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Agrément Certificate
06/4329
Product Sheet 4

RESITRIX ROOF WATERPROOFING SYSTEMS

RESITRIX SR

This Agrément Certificate Product Sheet⁽¹⁾ relates to Resitrix SR, a self-adhesive, glass-reinforced thermoplastic elastomer/EPDM multi-laminate membrane, for use as fully- or partially-adhered waterproofing on flat, zero fall and pitched roofs with limited access.

(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 membrane 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 membrane can enable a roof to be unrestricted under the Building Regulations (see section 7).

Resistance to wind uplift — when correctly specified, the membrane will resist the effects of any wind suction likely to occur in practice (see section 8).

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

Durability — under normal service conditions, the membrane 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 product described herein. This product 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

Date of Second issue: 5 December 2014

John Albon — Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

Originally certificated on 19 June 2014

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

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, Resitrix SR, 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 substructures the use of the product can enable a roof to be unrestricted under this Requirement. See section 7 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		Tests for water resistance on the product, including joints, indicate that it will meet this Requirement. See section 6.1 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The product 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:		The product can contribute to a construction meeting 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:		The product, when applied to a non-combustible substrate, can be regarded as having low vulnerability under clause 2.8.1 ⁽¹⁾⁽²⁾ of this Standard. See section 7 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The product will enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.7 ⁽¹⁾⁽²⁾ . See section 6.1 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The product 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 product under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012

Regulation:	23(a)(i)(iii)(b)(i)	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		Tests for water resistance of the product, including joints, indicate that it will 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 substructures, the use of the product will enable a roof to be unrestricted under the requirements of this Regulation. See section 7 of this Certificate.

Construction (Design and Management) Regulations 2007

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

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

See sections: 1 *Description* (1.2) and 3 *Delivery and site handling* (3.3) of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of Resitrix SR, 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 Resitrix SR, in accordance with harmonised European Standard EN 13956 : 2012. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

1 Description

1.1 Resitrix SR is a multi-laminate membrane consisting of a top layer of thermoplastic elastomer, a second layer of EPDM with glass reinforcement, a third layer of thermoplastic elastomer and a fourth layer of self-adhesive, polymer-modified bitumen with a release film incorporating a 60 mm selvedge with a thermofusible polyethylene film for heat welding of the joint.

1.2 The nominal characteristics of the membrane are given in Table 1.

Table 1 Nominal characteristics

Characteristic (unit)	Resitrix SR
Thickness (mm)	2.5
Length (m)	10
Width (m)	1
Mass per unit area* (kg·m ⁻²)	2.75
Roll weight (kg)	27.5
Tensile strength* (N per 50 mm)	
longitudinal	250
transverse	200
Elongation at break (%)	
longitudinal	300
transverse	300
Flexibility at low temperature* (°C)	-30
Dimensional stability* (%)	≤ 0.5
Reaction to fire*	Class E
Colour of top face	grey

1.3 Ancillary items necessary for installation of the product and included in this Certificate are:

- FG 35 — a quick-drying primer consisting of synthetic rubber and resins in an organic halogen-free solvent
- Resitrix patches — a range of Resitrix membrane patches with a heat-activated adhesive on the lower face, for use in producing corner details.

2 Manufacture

2.1 The polymer components are compounded, blended, calendered and laminated with the reinforcement. The semi-finished membrane is coated on the underside with the modified bitumen coating mass and a surface finish applied.

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

- 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 operated by the manufacturer are being maintained.

2.3 The management system of Carlisle Construction Materials GmbH has been assessed and registered as meeting the requirements of EN ISO 9001 : 2008 and EN ISO 14001 : 2004 by DQS GmbH (Certificate 502001QM08UM).

2.4 The membranes are manufactured in Germany by Carlisle Construction Materials GmbH and marketed in the UK by Carlisle Construction Materials Ltd, Eleven Arches House, Leicester Road, Rugby, Warwickshire CV21 1FD, tel: 01788 551294, e-mail: info.uk@ccm-europe.com

3 Delivery and site handling

3.1 The membranes are delivered to site in individually-wrapped rolls on a pallet. The wrapper bears the Certificate holder's name and address, product name, product description, article number, product dimensions, CE marking and the BBA logo incorporating the number of this Certificate.

3.2 Rolls must be stored vertically on a clean, dry, level surface and under cover.

3.3 FG 35 Surface Primer is classified under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP4)/Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) 2009* as 'highly flammable' (flashpoint -20°C⁽¹⁾) and bears the appropriate hazard warning. The primer is also harmful to aquatic organisms.

(1) This component should be stored in accordance with the *Dangerous Substances and Explosive Atmospheres Regulations 2002*.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Resitrix SR.

Design Considerations

4 General

4.1 Resitrix SR is satisfactory for use as a fully- or partially-adhered waterproofing on flat, zero fall and pitched roofs with limited access.

4.2 Limited access roofs are defined for the purpose of this Certificate as those subjected only to pedestrian traffic for maintenance of the roof covering, 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, for example, overall and local deflection and direction of falls. Zero fall roofs are defined for the purpose of this Certificate as those having a finished fall of less than 1:80. Pitched roofs are defined for the purpose of this Certificate as those having a fall in excess of 1:6.

4.4 Decks to which the membrane is to be applied must comply with the relevant requirements of BS 6229 : 2003, BS 8217 : 2005 and, where appropriate, *NHBC Standards* 2014, Chapter 7.1.

4.5 Contact with low-grade bitumen, coal tar and oil-based products must be avoided. If contact with such products is likely, a separating layer is laid before installing the waterproof membrane. If compatibility with other products is in doubt, the advice of the Certificate holder must be sought.

4.6 Insulation systems or materials used in conjunction with the system must be approved by the Certificate holder and either:

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

4.7 If rigid glassfibre or mineral wool roof insulation products are used, they must be overlaid with 13 mm thick fibreboard unless otherwise authorised by the Certificate holder.

5 Practicability of installation

The membrane is only installed by installers who have been trained and approved by the Certificate holder.

6 Weathertightness



6.1 The membrane and its joints, 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 relevant national Building Regulations.

6.2 The membrane is impervious to water and, when used in accordance with this Certificate, will give a weathertight roof capable of accepting minor structural movement without damage.

7 Properties in relation to fire



7.1 When tested to DD CEN/TS 1187 : 2012 Test 4 and classified to BS EN 13501-5 : 2005, the following systems achieved B_{ROOF}(t4):

- a system comprising an 18 mm thick orientated strand board (OSB) substrate, a layer of Alutrix FR vapour control layer, a 100 mm thick Powerdeck F polyisocyanurate (PIR) insulation board bonded with a polyurethane adhesive, a coating of FG 35 Primer and a layer of Resitrix SR
- a system comprising an 18 mm thick OSB substrate, a layer of Alutrix FR vapour control layer, a 100 mm thick Kingspan TR 27 PIR insulation board bonded with a polyurethane adhesive, a coating of FG 35 Primer and a layer of Resitrix SR
- a system comprising an 18 mm thick OSB substrate, a layer of Alutrix FR vapour control layer, a 100 mm thick Xtratherm MG PIR insulation board bonded with a polyurethane adhesive, a coating of FG 35 Primer and a layer of Resitrix SR.

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

England and Wales — test or assessment in accordance with Approved Document B, Appendix A, clause 1

Scotland — test to conform with Mandatory Standard 2.8, clause 2.8.1

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

8 Resistance to wind uplift

The adhesion of the fully-adhered membrane to the substrate will be limited by the cohesive strength of the substrate. Tests indicate that on substrates of high cohesive strength the adhesion of the membrane is sufficient to resist the effects of wind suction, thermal cycling or minor structural movements occurring in practice.

9 Resistance to foot traffic

Data indicate that the product can accept, without damage, the limited foot traffic and light concentrated loads associated with installation and maintenance. Reasonable care should be taken, however, to avoid sharp objects or concentrated loads. Wherever regular traffic is envisaged, eg for maintenance of lift equipment, a walkway should be provided using concrete slabs supported on bearing pads.

10 Maintenance



10.1 Roofs covered with the product should be the subject of annual inspections, as is good practice with single-layer waterproofing systems, to ensure continued security and performance.

10.2 Any damage to the membrane is repaired in accordance with section 14 of this Certificate.

11 Durability



Resitrix SR and products of a similar specification manufactured by the Certificate holder have been used in Europe since 1981 and have performed satisfactorily. Accelerated weathering tests and evidence from long-term existing sites confirm that satisfactory retention of physical properties is achieved. Available evidence indicates that the membrane will have a life in excess of 30 years.

Installation

12 General

12.1 Installation of Resitrix SR must be carried out by trained and approved installers working in accordance with the relevant clauses of the Certificate holder's instructions and BS 8000-4 : 1989.

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. Where the product is used over a rough substrate, a suitable protection layer should be laid first.

12.3 Installation must not be carried out during wet weather (eg rain, fog or snow) nor when the temperature is below 5°C unless suitable precautions against surface condensation are taken.

12.4 All flashings must be formed in accordance with the Certificate holder's instructions.

13 Procedure

13.1 The substrate is primed using FG 35 Surface Primer. For fully-bonded applications the primer is applied at a rate of 100% coverage. For partially-bonded applications the primer is applied at a rate of 100% coverage for a one metre wide band around the roof perimeter and 50% coverage in the central zone.

13.2 When the primer is dry (a minimum of 60 minutes), the membrane is laid out flat onto the substrate without folds or ripples, with 50 mm overlaps.

13.3 The membrane is either rolled or folded back on itself to its centre, and the release film is carefully scored with a knife along the centre line and removed.

13.4 The membrane is applied to the substrate and pressed down to ensure a good bond. The operation is repeated for the other half of the sheet.

13.5 Alternatively, the membrane can be installed without priming the substrate. In this case, mechanical fasteners are additionally required to ensure resistance to wind uplift forces. The exact fixing requirements for the site are calculated using the relevant clauses of BS EN 1991-1-4 : 2005 and its UK National Annex. The fasteners are installed in accordance with the Certificate holder's instructions.

Joints

13.6 The joints are formed by heat welding in accordance with the Certificate holder's installation instructions.

Detailing

13.7 Details are formed in accordance with the Certificate holder's installation instructions. Corner details should be reinforced using Resitrix patches.

14 Repair

In the event of damage, repairs must be carried out by cleaning the area around the damage and applying a patch as described in the Certificate holder's instructions.

15 Tests

Tests were carried out on the membrane and the results assessed to determine:

- tensile strength and elongation
- resistance to water pressure
- resistance to nail tear
- resistance to folding at low temperature
- resistance to leakage at joints
- tensile strength of joints
- peel strength of joints
- static indentation
- dynamic indentation
- fatigue cycling
- peel from substrate
- wind uplift on partially-bonded system
- tensile strength and elongation following heat ageing
- resistance to folding at low temperature following heat ageing
- peel from substrate following heat ageing
- resistance to folding at low temperature following UV ageing.

16 Investigations

16.1 Existing data on fire performance were evaluated.

16.2 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.

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*

NA to BS EN 1991-1-4 : 2005 *UK National Annex to 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*

DD CEN/TS 1187 : 2012 *Test methods for external fire exposure to roofs*

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

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

EN ISO 14001 : 2004 *Environmental Management systems — Requirements with guidance for use*

17 Conditions

17.1 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 or 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.

17.2 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.

17.3 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.

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

17.5 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.

17.6 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.