

## Timloc Building Products Ltd

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Agrément Certificate  
**95/3156**  
Product Sheet 1

### TIMLOC DAMP PROOF COURSE SYSTEMS

### SYSTEM 9000 POLYMERIC DPC

#### PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to System 9000 Polymeric DPC, a flexible sheet material manufactured from ethylene propylene rubbers and polyester fibres used in conjunction with polyethylene preformed cloaks used to provide horizontal, vertical or stepped damp-proof courses, in either solid or cavity masonry walls.

#### AGRÉMENT 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 system will not significantly extrude under load (see section 5).

**Resistance to water and water vapour** — the system will provide an effective barrier against moisture (see section 6).

**Compatibility with other materials** — the system is compatible with all materials which it is likely to come into contact with, except for timber preservatives based on creosote or tar oils (see section 8).

**Durability** — when properly specified and installed, the product will remain effective during the lifetime of the building (see section 10).

The BBA has awarded this Agrément Certificate to the company named above for the system described herein. The 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

A handwritten signature in black ink, appearing to read 'Simon Wroe'.

Simon Wroe  
Head of Approvals — Materials

A handwritten signature in black ink, appearing to read 'Greg Cooper'.

Greg Cooper  
Chief Executive

Date of First issue: 11 July 2011

Originally certified on 12 July 1995

*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, System 9000 Polymeric DPC, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



## The Building Regulations 2010 (England and Wales)

<b>Requirement:</b> A1	<b>Loading</b>
<b>Comment:</b>	The system will not significantly extrude under load, up to the point of failure of the wall, and will not adversely affect the ability of a properly designed wall to sustain and transmit compression loads to the ground. The presence of a dpc can reduce the shear and tensile strength of a wall and the design must take account of this. See sections 5.1 and 5.2 of this Certificate.
<b>Requirement:</b> C2(a)(b)	<b>Resistance to moisture</b>
<b>Comment:</b>	The system will form an effective barrier to the movement of moisture within the wall, enabling compliance with this Requirement. See section 6 of this Certificate.
<b>Requirement:</b> Regulation 7	<b>Materials and workmanship</b>
<b>Comment:</b>	The system is acceptable. See section 9 and the <i>Installation</i> part of this Certificate.



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

<b>Regulation:</b> 8(1)	<b>Fitness and durability of materials and workmanship</b>
<b>Comment:</b>	The system is acceptable. See section 9 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> 9	<b>Building standards – construction</b>
<b>Standard:</b> 1.1(a)(b)	<b>Structure</b>
<b>Comment:</b>	The system will not significantly extrude under load, up to the point of failure of the wall, and will not adversely affect the ability of a properly designed wall to sustain and transmit compression loads to the ground, with reference to clauses 1.1.1 <sup>(1)(2)</sup> and 1.1.3 <sup>(1)(2)</sup> . The presence of a dpc can reduce the shear and tensile strength of a wall and the design must take account of this. See sections 5.1 and 5.2 of this Certificate.
<b>Standard:</b> 3.4	<b>Moisture from the ground</b>
<b>Standard:</b> 3.10	<b>Precipitation</b>
<b>Comment:</b>	The system will form an effective barrier to the movement of moisture within the wall, enabling compliance with this Standard, with reference to clause 3.4.1 <sup>(1)(2)</sup> . See section 6 of this Certificate.
<b>Standard:</b> 7.1(a)	<b>Statement of sustainability</b>
<b>Comment:</b>	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.
<b>Regulation:</b> 12	<b>Building standards – conversions</b>
<b>Comment:</b>	Comments made in relation to the system under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 <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) 2000 (as amended)

<b>Regulation:</b> B2	<b>Fitness of materials and workmanship</b>
<b>Comment:</b>	The system is acceptable. See section 9 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> C4(a)(b)	<b>Resistance to ground moisture and weather</b>
<b>Comment:</b>	The system will form an effective barrier to the movement of moisture within the wall, enabling compliance with this Regulation. See section 6 of this Certificate.
<b>Regulation:</b> D1	<b>Stability</b>
<b>Comment:</b>	The system will not significantly extrude under load, up to the point of failure of the wall, and will not adversely affect the ability of a properly designed wall to sustain and transmit compression loads to the ground. The presence of a dpc can reduce the shear and tensile strength of a wall and the design must take account of this. See sections 5.1 and 5.2 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 2 *Delivery and site handling* (2.1 and 2.2) of this Certificate.

# Non-regulatory Information

## NHBC Standards 2011

NHBC accepts the use of System 9000 Polymeric DPC, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 6.1 *External masonry walls*.

## 1 Description

1.1 System 9000 Polymeric DPC is a black flexible material manufactured from a mixture of ethylene propylene rubbers, polyester fibres and other additives, calendered into sheet form, reeled into rolls and cut to width.

1.2 The product is manufactured and supplied to the following nominal dimensions:

Thickness (mm)	1.06
Length (m)	20
Width (mm)	100 to 1000
Weight per unit area (kg·m <sup>-2</sup> )	1.3

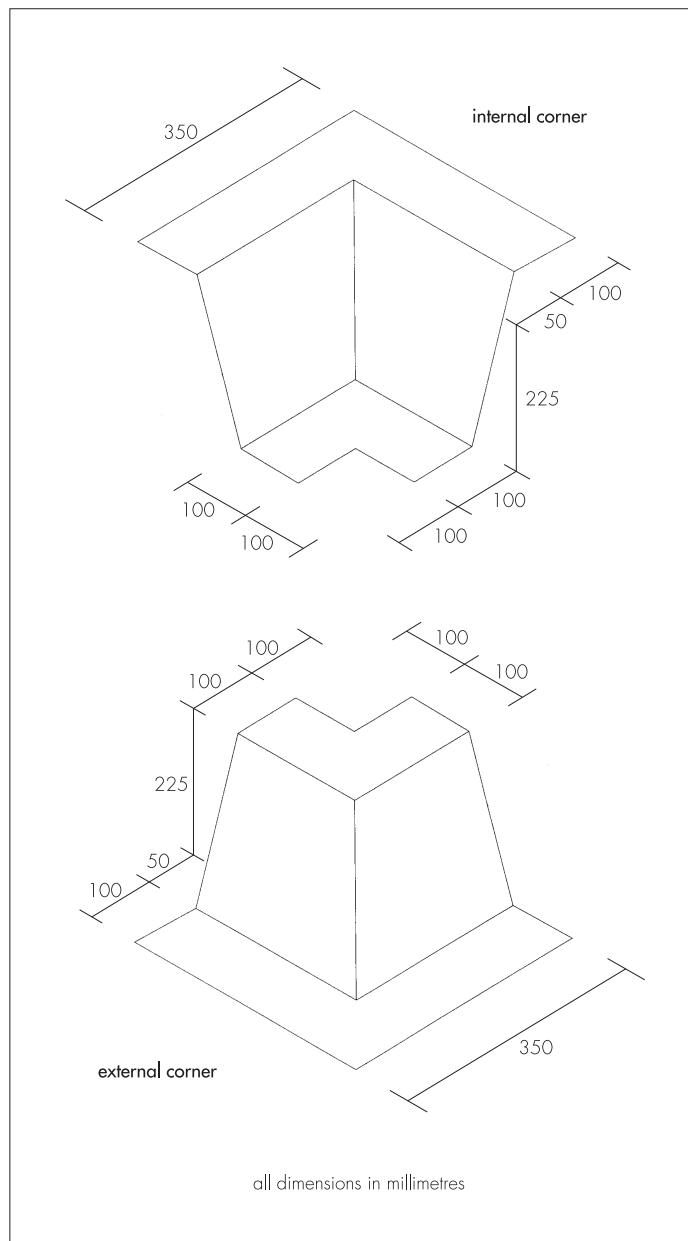
1.3 System 9000 Preformed Cloaks are vacuum formed from polyethylene sheet, for use as flexible units for angles in stepped or horizontal damp-proof coursing and are available in a variety of sizes (see Figure 1).

1.4 Other products used in the system include:

- Timloc Joint Support — to support the dpc at joints, available in six sizes
- Timloc Jointing Tape — a double-sided tape, for joining the dpc.

1.5 Quality control checks are performed on the raw materials, during manufacture and on the final product.

Figure 1 Examples of preformed cloaks



## 2 Delivery and site handling

2.1 System 9000 Polymeric DPC is delivered to site in rolls secured with tape bearing the marketing company's name, dimensions, product name and the BBA's identification mark incorporating the number of this Certificate. The rolls are packed in cardboard cartons and/or on pallets, with each roll bearing the date of manufacture, batch number, width and length.

2.2 Rolls must be stored on end and under cover. The product has a good resistance to hydrocarbon solvents such as petroleum spirit and diesel oil, but should not be stored where it is liable to come into contact with these or other organic solvents.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on System 9000 Polymeric DPC.

### Design Considerations

## 3 Use

System 9000 Polymeric DPC is satisfactory for use as a horizontal, vertical, or stepped damp-proof course (including cavity trays) in either solid or cavity walls of masonry. Information on good design practice is given in BS EN 1996-1-1 : 2005, BS EN 1996-1-2 : 2005, BS EN 1996-2 : 2006, BS EN 1996-3 : 2006, their respective UK Annexes and PD 6697 : 2010.

## 4 Practicability of installation

Installation can be carried out by bricklayers experienced with this type of product.

## 5 Behaviour under load



5.1 The system will not extrude under load, up to the point of compressive failure of the wall, and will not adversely affect the ability of a properly designed and built wall to sustain and transmit compression loads to the ground.

5.2 The presence of a dpc can reduce the shear and tensile strength of a wall and the design must take account of this. The stability of a wall in respect of lateral loads must be checked in relation to the stresses permitted between the dpc and the mortar. The characteristic stresses for design purposes and further guidance is available from the Certificate holder.

5.3 The system will withstand minor movement of the wall, and its performance is unlikely to be impaired by normally occurring movements up to the point where the wall itself is deemed to have failed.

## 6 Resistance to moisture



The system, when correctly specified and installed, will provide an effective barrier against the movement of moisture within the wall.

## 7 Compatibility with other materials

The system is compatible with most materials with which it is likely to come into contact with under normal construction, including timber preservatives of water-based solutions of salts. It is not, however, compatible with timber preservatives based on creosote or tar oils and contact with these materials must be avoided. Where there is doubt on the compatibility with materials in contact, the advice of the Certificate holder must be sought.

## 8 Maintenance

As the system is confined within the wall structure and it has suitable durability (see section 9), maintenance is not required. However, any damage occurring before installation must be repaired (see section 12).

## 9 Durability



When properly specified and installed, the product will in normal circumstances remain effective during the lifetime of the structure it is incorporated into.

## Installation

## 10 General

10.1 Installation of System 9000 Polymeric DPC must be in accordance with the Certificate holder's instructions, PD 6697 : 2010 and BS 8215 : 1991. Additional information on the use of damp-proof courses is given in BRE Digest 380 : 1993 *Damp-proof courses*.

10.2 Work can be carried out under all weather conditions normal to wall construction. The material retains sufficient flexibility to be installed at low temperatures and does not become tacky under warm conditions.

10.3 As with all flexible dpc's, care must be taken to avoid impact damage from sharp objects (eg chisels) during installation.

## 11 Procedure

11.1 The system must be laid on a wet, even bed of mortar and extend through the full thickness of the wall or wall leaf, including pointing, applied rendering or other facing material.

11.2 Any perforations in adjacent courses of brickwork must be completely filled with mortar.

11.3 All lap joints must have a minimum 100 mm overlap and be completely sealed with Timloc Jointing Tape in accordance with the Certificate holder's instructions.

11.4 System 9000 Preformed Cloaks, as described in section 1.3, must be used at stop ends and all corners or changes in levels of cavity trays.

11.5 When using System 9000 with boot lintels or similar constructions, the material is installed to follow the lintel profile where appropriate.

11.6 As with other similar materials, care must be taken to avoid damaging the damp-proof course during cleaning of mortar droppings. The following recommendations should prevent damage occurring:

- use of cavity battens to prevent mortar droppings from reaching the dpc
- removal of mortar droppings before they harden
- implements such as steel rods should never be used for cleaning the cavity
- inspection of cavity trays for damage as the work proceeds.

## 12 Repair

Damaged areas of the system can be easily repaired prior to being installed, by cutting out and/or replacing the damaged section, ensuring joints are made in accordance with section 11.3. Once covered, the system cannot be repaired.

# Technical Investigations

## 13 Tests

13.1 Tests were conducted on samples of System 9000 Polymeric DPC and the results assessed. These are summarised in Tables 1 and 2.

<i>Table 1 Physical properties – general</i>		
Test (units)	Mean results	Method
Weight per unit area (kg·m <sup>-2</sup> )	1.3	direct measurement
Water vapour permeability (g·m <sup>-2</sup> ·day <sup>-1</sup> )	4.02	BS 3177 (25°C/75% RH)
Water vapour resistance (MN·s·g <sup>-1</sup> )	51	BS 3177 (25°C/75% RH)
Water absorption (%)	0.33	BS 2782-4.430A
Cold flex temperature (°C)	-46	BS 2782-1.150B
Chisel impact		
0°C	severe indentation	<i>ad-hoc</i> <sup>(1)</sup>
23°C	slight penetration	
Water pressure (6 m head)	no penetration	MOAT 27 : 5.1.4
Tensile joint strength (N 50 mm <sup>-1</sup> )		MOAT 27 : 5.2.2/3/4
unaged	270	
heat aged <sup>(2)</sup>	297	
water soak <sup>(3)</sup>	280	
Peel strength (T-peel) (N 50 mm <sup>-1</sup> )		MOAT 46 : 6P
unaged	48.2	
heat aged	57.1	

(1) Test method based on Appendix B : Department of Transport Checks and Tests for the Approval of Waterproofing Systems for Concrete Decks to Highway Bridges : C(v).

(2) Heat aged at 60°C for 28 days.

(3) Water soak at 23°C for 28 days.

Table 2 Physical properties — directional

Test (units)	Mean results		Method
	Longitudinal	Transverse	
Tensile strength (N·mm <sup>-2</sup> )			BS 2782-3.320A (100 mm min <sup>-1</sup> )
unaged	9.4	7.0	
heat aged <sup>(1)</sup>	9.4	6.9	
water soak <sup>(2)</sup>	10.3	7.6	
UV aged <sup>(3)</sup>	9.3	6.7	
Elongation at break (%)			BS 2782-3.320A (100 mm min <sup>-1</sup> )
unaged	330	290	
heat aged <sup>(1)</sup>	293	250	
water soak <sup>(2)</sup>	342	303	
UV aged <sup>(3)</sup>	327	274	
Dimensional stability (%)	-1.09	+0.03	MOAT 27 : 5.1.6.1
Low temperature flexibility(°C)			MOAT 27 : 5.4.2
control	≤-20	≤-20	
heat aged <sup>(2)</sup>	≤-20	≤-20	
bitumen compatibility <sup>(4)</sup>	≤-20	≤-20	
Tear propagation (N)	24.2	55.3 <sup>(5)</sup>	<i>ad-hoc</i> <sup>(6)</sup>

(1) Heat aged at 60°C for 56 days.

(2) Water soak at 23°C for 56 days.

(3) UV aged for 100 light hours in general accordance with ASTM G53-93 (4 hours UV at 45°C/4 hours condensation at 40°C).

(4) Bitumen treated for 56 days at 50°C in accordance with MOAT 46 : 6T.

(5) Maximum load obtained.

(6) BBA method based on BS 2782-3.360B : 1980.

13.2 Tests were conducted on System 9000 Preformed Cloaks and the results assessed in relation to:

- dimensions
- Vicat softening point
- ash content
- melt flow rate
- impact resistance, unaged at -10°C and heat aged 60°C for 28 days.

## 14 Investigations

14.1 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.

14.2 An assessment was made of shear tests carried out to BS DD 86-1 : 1983. The results were satisfactory.

## Bibliography

- BS 2782-1.150B : 1976 *Methods of testing plastics — Thermal properties — Determination of cold flex temperature of flexible polyvinyl compound*
- BS 2782-3.320A to 320F : 1976 *Methods of testing plastics — Mechanical properties — Tensile strength, elongation and elastic modulus*
- BS 2782-3.360B : 1991 *Methods of testing plastics — Mechanical properties — Determination of tear resistance of plastics film and sheeting by the trouser tear method*
- BS 2782-4.430A to 430D : 1983 *Methods of testing plastics — Chemical properties — Determination of water absorption at 23°C — Determination of water absorption at 23°C with allowance for water-soluble matter — Determination of boiling water absorption — Determination of boiling water absorption with allowance for water-soluble matter*
- BS 3177 : 1959 *Method for determining the permeability to water vapour of flexible sheet materials used for packaging*
- BS 8215 : 1991 *Code of practice for design and installation of damp-proof courses in masonry construction*
- BS DD 86-1 : 1983 *Damp-proof courses — Methods of test for flexural bond strength and short term shear strength*
- 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*
- MOAT No 27 : 1983 *General Directive for the Assessment of Roof Waterproofing Systems*
- MOAT No 46 : 1988 *Special Directives for the Assessment of Roof Waterproofing Systems with Non-reinforced Vulcanized EPDM*
- PD 6697 : 2010 *Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2*
- ASTM G 53 : 1993 *Standard practice for operating light- and water-exposure apparatus (fluorescent UV-condensation type) for exposure of nonmetallic compounds*

## 15 Conditions

15.1 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.

15.2 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.

15.3 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.

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

15.5 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
- individual 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.

15.6 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.