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Agrément Certificate

17/5389

Product Sheet 1

HYFLEX ROOF WATERPROOFING SYSTEMS

HYFLEX 10 AND HYFLEX 10 PLUS

This Agrément Certificate Product Sheet⁽¹⁾ relates to Hyflex 10 and Hyflex 10 Plus, roof waterproofing systems for use on flat or 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 systems will resist the passage of moisture into the building (see section 6).

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

Adhesion — the adhesion of the systems is sufficient to resist the effects of any likely wind suction and the effects of thermal or other minor movement likely to occur in practice (see section 8).

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

Durability — under normal service conditions the systems will provide a durable waterproof covering with a service life of at least 10 years (see section 11).



The BBA has awarded this Certificate to the company named above for the systems described herein. These systems have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 16 February 2017

John Albon – Head of Approvals
Construction Products

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
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, Hyflex 10 and Hyflex 10 Plus, 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 systems can enable a roof to be unrestricted under this Requirement. See section 7 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The systems will enable a roof to satisfy this requirement. See section 6.1 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The systems are 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 use of the systems 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:		The systems, when applied to a non-combustible substrate, can be regarded as having low vulnerability under clause 2.8 ⁽¹⁾⁽²⁾ of this Standard. See section 7 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The use of the systems 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 systems 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 systems 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)(b)(i)	Fitness of materials and workmanship
Comment:		The systems are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.

Regulation:	28(b)	Resistance to moisture and weather
Comment:		The use of the systems 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 systems will enable a roof to be unrestricted under the requirements of this Regulation. See section 7 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 section: 3 *Delivery and site handling* (3.2, 3.3 and 3.4) of this Certificate.

Additional Information

NHBC Standards 2017

NHBC accepts the use of Hyflex 10 and Hyflex 10 Plus, provided they are installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.1 *Flat roofs and balconies*.

Technical Specification

1 Description

1.1 Hyflex 10 and Hyflex 10 Plus roof waterproofing systems are cold-applied, polymer-modified bitumen coatings applied in several layers with polyester-based reinforcing membranes to provide a seamless waterproofing layer. Hyflex 10 is used for maintenance and repair of existing roofs, and Hyflex 10 Plus for new work, refurbishment of existing roofs or where greater resistance to foot traffic is required.

1.2 The systems comprise the following components:

- Hyflex Base Sheet — a pre-formed SBS-modified bitumen sheet reinforced with a 180 g·m⁻² polyester fleece
- Hyflex Base Coat — a high-viscosity bitumen compound reinforced with fibrous fillers, available as an emulsion for application during the summer months when the temperature is above 5°C, or as a solution for application during the winter period (ie when the temperature is unlikely to exceed 5°C)
- Hyflex Membrane — a 50 g·m⁻² two-component polyester/ polyamide reinforcement membrane
- Hyflex Finish Coat — a high-viscosity, fibre-filled, rubber-modified bituminous coating, available as an emulsion (summer grade) and solution (winter grade)
- Hyflex Roofing Silver — a bitumen solution pigmented with aluminium for use as a UV barrier and to provide solar protection
- Hyvodex Primer — a low-viscosity solvent-based bituminous primer
- Hyflex Cold Bond Adhesive — a two-component, polyurethane cold-applied adhesive for bonding the Hyflex Base Sheet
- Hyflex Membrane D — a knitted polyester membrane for use as reinforcement in complex detail work where improved drape characteristics are required
- Hyflex Flexmat — a chopped strand polyester mat for reinforcing overlaps and fixing on profiled roofing sheets.

1.3 The build-up specifications for the systems are detailed in Table 1.

Table 1 Build-up specification for Hyflex 10 and Hyflex 10 Plus

Hyflex 10	Hyflex 10 Plus
Hyvodex Primer	Hyvodex Primer
Hyflex Base Coat	Hyflex Base Sheet ⁽¹⁾
Hyflex Membrane	Hyflex Base Coat
Hyflex Base Coat	Hyflex Membrane
Hyflex Membrane (laid at 90° to the first layer)	Hyflex Finish Coat (one coat)
Hyflex Finish Coat (one coat)	Hyflex Roofing Silver
Hyflex Roofing Silver	

(1) Bonded with Hyflex Cold Bond Adhesive.

2 Manufacture

2.1 The liquid components of the systems are manufactured by a batch-blending process.

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.

3 Delivery and site handling

3.1 The systems components' packaging bears labels with the components name, size, Certificate holder's name, batch number and CLP labelling information (where appropriate).

3.2 The system components are delivered to site as given in Table 2.

Table 2 Component packaging and dimensions

Component	Packaging	Packaging size
Hyflex base Coat, Hyflex Finish Coat	steel drums	25 litres
Hyflex Roofing Silver	steel drums	25 litres
Hyvodex Primer	Steel drums	5 and 25 litres
Hyflex Membrane	rolls	1 m x 200 m
Hyflex Membrane D	rolls	300 mm and 500 mm x 100 m
Hyflex Base Sheet	rolls	1 m x 20 m
Hyflex Flexmat	rolls	1 m x 100 m
Hyflex Cold Bond Adhesive	steel drums	2 kg and 15 kg

3.3 The systems components should be stored in a dry, shaded area at temperatures between 5°C and 30°C and away from ignition sources.

3.4 The Certificate holder has taken the responsibility of classifying and labelling the systems 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 Hyflex 10 and Hyflex 10 Plus.

Design Considerations

4 General

4.1 Hyflex 10 and Hyflex 10 Plus are satisfactory for use on flat or pitched roofs with limited access on the following substrates:

- bituminous membranes
- concrete
- timber (primed).

4.2 Limited access roofs are defined for the purposes 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. Pitched roofs are those having falls in excess of 1:6.

4.4 When designing flat roofs, 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. When upgrading existing flat roofs, care should be taken to eliminate ponding water.

4.5 Decks to which the product is to be applied must comply with the relevant requirements of BS 6229 : 2003, BS 8217 : 2005 and, where appropriate, *NHBC Standards 2017*, Chapter 7.1 *Flat roofs and balconies*.

4.6 Insulation materials to be used in conjunction with the membranes must be in accordance with the Certificate holder's instructions and be either:

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

5 Practicability of installation

Installation of Hyflex 10 and Hyflex 10 Plus must be carried out by the Certificate holder's trained operatives in accordance with the Certificate holder's instructions.

6 Weathertightness



6.1 The systems will adequately resist the passage of moisture into the building and enable a roof to comply with the requirements of the national Building Regulations.

6.2 The systems are impervious to water and, when used as described, will give a watertight roofing capable of accepting minor movement without damage.

6.3 To achieve weathertightness, it is essential that the coating is correctly applied and the coverage rate used complies with that stated in the Certificate holder's literature.

7 Properties in relation to fire



7.1 A system comprising a 12.7 mm thick chipboard, one layer of Hyflex Base Sheet fully bonded in Hyflex hot-melt bituminous adhesive, one layer of Hyflex Base Coat, one embedded layer of polyester reinforcement, one layer of Hyflex Finish Coat and one layer of Hyflex Roofing Silver is unrestricted by the national Building Regulations.

7.2 When used on flat roofs with one of the surface finishes defined in Part iii of Table A5 of Appendix A of The Building Regulations (England and Wales), or Technical Booklet E, Table 5.6, Part IV of The Building Regulations (Northern Ireland) (and listed below), the roof is deemed to be of designation B_{ROOF(t4)}:

- bitumen-bedded stone chippings covering the whole surface to a depth of not less than 12.5 mm
- bitumen-bedded tiles of a non-combustible material
- sand and cement screed
- macadam.

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 1

Scotland — test to conform to Mandatory Standard 2.8, clause 2.8.1⁽¹⁾⁽²⁾

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

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

8 Adhesion

8.1 The adhesion of the systems to bituminous membranes, concrete and primed chipboard is sufficient to resist the effects of any wind suction, elevated temperatures, thermal shock or minor movement likely to occur in practice.

8.2 Where the system is installed over an existing warm roof system, the resistance to wind uplift is dependent on the cohesive strength of the insulation and the method by which it is secured to the roof deck.

9 Resistance to foot traffic

9.1 The system can accept, without damage, the limited foot traffic and light concentrated loads associated with installation and maintenance. However, reasonable care should be taken to avoid damage by sharp objects or concentrated loads. Extra care should be taken when walking across the roof if surface water is present.

10 Maintenance



10.1 The systems should be the subject of annual inspections and roof drains should be kept clear, as is good practice with all membrane and liquid-applied flat roofing systems.

10.2 Maintenance is carried out by coating the surface of the existing waterproofing with Hyflex Finish Coat and Hyflex Roofing Silver, fully in accordance with the original specification.

11 Durability



The systems will have a service life of at least 10 years. This can be extended if regular inspection and maintenance of the roof is carried out.

12 General

12.1 Supporting structures must be stable and surfaces must be clean, sound and free from dust.

12.2 The systems should not be laid in rain, snow or heavy fog, or if the temperature falls below 5°C.

13 Procedure

Hyflex 10 (emulsion system for summer use)

13.1 Hyflex Base Coat is applied at a minimum rate of 1 m² per litre, to the prepared and primed substrate. Hyflex Membrane is bedded and brushed into the wet base coat to ensure uniform saturation. Laps of 75 mm should be allowed at the junction of individual sheets of the Hyflex Membrane.

13.2 When the first layer has dried and turned black, a second layer of Hyflex Base Coat and Hyflex Membrane is applied as described in section 12.1, ensuring that the membrane is applied at 90° to the first layer.

13.3 When the second stage is dry, one coat of Hyflex Finish Coat is applied at a rate of 1 m² per litre allowing 24 hours between coats.

13.4 Hyflex Finish Coat should be allowed to dry for at least 10 days, after which a Hyflex Roofing Silver solar protective layer should be applied by roller.

Hyflex 10 (solution system for winter use)

13.5 When applying the system under winter conditions, it is important that the components used are those marked with the legend ' SOLVENT SYSTEM'.

13.6 The system should be applied in the manner described for the summer system (see sections 13.1 to 13.4) but at a coverage rate for the Hyflex Base Coat of 1.5 m² per litre. A minimum of 24 hours should be allowed between each stage and at least four days between the Hyflex Finish Coat and the Hyflex Roofing Silver.

Details

13.7 Details of Hyflex Membrane, available in specially cut widths for such purpose, are applied as for the summer or winter system (as appropriate) paying particular attention to the relevant drying times. It is permissible for the two layers of the membrane to run in the same direction. At complex details, Hyflex Membrane D may be substituted for the ordinary membrane where its superior drape characteristics allow improved detail formation.

Hyflex 10 Plus (heavy duty system)

13.8 Where greater resistance to foot traffic is required, or on new work, the first layer of Hyflex Base Coat and Hyflex Membrane is replaced by one layer of Hyflex Base Sheet bonded in Hyflex Cold Bond Adhesive, allowing 75 mm end laps and 50 mm side laps. All excess adhesive at laps must be smoothed out. Hyflex Base Coat, Hyflex Membrane, Hyflex Finish Coat and Hyflex Roofing Silver must be correctly applied as soon as possible.

Profiled roofing sheets

13.9 Application to structurally-sound profiled roofing sheets may be carried out by priming the area to be coated with Hyvodex Primer at a coverage rate of 6.5 m² per litre, and applying a coat of Hyflex Base Coat at a coverage rate of 1 m² per litre to all laps and fixings, followed by a reinforcing layer of Hyflex Flexmat or Hyflex Membrane D.

13.10 A coat of Hyflex Base Coat is then applied to the whole area to be coated at a coverage rate of 1 m² per litre.

13.11 When this is fully dry, a coat of Hyflex Finish is applied at a coverage rate of 1 m² per litre.

13.12 When this is fully dry, a coat of Hyflex Roofing Silver is applied at a coverage rate of 10 m² per litre.

13.13 To avoid damage to the membrane, coated profiled decks must not be subjected to direct foot trafficking. Suitable protection must be used. The Certificate holder's advice should be sought.

14 Repair

Where damage to the systems occur, it may be repaired by cutting the damaged area back to sound, well-bonded material and re-applying the system to the original specification. The Certificate holder's advice must be sought for detailed repair procedures.

Technical Investigations

15 Tests

Tests were carried out and the results assessed to determine:

- thickness
- ash content
- water vapour permeability
- vapour resistance
- cold flex temperature
- dimensional stability
 - unrestrained
 - restrained
- resistance to water pressure
- dynamic indentation
 - hard substrate
 - soft substrate
- static indentation
 - hard substrate
 - soft substrate
- peel strength from base sheet
 - unaged
 - heat aged
- peel strength from substrate
 - unaged
 - heat aged
- resistance to wind uplift
- resistance to thermal shock
- resistance to fatigue
- strength of joints in reinforcement
- tensile strength
 - unaged
 - heat aged
 - water soak
- elongation
 - unaged
 - heat aged
 - water soak
- tear propagation
- nail tear.

16 Investigations

16.1 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.

16.2 Existing data on the fire performance were examined.

16.3 The Certificate holder's installation instructions were evaluated and found to be practicable.

16.4 Visits were made to existing sites and sites in progress to assess the performance in use and practicability of installation.

Bibliography

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

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

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 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.