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Agrément Certificate
19/5709
Product Sheet 2

AXTER SECOND GENERATION HOT MELT STRUCTURAL WATERPROOFING SYSTEMS

HYRAFLEX SECOND GENERATION MONOLITHIC HOT MELT STRUCTURAL TRAFFICKED DECK WATERPROOFING SYSTEM

This Agrément Certificate Product Sheet⁽¹⁾ relates to the Hyraflex⁽¹⁾ Second Generation Monolithic Hot Melt Structural Trafficked Deck Waterproofing System, a reinforced hot-applied modified bitumen-based waterproofing system for use as a protected waterproofing system overlaid with a wearing course on pedestrian and vehicular trafficked decks such as parking decks and podium decks.

- (1) Hereinafter referred to as 'Certificate'.
(2) Hyraflex is a registered Trademark.

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 will resist the passage of water and water vapour to the interior of a building or structure (see section 6).

Properties in relation to fire — the system, under suitable protection, can enable a trafficked roof deck to be unrestricted under the national Building Regulations (see section 7).

Resistance to wind uplift — the system will resist the effects of any likely wind suction acting on the structure (see section 8).

Resistance to mechanical damage — the system will accept, without damage, the traffic loads, and the effects of thermal and other minor movement likely to occur in practice (see section 9).

Durability — the system will have a service life in excess of 10 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

Date of First issue: 26 November 2019



Brian Moore
Director

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 MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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Regulations

In the opinion of the BBA, the Hyraflex Second Generation Monolithic Hot Melt Structural Trafficked Deck 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(2) | External fire spread |
| Comment: | | When used on concrete trafficked roof decks with a suitable wearing surface, the system can enable a structure to be unrestricted under this Requirement. See section 7.1 (Wales only), 7.2 (England only) and 7.3 of this Certificate. |
| Requirement: | C2(b) | Resistance to moisture |
| Comment: | | The system will enable a structure to satisfy this Requirement. See section 6.1 of this Certificate. |
| Regulation: | 7 | Materials and workmanship (applicable to Wales only) |
| Regulation: | 7(1) | Materials and workmanship (applicable to England only) |
| 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: | | The use of the system satisfies the requirements of this Regulation. See sections 10.1 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: | | When used on roof deck structures with a concrete wearing surface, the structure can be regarded as having low vulnerability under clause 2.8.1 ⁽¹⁾⁽²⁾ of this Standard. See sections 7.2 and 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 6.1 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: | | Comments made 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)(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: | C4(b) | Resistance to moisture and weather |
| Comment: | | The system 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: | When used on trafficked roof decks with an asphalt or concrete wearing surface, the system can enable a structure to be unrestricted under the requirements of this Regulation. See section 7.1 and 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), 3 *Delivery and site handling* (3.1 and 3.3) and 13 *Procedure* (13.2) of this Certificate.

Technical Specification

1 Description

1.1 The Hyraflex Second Generation Monolithic Hot Melt Structural Trafficked Deck Waterproofing System is a seamless, hot applied, elastomeric bitumen membrane and compound waterproofing system reinforced with a polyester mesh, with a nominal thickness of 6 mm. The system consists of:

- Hyraflex Hot Melt monolithic elastomeric compound — a hot-applied polymer-modified bitumen compound
- Hyraflex Reinforcement — a polymeric mesh ($100 \text{ g}\cdot\text{m}^{-2}$) for use as the reinforcement layer for the system
- Hyraflex Primer — a surface preparation primer, for use prior to the application of the hot-applied membrane
- Hyraflex 35 — a polyester reinforced ($180 \text{ g}\cdot\text{m}^{-2}$) elastomeric SBS modified bitumen, root resistant, waterproofing membrane. The upper and lower surfaces are finished with fine sand
- Hyraflex 35 S — a stabilised polyester reinforced ($180 \text{ g}\cdot\text{m}^{-2}$) elastomeric SBS modified bitumen waterproofing membrane. The upper surface is finished with sand and lower surface with a thermofusible film
- Hyraflex 35 Trafic — a stabilised polyester reinforced ($180 \text{ g}\cdot\text{m}^{-2}$) elastomeric SBS modified bitumen, root resistant, waterproofing membrane. The upper surface is finished with mineral slate chippings and the lower surface with a thermofusible film.

1.2 The nominal characteristics of the waterproofing membranes are shown in Table 1.

Table 1 Nominal characteristics of membranes

| Characteristic (unit) | Hyraflex 35 | Hyraflex 35 S | Hyraflex 35 Trafic |
|--|-------------|---------------|--------------------|
| Thickness (mm) | 3.9 | 4.0 | 4.0 |
| Roll width (m) | 1 | 1 | 1 |
| Roll length (m) | 7.5 | 10 | 8 |
| Roll weight (kg) | 36.6 | 51.3 | 41 |
| Mass per unit area ($\text{kg}\cdot\text{m}^{-2}$) | 4.9 | 5.1 | 5.1 |
| Tensile strength* (N per 50 mm) | | | |
| longitudinal | 600 | 600 | 600 |
| transverse | 600 | 600 | 600 |
| Elongation at break* (%) | | | |
| longitudinal | 35 | 35 | 35 |
| transverse | 35 | 35 | 35 |
| Low temperature flexibility* ($^{\circ}\text{C}$) | -16 | -16 | -16 |
| Flow resistance* ($^{\circ}\text{C}$) | 100 | 100 | 100 |
| Impact – soft substrate* (mm) | 1000 | 1500 | 1750 |
| Static loading – soft substrate* (kg) | 20 | 20 | 20 |

1.3 The following materials may be used with the system, but are out of the scope of this Certificate, the Certificate holder will give advice on recommended materials:

- Starcoat QC — a cold liquid applied single component polyurethane resin waterproofing system (the subject of BBA Certificate 13/5031, Product Sheet 1)
- Starcoat PMMA — a cold liquid applied polymethyl methacrylate resin waterproofing system (the subject of BBA Certificate 16/5322, Product Sheet 1)
- cold liquid applied bitumen waterproofing — single component bitumen waterproofing with anti-root additive for waterproofing complex details
- inverted roof insulation — vacuum insulation panels, extruded polystyrene (XPS) insulation boards and expanded polystyrene (EPS) boards
- upstand insulation boards — EPS or XPS insulation board with a weather-resistant facing board, used for upstand detailing
- water flow reducing layers (WFRL) — geotextiles, such as spun bonded polyethylene, installed above inverted roof insulation to minimise heat loss caused by rainwater cooling of the roof deck
- self-adhesive or heat activated, reinforced, elastomeric SBS modified bitumen underlay and capsheet membranes
- drainage, protection, moisture retention layers and related ancillaries — for use in living roof and podium deck hard landscaping applications
- extensive, intensive, biodiverse and modular living roof systems and related ancillaries
- blue roof attenuation systems and related ancillaries
- paviour supports and related ancillaries
- ceramic roof tiles and related ancillaries
- prefabricated roof accessories and ancillaries, such as pipe collars
- rainwater outlets and related ancillaries.

2 Manufacture

2.1 The Hyraflex Hot Melt monolithic elastomeric compound is manufactured by heating and blending together the raw materials.

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 Axter SAS has been assessed and registered as meeting the requirements of EN ISO 9001 : 2015 and EN ISO 14001 : 2015 by AFAQ (Certificate QUAL/1996/5190.11 and No 2011/40655.3 respectively).

3 Delivery and site handling

3.1 The Hyraflex Hot Melt monolithic elastomeric compound is delivered to site in 10 or 24 kg boxes. The boxes bear the product name, the manufacturer's name and the BBA logo incorporating the number of this Certificate.

3.2 Reinforcing and protection layers are packaged with labels bearing the Axter trade name and should be stored under cover and kept dry.

3.3 The Certificate holder has taken the responsibility of classifying and labelling the system components under the *CLP Regulations (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 Hyraflex Second Generation Monolithic Hot Melt Structural Trafficked Deck Waterproofing System.

Design Considerations

4 Use

4.1 The Hyraflex Second Generation Monolithic Hot Melt Structural Trafficked Deck Waterproofing System, applied to a concrete deck laid in accordance with BS EN 1992-1-1 : 2004 and its UK National Annex, is satisfactory for use on trafficked parking decks subjected to vehicular and pedestrian traffic.

4.2 The system must be overlaid with a suitable trafficable wearing course that is compatible with the system.

5 Practicability of installation

The system should only be installed by trained contractors using specialist equipment. Details of these are available from the Certificate holder.

6 Weathertightness



6.1 The system is an effective barrier against the passage of water, it is flexible and can accommodate the movement owing to cracking permitted by BS EN 1992-1-1 : 2004 and its UK National Annex.

6.2 The system will have a water vapour resistance commensurate with typical hot-applied bituminous systems with SBS polymer-modified bitumen protection membranes of this type and will provide a high resistance to the passage of water vapour.

7 Properties in relation to fire



7.1 The system, applied to a concrete substrate and overlaid with mastic asphalt or one of the inorganic coverings listed in the Annex of Commission Decision 2000/553/EC, in Wales and Northern Ireland, may be deemed to be of designation B_{ROOF}(t4) and so will be unrestricted under the national Building Regulations.



7.2 In England and Scotland, the system, applied to a concrete substrate and overlaid with one of the inorganic coverings listed in the Annex of Commission Decision 2000/553/EC, may be deemed to be of designation B_{ROOF}(t4) and so will be unrestricted under the national Building Regulations.



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

8 Resistance to wind uplift

The system will resist the effects of wind suction likely to occur in service.

9 Resistance to mechanical damage

9.1 The system, when overlaid with a suitable wearing course, can accept, without damage, the foot and vehicular traffic likely to occur in practice. Where continuous heavy point loading is envisaged, additional protection should be considered, and the Certificate holder consulted for advice.

9.2 Where active (movement) joints are encountered, the system must be used in conjunction with suitable expansion joints. The Certificate holder must be consulted.

10 Maintenance



10.1 Installation of the system should be the subject of a planned maintenance programme to ensure that drainage outlets are kept clear.

10.2 Damaged sections of the system or overlay must be repaired in accordance with section 14.

11 Durability



The system is durable and will remain effective, provided it is not damaged during subsequent resurfacing operations, and will have a service life in excess of 10 years.

Installation

12 General

12.1 The system must be applied only to prepared concrete substrates that are clean and free from ice, frost, laitance, oil or other contaminants that could impair the adhesion of the system. Suitable concrete finishes include tamped, timer-formed and U4.

12.2 Concrete structures should be designed and built in accordance with BS EN 1992-1-1: 2004 and its UK National Annex.

12.3 New concrete⁽¹⁾ must be well compacted and finished, preferably by power floating, and without excessive laitance, to a dense, smooth finish, free from defects.

(1) Concrete toppings/screeds must be well compacted and bonded to the substrate and have a skip float finish with minimum laitance.

12.4 The concrete substrate should be cured for a minimum period of 28 days. The advice of the Certificate holder must be sought where shorter cure periods are envisaged.

12.5 Any imperfections in the concrete deck must be repaired with a material compatible with the system and must be agreed with the Certificate holder.

12.6 When application is made to an existing substrate, the advice of the Certificate holder must be sought.

12.7 Substrates should be free from physical defects such as cracks. Small surface defects can be filled with a proprietary mortar.

12.8 The prepared or existing substrate must be primed with Hyraflex Primer using a stiff brush or roller, to achieve a minimum coverage rate of 0.15 litres per m² depending on the porosity and surface texture of the concrete. Ponding of the primer must be avoided.

12.9 Adhesion of the waterproofing membrane to the primed concrete, and any repair system(s) used, must be checked prior to installation by random application to ensure that a minimum tensile bond strength of 0.3 MPa is achieved.

12.10 Installation of the system must only proceed when the air and substrate temperatures are above 4°C and the substrate temperature is above the dew point.

12.11 Upstands should be treated in accordance with the recommendations of BS 8218 : 1998 and the Certificate holder's instructions.

13 Procedure

13.1 The Hyraflex reinforcement is rolled out loose over the substrate with 100 mm overlaps.

13.2 The blocks of Hyraflex Hot Melt monolithic elastomeric compound are heated in an electronic or propane gas, thermostatically controlled, insulated melter.

13.3 The operating temperature range for the molten compound is 150 and 180°C. The temperature of the compound must not exceed 200°C.

13.4 The molten compound is poured onto the reinforcement at a coverage rate of approximately 2.5 kg·m⁻² and the appropriate Hyraflex SBS polymer modified waterproofing membrane is simultaneously unrolled into the compound and fully bonded.

13.5 The finished system must have a minimum depth of 6 mm.

13.6 The system must be overlaid with a suitable wearing surface as soon as practicable after installation of the membrane and before the system is subjected to vehicular trafficking. The Certificate holder must be consulted for suitable products.

13.7 Where required, Axter recommended inverted roof finishes, (insulation, ballast, paving slabs, green living roof, blue roof finishes should be applied in accordance with the Certificate holder's instructions.

14 Repair

14.1 Any damage to the system must be repaired as soon as possible to ensure that the integrity of the waterproofing is maintained. The advice of the Certificate holder should be sought.

14.2 Where maintenance or repair of any of the roof components above the waterproofing system is necessary, care must be taken to avoid damage to the membrane. If damage occurs, it should be repaired in accordance with the Certificate holder's instructions.

14.3 In the event that the system is contaminated by chemicals, oils and greases, the advice of the Certificate holder should be sought.

14.4 The wearing surface must be reinstated once the repair to the system has been completed.

Technical Investigations

15 Tests

Tests were carried out and the results assessed to determine:

- mass per unit area
- tensile strength and elongation
- fines content
- penetration
- flow
- low temperature flexibility
- water vapour permeability
- head of water
- dynamic indentation
- static indentation
- fatigue cycling
- effects of long-term heat ageing
- effects of long-term water exposure
- resistance to chisel impact
- resistance to aggregate indentation.

16 Investigations

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 8218 : 1998 *Code of practice for mastic asphalt roofing*

BS EN 1992-1-1 : 2004 + A1 : 2014 *Eurocode 2: Design of concrete structures – General rules and rules for buildings*
NA + A2 :14 to BS EN 1992-1-1 : 2004 + A1 : 2014 *UK National Annex to Eurocode 2: Design of concrete structures – General rules and rules for buildings*

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

EN ISO 14001 : 2015 *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.