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Agrément Certificate

89/2216

Product Sheet 2

FIRESTONE ROOF WATERPROOFING SYSTEMS

FIRESTONE RUBBERCOVER EPDM SYSTEM

This Agrément Certificate Product Sheet⁽¹⁾ relates to the Firestone RubberCover EPDM System, for use as a single-layer roof waterproofing membrane in fully-adhered systems on flat roofs of up to 150 m² plan area with limited access in domestic applications.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Weathertightness — the system and its joints, when completely sealed and consolidated, will resist the passage of moisture to the interior of the building (see section 6).

Properties in relation to fire — the system can enable a roof to be unrestricted under the Building Regulations (see section 7).

Resistance to wind uplift — the system will resist the effects of any wind suction likely to occur in practice (see section 8).

Resistance to foot traffic — the system will accept, without damage, the limited foot traffic and loads associated with installation and maintenance (see section 9).

Durability — under normal service conditions, the system will provide a durable waterproof covering with a service life of at least 30 years (see section 11).

The BBA has awarded this Certificate to the company named above for the system described herein. This system has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

A stylized signature of John Albon.

Date of First issue: 22 February 2016

John Albon – Head of Approvals
Construction Products

A handwritten signature of Claire Curtis-Thomas.

Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited certification body – Number 113.

The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

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Regulations

In the opinion of the BBA, the Firestone RubberCover EPDM System, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	B4(2)	External fire spread
Comment:		On suitable non-combustible substructures, the use of the system can enable a roof to be unrestricted under this Requirement. See section 7 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The system, including joints, can enable a roof to satisfy this Requirement. See section 6.1 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The system is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Durability, workmanship and fitness of materials
Comment:		Use of the system satisfies the requirements of this Regulation. See sections 10 and 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.8	Spread from neighbouring buildings
Comment:		On suitable non-combustible substructures the use of the system will be unrestricted by the requirements of clause 2.8.1 ⁽¹⁾ of this Standard. See section 7 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The system, including joints, can enable a roof to satisfy the requirements of clauses 3.10.1 ⁽¹⁾ and 3.10.7 ⁽¹⁾ of this Standard. See section 6.1 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The system can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	12	Building standards applicable to conversions
Comment:		All comments given for this system under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾ and Schedule 6 ⁽¹⁾ .

(1) Technical Handbook (Domestic).



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	23(a)(i) (iii)(b)(i)	Fitness of materials and workmanship
Comment:		The system is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The system, including joints, can enable a roof to satisfy the requirements of this Regulation. See section 6.1 of this Certificate.

Regulation:	36(b)	External fire spread
Comment:	On suitable non-combustible substructures the use of the system can enable a roof to be unrestricted by this Regulation. See section 7 of this Certificate.	

Construction (Design and Management) Regulations 2015 Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, Principal Designer/CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See sections: 1 *Description* (1.1) and 3 *Delivery and site handling* (3.3) of this Certificate.

Additional Information

NHBC Standards 2016

NHBC accepts the use of the Firestone RubberCover EPDM System, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.1 *Flat roofs and balconies*.

CE marking

The Certificate holder has taken the responsibility of CE marking the system in accordance with harmonised European Standard BS EN 13956 : 2012. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 The Firestone RubberCover EPDM System is a non-reinforced black synthetic ethylene-propylene-diene terpolymer (EPDM) membrane with the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Characteristic (unit)	Membrane	
	1.1 mm thickness	1.5 mm thickness
Roll width (m)	3.05, 4.57, 6.10	3.05, 4.57
Length (m)	7.62	7.62
Mass per unit area (kg·m ⁻²)	1.35	1.90
Tensile strength (N·mm ⁻²)	≥ 7	≥ 7
Elongation (%)	≥ 300	≥ 300
Tear resistance (N)	≥ 40	≥ 40
Dimensional stability (%)	≤ 0.5	≤ 0.5
Foldability at low temperature (°C)	≤ -45	≤ -45
Resistance to impact (mm)		
Soft substrate	≥ 1700	≥ 2000
Hard substrate	≥ 200	≥ 300
Resistance to static load (kg) (hard substrate)	≥ 20	≥ 20

1.2 Other products for use with the system are:

- Firestone Modular Water-Based Bonding Adhesive — a water-based adhesive for bonding the membrane to approved substrates
- QuickSeam Batten Cover Strip — a semi-cured EPDM strip, laminated to QuickSeam Tape, to cover and seal butt-jointed membranes
- QuickSeam Corner Flashing — a circular self-adhesive uncured EPDM flashing for use at corners

- QuickSeam SA Flashing — a self-adhesive cured EPDM strip for use as flashing for kerbs, outlets, in gutters and for repairs.

1.3 Ancillary items for use with the system, but outside the scope of the Certificate, include:

- Firestone Bonding Adhesive BA-2012 — a solvent-based contact adhesive for bonding the membrane to approved substrates
- Firestone Bonding Adhesive E — a solvent-based contact adhesive for bonding the membrane to approved substrates
- QuickPrime Plus — for cleaning and priming the membrane prior to application of QuickSeam products
- QuickSeam Pipe Flashing — a pre-fabricated pipe boot for flashing circular roof penetrations.

2 Manufacture

2.1 The Firestone RubberCover EPDM membrane is manufactured by blending EPDM, process oils, fillers and other additives. The sheets are produced by calendaring or extruding and vulcanising.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control being operated by the manufacturer are being maintained.

2.3 The management system of Firestone Building Products Europe has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by BSI (Certificate FM 32845).

3 Delivery and site handling

3.1 The membranes are delivered to site in rolls, each wrapped in a polythene sleeve bearing the product name, thickness, manufacturer's name and the BBA logo incorporating the number of this Certificate.

3.2 The Firestone QuickSeam products should be stored in a clean, dry location and at temperatures between 15°C and 25°C. QuickSeam Corner Flashings and Quickseam Cover Strips cure gradually and should not be stored for more than twelve months. As curing occurs the product becomes less flexible; this does not affect its waterproofing characteristics but it does become more difficult to form details.

3.3 The Certificate holder has taken the responsibility of classifying and labelling the system components under the *CLP Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Firestone RubberCover EPDM System.

Design Considerations

4 General

4.1 The Firestone RubberCover EPDM system is satisfactory for use in fully-adhered systems on flat roofs with limited access in residential and domestic applications.

4.2 Limited access roofs are defined for the purpose of this Certificate as those roofs subjected only to pedestrian traffic for maintenance of the roof covering and cleaning of gutters, etc. Where traffic in excess of this is envisaged

special precautions, such as additional protection to the membrane, must be taken.

4.3 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80. For design purposes, twice the minimum finished fall should be assumed, unless a detailed analysis of the roof is available, including overall and local deflection, direction of falls, etc.

4.4 Decks to which the system is to be applied must comply with the relevant requirements of BS 6229 : 2003, BS 8217 : 2005 and, where appropriate, *NHBC Standards 2016, Chapter 7.1 Flat Roofs and Balconies*.

4.5 Insulation systems or materials used in conjunction with the system must be approved by the manufacturer and by Firestone Building Products and must be either:

- as described in the relevant clauses of BS 8217 : 2005, or
- the subject of a current BBA Certificate and be used in accordance with, and within the limitations of, that Certificate.

5 Practicability of installation

The system should only be installed by installers who have been trained and approved by the Certificate holder or the Certificate holder's authorised representatives.

6 Weathertightness



6.1 The membrane and joints in the system, when completely sealed and consolidated, will adequately resist the passage of moisture to the inside of the building and so meet the requirements of the national Building Regulations.

6.2 The system is impervious to water and when used as described in this Certificate will achieve a weathertight roof capable of accepting minor structural movement without damage.

7 Properties in relation to fire



7.1 A system comprising an 18 mm plywood substrate, a 250 µm polyethylene vapour control layer, a mechanically fastened 100 mm glass-faced polyisocyanurate foam insulation board and a layer of RubberCover 1.1 bonded with Firestone Modular Water-based Bonding Adhesive, achieved a B_{ROOF}(t4) classification in accordance with BS EN 13501-5 : 2005.

7.2 The membranes, when used in a specification including an inorganic covering listed in the Annex of Commission Decision 2000/553/EC, can be considered unrestricted under the national requirements.

7.3 The designation of other specifications (eg when used on combustible substrates) should be confirmed by:

England and Wales — test or assessment in accordance with Approved Document B, Appendix A, Clause A1

Scotland — test to confirm Mandatory Standard 2.8, Clause 2.8.1⁽¹⁾

(1) Technical Handbook (Domestic).

Northern Ireland — test or assessment carried out by a UKAS accredited laboratory or an independent consultant with appropriate experience.

8 Resistance to wind uplift

8.1 The adhesion of a fully adhered system to a substrate will normally be limited by the cohesive strength of the substrate. Tests indicate that on substrates with high cohesive strength the adhesion of the membranes is sufficient to resist the effect of wind suction, thermal cycling or minor structural movements occurring in practice.

8.2 Where the membrane is fully adhered to insulation boards, the resistance to wind uplift will be dependent on the cohesive strength of the insulation and the method by which it is secured to the roof deck. This should be taken into account when the insulation material is selected.

9 Resistance to foot traffic

The system can withstand, without damage, the limited foot traffic and light concentrated loads associated with installation and maintenance operations. Where traffic in excess of this is envisaged, eg a balcony or roof terrace, then appropriate protection must be considered and the advice of the Certificate holder should be sought. Reasonable care should be taken to avoid puncture by sharp objects or concentrated loads

10 Maintenance



Roofs covered with the system should be subject to annual inspections, as is good practice with waterproofing systems, to ensure continued security and performance.

11 Durability



Under normal service conditions, the system will provide a durable roof waterproofing with a life in excess of 30 years.

Installation

12 General

12.1 Installation of the Firestone RubberCover EPDM System must be carried out by trained and approved installers working in accordance with the relevant clauses of the Certificate holder's instructions, BS 8000-4 : 1989 and this Certificate.

12.2 Conditions on site should be those for normal roof waterproofing work. Deck surfaces must be dry, clean and free from sharp projections such as nail heads and concrete nibs.

12.3 When the system is to be laid over a rough substrate, an appropriate isolating material, cover board or insulation board must be installed first.

12.4 Installation should not be carried out during wet weather (eg rain, fog or snow), nor when the temperature is below 0°C. Special precautions in accordance with the Certificate holder's instructions should be taken if the system is to be installed at temperatures below 5°C due to the risk of condensation contaminating the bonding adhesive.

12.5 The Modular Water-Based Bonding Adhesive should not be applied if there is a possibility of freezing temperatures within 48 hours after application.

12.6 Contact with fresh bituminous, coal tar and oil-based products must be avoided as the membrane is not compatible with lower grades of bitumen. If contact with such products is likely, an isolating layer should be interposed before installing the waterproofing sheet. Where doubt arises, the advice of the Certificate holder should be sought.

12.7 The membrane must be fully adhered continuously through all angle changes and to all upstands. The membrane must be properly terminated at the top of the upstand with the Certificate holder's approved detail.

12.8 The membrane should be unrolled into position and allowed to condition for 30 minutes prior to fixing and/or lap jointing. Care must be taken to avoid ripples or folds in the sheets.

13 Procedure

13.1 All insulation boards must be attached to the structural deck by bitumen bonding, adhesive or mechanical fastening (a minimum of four fixings per board) as appropriate to the type and thickness. The method of attachment must be adequate to provide resistance to wind uplift forces as defined in BS EN 1991-1-4 : 2005. When installed over glass-fibre, mineral wool-based or polystyrene insulations, a suitable separation layer is either mechanically fastened or bitumen bonded over the insulation prior to the application of the waterproofing.

13.2 The resistance to wind uplift will be limited by the cohesive strength of the insulation and method of attachment. These factors should be taken into account when selecting the insulation material. Faced polyurethane should be mechanically fixed to prevent bowing.

13.3 The fully-bonded application may not be used directly onto insulation materials that will be adversely affected by the solvent in the adhesive (eg polystyrene). The width of the membrane should not exceed 6.1 metres for this type of application.

13.4 A layer of Firestone Modular Water-Based Bonding Adhesive should be roller-applied to both the substrate and the membrane at approximate application rates of 0.8 litres per square metre and 0.5 litres per square metre respectively (the exact rate dependent on the porosity of the substrate). When the adhesive has become touch dry, the membrane should be applied to the substrate and rolled to ensure a full bond and that air has not been trapped beneath the membrane.

13.5 Alternatively, a layer of Firestone Modular Water-Based Bonding Adhesive should be applied to the approved substrate at an application rate of 1.47 to 2.45 metres square per litre. The membrane should be applied to the adhesive while wet and rolled to ensure a full bond and that no air has been trapped beneath the membrane.

13.6 Alternatively, a layer of Firestone BA-2012 Bonding Adhesive should be roller- or spray-applied to both the substrate and the membrane at an approximate rate of 0.3 litres per square metre. When the adhesive has become touch dry, the membrane should be applied to the substrate and compressed with a stiff brush to ensure a full bond and that air has not been trapped beneath the membrane.

14 Details

Seaming procedure — QuickSeam

14.1 Where jointing is necessary, the membranes should be butted together with a maximum gap of no more than 5 mm. The area must be cleaned with QuickPrime Plus (alternatives should not be used). The QuickSeam Batten Cover Strip is positioned centrally over the joint and unrolled. The seam should be rolled with a silicone roller. Care must be taken to avoid ripples or folds.

Outside corner detail — QuickSeam Corner Flashing

14.2 Where an external corner flashing is necessary, the Firestone RubberCover EPDM membrane should be cut to accommodate the corner of the kerb/wall. The area must be cleaned with QuickPrime Plus (alternatives should not be used). The resultant area should be flashed with QuickSeam SA Flashing. The base of the corner should be cleaned with QuickPrime Plus and a QuickSeam Corner Flashing applied and hand moulded to accommodate the angle changes at the base of the corner. The completed detail should be rolled with a silicone roller. Care must be taken to avoid ripples or folds.

Inside corner detail — QuickSeam Corner Flashing

14.3 Where an inside corner flashing is necessary, the Firestone RubberCover EPDM membrane should be folded into a 'pig-ear'. The contact area of the pig-ear should be cleaned (both mating surfaces) with QuickPrime Plus. The pig-ear must then be adhered to the upstand.

Circular pipe flashing

14.4 Circular pipes of 25 mm – 150 mm diameter are flashed using a pre-moulded QuickSeam Universal Pipe Flashing. The flashing should be cut according to the sizing rings to suit the pipe diameter. The horizontal roof area around the base of the pipe should be prepared with QuickPrime Plus primer and allowed to become touch dry. The QuickSeam Universal Pipe Flashing is installed over the pipe and with the base flange flush to the roof surface, removing the release paper to mate the QuickSeam adhesive underside to the primed roof area. The bond is consolidated by using a silicone roller to remove any trapped air. The detail is finished at the top edge with a bead of waterproof mastic. A stainless steel strap is used to secure the pipe.

Horizontal or through-wall outlet flashing

14.5 With the RubberCover EPDM membrane already adhered to the substrate, a pre-fabricated rainwater outlet insert is installed. It should be ensured that connection to the roof drainage system is secure and, using appropriate fixings, it is fastened to the structure. The flange of the outlet insert and the surrounding area is primed using QuickPrime Plus primer. The QuickSeam SA Flashing is installed, sized minimum 75 mm larger than the outlet insert flange in each direction. The QuickSeam SA Flashing is rolled with a silicone roller to consolidate the bond and remove any trapped air. A central area is cut away from the QuickSeam SA Flashing directly over the outlet. A suitable push-fit leaf guard is installed upon completion. The Certificate holder's advice should be sought regarding compatible rainwater outlet inserts.

Perimeter edge trim

14.6 The RubberCover EPDM membrane is fully adhered over the perimeter edge. An appropriate pre-fabricated trim is installed to the roof edge, fastening the horizontal flange of the trim through the membrane and into the structure at maximum 200 mm centres using appropriate fasteners. The edge trim should be sealed by installing a strip of QuickSeam Batten Cover Strip in conjunction with QuickPrime Plus primer, ensuring adequate coverage of the fixings and a minimum 50 mm lap onto the RubberCover EPDM membrane. The Certificate holder's advice should be sought regarding compatible roof edge trims.

15 Repair

In the event of damage to the system, repairs can be carried out by cleaning the area around the damage and applying a patch of QuickSeam SA Flashing in accordance with the Certificate Holders instructions.

Technical Investigations

16 Tests

16.1 Tests were carried out and the results assessed to determine:

- thickness
- width
- mass per unit area
- water vapour transmission
- watertightness
- tensile strength/elongation
- tear strength
- low temperature flexibility
- dimensional stability
- static loading
- dynamic impact
- fatigue cycling
- peel from substrate
- wind uplift
- heat ageing
- UV ageing
- bitumen compatibility.

16.2 Existing data for QuickSeam SA Flashing and QuickSeam Batten Cover Strip were examined in respect of:

- resistance to peel
- thickness
- dimensional stability
- resistance to tear
- low temperature flexibility
- resistance to impact

- water absorption
- tensile strength and elongation on controls and after heat ageing (24 weeks at 70°C and 24 weeks at 80°C).

17 Investigations

17.1 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

17.2 An evaluation was made of existing data on the fire performance of the system.

Bibliography

BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*

BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*

BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*

BS EN 1991-1-4 : 2005 *Eurocode 1 : Actions on structures — General actions — Wind actions*

BS EN 13501-5 : 2005 *Fire classification of construction products and building elements — Classification using data from external fire exposure to roofs tests*

BS EN 13956 : 2012 *Flexible sheets for waterproofing — Plastic and rubber sheets for roof waterproofing — Definitions and characteristics*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

18 Conditions

18.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

18.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

18.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

18.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

18.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

18.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.