone RubberCover EPDM membrane does not have compatibility issues with polyester, old bitumen and PVC membranes. It is compatible with nearly every kind of waterproofing base.

In case of doubt, it is strongly advised to consult with the technical department of Firestone Building Products.

### RESISTANCE TO MICRO-ORGANISMS

The high level of cross-linking in its carbon chains and the presence of sulphur in its molecular structure (a compound which bacteria that are likely to corrode the membrane are not able to withstand), makes Firestone RubberCover EPDM membrane almost impervious to micro-organism degradation.

The Firestone RubberCover EPDM membrane is fully compatible with a ballasted system, no modifications to its composition are required. This is not always the case for some other types of roofing membrane.

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## QUICK, EASY AND RELIABLE APPLICATION

The Firestone RubberCover EPDM membrane is fast and easy to apply. In a trade which is highly dependent on weather conditions, the speed of installation of Firestone's RubberCover EPDM membrane represents a major advantage.

### HANDLING EPDM MEMBRANES:

The Firestone RubberCover EPDM membrane is available in large dimensions. Consequently there is a significant reduction in the number of seams to be made on the roof and therefore substantially reduces the risks inherent to installation.

The membranes are available in numerous sizes which can be selected to accommodate the dimensions of the project. This reduces losses and limits the cutting and field seaming.

The installation of the Firestone RubberCover membrane is made significantly easier as a result of its flexibility and light weight (weight per unit of area of 1.51 kg/m<sup>2</sup> for a thickness of 1.1 mm) which enables it to be easily moved by wafting so as to create a cushion of air between the membrane and the base.

### FIELD SEAMING:

Firestone RubberCover EPDM field seaming method using Firestone QuickSeam Cover Strip enables consistent quality of seam over the entire length.



## INSTALLATION ON SITE WITHOUT THE USE OF FLAME

Unlike other waterproofing membranes, the Firestone RubberCover EPDM membrane does not require flame or hot air welding. The seams and roof details are realized with primers and self-adhesive products. The risk of fire during works is therefore significantly reduced. The waterproofing work with Firestone RubberCover EPDM membrane do not require buildings to be closed, meaning no interruptions to the use of the building.



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## COMPLETE RANGE OF ACCESSORIES

To waterproof roof details such as: skylights, pipes, roof drains and gutters, Firestone boasts a full range of accessories to complete roof detailing. For example:

### 1 Firestone QuickSeam™ Corner Flashings

Circular unvulcanized EPDM flashing (progressively vulcanized after application) laminated to self adhesive Firestone QuickSeam Splice Tape. This material conforms to each sealing detail perfectly and without any stress.

### 2 Firestone QuickSeam™ Pipe Flashing

Prefabricated sleeves, facilitating the fast and neat waterproof connection of pipes.

### 3 Firestone QuickSeam™ SA Flashing

A 450 mm wide strip of cured EPDM laminated to self-adhesive Firestone QuickSeam Splice Tape. This material may be used to flash drain details, kerbs and valley gutter amongst other uses.

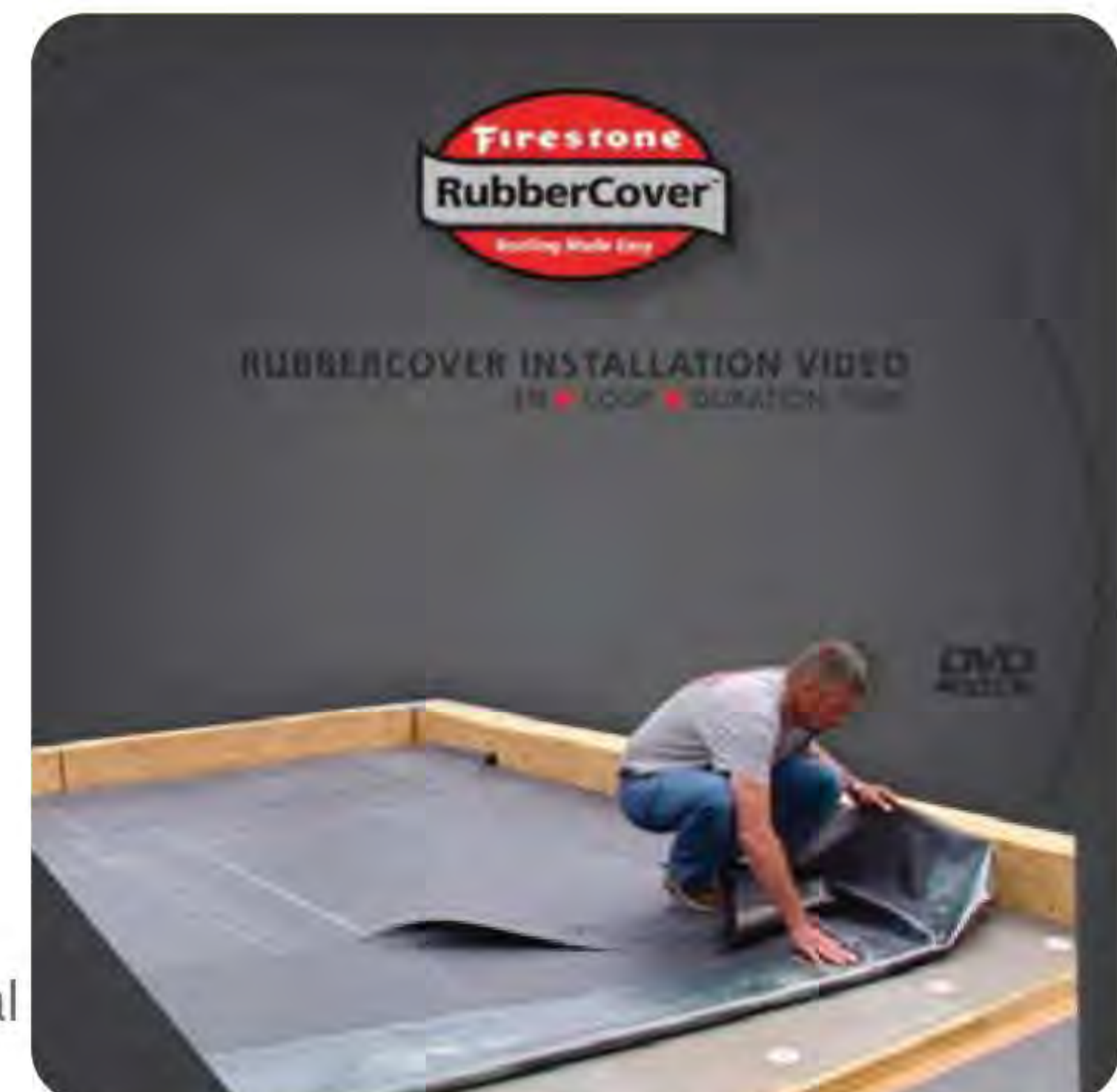


## EBP - AUTHORISED RUBBERCOVER™ DISTRIBUTOR SUPPORT

The performance of a waterproofing system is directly linked to the quality of the installation by roofing contractors. For this reason Firestone's RubberCover EPDM membrane should be installed by roofing contractors, who have been trained by EBP Building Products personnel. The Ensor support team regularly attend RubberCover Regional Training Seminars. This ensures that the installation meets the quality standards set by the manufacturer.

EBP technical department offers its first rate support in theoretical and practical training by their technicians.

A RubberCover roofing video is available on our website [www.ebpbuilding.com](http://www.ebpbuilding.com) which shows step by step procedure for making different roofing details. The video is also available on DVD format from EBP.



## SEAM MONITORING TEST

Whilst seams are very limited on RubberCover roofs, there are several different seaming control methods available which provide accurate information regarding the quality of any field seams.

Most commonly, due to the efficient and reliable nature of the QuickSeam Cover Strip field seaming detail, a visual inspection will suffice whereby a series of elements may be easily checked visually and which give a very good indication of the quality of the seams.

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## EASY TO REPAIR

Given the inert nature of Firestone's RubberCover EPDM membrane, its composition does not vary over time. Consequently, the membrane can still be assembled and/or repaired many years after being installed and having been exposed to climatic elements. All that is required is that the membrane is thoroughly cleaned before commencing the repair.

The installation techniques for repairs do not differ from the techniques for the initial installation of the EPDM membrane. Therefore, repairs are quick and easy to carry out. If in doubt, consult Firestone Technical Services for a recommended solution.

## RESEARCH AND DEVELOPMENT

Since its introduction, improvement to products and services has always been a primary focus at Firestone.

The introduction of QuickSeam technology and products has meant a significant advance in quality and installation.

The use of products with low volatility components or water-based components (Water Based Bonding Adhesive) has led to a reduction in the environmental impact.

An ever-expanding range of accessories means installation times can be reduced.

The provision of polyisocyanurate insulation materials (ISO 95+, RESISTA), and cover boards (ISOGARD HD), thermal barrier (DensDeck Prime) with a M0 classification (non-combustible material), enable a complete and 100% compatible roofing system to be offered.



## NATIONAL AND INTERNATIONAL TECHNICAL APPROVALS

The Firestone RubberCover EPDM membrane has obtained CE marking, which proves that it meets current European requirements for health, safety, consumer protection and environment.

Firestone's EPDM manufacturing facilities also holds **ISO 9001** and **ISO 14001 certifications** which reflect Firestone's commitment to quality and environmental management systems.

Firestone EPDM membranes have been tested and certified by many national and international bodies.

Within the context of these certifications, regular audits are conducted at Firestone Building Products factories to verify the production process, quality control monitoring and the quality of the end product. Consequently, Firestone Building Products can guarantee that its RubberCover EPDM membrane is of a consistently high quality.



1725-CPD M0008  
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ISO 9001:2000  
FM 35989



ISO 14001  
EMS 52969

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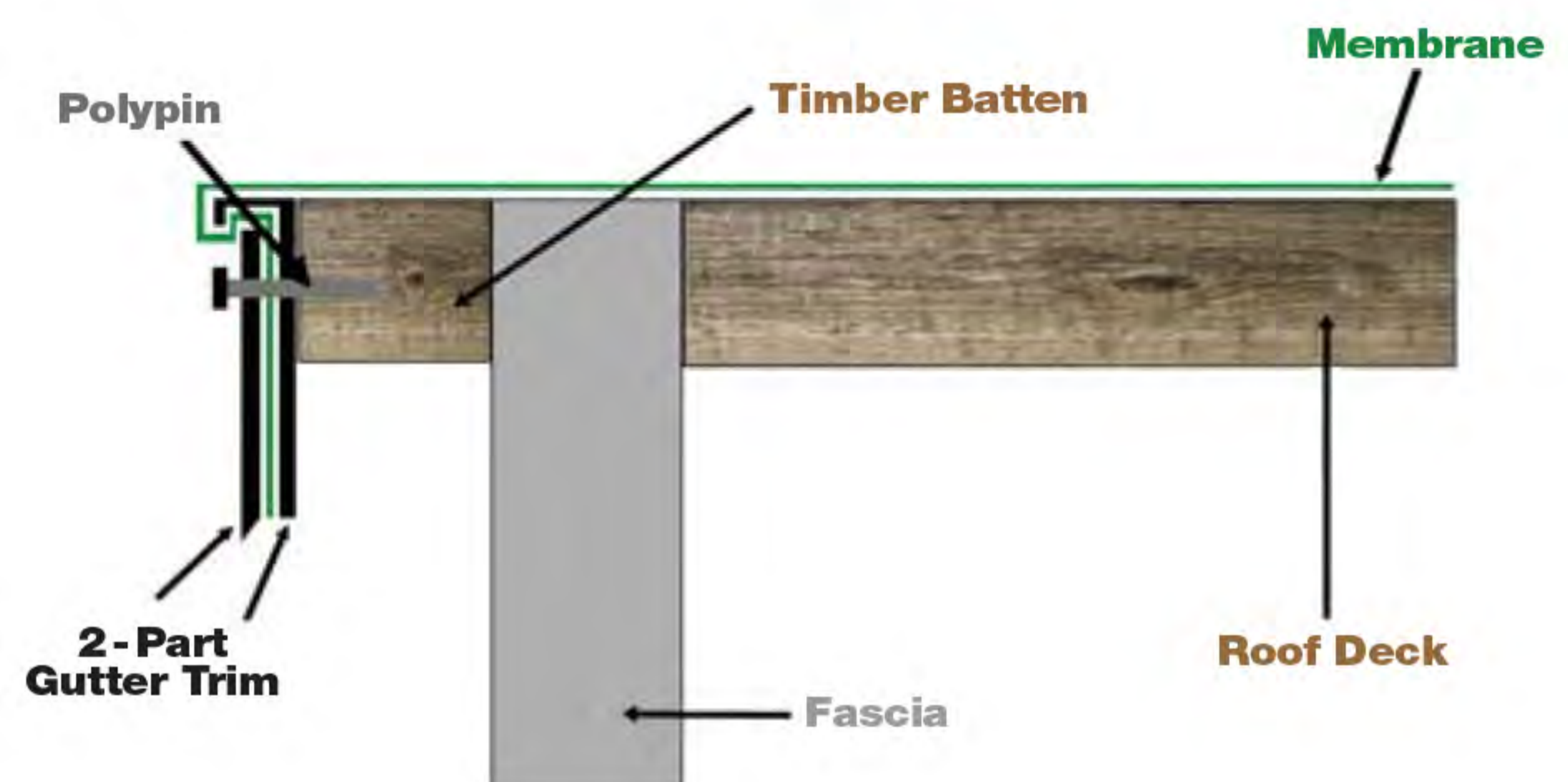
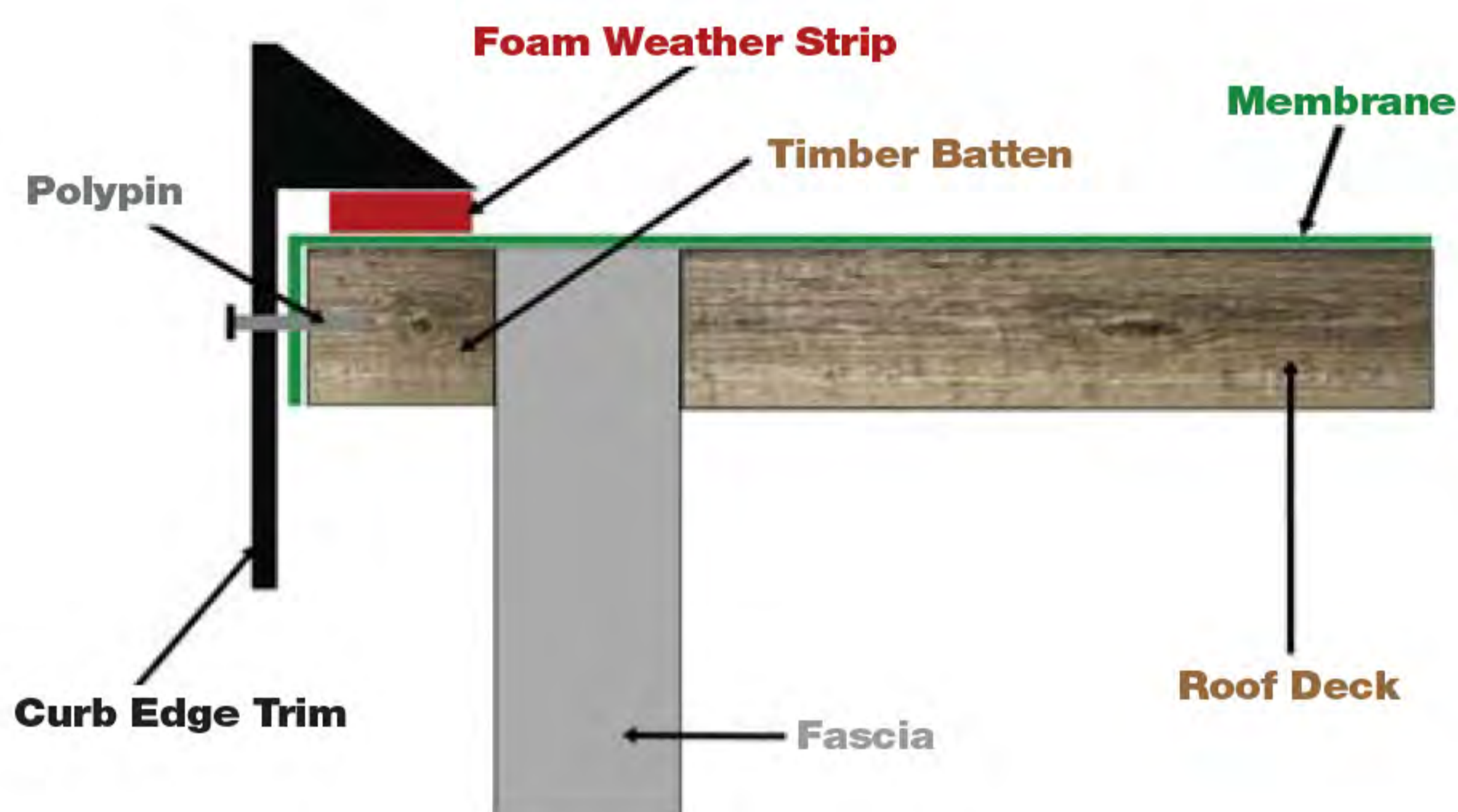
### WHY CHOOSE EBP ULTRATRIM™?

Welcome to our environmentally friendly flat roofing edging trims & accessories. Features & benefits of UltraTrim™ compared to other systems on the market include:

- Competitive price
- Base material more pliable and therefore does not shatter if dropped; enables installation on curved edges such as bay windows
- Superior finish and neater appearance when installed
- UV Stable
- Better design - mechanical fix of two part gutter edge trim as opposed to 'snap-fit' provides a more secure fix and prevents warping and 'snap-out' of two parts when factory seams or repair patches are present in the membrane



### EBP ULTRATRIM™ INSTALLATION INSTRUCTIONS



### BATTEN BAR



Apply 'water block' adhesive between EPDM membrane and existing membrane as shown to the left.



Fix batten bar onto the EPDM membrane as above through the pre-drilled holes.

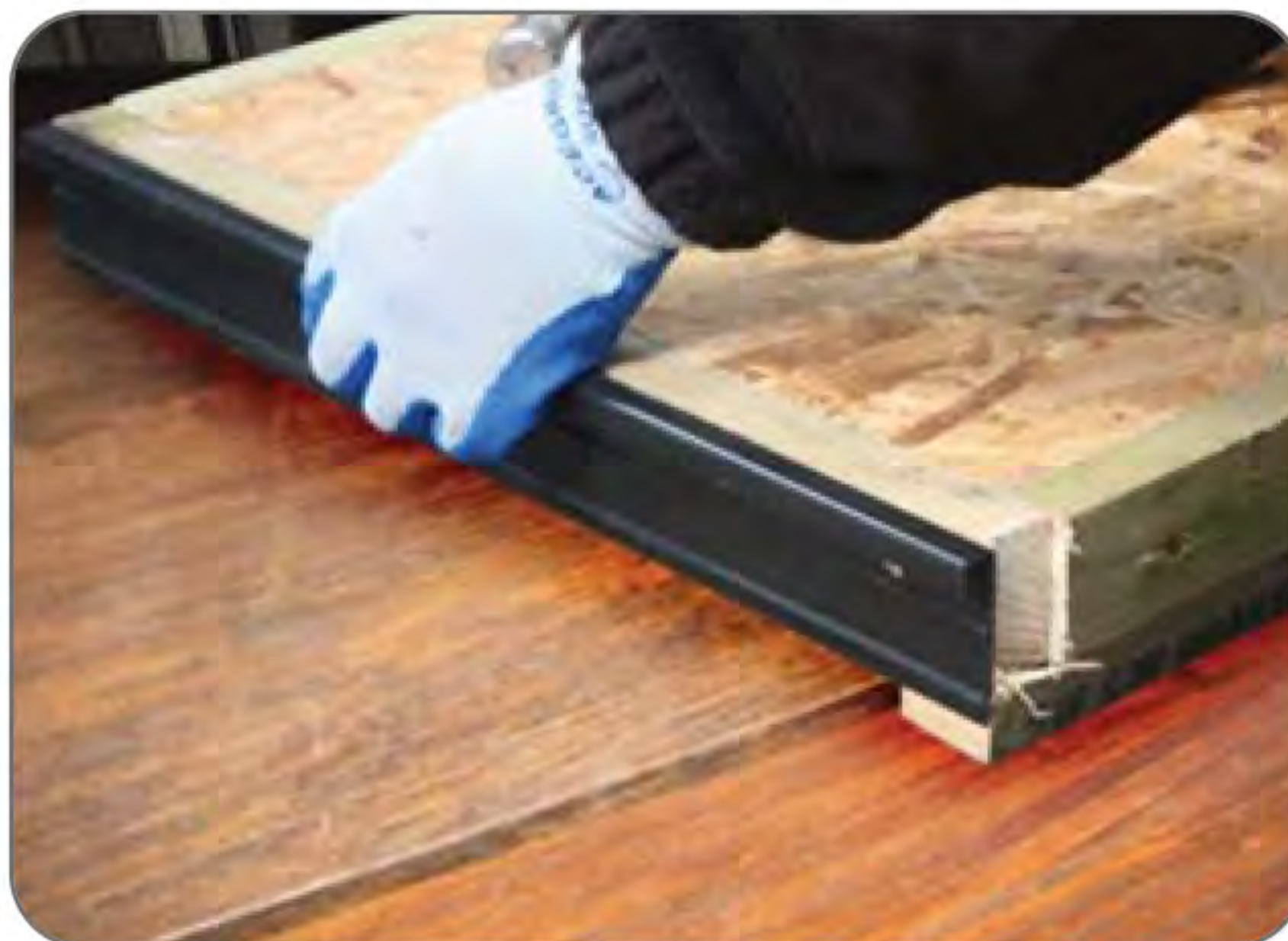


Complete the installation by installing a 150 mm batten cover strip over the batten bar using quickprime.

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## GUTTER EDGE TRIM

The gutter trim comes in 2 parts a back plate and a drip edge plate; it is advisable to fix the back plate prior to the installation of the membrane.



Fix a 25 mm x 50 mm batten to the top of the fascia, level with the roof substrate to bring the trim over the gutter. Fix the back drip of the 2 part gutter trim to the batten, level with the top at approx 250 mm centres.

Once the installation of the EPDM membrane is completed the drip edge plate can be installed onto the back plate.

Make sure that the membrane overhangs the back plate by a minimum of 70 mm, trim if necessary. Take the drip edge plate as shown below and locate the top edge of the plate under the top lip of the back plate, making sure the membrane is in between both plates.



Once you are sure that the drip edge plate is in place you can securely fix into position using the method shown above.

## CURB EDGE TRIM

It is recommended to fix a 25 x 50 mm batten to ensure a secure hold.

Cut the curb edge trim to required length and fix the foam tape to the trim as shown to the right. Fill the open ends of the curb trim with sealant or use the small endcaps.



Ensure the membrane overhangs the roof edge a minimum of 50 mm, then fix trim as shown above.



Install the corner as shown above.



Complete installation by fixing any end caps required as shown above if going from a curb to a gutter trim.



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