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**Agrément
Certificate
No 94/3037/C**

Designated by Government
to issue
European Technical
Approvals

EXCEL HR ROOF COVERING

Revêtement d'étanchéité
Dachabdichtungen

Product

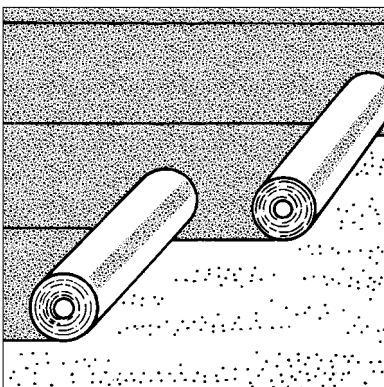
• THIS CERTIFICATE OF CONFIRMATION RELATES TO EXCEL HR ROOF COVERING, A REINFORCED POLYMER MODIFIED BITUMEN SHEETING.

- The membrane is available with either ceramic granule or mineral flake surface finishes.
- The membrane is torch applied, and is suitable for use as:

(a) a fully or partially bonded single-layer waterproofing on flat or pitched roofs with limited access

(b) a repair medium for existing roofs, ie as a complete single-layer overlay where appropriate.

- The product is manufactured in France by Société Axter, and marketed in the United Kingdom by Axter Ltd.



Confirmation of a French Avis Technique of the Centre Scientifique et Technique du Bâtiment (CSTB) issued to Société Axter, 21 Square Saint-Charles, 75583 Paris Cedex 12, France.

Building Regulations

1 The Building Regulations 1991 (England and Wales)

The Secretary of State has agreed with the British Board of Agrément the aspects of performance to be used by the BBA in assessing the compliance of roof waterproofing membrane with the Building Regulations. In the opinion of the BBA, Excel HR Roof Covering, if used in accordance with the provisions of this Certificate, will meet the relevant requirements.

Requirement:	B4(2)	External fire spread
Comment:		On flat roofs and with one of the surface finishes prescribed in Part iii of Table A5 of the Approved Document the roof shall be deemed to be of designation AA. For other situations see sections 10.1 to 10.3 of this Certificate.
Requirement:	C4	Resistance to weather and ground moisture
Comment:		Data examined for water resistance of the membranes indicate that the material meets the Requirement. See section 7.1 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		Excel HR is an acceptable material. See section 12.1 of this Certificate.

2 The Building Standards (Scotland) Regulations 1990 (as amended)

In the opinion of the BBA, Excel HR Roof Covering, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Technical Standards as listed below.

Regulation:	10	Fitness of materials
Standard:	B2	Selection and use of materials, fittings, components and other manufactured products
Comment:		Excel HR complies with this Standard.
Regulation:	12	Structural fire precautions
Standard:	D2.5	Separation of roofs and rooflights from boundaries
Standard:	D3.6	Roofs and rooflights of buildings ancillary to dwellings
Comment:		Test data to BS 476 : Part 3 : 1958 indicate that on suitable substructures the use of Excel HR will be unrestricted by the requirements of these Standards. See sections 10.1 and 10.4.
Regulation:	17	Preparation of sites and resistance to moisture
Standard:	G3.1	Resistance to precipitation
Comment:		Test data examined for water resistance on the membranes indicate that the use of Excel HR can enable a roof to satisfy the requirements of this Standard. See section 7.2 of this Certificate.

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3 The Building Regulations (Northern Ireland) 1990 (as amended 1991 and 1993)



In the opinion of the BBA, Excel HR Roof Covering, if used in accordance with the provisions of this Certificate, will satisfy the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		Excel HR is an acceptable material. See section 12.1 of this Certificate.
Regulation:	C4	Resistance to ground moisture and weather
Comment:		Data examined for water resistance of the membranes indicate that the use of Excel HR can enable a roof to satisfy the requirements of this Regulation. See section 7.2 of this Certificate.
Regulation:	E17	Roofs
Comment:		Data obtained from tests to BS 476 : Part 3 : 1958 indicate that on suitable substructures the use of Excel HR will enable a roof to be unrestricted under the requirements of these Regulations. See sections 10.1, 10.5 and 10.6 of this Certificate.

Technical Specification

4 Description

4.1 Excel HR is a torch-applied glass-fibre/polyester (180 gm^{-2}) reinforced ALPA (olefin copolymer) modified bitumen roof waterproofing membrane, with either a ceramic granule or mineral flake finished upper surface and a thermofusible thermoplastic film on the lower surface.

4.2 The product is manufactured to the nominal dimensions given in Table 1.

Table 1 Nominal dimensions

Dimensions	
thickness (mm)	4
width (m)	1
length (m)	8
weight (kgm^{-2}) ⁽¹⁾	5.4/6.0
roll weight (kg) ⁽¹⁾	43/48

(1) Dependent on mineral/ceramic finish used.

4.3 Other products for use with Excel HR include:
Excel Renfort — for use as a bonded underlay with a glass (90 gm^{-2}) reinforcement.

Vernis Antac — primer for preparation of substrate prior to application of membrane.

Axteq — a mineral surfaced polyester/glass-fibre reinforced torch-on sheeting, for use as a walkway.

Antivap PY — a metal cored polyester reinforced sheet, for use as a vapour control layer.

Thermecran — a loose-laid perforated sheet for use as a venting layer and in partial bonding. Subsequent layers are applied by torching.

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 upstands, etc).

4.4 Quality control checks are carried out on the raw materials and coating mass. Checks on the final product include:

low temperature flexibility
resistance to heat
tensile strength
elongation at break.

5 Delivery and site handling

5.1 Excel HR is 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 identification mark incorporating the number of this Certificate.

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

Design Data

6 General

6.1 Excel HR Roof Covering, when installed in accordance with this Certificate, is suitable as:

(a) fully or partially bonded single-layer waterproofing for flat or pitched roofs with limited access; or

(b) a repair medium for existing roofs, ie as a complete single-layer overlay where appropriate.

6.2 Excel HR is suitable for use, where appropriate, in detail work.

6.3 Limited access roofs are defined for the purpose of this Certificate as those roofs subjected only to pedestrian traffic for maintenance of the roof covering and cleaning of gutters, etc. Where traffic in excess of this is envisaged, special precautions, such as additional protection to the membrane, must be taken.

6.4 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. Flat roofs are defined for the purpose of this Certificate as those roofs having a minimum finished fall of 1:80. Pitched roofs are defined as those having falls in excess of 1:6.

6.5 Decks to which the product is to be applied must comply with the relevant requirements of BS 8217 : 1994, BS 6229 : 1982 and, where appropriate, NHBC Standards Chapter 7.1 or the Zurich Building Guarantees *Technical Manual*, Section 5, clause 5.9.3.14.

6.6 Insulation materials used in conjunction with the product must be:

- (a) as described in the relevant clauses of BS 8217 : 1994, or
- (b) the subject of a current BBA Certificate and be used in accordance with and within the limitations of that Certificate.

7 Weathertightness



7.1 Data examined confirm that the membrane, when completely sealed and consolidated, will adequately resist the passage of moisture to the inside of the building and so meet the requirements of Section 5.1 of Approved Document C4 of the Building Regulations 1991 (England and Wales).



7.2 Data examined confirm that the membrane, when completely sealed and consolidated, will adequately resist the passage of moisture to the inside of the building and will satisfy the requirements of Regulation 17 Standard G3.1 for compliance with the Building Standards (Scotland) Regulations 1990 (as amended) and Regulation C4 of the Building Regulations (Northern Ireland) 1990 (as amended 1991 and 1993).

7.3 The product is impervious to water and, when used in the systems described, will give a weathertight roofing capable of accepting minor structural movements without damage.

8 Resistance to wind uplift

Data examined indicate that the adhesion of the bonded systems to the decking, or to bituminous felt, is sufficient to resist the effects of wind suction, elevated temperature 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 Properties in relation to fire



10.1 When tested in accordance with BS 476 : Part 3 : 1958:

- (a) A system comprising 19 mm thick exterior grade plywood and one layer of Excel HR, fully bonded by torching, achieved EXT.F.AA rating.
- (b) A system comprising profiled metal deck, aluminium cored vapour control layer, 20 mm thick perlite insulation board (mechanically fixed) and one layer of Excel HR, fully bonded by torching, achieved EXT.F.AA rating.



10.2 When used for flat roofs with one of the surface finishes defined in Part iii of Table A5 of Appendix A of Approved Document B of the Building Regulations 1991 (England and Wales) (and listed below), the roof is deemed to be of designation AA.

Surface finishes:

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

10.3 The designation of other specifications should be confirmed by test or assessment in accordance with Clause A1 of Appendix A of Approved Document B of the Building Regulations 1991 (England and Wales).



10.4 The designation of specifications other than that contained in section 10.1 must be confirmed by testing to ensure conformity with Standards D2.5 and D3.6 for compliance with the Building Standards (Scotland) Regulations 1990 (as amended).



10.5 When used for flat roofs with one of the surface finishes given in Schedule 5 of the Building Regulations (Northern Ireland) 1990 (as amended 1991 and 1993), the roof should be considered to be of designation AA.


10.6 The designation for other specifications, for example when the system is used on combustible substrates, should be confirmed either by testing or by assessment by a NAMAS laboratory, BRE or an

independent consultant with appropriate experience.

11 Maintenance

In the event of damage, the sheets can be effectively repaired, after cleaning, with pieces of Excel HR, torch welded to the damaged area.

12 Durability

 12.1 Excel HR Roof Covering, when subjected to normal conditions of exposure and use, will retain its integrity for a period of at least 20 years.

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

Installation

13 General

13.1 Deck surfaces must be dry, clean and free from sharp projections such as nail heads, concrete nibs, etc.

13.2 Installation of these products is carried out using traditional methods for laying bituminous felts, in accordance with the manufacturer's instructions, the relevant clauses of BS 8217 : 1994, BS 6229 : 1982, BS 8000 : Part 4 : 1989 and, where appropriate, NHBC Standards Chapter 7.1 or the Zurich Building Guarantees *Technical Manual*, Section 5, clause 5.9.3.14.

13.3 The product should not be laid in rain, snow or heavy fog, nor if the temperature falls below -5°C . When installing the membranes below 5°C precautions should be taken against formation of condensation on the substrate.

13.4 At falls in excess of 1:6 the normal precautions against slippage and the provision for mechanical fixings as required by BS 8217 : 1994 should be observed.

13.5 If the roof is likely to be subjected to uncontrolled pedestrian access, the substructure must meet the requirements of clause 3.9 of BS 8217 : 1994, and one of the surface finishes (1, 2 or 3) described in clause 3.14.1 of the code must be used to prevent damage to the roof covering.

13.6 When used for remedial work, existing waterproofing layers must be made sound and existing surface finishes (eg surface dressing, etc) must be removed and then primed.

13.7 Excel HR, having either a mineral or ceramic surface finish, when used on roofs with limited access, requires no further surface protection.

14 Procedure

Fully bonded applications

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

14.2 Side laps should 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 and which should be levelled out using a heated, rounded-tip trowel.

Partially bonded applications

14.3 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.

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

Technical Investigations

The following is a summary of the technical investigations carried out on Excel HR Roof Covering.

15 Tests

Technical data from tests carried out by and for CSTB, which led to the issue of Avis Technique 5/90-797, are summarised in Tables 2 to 4. All data were evaluated in the context of UK roofing practice and building regulations.

Table 2 Coating mass properties

Test (units)	Method*	Mean result
Ring and ball softening temperature ($^{\circ}\text{C}$)	MOAT 31 : 6G	
unaged		≥ 140
heat aged ⁽¹⁾		≥ 140
Low temperature flexibility ($^{\circ}\text{C}$)	MOAT 31 : 6D	
unaged		-15
heat aged ⁽¹⁾		-10

(1) Heat aged 70°C for 180 days.

*The test document is detailed in the *Bibliography*. Numbers in the table refer to sections/parts of the document.

Table 3 Physical properties — directional

Test (units)	Method*	Mean results	
		Long ⁽¹⁾	Trans ⁽²⁾
Tensile strength (N/50 mm)	MOAT 31 : 6C	785	720
Elongation at break (%)	MOAT 31 : 6C	31.3	32.5
Dimensional stability (%)	MOAT 27 : 5.1.6	-0.28	-0.19

(1) Longitudinal direction

(2) Transverse direction.

*The test documents are detailed in the *Bibliography*. Numbers in the table refer to the sections/parts of the various documents.

Table 4 Service performance

Test (units)	Method*	Mean result
Static indentation (kg)	NFP 84-352	
perlite		28 ⁽¹⁾
EPS		25 ⁽¹⁾
Dynamic indentation	MOAT 27 : 5.1.9	
EPS		I ₄
Resistance to slippage	MOAT 27 : 5.1.7	no movement
Resistance to fatigue	MOAT 31 : 6K	
unaged		satisfactory
heat aged ⁽²⁾		satisfactory
Low temperature flexibility (°C)	MOAT 31 : 6D	
unaged		-15
heat aged ⁽³⁾		-10
Heat resistance (°C)	MOAT 31 : 6E	
unaged		145
heat aged ⁽³⁾		145
Tensile joint strength (N/50 mm)	MOAT 27 : 5.2.2	
unaged		695
heat aged ⁽²⁾		734
Air pressure	MOAT 27 : 5.2.1	no leakage at 10 kPa
Peel resistance (N/50 mm) substrate felt	MOAT 27 : 5.1.3	
unaged		42.0
heat aged ⁽²⁾		132.5
water soak ⁽⁴⁾		109.5

(1) Result equivalent to MOAT 27 : 5.1.10 rating of I₄

(2) Heat aged for 28 days at 80°C

(3) Heat aged for 90 days at 70°C

(4) Water soak for 7 days at 60°C

*The test documents are detailed in the *Bibliography*. Numbers in the table refer to the sections/parts of the various document.

16 Other investigations

16.1 An examination was made of reports of fire tests carried out to BS 476 : Part 3 : 1958.

16.2 The manufacturing process was assessed, including the method adopted for quality control, and details were obtained of the quality and composition of the materials used.

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

16.4 An examination of the CSTB assessment of wind uplift data was made.

Bibliography

BS 476 *Fire tests on building materials and structures*

Part 3 : 1958 *External fire exposure roof test*

BS 6229 : 1982 *Code of practice for flat roofs with continuously supported coverings*

BS 8000 *Workmanship on building sites*

Part 4 : 1989 *Code of practice for waterproofing*

BS 8217 : 1994 *Code of practice for built-up felt roofing (supersedes CP 144 : Part 3)*

MOAT No 27 : 1983 *General Directive for the Assessment of Roof Waterproofing Systems*

MOAT No 31 : 1984 *Special Directives for the Assessment of Reinforced Homogeneous Waterproof Coverings of Styrene-Butadiene-Styrene (SBS) Elastomer Bitumen*

NFP 84-352 *Étanchéite — Revêtements*

d'étanchéite — Essai de poinçonnement statique

— Déc 1988 (Waterproofing — Waterproofing

Membranes — Test for static point loading — Dec 1988).

Conditions of Certification

17 Conditions

17.1 The quality of materials and the method of manufacture have been examined and found satisfactory by the BBA and must be maintained to this standard during the period of validity of this Certificate. This Certificate will remain valid for an unlimited period provided that:

- (a) the specification of the products is unchanged, and
- (b) the product remains the subject of a CSTB Avis Technique.

17.2 Where reference is made in this Certificate to any Act of Parliament, Regulation made thereunder, Statutory Instrument, Code of Practice, British Standard, manufacturer's instruction or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this Certificate.

17.3 In granting this Certificate, the BBA makes no representation as to the presence or absence of patent rights subsisting in the products and/or as to the legal right of Axter Ltd to market, install or maintain the products.

17.4 It should be noted that any recommendations relating to the safe use of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do not purport in any way to re-state the requirements of the Health and Safety at Work etc Act 1974, or of any other statutory or Common Law duties of care, or of any duty of care which may in the future exist; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any other present or future statutory or Common Law duties of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage incurred in respect of personal injury arising as a direct or indirect result of the use of this product.



In the opinion of the British Board of Agrément, Excel HR Roof Covering is fit for its intended use if used as set out in this Certificate. Certificate No 94/3037/C is accordingly awarded to Axter Ltd.

On behalf of the British Board of Agrément

Date of issue: 5th July 1994

Director

Recreated in QX 29.11.00 (SM)