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Agrément Certificate
06/4329
Product Sheet 2

RESITRIX ROOF WATERPROOFING SYSTEMS

RESITRIX SK W FULL BOND WATERPROOFING SYSTEM

This Agrément Certificate Product Sheet(1) relates to the Resitrix SK W Full Bond Waterproofing System, a self-adhesive, glass-reinforced thermoplastic elastomer/EPDM multi-laminate, root-resistant fully adhered membrane for waterproofing flat and pitched roofs with limited access and flat (including zero fall) roofs in inverted roof, roof garden and green roof 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 will resist the passage of moisture to the interior of a building (see section 6).

Properties in relation to fire — the system may 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 likely wind suction acting on the roof (see section 8).

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

Resistance to root penetration — the system will resist the effects of root penetration from intensive and extensive roof garden installations (see section 10).

Durability — under normal service conditions, the system will provide a durable waterproof covering with a service life of at least 30 years (see section 12).

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

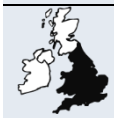
Date of Fifth issue: 13 December 2021

Originally certificated on 8 October 2010

Hardy Giesler
Chief Executive Officer

Regulations

In the opinion of the BBA, the Resitrix SK W Full Bond Waterproofing 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(1)**	**External fire spread**
Comment:		The system is restricted by this Requirement in some circumstances. See section 7.4 of this Certificate.
Requirement:	**B4(2)**	**External fire spread**
Comment:		On suitable substructures the system may enable a roof to be unrestricted under this Requirement. See sections 7.1 to 7.3 of this Certificate.
Requirement:	**C2(b)**	**Resistance to moisture**
Comment:		The system, including joints, will enable a roof to satisfy this Requirement. See section 6 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The system is acceptable. See section 12 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)(2)**	**Durability, workmanship and fitness of materials**
Comment:		The system satisfies the requirements of this Regulation. See sections 11.1 and 12 and the *Installation* part of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	2.6	Spread to neighbouring buildings
Comment:		The system is restricted under clause 2.6.4(1)(2) of this Standard in some circumstances. See section 7.5 of this Certificate.
Standard:	2.8	Spread from neighbouring buildings
Comment:		When applied to a suitable substructure, the system may enable a roof to be unrestricted under clause 2.8.1(1)(2) of this Standard. See sections 7.1 to 7.3 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The system 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 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:		Comments in relation to the system 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 (as amended)

Regulation:	**23(a)(i)**	**Fitness of materials and workmanship**
Comment:	**(iii)(b)(i)**	The system is acceptable. See section 12 and the *Installation* part of this Certificate.
Regulation:	**28(b)**	**Resistance to moisture and weather**
Comment:		The system, including joints, will enable a roof to satisfy the requirements of this Regulation. See section 6 of this Certificate.
Regulation:	**36(b)**	**External fire spread**
Comment:		On suitable substructures, the system may enable a roof to be unrestricted under the requirements of this Regulation. See sections 7.1 to 7.3 of this Certificate.

Construction (Design and Management) Regulations 2015
Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) 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 2021

In the opinion of the BBA, the Resitrix SK W Full Bond Waterproofing System, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards,* Chapter 7.1 *Flat roofs, terraces and balconies.*

The NHBC Standards do not cover the use of the system in the refurbishment of existing roofs.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard EN 13956 : 2013.

Technical Specification

1 Description

1.1 The Resitrix SK W Full Bond Waterproofing System 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. The membrane also contains a root inhibitor.

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

Table 1 Nominal characteristics

Characteristic (unit)	Resitrix SK W Full Bond
Thickness (mm)	2.5
Length (m)	10
Width (m)(1)	1
Mass per unit area (kg·m^{-2})	2.75
Roll weight (kg)	27.5
Flexibility at low temperature (°C)	–30
Dimensional stability (%)	≤ 0.5
Resistance to static loading (kg)	
most compressible substrate	10
least compressible substrate	20

(1) Also available in widths of 250, 333, 500 and 666 mm.

1.3 Ancillary items necessary for installation of the system and included in this assessment are:

- FG 35 Surface Primer — a synthetic rubber and resin, low viscosity solvent-based primer, for use in priming all surfaces prior to application of Resitrix SK W Full Bond
- Resitrix patches — a range of Resitrix membrane patches with a heat-activated adhesive on the lower face, for use in producing corner details.

1.4 G 500 Thinner, a blend of organic solvents for use degreasing metal surfaces and cleaning tools/equipment, may be used with the system but is outside the scope of this Certificate.

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 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 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 : 2015 and EN ISO 14001 : 2015 by DQS GmbH (Certificate 543393 QM15 UM15).

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.

3 Delivery and site handling

3.1 The membranes are delivered to site in individually wrapped rolls on a pallet, 20 rolls per pallet. The wrapper bears the product name, dimensions, weight, production code 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 The Certificate holder has taken the responsibility of classifying and labelling the products under *The Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) 2009* . Users must refer to the relevant Safety Data Sheets.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Resitrix SK W Full Bond Waterproofing System.

Design Considerations

4 Use

4.1 The Resitrix SK W Full Bond Waterproofing System is satisfactory for use as fully adhered waterproofing on flat and pitched roofs with limited access, and in inverted roof, roof garden and green roof applications in flat (including zero fall) roofs.

4.2 Decks to which the membrane is to be applied must comply with the relevant requirements of BS 6229 : 2018, BS 8217 : 2005 and, where appropriate, *NHBC Standards* 2021, Chapter 7.1.

4.3 The following terms are defined for the purpose of this Certificate as:

- roof garden (intensive) — a roof with a substantial layer of growing medium with planting that can include shrubs and trees, and generally accessible to pedestrians.
- green roof (extensive) — a roof with a shallow layer of growing medium planted with low-maintenance plants such as mosses, sedums, grasses and some wild flower species.

4.4 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.

4.5 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80(1). 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.

(1) *NHBC Standards* 2021 require a minimum fall of 1:60 for green roofs and roof gardens.

4.6 Pitched roofs are defined for the purpose of this Certificate as those having a fall in excess of 1:6.

4.7 Zero fall roofs are defined for the purpose of this Certificate as those having a finished fall of less than 1:80(1). Reference should also be made to the appropriate clauses in Liquid Roofing and Waterproofing Association (LRWA) Note 7 – *Specifier Guidance for Flat Roofs.*

(1) *NHBC Standards* 2021 require a minimum fall of 1:60 for green roofs and roof gardens.

4.8 Structural decks to which the system is to be applied must be suitable to transmit the dead and imposed loads experienced in service.

4.9 Imposed loads, dead loading and wind loads are calculated by a suitably competent and experienced individual in accordance with BS EN 1991-1-1 : 2002, BS EN 1991-1-3 : 2003 and BS EN 1991-1-4 : 2005, and their UK National Annexes.

4.10 Recommendations for the design of green roofs and roof garden specifications are available in the latest edition of *The GRO Green Roof Guide – Green Roof Code of Best Practice for the UK*.

4.11 The drainage systems for zero fall roofs, inverted roofs, green roofs or roof gardens must be correctly designed, and the following points should be addressed:

- provision made for access for maintenance purposes
- for zero fall roofs, it is particularly important to identify the correct drainage points, to ensure that drainage is sufficient and effective
- dead loads for green roofs and roof gardens can increase if the drains become partially or completely blocked causing waterlogging of the drainage layer

- additional guidance for inverted roof specifications is given in BBA Information Bulletin No 4 *Inverted roofs — Drainage and U value corrections*.

4.12 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.

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

- as described in BS 6229 : 2018, or
- the subject of a current BBA Certificate and used in accordance with, and within the limitations of, that Certificate.

4.14 In exposed roofs, if rigid glass fibre or mineral wool roof insulation products are used, they must be overlaid with 13 mm thick fibreboard unless otherwise authorised by the Certificate holder.

4.15 Insulation used in roof garden and green roof applications must have adequate compression strength to withstand the dead load imposed by the system. Glass fibre and mineral wool must not be used in inverted roof, green roof and roof garden applications.

5 Practicability of installation

The system must only be installed by installers who have been trained and approved by the Certificate holder.

6 Weathertightness

The membranes and joints between them, when completely sealed and consolidated, will adequately resist the passage of moisture to the inside of the building and so satisfy the relevant requirements of the national Building Regulations.

7 Properties in relation to fire

7.1 When classified to BS EN 13501-5 : 2005, a system comprising an 18 mm thick primed marine plywood substrate, a self-adhesive bitumen/aluminium vapour control layer, an 80 mm thick mechanically fastened primed polyisocyanurate insulation board, and a layer of Resitrix SK(1) fully bonded is designated as $B_{ROOF}(t4)$(2) and so is unrestricted with respect to proximity to a boundary by the documents supporting the national Building Regulations.

(1) Resitrix SK is to the same specification as Resitrix SK W Full Bond but does not incorporate an anti-root additive.
(2) Test report 151009, issued by Warringtonfire, is available from the Certificate holder.

7.2 In the opinion of the BBA, a roof incorporating the system will also be unrestricted under the national Building Regulations in the following circumstances:

- protected with an inorganic covering listed in the Annex of Commission Decision 2000/553/EC
- a roof garden covered with a drainage layer of gravel 100 mm thick and a soil layer 300 mm thick
- irrigated green roofs or roof gardens.

7.3 The designation of other specifications should be confirmed by reference to the requirements of the documents supporting the national Building Regulations.

7.4 In England and Wales, the system, when used in pitches greater than 70°, should not be used on buildings that have a storey at least 18 m above ground level and which contain one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools.

7.5 In Scotland, the system, when used in pitches greater than 70°, excluding upstands, should not be used on buildings that have a storey more than 11 m above ground level.

7.6 If green roofs and roof gardens are allowed to dry, the plants used may allow flame to spread across the roof. This must be taken into consideration when selecting suitable plants. Appropriate planting irrigation and/or protection must be applied to ensure the overall fire-rating of the roof is not compromised.

8 Resistance to wind uplift

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

8.2 The membrane, when used with a suitable inverted roof, roof garden or green roof specification, will adequately resist the effects of wind uplift likely to occur in practice.

8.3 The soil used in intensive planting should not be of a type that will be removed or become localised owing to wind scour experienced on site.

8.4 It should be recognised that the type of plants used in a roof garden could significantly affect the expected wind loads experienced in service.

9 Resistance to mechanical damage

9.1 The system 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.

9.2 Where traffic in excess of this is envisaged, such as for maintenance of lift equipment, walkways must be provided using concrete slabs supported on bearing pads.

9.3 The system is capable of accepting minor structural movement while remaining weathertight.

9.4 Once the green roof or roof garden is installed it can be regarded as a suitable protection for the membrane in use.

10 Resistance to root penetration

10.1 The Resitrix SK W Full Bond membrane, including joints, will adequately resist penetration by plant roots.

10.2 Resitrix SK W Full Bond, when incorporated in an inverted roof and using the standard protection sheet, will resist the effects of root penetration from intensive and extensive roof garden systems planted. Advice on suitable plant specifications can be sought from the Certificate holder.

10.3 Where there is a run-off from a large sill or gully onto the roof surface, the build-up of silt may allow the germination of seeds, and therefore this type of detail should be avoided. However, any growth occurring will be restricted and will not normally affect the performance of the roof.

11 Maintenance

11.1 The system must be the subject of six-monthly inspections and maintenance in accordance with BS 6229 : 2018, Chapter 7, to ensure continued satisfactory performance.

11.2 Guidance is available in the latest edition of *The GRO Green Roof Code – Green Roof Code of Best Practice for the UK.*

11.3 Where damage has occurred, it should be repaired in accordance with section 15 and the Certificate holder's instructions.

12 Durability

Under normal service conditions, the system will have a service life of at least 30 years.

Installation

13 General

13.1 Installation of the Resitrix SK W Full Bond Waterproofing System must be carried out by trained and approved installers working in accordance with the Certificate holder's instructions, the relevant clauses of BS 8000-0 : 2014 and BS 8000-4 : 1989 and this Certificate.

13.2 Conditions on site should be the same as those used for normal roof waterproofing work. Deck surfaces must be dry, clean and free from sharp projections such as nail heads and concrete nibs. When used over a rough substrate, a suitable protection layer should be laid first.

13.3 Installation must not be carried out in wet weather (such as rain, fog or snow) or in temperatures below 5°C, unless suitable precautions against surface condensation are taken.

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

13.5 Soil or other bulk material must not be stored on one area of the roof, to ensure that localised overloading does not occur.

14 Procedure

14.1 The substrate is primed using FG 35 Surface Primer at a rate of 100% coverage.

14.2 When the primer is dry (a minimum of 30 minutes), the membrane is laid out flat onto the substrate without folds or ripples, with 50 mm overlaps.

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

14.4 The membrane is applied to the substrate and pressed down, ensuring a good bond between membrane and substrate. The operation is repeated for the other half of the sheet.

Joints

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

Detailing

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

14.7 Subsequent layers, such as separation layers, drainage layers and the growing medium, are installed in accordance with the Certificate holder's installation instructions.

15 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.

Technical Investigations

16 Tests

16.1 Tests were carried out on a material of similar formulation to Resitrix SK W Full Bond 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.

16.2 Existing data for Resitrix SK W Full Bond were evaluated regarding resistance to root penetration.

17 Investigations

17.1 Reaction to fire performance were assessed.

17.2 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 : 2018 *Flat roofs with continuously supported flexible waterproof coverings — Code of practice*

BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*

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 1991-1-1 : 2002 *Eurocode 1 : Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*
NA to BS EN 1991-1-1 : 2002 UK National Annex to *Eurocode 1 — Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*
BS EN 1991-1-3 : 2003 + A1 : 2015 *Eurocode 1 : Actions on structures. General actions — Snow loads*
NA + A2 : 18 to BS EN 1991-1-3 : 2003 + A1 : 2015 UK National Annex to *Eurocode 1 — Actions on structures — General actions — Snow loads*
BS EN 1991-1-4 : 2005 + A1: 2010 *Eurocode 1 Actions on structures — General actions — Wind actions*
NA to BS EN 1991-1-4 : 2005 + A1 : 2010 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*

EN 13956 : 2013 *Flexible sheet for waterproofing — Plastic and rubber sheets for roof waterproofing — Definitions and characteristics*

EN ISO 9001 : 2015 *Quality management systems — Requirements*

EN ISO 14001 : 2015 *Environmental Management systems — Requirements with guidance for use*

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 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.

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.

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