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Agrément Certificate
94/3037
Product Sheet 1

AXTER ROOF WATERPROOFING MEMBRANES

EXCEL ROOF SYSTEM

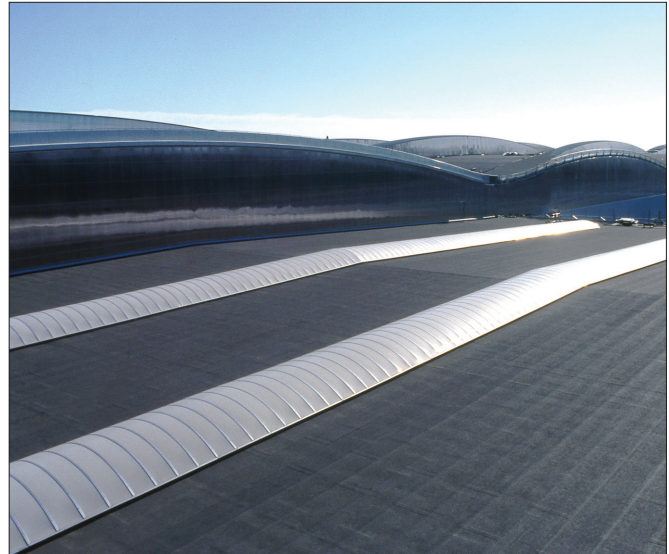
This Agrément Certificate Product Sheet⁽¹⁾ relates to the Excel Roof System, a reinforced polymer-modified self-finished waterproofing membrane, manufactured with Alpa⁽²⁾ mix binder, satisfactory for installation on flat, zero-pitched and pitched roofs.

(1) Hereinafter referred to as 'Certificate'.

(2) Alpa 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 moisture into a building (see section 6).

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

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

Resistance to foot traffic — the system will accept the limited foot traffic and loads associated with installation and maintenance (see section 9).

Durability — under normal service conditions the system will provide a durable roof waterproofing with a service life in excess of 25 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 Second issue: 6 March 2015

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



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

Requirement: B4(2)	External fire spread
Comment:	On suitable substructures the use of the system can enable a roof to be unrestricted under this Requirement. See section 7 of this Certificate.
Requirement: C2(b)	Resistance to moisture
Comment:	The system, including joints, will enable a roof to meet this Requirement. See section 6.1 of this Certificate.
Regulation: 7	Materials and workmanship
Comment:	The system is acceptable. See section 11.1 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 and 11.1 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 system, when applied to a suitable substructure, is regarded as having a low vulnerability under clause 2.8 ⁽¹⁾⁽²⁾ of this Standard. See sections 7.1 and 7.3 of this Certificate.
Standard: 3.10	Precipitation
Comment:	The system, including joints, will enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.2 ⁽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:	All comments given for this system under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾ . (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 system is acceptable. See section 11.1 and the <i>Installation</i> 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 6.1 of this Certificate.
Regulation: 36(b)	External fire spread
Comment:	On suitable non-combustible substructures, the use of the system will be unrestricted by 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 section: 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 the Excel Roof System provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.1 *Flat roofs and balconies*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 13707 : 2004. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

1 Description

1.1 Excel Roof System is a torch-applied, combined polyester and glassfibre (180 g·m⁻²) reinforced Alpa polymer-modified bitumen roof waterproofing membrane with either a ceramic granule or a mineral flake finished upper surface and a thermofusible thermoplastic film on the lower surface.

1.2 The system is manufactured to the following nominal dimensions:

thickness*	4 mm
roll width*	1 m
roll length*	8 m
weight*	5.4 kg·m ⁻² (mineral finish) or 6.0 kg·m ⁻² (ceramic finish)
roll weight*	43 kg (mineral finish) or 48 kg (ceramic finish).

1.3 The nominal physical characteristics of Excel Roof System are as follows:

tensile strength*(N per 50 mm)	
longitudinal	600
transverse	600
elongation at break* (%)	
longitudinal	35
transverse	35
low temperature flexibility*(°C)	-14
heat resistance* (°C)	110

1.4 Ancillary items for use with the system but outside the scope of this Certificate include:

- Excel Renfort — a bonded underlay with glass (90 g·m⁻²) reinforcement
- Hyranger SPOT ADH/S3V — a self-adhesive/heat-activated reinforced SBS polymer-modified bitumen membrane, with a macro-perforated film on the top surface and removable release paper to the underside and selvage
- 35 PY Reinforcing Strip — a polyester-reinforced elastomeric SBS membrane for detail reinforcement
- Vernis Seal — a coloured, quick-drying surface conditioner for preparation of the substrate prior to application of the system
- Vernis Antac ST — a primer for preparation of the substrate prior to the application of the system
- Antivap PY — a metal cored polyester-reinforced vapour control layer
- Vap IND — a self-adhesive vapour control layer with polyester foil surface
- Vap AL — an aluminium-cored, polyester-reinforced, torch-applied vapour control layer
- Vap AL SK — a self-adhesive, heat-activated, aluminium-cored vapour control layer
- Thermecran — a loose-laid perforated sheet for use as a venting layer and in partial bonding (subsequent layers are torch-applied)
- Hytherm ADH/BF/FM/EPS — warm roof thermal insulation installed as part of the system
- Hyra-Stick — polyurethane adhesive
- Mastic Hyrene — bitumen cold-bonding compound
- Excel Joint — a polyamide-reinforced membrane for use over linear movement joints (prefabricated junction pieces are also available)
- Excel Alu — an aluminium-surfaced membrane for use in detailing (eg at upstands)
- Starcoat R — a bitumen polyurethane single-component waterproofing resin for complex detailing
- Axtep — a mineral-surfaced polyester/glassfibre-reinforced torch-on sheeting for use as a walkway.

2 Manufacture

2.1 A laminate of glassfibre/polyester sheets is impregnated with bitumen to form a waterproof membrane.

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

- agreed with the manufacturer the quality control procedures and system 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 Ltd. has been assessed and registered as meeting the requirements of BS EN ISO 9001: 2008 and/or BS EN ISO 14001: 2004 by AFAQ (Certificate QUAL/1996/5190d).

3 Delivery and site handling

3.1 The membranes are delivered to site in rolls wrapped in paper on pallets which are shrink-wrapped in plastic. The roll sealing tape bears the product name and the BBA logo incorporating the number of this Certificate.

3.2 Individual rolls must be stored in an upright position on a clean, level surface and kept under cover.

3.3 Vernis Antac ST primer has a flashpoint of 23°C and is classified as 'highly flammable' and 'harmful' under *The Chemical (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP4)/Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) 2009*, and should be stored appropriately. The product wrapping bears the appropriate hazard warnings.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Excel Roof System.

Design Considerations

4 General

4.1 Excel Roof System is satisfactory for use as:

- a fully- or partially-bonded single-layer waterproofing for flat, zero-pitched or pitched roofs with limited access, or under heavy protection (eg concrete slab) on flat roofs with regular pedestrian traffic
- a repair/refurbishment medium for existing roofs as a complete single-layer overlay where appropriate
- part of a built-up specification, where necessary in conjunction with appropriate reinforced bitumen membranes to BS 8747 : 2007 and warm roof insulation on fully- or partially-bonded flat or pitched roofs with limited access, or under heavy protection (eg concrete slab) on flat roofs with regular pedestrian traffic.

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, additional protection to the membrane must be provided.

4.3 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 or direction of falls. Flat roofs are defined for the purpose of this Certificate as those with a pitch of 1:80 or less. Zero-pitched roofs are defined for the purpose of this Certificate as those having a finished fall which can vary between 0° and 0.7°. Pitched roofs are defined as those having falls in excess of 1:6.

4.4 Decks to which membranes are to be applied must comply with the relevant requirements of either BS 6229 : 2003 or BS 8217 : 2005 and, where appropriate, *NHBC Standards 2014, Chapter 7.1 Flat roofs and balconies*.

4.5 Insulation materials used in conjunction with the system must be:

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

4.6 On zero-pitched roofs it is particularly important to identify the correct drainage points to ensure that the drainage provided is effective.

5 Practicability of installation

The system is designed to be installed by competent roofing contractors experienced with this type of product.

6 Weathertightness



6.1 The system, including joints, when completely sealed and consolidated, will adequately resist the passage of moisture into a building and will enable a roof to comply with the requirements of the national Building Regulations:

England and Wales — Approved Document C, Requirement C2(b), Section 6

Scotland — Mandatory Standard 3.10, clauses 3.10.1 and 3.10.7

Northern Ireland — Regulation 28(b).

6.2 The membranes are impervious to water and, when used in the systems described, will give a waterproof roof capable of accepting minor structural movement without damage.

7 Properties in relation to fire



7.1 Test results indicate that the following systems will be designated as unrestricted by the national Building Regulations:

- 19 mm thick exterior grade plywood and one layer of Excel Roof System, fully bonded by torching
- 20 mm thick perlite insulation board (mechanically fixed) and one layer of fully-bonded Excel Roof System, a profiled metal deck and an aluminium-cored vapour control layer.



7.2 When used for flats roofs with one of the surface finishes defined in table A5 of Appendix A of the Building Regulations (England and Wales) or technical Booklet E table 4.6 Part IV of the Building Regulations (Northern Ireland), and listed below, the roof is deemed to be of designation AA:

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



7.3 The designation of other specifications 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 UKAS-accredited laboratory or an independent consultant with appropriate experience.

8 Resistance to wind uplift

The adhesion of the bonded system to decking or to bituminous felt is sufficient to resist the effects of wind suction, elevated temperatures and thermal shock conditions likely to occur in practice.

9 Resistance to foot traffic

The system can accept, without damage, the limited foot traffic and light concentrated loads associated with installation and maintenance operations. Where traffic in excess of this is envisaged, additional protection to the membrane in accordance with the manufacturer's instructions must be provided. However, reasonable care should be taken to avoid puncture by sharp objects or concentrated loads.

10 Maintenance



The installed membranes should be the subject of regular annual inspections and roof drains kept clear, as is good practice with all roofing membranes.

11 Durability



11.1 Excel Roof System, when subjected to normal conditions of exposure and use, will retain its integrity for a period of at least 25 years.

11.2 With the mineral surfaced membrane, localised loss of the mineral surfacing may occur after some years in areas where complex detailing of the roof design is incorporated.

Installation

12 General

12.1 Deck surfaces on which the system is to be laid must be dry, clean and free from sharp projections such as nail heads and concrete nibs.

12.2 Installation of the system is carried out using standard methods for laying reinforced bituminous membranes and in accordance with the Certificate holder's instructions, the relevant clauses of BS 8000-4 : 1989 and BS 8217 : 2005, and this Certificate.

12.3 The system should not be laid in rain, snow or heavy fog, nor if the temperature falls below -5°C .

12.4 At falls in excess of 1:6 normal precautions against slippage must be taken, and provision made where necessary for mechanical fixings as required by BS 8217 : 2005. To prevent damage to the roof covering, one of the appropriate surface finishes referred to in clause 6.12 of the code must be used.

12.5 On completion of the roof the top layer may have a surface finish applied in accordance with BS 8217 : 2005, clause 8:19. Surface finishes in the Code of Practice include:

- stone aggregate in dressing compound
- precast concrete paving slabs
- proprietary tiles on bonding compound.

12.6 Further surface protection is not required where the system has either a mineral or ceramic finish and is used on roofs with limited access.

13 Procedure

Fully-bonded applications

13.1 Bonding is achieved by melting the lower surface by torching, and pressing the membrane down. Care must be taken not to overheat the coating.

13.2 Side laps must be a minimum of 60 mm and end laps a minimum of 100 mm. A bead of molten material must exude from all laps to indicate a satisfactory seal. This bead is levelled out using a heated, rounded-tip trowel.

Partially-bonded applications

13.3 A layer of Thermecran should be loose-laid edge to edge, over the substrate. This layer should be fully torch bonded to the substrate at the perimeter of the roof area and around any upstands. Alternatively, the Thermecran membrane can be omitted and the torching lines on the underside of the membrane heated to a molten state in order to achieve a partial bond.

13.4 Excel is fully torch welded onto the perforated layer ensuring that the bitumen seeps regularly into the perforations.

Repair

13.5 Damage is repaired by cleaning the affected area, locally removing the ceramic-granule or mineral-flake finish, and torch welding a patch of the membrane over it.

Technical Investigations

14 Tests

14.1 An assessment was made of test data to determine:

- tensile strength and elongation
- dimensional stability
- static indentation of perlite and EPS
- dynamic indentation on EPS
- resistance to slippage
- resistance to fatigue
- low temperature flexibility
- heat resistance
- tensile joint strength
- resistance to air pressure
- peel resistance
- effects of heat ageing followed by resistance to fatigue, low temperature flexibility, heat resistance, tensile strength of joints and peel resistance
- effects of water soak followed by peel resistance
- effects of 180 day water soak at 60°C followed by shear resistance, peel resistance and resistance to leakage of joints.

in order to assess:

- effect of substrate movement
- resistance to wind
- effect of temperature
- durability.

14.2 An assessment was made of fire test reports.

14.3 An assessment was made of CSTB's wind uplift test data.

15 Investigations

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

15.2 The installation instructions were evaluated in order to assess the practicability of installation.

15.3 A visit to a site in progress was carried out to investigate installation procedures.

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 8747 : 2007 *Reinforced bitumen membranes (RBMs) for roofing — Guide to selection and specification*
- BS EN 13707 : 2004 *Flexible sheets for waterproofing — Reinforced bitumen sheets for roof waterproofing — Definitions and characteristics*
- BS EN ISO 9001 : 2008 *Quality management systems — Requirements*
- BS EN ISO 14001 : 2004 *Environmental management systems — Requirements with guidance for use*

Conditions of Certification

16 Conditions

16.1 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.

16.2 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.

16.3 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.

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

16.5 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.

16.6 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.