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Agrément Certificate  
**15/5222**  
Product Sheet 3

## AXTER WATERPROOFING SYSTEMS

### HYRANGER SYSTEMS

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Hyranger<sup>(2)</sup> Systems, SBS modified bitumen membranes for use as fully or partially torch-bonded, multi-layer waterproofing systems on flat roofs with limited or pedestrian access or pitched roofs with limited access, or as loose-laid and ballasted waterproofing systems on flat roofs with limited or pedestrian access.

(1) Hereinafter referred to as 'Certificate'.

(2) Hyranger 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

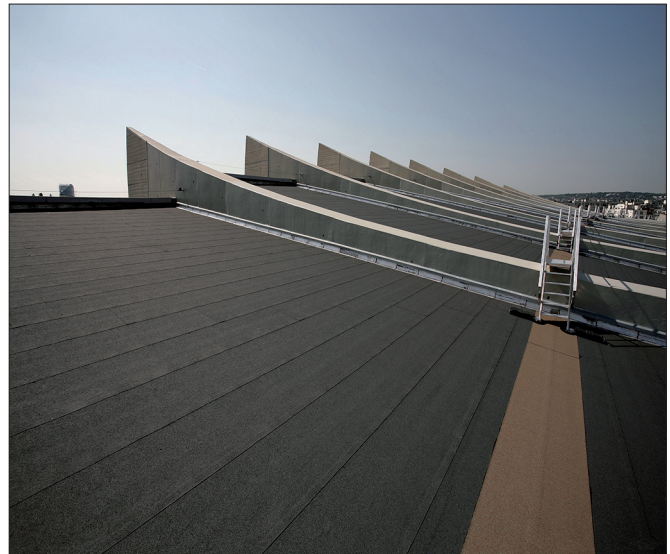
**Weathertightness** — the systems will resist the passage of moisture into the building (see section 6).

**Properties in relation to fire** — the systems, when used in a suitable specification, will enable a roof to be unrestricted under the Building Regulations (see section 7).

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

**Resistance to mechanical damage** — 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 30 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

A handwritten signature in black ink, appearing to read 'John Albon'.

Date of First issue: 22 September 2015

John Albon — Head of Approvals  
Construction Products

A handwritten signature in black ink, appearing to read 'Claire Curtis-Thomas'.

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](http://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, Hyranger Systems, 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)

<b>Requirement:</b> B4(2)	<b>External fire spread</b>
<b>Comment:</b>	Tests indicate that on suitable substructures use of the systems will enable a roof to be unrestricted under this Requirement. See section 7 of this Certificate.
<b>Requirement:</b> C2(b)	<b>Resistance to moisture</b>
<b>Comment:</b>	The systems will enable a roof to meet this Requirement. See section 6.1 of this Certificate.
<b>Regulation:</b> 7	<b>Materials and workmanship</b>
<b>Comment:</b>	The systems are acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.



## The Building (Scotland) Regulations 2004 (as amended)

<b>Regulation:</b> 8(1)(2)	<b>Durability, workmanship and fitness of materials</b>
<b>Comment:</b>	The systems can contribute to a construction meeting this Regulation. See sections 10 and 11.1 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> 9	<b>Building standards applicable to construction</b>
<b>Standard:</b> 2.8	<b>Spread from neighbouring buildings</b>
<b>Comment:</b>	Tests indicate that the systems, when applied to suitable substructures, are regarded as having a low vulnerability under clause 2.8.1 <sup>(1)(2)</sup> of this Standard. See sections 7.1, 7.2 and 7.4 of this Certificate.
<b>Standard:</b> 3.10	<b>Precipitation</b>
<b>Comment:</b>	The use of the systems will enable a roof to satisfy the requirements of this Standard, with reference to clauses 3.10.1 <sup>(1)(2)</sup> and 3.10.7 <sup>(1)(2)</sup> . See section 6.1 of this Certificate.
<b>Standard:</b> 7.1(a)	<b>Statement of sustainability</b>
<b>Comment:</b>	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.
<b>Regulation:</b> 12	<b>Building standards applicable to conversions</b>
<b>Comment:</b>	All comments given for the systems under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 <sup>(1)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



## The Building Regulations (Northern Ireland) 2012 (as amended)

<b>Regulation:</b> 23(a)(i)(iii)(b)(i)	<b>Fitness of materials and workmanship</b>
<b>Comment:</b>	The systems are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> 28(b)	<b>Resistance to moisture and weather</b>
<b>Comment:</b>	The systems will enable a roof to satisfy the requirements of this Regulation. See section 6.1 of this Certificate.
<b>Regulation:</b> 36(b)	<b>External fire spread</b>
<b>Comment:</b>	Tests indicate that 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) 2007

Information in this Certificate may assist the client, Principal Designer/CDM co-ordinator, designer and contractors 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 2014

NHBC accepts the use of Hyranger Systems, provided they are 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 systems, in accordance with harmonised European Standard EN 13707 : 2013. An asterisk (\*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

## 1 Description

1.1 Hyranger Systems consist of the following SBS modified bitumen membranes:

### Hyranger membranes

- Hyranger 25/25 RE — an underlay with a 50 g·m<sup>-2</sup> glass reinforcement and a sand finish on both faces
- Hyranger 40 AR — a cap sheet for exposed areas of the system with a 50 g·m<sup>-2</sup> glass reinforcement, a mineral finish on the upper face and a sand finish on the lower face
- Hyranger 40 AR FP — a torch-on cap sheet for exposed areas of the system with a 50 g·m<sup>-2</sup> glass reinforcement, a mineral finish on the upper face and a thermofusible film finish on the lower face
- Hyranger 40 PY AR — a torch-on cap sheet for exposed areas of the system with a 180 g·m<sup>-2</sup> polyester reinforcement, a mineral finish on the upper face and a sand finish on the lower face
- Hyranger 40 PY FP — a torch-on cap sheet for exposed areas of the system with a 180 g·m<sup>-2</sup> polyester reinforcement, a mineral finish on the upper face and a thermofusible film finish on the underside
- Hyranger 250 AR — a cap sheet for exposed areas of the system with a 250 g·m<sup>-2</sup> polyester reinforcement, a mineral finish on the upper face and a sand finish on the lower face
- Hyranger CPV RE — an underlay with 120 g·m<sup>-2</sup> polyester reinforcement and a sand finish on both surfaces
- Hyranger 25 TS — a torch-on underlay with a 50 g·m<sup>-2</sup> glass reinforcement, a sand finish on the upper face and a thermofusible film on the lower face
- Hyranger 25/25 TS — a torch-on underlay with a 50 g·m<sup>-2</sup> glass reinforcement, a sand finish on the upper face and thermofusible film finish on the lower face
- Hyranger TS — a torch-on underlay with a 50 g·m<sup>-2</sup> glass reinforcement, a macroperforated film and a sand finish on the upper face, and a thermofusible film on the lower face
- Hyranger TS (sanded) — a partial-bond underlay with a 50 g·m<sup>-2</sup> glass reinforcement, a sand finish on the upper face, and a macroperforated film and a sand finish on the lower face
- Hyranger TS CPV — a torch-on underlay with a 120 g·m<sup>-2</sup> polyester reinforcement, a sand finish on the upper face and a thermofusible film on the lower face
- Hyranger TS CPV (sanded) — a partial-bond underlay with a 120 g·m<sup>-2</sup> polyester reinforcement, a sand finish on the upper face, and a macroperforated film and a sand finish on the lower face
- Hyranger TS PY — a torch-on intermediate layer with a 180 g·m<sup>-2</sup> polyester reinforcement, a sand finish on the upper face and a thermofusible film on the lower face
- Hyranger TS PY (sanded) — a torch-on intermediate layer with a 180 g·m<sup>-2</sup> polyester reinforcement, a sand finish on the upper face, and a macroperforated film and a sand finish on the lower face
- Hyranger TS 180 PY — a torch-on intermediate layer with a 180 g·m<sup>-2</sup> polyester reinforcement, a macroperforated film on the upper face and a thermofusible film on the lower face
- Hyranger Spot ADH — a self-adhesive underlay membrane with a 120 g·m<sup>-2</sup> polyester reinforcement, a macroperforated film and a sand finish on the upper face, and a silicone release film on the lower face

### Matflex membranes

- Matflex VV — a partial-bond underlay with a 50 g·m<sup>-2</sup> glass reinforcement, a sand finish on the upper face, and a macroperforated film and a sand finish on the lower face
- Matflex CPV — a partial-bond underlay with a 120 g·m<sup>-2</sup> polyester reinforcement, a sand finish on the upper face, and a macroperforated film and a sand finish on the lower face
- Matflex PY — a partial-bond intermediate layer with a 180 g·m<sup>-2</sup> polyester reinforcement, a sand finish on the upper face, and a macroperforated film and a sand finish on the lower face

### Force membranes

- Force 3000 Trafic NT — a torch-on cap sheet with a 180 g·m<sup>-2</sup> polyester reinforcement, a mineral finish on the upper face and a thermofusible film on the lower face
- Force 4000 Trafic NT — a torch-on cap sheet with a 250 g·m<sup>-2</sup> polyester reinforcement, a mineral finish on the upper face and a thermofusible film on the lower face
- Force 4000 Trafic SP NT — a torch-on cap sheet with a 180 g·m<sup>-2</sup> polyester reinforcement, a mineral finish on the upper face and a thermofusible film on the lower face
- Force 4000 S — a torch-on cap sheet with a 180 g·m<sup>-2</sup> polyester reinforcement, a mineral finish on the upper face and a thermofusible film on the lower face
- Force 4000 Dalle — a torch-on intermediate layer with a 180 g·m<sup>-2</sup> polyester reinforcement and a thermofusible film on both faces.

1.2 The membranes are manufactured to the nominal characteristics given in Tables 1 to 3.

Table 1 Nominal characteristics — Hyranger membranes

Characteristic (unit)	Hyranger 25/25	Hyranger 40 AR	Hyranger 40 AR FP
Thickness (mm)	2.65	2.85	2.70
Roll width (m)	1	1	1
Roll length (m)	10	10	10
Roll weight (kg)	34	44	42
Watertightness	Pass	Pass	Pass
Tensile strength* (N per 50 mm)			
longitudinal	250	250	250
transverse	150	150	150
Elongation at break* (%)			
longitudinal	3	3	3
transverse	3	3	3
Nail tear* (N)			
longitudinal	80	–	–
transverse	80	–	–
Low temperature flexibility* (°C)	≤ –16	≤ –16	≤ –16
Flow resistance* (°C)	100	100	100
Dimensional stability (%)	≤ 0.1	≤ 0.1	≤ 0.1
Impact* (mm)	500	–	–
Static loading* (kg)			
(soft substrate A)	–	–	–
(hard substrate B)	–	–	–
Characteristic (unit)	Hyranger 40 PY AR	Hyranger 40 PY FP	Hyranger 250 AR
Thickness (mm)	3.20	3.20	3.7
Roll width (m)	1	1	1
Roll length (m)	10	10	8
Roll weight (kg)	48	48	45
Watertightness	Pass	Pass	Pass
Tensile strength* (N per 50 mm)			
longitudinal	750	750	900
transverse	750	750	900
Elongation at break* (%)			
longitudinal	35	35	45
transverse	35	35	45
Nail tear* (N)			
longitudinal	–	–	–
transverse	–	–	–
Low temperature flexibility* (°C)	≤ –16	≤ –16	≤ –16
Flow resistance* (°C)	100	100	100
Dimensional stability (%)	≤ 0.3	≤ 0.3	≤ 0.5
Impact* (mm)	–	–	–
Static loading* (kg)			
(soft substrate A)	–	–	–
(hard substrate B)	–	–	–
Characteristic (unit)	Hyranger CPV RE	Hyranger 25 TS	Hyranger 25/25 TS
Thickness (mm)	2.30	2.65	2.65
Roll width (m)	1	1	1
Roll length (m)	15	10	10
Roll weight (kg)	40	37	37
Watertightness	Pass	Pass	Pass
Tensile strength* (N per 50 mm)			
longitudinal	400	250	250
transverse	275	150	150
Elongation at break* (%)			
longitudinal	15	3	3
transverse	15	3	3

Continued

Nail tear* (N)			
longitudinal	–	80	80
transverse	–	80	80
Low temperature flexibility* (°C)	≤ –16	≤ –16	≤ –16
Flow resistance* (°C)	100	100	100
Dimensional stability (%)	≤ 0.3	≤ 0.1	≤ 0.1
Impact* (mm)	700	500	500
Static loading* (kg)			
(soft substrate A)	10	–	–
(hard substrate B)	–	5	5
Characteristic (unit)	Hyranger TS/ Hyranger TS (sanded)	Hyranger TS CPV/ Hyranger TS CPV (sanded)	Hyranger TS PY/ Hyranger TS PY (sanded)
Thickness (mm)	2.80	2.70	2.80
Roll width (m)	1	1	1
Roll length (m)	10	10	10
Roll weight (kg)	35/36	30	29
Watertightness	Pass	10	Pass
Tensile strength* (N per 50 mm)			
longitudinal	250	400	700
transverse	150	275	440
Elongation at break* (%)			
longitudinal	3	15	25
transverse	3	15	25
Nail tear* (N)			
longitudinal	80	–	–
transverse	80	–	–
Low temperature flexibility* (°C)	≤ –16	≤ –16	≤ –16
Flow resistance* (°C)	100	–	–
Dimensional stability (%)	≤ 0.1	≤ 0.3	≤ 0.3
Impact* (mm)	500	700	1000
Static loading* (kg)			
(soft substrate A)	–	10	20
(hard substrate B)	–	–	–
Characteristic (unit)	Hyranger TS 180 PY	Hyranger Spot ADH	
Thickness (mm)	3.15	2.70	
Roll width (m)	1	1	
Roll length (m)	10	10	
Roll weight (kg)	35	32	
Watertightness	Pass	Pass	
Tensile strength* (N per 50 mm)			
longitudinal	700	450	
transverse	550	275	
Elongation at break* (%)			
longitudinal	35	15	
transverse	35	15	
Nail tear* (N)			
longitudinal	–	–	
transverse	–	–	
Low temperature flexibility* (°C)	≤ –16	≤ –16	
Flow resistance* (°C)	–	–	
Dimensional stability (%)	≤ 0.5	≤ 0.3	
Impact* (mm)	1000	700	
Static loading* (kg)			
(soft substrate A)	20	10	
(hard substrate B)	–	–	

*Table 2 Nominal characteristics — Matflex membranes*

Characteristic (unit)	Matflex W	Matflex CPV	Matflex PY
Thickness (mm)	2.70	2.70	2.70
Roll width (m)	1	1	1
Roll length (m)	10	8	10
Roll weight (kg)	31	30	30
Watertightness	Pass	Pass	Pass
Tensile strength* (N per 50 mm)			
longitudinal	400	400	700
transverse	300	350	700
Elongation at break* (%)			
longitudinal	3	15	35
transverse	3	15	35
Nail tear* (N)			
longitudinal	150	–	350
transverse	120	–	350
Low temperature flexibility* (°C)	≤ -16	≤ -16	≤ -16
Flow resistance (°C)	100	100	100
Dimensional stability (%)	≤ 0.5	≤ 0.5	≤ 0.5
Impact* (mm)	500	500	1000
Static loading* (kg) (soft substrate A)	5	15	20

*Table 3 Nominal characteristics — Force/Force Dalle membranes*

Characteristic (unit)	Force 3000 Trafic NT	Force 4000 Trafic NT	Force 4000 Trafic SP NT	Force 4000 S	Force 4000 Dalle
Thickness (mm)	3.20	4.00	3.50	3.90	4
Roll width (m)	1	1	1	1	1
Roll length (m)	8	8	8	8	8
Roll weight (kg)	37	40	38	44	37
Watertightness	Pass	Pass	Pass	Pass	Pass
Tensile strength* (N per 50 mm)					
longitudinal	750	900	700	600	700
transverse	650	900	450	600	600
Elongation at break* (%)					
longitudinal	35	45	45	35	35
transverse	35	50	45	35	35
Nail tear* (N)					
longitudinal	–	250	–	–	180
transverse	–	300	–	–	230
Low temperature flexibility* (°C)	≤ -16	≤ -16	≤ -16	≤ -16	≤ -16
Flow resistance* (°C)	90	90	90	100	100
Dimensional stability (%)	≤ 0.3	≤ 0.5	–	≤ 0.3	≤ 0.5
Impact* (mm)	1250	1750	1500	1750	2000
Static loading* (kg) (soft substrate A)	20	20	20	20	20
Tensile strength of joint* (N per 50 mm)					
selvedge	650	900	450	600	600
end joint	750	900	700	600	700

1.3 Topfix FMP (sanded) and Topfix FMP PY (sanded), SBS modified bitumen mechanically-fastened underlayers which are covered in Product Sheet 2 of this Certificate, can be used in conjunction with the Hyranger Systems membranes.

1.4 Primers for use with the systems are:

- Vernis Antac — a solvent-based bitumen primer
- Vernis Antac ST — a solvent-based, quick-drying, bitumen primer
- Vernis Antac GC — a solvent-based elastomeric bitumen primer
- Vernis Seal — a coloured quick-drying primer.

1.5 Ancillary items which can be used with the membranes, but which are outside the scope of this Certificate, include:

- additional Axter roofing membranes which can be used in conjunction with the Force Dalle membranes — Excel (also known as Alpal Décor CPV), Arma CPV, Topaz 25, Armalu Paxalpha PB 4000 Cuivre, Paxalpha PB Copper, Paxinox and Topflam FMP (sanded)
- Axtex Caminaxter — a polyester-reinforced, SBS modified bitumen membrane with ceramic granule finish, for use where a walkway across the exposed roofing membrane is required
- Hyranger 35 PY Reinforcement Strip
- Thermecran — a perforated membrane for use in partially-bonded applications
- Planivent — a perforated membrane for use in partially-bonded applications
- Axter adjustable or fixed height paving and timber decking support system
- Dalle Ceramic — a specialist range of ceramic pavers for use with the Axter support system
- MAT 50 — a 50 g·m<sup>-2</sup> glassfibre protection or separation layer for optional use under heavy protection or paving slabs on supports
- MAT 100 — a 100 g·m<sup>-2</sup> glassfibre protection or separation layer for optional use under heavy protection or paving slabs on supports
- Axter vapour control layers — VAP AL, VAP AL SK, Hyranger Spot ADH, Force SA, Vap IND, SK Vap, Stickflex VV 50, Armalu, Armalu CPV, Alphardoise, Alphardoise CPV, Antivap and Vap Foil
- Hytherm ADH/BF/EPS — thermal insulation
- Hyra-Stik — cold-applied liquid polyurethane adhesive for installing EPS, PUR and PIR insulation boards
- Mastic Hyrene — a bituminous adhesive for use in partially bonding membranes to concrete substrates
- Starcoat liquid membranes — cold-applied liquid resins for complex detailing (covered by BBA Certificate 13/5031)
- Excel Joint and Excel Park — a polyamide reinforced elastomeric membrane and jointing system for movement and expansion joints including prefabricated junction pieces (Inter-L and Inter-R)
- prefabricated accessories — rainwater outlets, leaf guards, SVP covers, cable penetration units, hot and cold pipe penetration units, Ax-trims and termination bars.

## 2 Manufacture

2.1 The membranes are manufactured by saturating and coating the reinforcement with SBS (styrene-butadiene-styrene) modified bitumen and calendaring to the correct thickness.

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 : 2008 and EN ISO 14001 : 2004 by AFAQ (Certificates QUAL/1996/5190.10 and 2011/40665 respectively).

## 3 Delivery and site handling

3.1 The membranes are delivered to site in rolls with labels bearing the product name, roll dimensions, production date, batch number, Certificate holder's name and the BBA logo incorporating the number of their corresponding Certificate.

3.2 Rolls should be stored upright on a clean, level surface and kept dry, away from excessive heat and under cover.

3.3 The primers are classified under the *Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) 2009* and bear the appropriate hazard warning label. When storing, extremes of temperature must also be avoided. The flashpoints and hazard warning classifications are given in Table 4.

Table 4 Flashpoints and hazard classification

Material	Flashpoint (°C)	Classification
Vernis Antac	28	Harmful, Flammable
Vernis Antac ST	10	Harmful, Highly flammable
Vernis Antac GC	28	Harmful, Flammable
Vernis Seal	-4	Irritant, Highly flammable

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Hyranger Systems.

### Design Considerations

#### 4 General

4.1 Hyranger Systems are for use as loose-laid and ballasted waterproofing systems on flat roofs with limited or pedestrian access, or as fully or partially torch-bonded multi-layer waterproofing systems on flat roofs with limited or pedestrian access or on pitched roofs with limited access.

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 and cleaning of gutters etc. Pedestrian access roofs are defined for the purposes of this Certificate as those allowing unrestricted foot traffic but not subject to vehicular traffic. Where pedestrian access is envisaged, additional protection to the membrane must be provided (see section 9).

4.3 Flat roofs are defined for the purpose of this Certificate as those having a minimum finished fall of 1:80. For design purposes, twice the minimum finished fall should be assumed, unless a detailed analysis of the roof is available, including such features as overall and local deflection and direction of falls. Pitched roofs are defined as those having a fall greater than 1:6.

4.4 Decks to which the 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.


4.5 Insulation systems or materials used in conjunction with the membranes must be either:

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

#### 5 Practicability of installation


The systems are designed to be installed by a competent roofing contractor experienced with these types of systems.

#### 6 Weathertightness


 6.1 The systems will resist minor structural movements and the passage of water and moisture to the inside of the building and so enable a roof to comply with the relevant requirements of the national Building Regulations.

6.2 The systems are impervious to water and, when used in one of the build-ups described, will achieve a weathertight roof capable of accepting minor structural movement without damage.

#### 7 Properties in relation to fire

 7.1 When tested to CEN/TS 1187 : 2012, Test 4, a system comprising a 18 mm OSB substrate with a bonded layer of Hyranger 40 PY FP achieved a classification of B<sub>ROOF</sub>(t4) in accordance with BS EN 13501-5 : 2005.

7.2 The systems, when protected by an inorganic covering (eg gravel or paving slabs) listed in the Annex of Commission Decision 2000/553/EC, can be considered to be unrestricted under the various national Building Regulations.

 7.3 Exposed areas of the capsheet, when used with one of the surface finishes detailed in Approved Document B, Appendix A, Table A5, part iii (England and Wales) and Technical Booklet E, Table 4.6, part iv (Northern Ireland) (listed below), would be deemed to be unrestricted:

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





7.4 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

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

## 8 Resistance to wind uplift

8.1 The systems, when used within a suitable specification, will adequately resist the effects of wind uplift likely to occur in practice.

8.2 In loose-laid and ballasted systems the precise ballast requirements should be calculated in accordance with the relevant parts of BS EN 1991-1-4 : 2005 and its UK National Annex.

## 9 Resistance to mechanical damage

9.1 The systems can accept the limited foot traffic and light concentrated loads associated with installation and maintenance. Reasonable care should be taken to avoid puncture of the systems by sharp objects or concentrated loads. Where traffic in excess of this is envisaged, such as for maintenance of lift equipment or in pedestrian areas, suitable protection, for example, using concrete slabs supported on an Axter support system, must be used.

9.2 When used over construction or expansion joints, the systems can accommodate without damage the minor structural movement likely to occur under normal service conditions.

## 10 Maintenance



Roofs covered with the systems must be the subject of annual inspections to ensure continued performance.

## 11 Durability



11.1 The systems will have a service life in excess of 30 years.

11.2 Exposed cap sheets may suffer some localised loss of mineral/ceramic surfacing in areas where complex detailing of the roof design is incorporated.

# Installation

## 12 General

12.1 Installation must be carried out in accordance with the relevant clauses of BS 8000-4 : 1989 and BS 8217 : 2005, the Certificate holder's instructions and this Certificate.

12.2 Substrates to which the systems are to be applied must be sound, dry and clean, and free from sharp projections such as nail heads and concrete nibs.

12.3 Installation should not be carried out during inclement weather (eg rain, fog or snow), nor when the temperature is below 5°C, unless suitable precautions against surface condensation are taken.

12.4 If the roof is likely to be subjected to uncontrolled pedestrian access, the substructure must meet the requirements of BS 8217 : 2005, and, to prevent damage to the roof covering if exposed, one of the appropriate surface finishes referred to in Clauses 8.19 and 9.2 of the Code, or alternatively Axter Caminaxter membrane, must be used.

## 13 Procedure

13.1 The membranes are installed with torch bonded joints with 60 mm side laps and 100 mm end laps. A bead of molten material must exude from all laps to indicate a satisfactory seal.

13.2 The membranes must always be installed with end laps staggered by a minimum of 300 mm, in such a manner that no counter-seams are made in the direction of outlets, and joints in a layer are staggered by a minimum of 100 mm in relation to the previous layer.

### Bonded applications - general

13.3 If required, the substrate is primed using the appropriate primer for the substrate prior to installation of the membrane.

### Fully-bonded applications

13.4 Bonding is achieved by melting the lower surface by torching and pressing the membrane down. Care must be taken not to overheat the coating. Jointing is carried out as described in sections 13.1 and 13.2.

### Partially-bonded applications

13.5 For partially-bonded applications, a layer of either Thermecran or Planivent is loose-laid over the substrate with minimum side laps of 50 mm prior to installation of the membrane.

13.6 The underlayer is bonded to the surface of the perforated membrane as described in section 13.4 of this Certificate followed by the intermediate or cap sheet, depending on the system specification. Bonding should occur regularly through the perforations to ensure even bonding of the membrane to the substrate. Jointing is carried out as described in sections 13.1 and 13.2.

13.7 As an alternative method, Mafflex membranes may be used as the partially-bonded layer, excluding the perforated membranes.

### Loose-laid and ballasted applications

13.8 A separating layer is loose-laid over the substructure, with 100 mm loose overlapping joints and terminating around the perimeter and upstands for a minimum distance of 500 mm.

13.9 The underlayer is loose-laid with the recommended side and end laps. The laps are bonded in accordance with the manufacturer's instructions.

13.10 The next and subsequent layers, if applicable, are torch bonded to the previous membrane as described in section 13.4 of this Certificate. Jointing is carried out as described in sections 13.1 and 13.2 of this Certificate.

### Detailing

13.11 Upstands and other detailing are carried out in accordance with the Certificate holder's installation instructions.

## 14 Repair

In the event of damage, the membranes can be effectively repaired, after cleaning, by applying a patch of the same membrane, bonded to the damaged area with a suitable overlap.

## Technical Investigations

### 15 Tests

Tests were conducted on Hyranger Systems and the results assessed to determine:

#### on the coating mass

- softening point (ring and ball)
- penetration at 25°C
- low temperature flexibility
- elastic recovery
- heat ageing 168 days at 70°C – softening point (ring and ball), low temperature flexibility and elastic recover

#### on the membranes

- static indentation
- dynamic impact
- sliding resistance
- fatigue cycling
- dimensional stability
- low temperature stability
- heat resistance
- tensile strength of joints
- root resistance.

### 16 Investigations

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

16.2 Data on CE marking for the roofing membranes to EN 13707 : 2013 were examined.

16.3 Visits were carried out to existing sites for exposed Axter membranes of similar product specification, to assess the performance in use and durability of the membranes.

## 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 EN 1991-1-4 : 2005 *Eurocode 1 : Actions on structures — General actions — Wind actions*  
NA to BS EN 1991-1-4 : 2005 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 13707 : 2013 *Flexible sheets for waterproofing — Reinforced bitumen sheets for roof waterproofing — Definitions and characteristics*

EN ISO 9001 : 2008 *Quality management systems — Requirements*

EN ISO 14001 : 2004 *Environmental management systems — Requirements with guidance for use*

CEN/TS 1187 : 2012 *Test methods for external fire exposure to roofs*

## Conditions of Certification

### 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.