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Agrément Certificate

96/3271

Product Sheet 4

## XTRA-LOAD DAMP-PROOF COURSE SYSTEMS

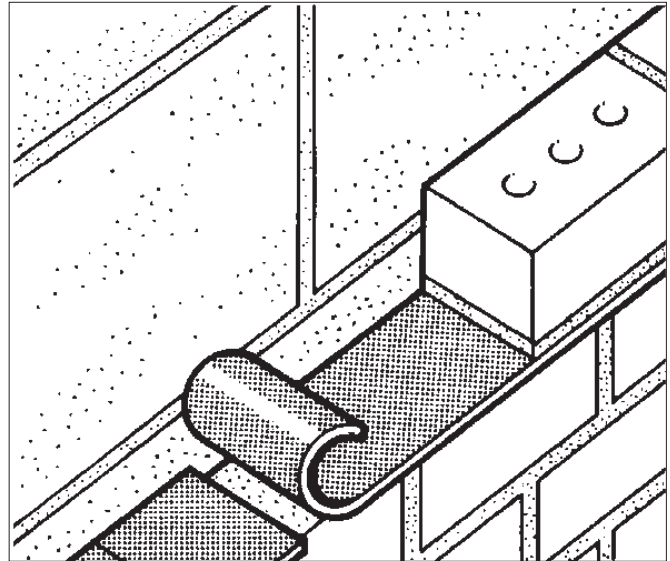
### XTRA-LOAD ALUMITE GAS RESISTANT DPC

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to the Xtra-Load Alumite Gas Resistant DPC, a polymer-modified bitumen membrane incorporating an aluminium foil inter-ply and reinforced with a non-woven polyester fabric, for use as a gas-resistant, damp-proof course in masonry walls.

(1) Hereinafter referred to as 'Certificate'.

#### CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



#### KEY FACTORS ASSESSED

**Behaviour under load** — the product is suitable for use under low compressive stress conditions as defined in BS 6398 : 1983 and will not significantly extrude under these conditions (see section 6).

**Resistance to water and water vapour** — the product will provide an effective barrier against liquid water and water vapour (see section 7).

**Resistance to radon and landfill gases** — the product will provide an effective barrier against radon and landfill gases (see section 8).

**Compatibility with other materials** — within normal construction, the product is compatible with all materials with which it will be in contact, with the exception of timber preservatives based on creosote or tar oils (see section 9).

**Durability** — when properly specified and installed, the product, in normal circumstances, will remain effective during the lifetime of the building (see section 11).

The BBA has awarded this Certificate to the company named above for the product described herein. This product 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

Simon Wroe  
Head of Approvals — Materials

Claire Curtis-Thomas  
Chief Executive

Date of Third issue: 15 October 2014

Originally certificated on 18 February 2009

*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, Xtra-Load Alumite Gas Resistant DPC, 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> A1	<b>Loading</b>
<b>Comment:</b>	The product is suitable for use under low compressive stress conditions and will not adversely affect the ability of a properly designed wall to sustain and transmit the resulting loads to the ground. See sections 6.1 and 6.2 of this Certificate.
<b>Requirement:</b> C1(2)	<b>Site preparation and resistance to contaminants</b>
<b>Comment:</b>	The product can contribute to satisfying this Requirement. See section 8.1 of this Certificate.
<b>Requirement:</b> C2(a)	<b>Resistance to moisture</b>
<b>Comment:</b>	Properly installed in a correctly designed structure, the product will form an effective barrier to the movement of water within the wall, enabling compliance with this Requirement. See section 7 of this Certificate.
<b>Regulation:</b> 7	<b>Materials and workmanship</b>
<b>Comment:</b>	The product is acceptable. See section 11 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 use of the product satisfies the requirements of this Regulation. See sections 10 and 11 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> 9	<b>Building standards applicable to construction</b>
<b>Standard:</b> 1.1(a)(b)	<b>Structure</b>
<b>Comment:</b>	The product is suitable for use under low compressive stress conditions and will not adversely affect the ability of a properly designed wall to sustain and transmit the resulting loads to the ground, with reference to clauses 1.1.1 <sup>(1)(2)</sup> and 1.1.3 <sup>(1)(2)</sup> . See sections 6.1 and 6.2 of this Certificate.
<b>Standard:</b> 3.1	Site preparation — harmful and dangerous substances
<b>Standard:</b> 3.2	Site preparation — protection from radon gas
<b>Comment:</b>	The product can contribute to satisfying the requirements of these Standards, with reference to clauses 3.1.6 <sup>(1)(2)</sup> , 3.2.0 <sup>(1)(2)</sup> , 3.2.1 <sup>(2)</sup> and 3.2.2 <sup>(1)</sup> . See section 8.1 of this Certificate.
<b>Standard:</b> 3.4	Moisture from the ground
<b>Comment:</b>	Properly installed in a correctly designed structure, the product will form an effective barrier to the movement of water within the wall, enabling compliance with this Standard, with reference to clause 3.4.1 <sup>(1)(2)</sup> . See section 7 of this Certificate.
<b>Standard:</b> 7.1(a)	Statement of sustainability
<b>Comment:</b>	The product 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 product 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

<b>Regulation:</b> 23(a)(i)(iii)(b)(i)	<b>Fitness of materials and workmanship</b>
<b>Comment:</b>	The product is an acceptable material. See section 11 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> C26	<b>Site preparation and resistance to contaminants</b>
<b>Comment:</b>	The product can contribute to satisfying this Regulation. See section 8.1 of this Certificate.
<b>Regulation:</b> 28(a)	<b>Resistance to moisture and weather</b>
<b>Comment:</b>	Properly installed in a correctly designed structure, the product will form an effective barrier to the movement of water within the wall, enabling compliance with this Regulation. See section 7 of this Certificate.
<b>Regulation:</b> 30	<b>Stability</b>
<b>Comment:</b>	The product is suitable for use under low compressive stress conditions and will not adversely affect the ability of a properly designed wall to sustain and transmit the resulting loads to the ground. See sections 6.1 and 6.2 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 sections: 1 *Description* (1.2) and 3 *Delivery and site handling* (3.4) of this Certificate.

## Additional Information

### NHBC Standards 2014

NHBC accepts the use of Xtra-Load Alumite Gas Resistant DPC, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 6.1 *External masonry walls*.

### CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 14967 : 2006. An asterisk (\*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

## Technical Specification

### 1 Description

1.1 Xtra-Load Alumite Gas Resistant DPC is a sand-surfaced, polymer-modified bitumen membrane incorporating an aluminium foil inter-ply and reinforced with a non-woven polyester fabric.

1.2 The rolls are manufactured to the nominal dimensions and characteristics given in Table 1.

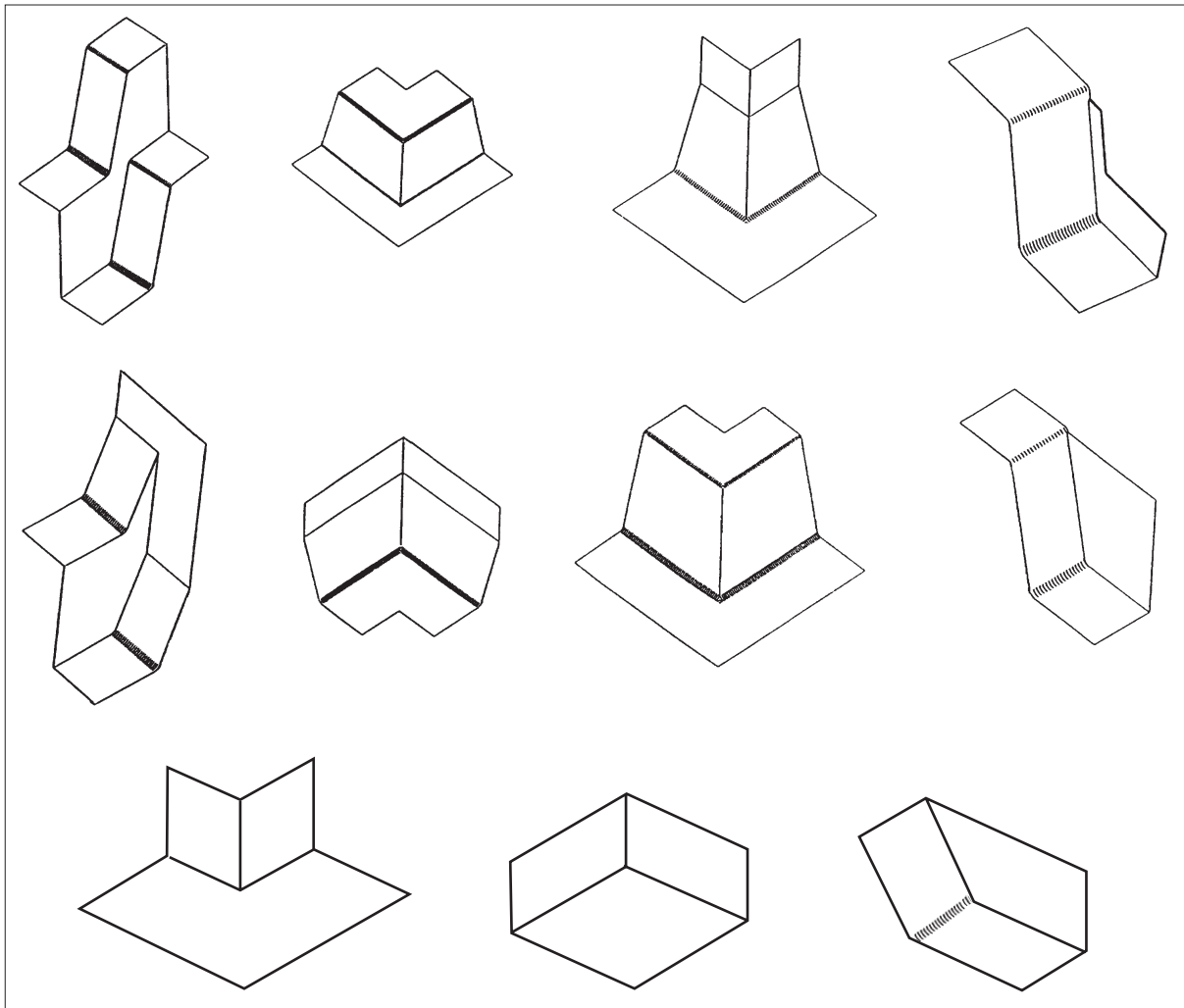
Table 1 Nominal characteristics

Characteristic (unit)	Value
Thickness* (mm)	3
Mass* (kg·m <sup>-2</sup> )	4.01
Roll length (m)	8
Roll width (mm) <sup>(1)</sup>	100 to 1000
Watertightness* (2 kPa)	Pass
Durability (artificial ageing)*	Pass
Resistance to low temperature*(°C)	-15
Resistance to impact* (mm)	>300

1.3 Other products include:

- Xtra-Load Preformed Cavity Tray Units — 1.2 mm thick polymer sheet which is suitable for high frequency welding. The units are available in a range of shapes for angles, changes in level and stopends. Typical examples are shown in Figure 1; units to other designs can be fabricated to order in consultation with the Certificate holder
- Icopal Jointing Tape — a double sided, self-adhesive tape, protected by a silicone release film, used to seal laps between dpc to dpc and between dpc to preformed cavity tray units
- Xtra-Load DPC Joint Support is manufactured from a piece of twin-walled polypropylene 150 mm x 315 mm with the internal reinforcing webs running across the width and an additional twin-walled polypropylene reinforcing pad on the underside with the internal reinforcing webs running perpendicular to those in support, for added strength
- Xtra-Load DPC Fixing Strip — 2 m long by 25 mm wide by 3 mm thick plastic strip, pre-drilled with 6 mm diameter holes at 150 mm centres, used to secure surface fixed cavity tray damp-proof courses to substrate
- Xtra-Seal QD Bitumen Primer — for preparation of masonry prior to bonding of damp-proof courses to the substrate.

Figure 1 Standard Xtra-Load Preformed Cavity Units



## 2 Manufacture

2.1 The reinforcement is impregnated and coated, in a continuous process, with the polymer-modified bitumen compound. Dried sand is applied to both sides of the dpc prior to cooling.

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 Icopal Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and BS EN ISO 14001 : 2004 by BSI (Certificates Q05556 and EMS 535978).

## 3 Delivery and site handling

3.1 Xtra-Load Alumite Gas Resistant DPC is delivered to site in rolls secured with a paper wrapper bearing the marketing company's name, product details and the BBA logo incorporating the number of this Certificate.

3.2 Rolls must be stored on end and under cover protected from extremes of temperature. The product must not be allowed to come into contact with organic solvents.

3.3 Xtra-Load Preformed Cavity Tray Units are delivered to site in polythene bags. A label bearing a description of the contents and the BBA logo incorporating the number of the appropriate Certificate is affixed to each bag.

3.4 Xtra-Seal QD Bitumen Primer is delivered to site in 25 litre drums. The product is classified under *The Chemicals (Hazard Information and Packaging for Supply Regulations 2009 (CHIP4)/Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) 2009* as 'flammable' with a flashpoint below 32°C, and must be stored in accordance with *The Dangerous Substances and Explosive Atmospheres Regulations 2002*.

# Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Xtra-Load Alumite Gas Resistant DPC.

## Design Considerations

### 4 Use


4.1 When correctly specified and installed, Xtra-Load Alumite Gas Resistant DPC provides satisfactory gas-resistant damp-proof courses at ground level in masonry walls. General standards of good design practice are given in BS EN 1996-1-1 : 2005, BS EN 1996-1-2 : 2005, BS EN 1996-2 : 2006, BS EN 1996-3 : 2006 and their respective UK National Annexes, and BS 8215 : 1991 and PD 6697 : 2010. Recommended uses for the bitumen damp-proof courses are given in BS 6398 : 1983.

4.2 The product must be used in conjunction with a gas-resistant membrane to restrict the ingress of gas into buildings. The Certificate holder must be consulted for suitable products and recommended detailing practices.

### 5 Practicability of installation


The product must only be installed by a competent general builder, or a contractor, experienced with this type of product. Care must be taken to ensure joints are well made using Icopal Jointing Tape and that joints in cavity trays are supported by Xtra-Load DPC Joint Support.

### 6 Behaviour under load


 6.1 The product will not adversely affect the ability a properly designed wall to sustain and transmit compression loads. Creep tests carried out on the product indicate that it will not significantly extrude at loads of up to  $1 \text{ N}\cdot\text{mm}^{-2}$  and is suitable for use under low compressive stress conditions as defined in BS 6398 : 1983.

6.2 The presence of a dpc can reduce the shear and tensile (and, therefore, bending) strengths of a wall at that point and the design of the structure should take account of this. Shear tests carried out on the product gave a characteristic initial shear strength for the product of  $0.31 \text{ N}\cdot\text{mm}^{-2}$ .

### 7 Resistance to water and water vapour

 When correctly installed, the product will provide an effective barrier against liquid water and water vapour either from a source external to the structure, or from one part of the structure to another.

### 8 Resistance to radon and landfill gases

 8.1 The results of gas permeability tests indicate that the product, when properly sealed and consolidated, will restrict the ingress of radon, methane and carbon dioxide gases from naturally occurring and landfill sources into the wall cavity.


8.2 Buildings in areas of risk from radon or landfill gases should be constructed in accordance with the recommendation of BRE Report 211 *Radon : guidance on protective measures for new dwellings*; BRE Report 212 *Construction of new buildings on gas-contaminated land* and BRE Digest 414 *Protective measures for housing on gas-contaminated land*. Guidance is given in the *Ground Gas Handbook 2009* and the Certificate holder's technical literature.

### 9 Compatibility with other materials


9.1 Under normal circumstances, the product is compatible with other materials with which it is likely to be in contact in normal construction, with the exception of timber preservatives containing creosote, tar oils or pitch.

9.2 The product contains an aluminium foil inter-ply which may be subject to corrosion under alkaline conditions if damage to the membrane occurs and the foil is exposed.

### 10 Maintenance

 As the product is confined within the wall structure and has suitable durability (see section 11), maintenance is not required. However, it must be ensured that damage occurring before enclosure is repaired (see section 15).

### 11 Durability

 Laboratory tests, including accelerated ageing tests, indicate that the product has acceptable resistance to damage and a satisfactory retention of physical properties is achieved. When properly specified and installed, the product will in normal circumstances remain effective during the lifetime of the building.

## 12 General

12.1 Installation of Xtra-Load Alumite Gas Resistant DPC must follow normal good practice for the detailing of damp-proof courses, as set out in PD 6697 : 2010, and must be in accordance with the relevant clauses of BS 8000-3 : 2001, BS 8215 : 1991, BRE Digest 380 *Damp-proof courses*, and the Certificate holder's instructions.

12.2 As with all flexible damp-proof courses, care should be taken to avoid impact damage from sharp objects (eg trowels) during installation.

## 13 Procedure

13.1 The product must extend through the full thickness of the wall or wall leaf, including pointing, applied rendering or other facing material. It must project 5 mm beyond the finished external face.

13.2 The product must be laid on a wet, even bed of mortar, and perforations in adjacent courses of brickwork must be filled completely with mortar.

13.3 All joints in the product must have a minimum 100 mm overlap and be sealed using Icopal Jointing Tape in accordance with the Certificate holder's instructions. Joints must be supported across cavities using the Xtra-Load DPC Joint Support System.

13.4 Care must be taken to avoid damaging the product during the installation or during cavity cleaning following installation.

13.5 Precautions to be taken during subsequent work include:

- use of cavity battens to prevent mortar droppings from reaching the product
- removal of mortar droppings before they harden
- implements such as steel rods must not be used for cleaning the cavity
- inspection for damage as the work proceeds.

## 14 Dpc/dpm connections and continuity

14.1 To ensure the integrity as a gas barrier system, the product must be connected to a suitable gas-resistant, damp-proof membrane, eg Monarflex RMB 400. Typical details for external wall to solid and suspended ground slabs are shown in Figure 2.

14.2 The product is hot bonded by torching to the primed floor slab and down the cavity face of the internal leaf or slab edge by a minimum of 75 mm, and must project onto the slab by a minimum of 150 mm beyond the internal face of the inner leaf.

14.3 The gas-resistant, damp-proof membrane is overlapped by a minimum of 150 mm over the product and the laps sealed with 30 mm wide Monobond LT Sealant Tape.

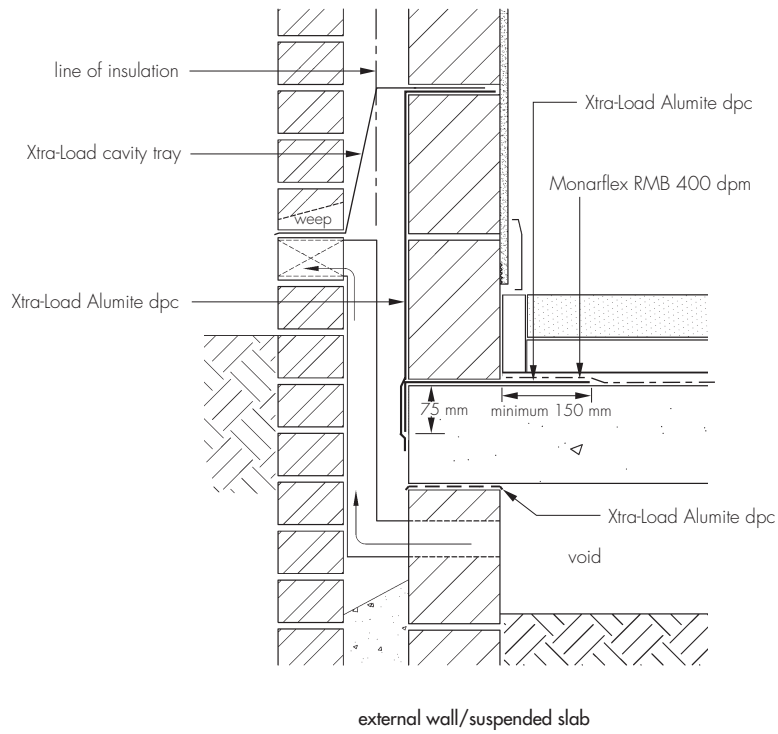
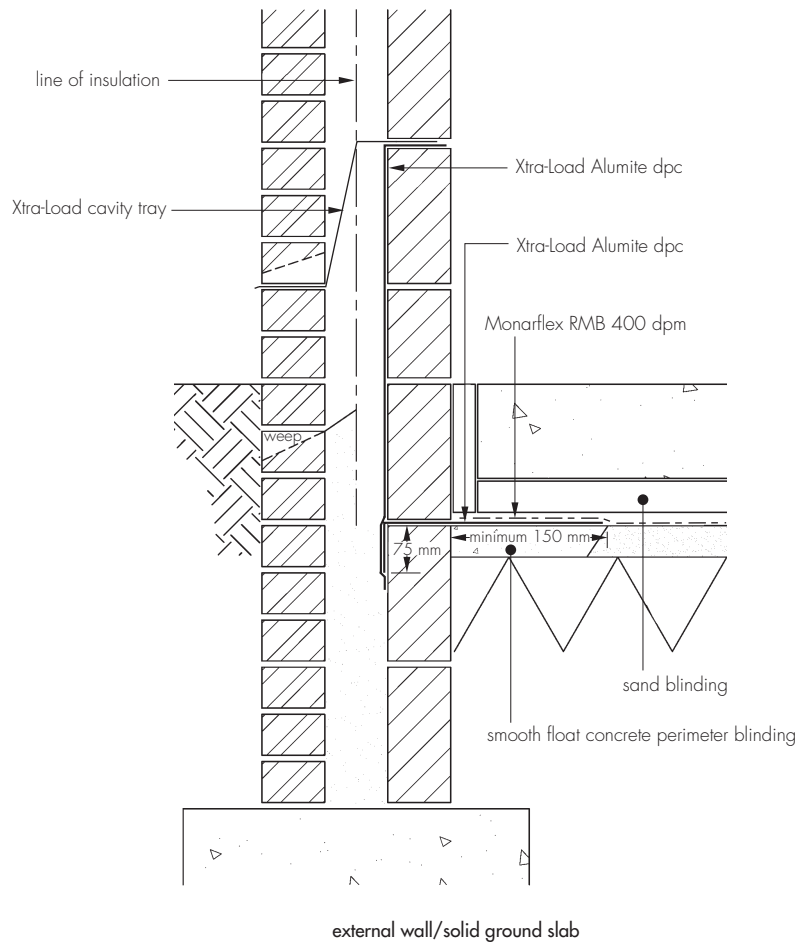
14.4 The product is applied to the primed inner leaf/slab edge and fully bonded by torching, ensuring that it terminates a minimum of 150 mm above the dpc or cavity tray in the outer leaf and completely overlaps the product applied around and down the edge of the slab (see section 14.2).

14.5 The product must be used to form a cavity tray linking with the waterproofing and finishing in the outer leaf by a minimum of 150 mm above finished external ground level.

## 15 Repair

Damaged areas of the product can be repaired prior to being covered by cutting out and replacing the damaged section, ensuring joints are made in accordance with section 13.3. Once covered, the product cannot be repaired.

Figure 2 Dpc/dpm gas membrane connections and continuity



## 16 Tests

Tests were conducted and results assessed to determine:

- mass per unit area
- resistance to water pressure
- water vapour permeability
- water vapour resistance
- resistance to static indentation
- resistance to chisel impact
- creep tests
- characteristic initial shear strength
- tensile strength and elongation
- flexibility at low temperature
- effect of heat ageing (56 days at 60°C)
- effect of water soak (7 days at 60°C)
- nail tear.

## 17 Investigations

17.1 An evaluation was made of the results of test data regarding permeability of radon, methane and carbon dioxide.

17.2 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.

17.3 A survey of users and/or specifiers of the product was carried out.

## Bibliography

BS 6398 : 1983 *Specification for bitumen damp-proof courses for masonry*

BS 8000-3 : 2001 *Workmanship on building sites — Code of practice for masonry*

BS 8215 : 1991 *Code of practice for design and installation of damp-proof courses in masonry construction*

BS EN 1996-1-1 : 2005 *Eurocode 6: Design of masonry structures — General rules for reinforced and unreinforced masonry structures*

NA to BS EN 1996-1-1 : 2005 UK National Annex to *Eurocode 6: Design of masonry structures — General rules for reinforced and unreinforced masonry structures*

BS EN 1996-1-2 : 2005 *Eurocode 6: Design of masonry structures — General rules — Structural fire design*

NA to BS EN 1996-1-2 : 2005 UK National Annex to *Eurocode 6: Design of masonry structures — General rules — Structural fire design*

BS EN 1996-2 : 2006 *Eurocode 6: Design of masonry structures — Design considerations, selection of materials and execution of masonry*

NA to BS EN 1996-2 : 2006 UK National Annex to *Eurocode 6: Design of masonry structures — Design considerations, selection of materials and execution of masonry*

BS EN 1996-3 : 2006 *Eurocode 6: Design of masonry structures — Simplified calculation methods for unreinforced masonry structures*

NA to BS EN 1996-3 : 2006 UK National Annex to *Eurocode 6: Design of masonry structures — Simplified calculation methods for unreinforced masonry structures*

BS EN 14967 : 2006 *Flexible sheets for waterproofing — Bitumen damp proof courses — 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*

PD 6697 : 2010 *Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2*



## 18 Conditions

18.1 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.

18.2 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.

18.3 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.

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

18.5 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.

18.6 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.