

Fosroc Limited

Drayton Manor Business Park
Coleshill Road
Tamworth
Staffordshire B78 3XN

Tel: 01827 262222 Fax: 01827 262444

e-mail: enquiryuk@fosroc.com

website: www.fosroc.com



Agrément Certificate

03/4042

Product Sheet 1

FOSROC MEMBRANES

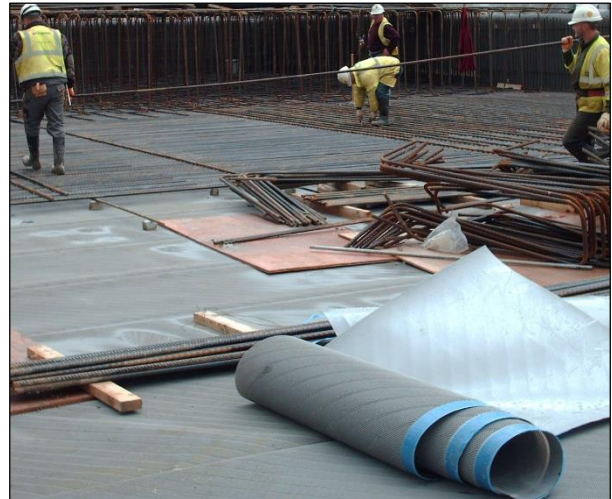
PROOFEX ENGAGE

This Agrément Certificate Product Sheet⁽¹⁾ relates to Proofex Engage, a polyolefin membrane with an integrated polyolefin net, for use as an externally pre-applied damp proof and waterproofing membrane in below ground concrete structures.

(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

Resistance to water and water vapour — the product, including joints, provides an effective barrier to the passage of water under hydrostatic pressure and water vapour from the ground (see section 6).

Resistance to mechanical damage — the product will accept without damage the limited foot traffic and loads associated with installation (see section 8).

Adhesion and stability — the product will form a satisfactory bond with cured concrete and will accommodate the minor movements likely to occur under normal service conditions (see section 9).

Durability — under normal service conditions, the product will provide an effective barrier to the transmission of moisture for the life of the structure in which it has been incorporated (see section 12).



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

Date of Third issue: 9 May 2017

John Albon – Head of Approvals
Construction Products

Originally certificated on 29 August 2003

Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited certification body – Number 113.

The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk
Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

British Board of Agrément

Bucknalls Lane
Watford
Herts WD25 9BA

tel: 01923 665300

fax: 01923 665301

clientservices@bba.star.co.uk

www.bbacerts.co.uk

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Regulations

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



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

Requirement:	C1(2)	Site preparation and resistance to contaminants
Comment:		The product, including joints, can contribute to a structure satisfying this Requirement with regards to radon, methane and carbon dioxide. See section 7 of this Certificate.
Requirement:	C2(a)	Resistance to moisture
Comment:		The product, including joints, will enable a structure to satisfy this Requirement. See section 6.1 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The product can contribute to a construction satisfying this Regulation. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	3.1	Site preparation — harmful and dangerous substances
Comment:		The product, including joints, can contribute to satisfying the requirements of this Standard with regard to the control of the effects of methane and carbon dioxide, with reference to clause 3.1.6 ⁽¹⁾⁽²⁾ . See section 7 of this Certificate.
Standard:	3.2	Site preparation — protection from radon gas
Comment:		The product, including joints, can contribute to satisfying the requirements of this Standard, with reference to clause 3.2.2 ⁽¹⁾⁽²⁾ . See section 7 of this Certificate.
Standard:	3.4	Moisture from the ground
Comment:		The product, including joints, will enable a structure to satisfy the requirements of this Standard, with reference to clause 3.4.7 ⁽¹⁾⁽²⁾ . See section 6.1 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The product can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	12	Building standards applicable to conversions
Comment:		Comments made in relation to this product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ .

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).



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

Regulation:	23(a)(i)	Fitness of materials and workmanship
Comment:	(iii)(iv)(b)(i)	The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.

Regulation:	26(1)(2)	Site Preparation and resistance to contaminants
Comment:		The product, including joints, will enable a structure to satisfy the requirements of this Regulation. See section 7 of this Certificate.
Regulation:	28(a)	Resistance to ground moisture and weather
Comment:		The product, including joints, will enable a structure to satisfy the requirements of this Regulation. See section 6.1 of this Certificate.

Construction (Design and Management) Regulations 2015 Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 1 *Description* (1.1) and 3 *Delivery and site handling* (3.1) of this Certificate.

Additional Information

NHBC Standards 2017

NHBC accepts the use of, Proofex Engage, when installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Technical Requirement R3 and Chapters 5.1 *Substructure and ground bearing floors* clause 5.1.20 *Damp-proofing concrete floors*, for use below the slab, and 5.4 *Waterproofing of basements and other below ground structures*.

Where Grade 3 protection is required and the below ground wall retains more than 600 mm measured from the top of the retained ground to the lowest finished floor level, the product must be used in combination with either Type B or Type C waterproofing protection.

CE marking

The Certificate holder has taken the responsibility of CE marking the product, in accordance with harmonised European Standard EN 13967 : 2012. 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 Proofex Engage is a polyolefin membrane with an integrated polyolefin net with the nominal characteristics of:

Overall thickness (mm)*	4.0 to 5.0
Nominal membrane thickness (mm)	0.8 (excluding the net)
Roll width (m)*	1.27
Roll length (m)*	30.0
Edge lap (mm)	68.0
Roll weight (kg)	58.0
Colour	Grey.

1.2 Ancillary items that may be used in conjunction with the membrane are:

- Proofex Engage Detail Strip — a nominal 1.5 mm thick reinforced, double-sided, bitumen rubber waterproof adhesive tape for sealing jointing roll ends, cut ends, cut edges and wall-to-floor detailing. Each side of the tape is protected with a removable release film. The product is available in rolls of 200 mm by 10 m

- Fosroc Polyurea WCS gun-grade — a rapid cure two-component polyurea sealant used in conjunction with Proofex Engage Detail Strip for additional waterproofing protection at Proofex Engage butt-joints. The product is supplied in twin 300 ml cartridges (600 ml total)
- Proofex LM — a two-component, bituminous, liquid membrane for use at intricate details, eg pipe entries, penetrations
- Proofex LM Mesh — a reinforcement mesh for use with Proofex LM in areas of high stress
- Proofex 3000 — self-adhesive, polymer-modified bitumen waterproof membrane used for detailing and patch repair
- Nitoseal MS60 — a one-part, general-purpose sealant for sealing between Proofex Top Hat and the penetration. The product is available in 380 ml cartridges
- Proofex Total Tape — a 50 mm by 30 m tape used to adhere Proofex Top Hat to Proofex Engage membrane
- Proofex 'L' Section — a 125 by 125 mm, self-adhesive jointing strip
- Proofex Corner Pieces, Internal and External — for jointing at corners
- Proofex Top Hats — for detailing at service penetrations. The product is available in diameters of 110 and 160 mm.

2 Manufacture

2.1 Proofex Engage is manufactured by heat welding a blended polyolefin membrane to a blended polyolefin net. The membrane includes a self-adhesive sealing strip on the selvedge to provide sealed lap joints.

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 the manufacturer has been assessed and registered as meeting the requirements of EN ISO 9001 : 2008.

3 Delivery and site handling

3.1 The product is delivered to site in rolls, nominally five rolls to one pallet. Each roll is wrapped in a pre-printed film bearing the company details, product name and the BBA logo incorporating the number of this Certificate. The product packaging also includes the CE mark to EN 13967 : 2012.

3.2 The rolls should be stored under cover in the original unopened packaging and kept in cool dry conditions away from direct sunlight.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Proofex Engage.

Design Considerations

4 Use

4.1 Proofex Engage is satisfactory for use as a Type A waterproofing protection as defined in BS 8102 : 2009 for the waterproofing of new-build underground structures, and as a damp-proofing membrane for solid floors in accordance with the relevant clauses of CP 102 : 1973, section 3.

4.2 The product can be used to provide an effective barrier to the transmission of liquid water where Grades 1 to 3 waterproofing protection is required, as defined in Table 2 of BS 8102 : 2009.

4.3 Where Grade 3 waterproofing protection is required the environment must also be controlled by use of ventilation, dehumidification and/or air conditioning, as appropriate, to ensure dampness does not occur. See also the *Additional Information*, section of this Certificate relating to the *NHBC Standards*.

5 Practicability of installation

The product should only be installed by competent contractors experienced with this type of product.

6 Resistance to water and water vapour



6.1 The product, including joints, when completely sealed and consolidated, will adequately resist the passage of water under hydrostatic pressure and moisture from the ground, and so meet the relevant requirements of the national Building Regulations.

6.2 The product is impervious to water and will provide a waterproof layer capable of accepting minor structural movements without damage.

7 Resistance to underground gases



7.1 When used as part of the structural barrier in basement floor and wall constructions conforming to BS 8102 : 2009, Grade 2 and Grade 3 waterproofing, the product will contribute to restricting the ingress of radon, methane and carbon dioxide gases into a building from landfill and naturally occurring sources, with reference to BS 8485 : 2015, Table 5.

7.2 Measured gas permeability on the unjointed membrane is given in Table 1.

Table 1 – Gas permeability

Gas	Method	Result
Methane	BS ISO 15105-1: 2007	127 ml·m ⁻² ·day ⁻¹ ·atm ⁻¹ (unjointed)

8 Resistance to mechanical damage

8.1 The product can accept the limited foot traffic and light loads associated with the installation and maintenance operations without damage.

8.2 When installed, the membrane is capable of accommodating the minor movements likely to occur under normal service conditions.

8.3 The membrane can be damaged by sharp objects and care must be taken with exposed surfaces during construction and back filling operations.

8.4 The mechanical bond formed between the membrane net and concrete is satisfactory.

8.5 Where damage does occur, the membrane must be repaired (see section 17).

9 Adhesion and stability

9.1 When cured, the poured concrete will physically bond to the membrane's net to form a satisfactory bond.

9.2 The product is able to accommodate the minor movements likely to occur in the structure into which it is incorporated.

10 Effect of temperature

The membrane will not be adversely affected by temperatures likely to occur during the installation or in-service.

11 Maintenance

As the product is confined and has suitable durability, maintenance is not required. Any damage occurring during installation must be repaired prior to backfilling (see section 17).

12 Durability



Proofex Engage, when subject to normal service conditions, will provide an effective barrier to the transmission of water under hydrostatic pressure and moisture from the ground for the life of the structure in which it has been incorporated.

13 Reuse and recyclability

The product comprises a blend of polyolefins that can be recycled. However, the product is confined within the final structure and consequently its recyclability may be restricted.

Installation

14 General

14.1 Proofex Engage must be installed in accordance with the relevant requirements of BS 8102 : 2009, the Certificate holder's instructions and this Certificate.

14.2 The product may be installed under most normal site conditions at temperatures $\geq 5^{\circ}\text{C}$.

14.3 The product is compatible with concrete and other building materials and chemicals it is likely to come into contact with under normal service conditions.

14.4 On horizontal surfaces the product must be installed over a smooth concrete blinding or well-compacted granular fill. The substrate must be free from loose aggregate or other sharp protrusions. Standing water must be removed to prevent contamination of the overlap areas.

14.5 Vertical surfaces must be either suitable adjoining structures or formwork.

14.6 All surfaces to which the product is applied should be sound and solid to ensure no movement occurs during the pouring of concrete.

15 Procedure

15.1 The membrane is cut to a convenient length and laid out on the substrate with the net side uppermost.

15.2 Adjacent sheets are accurately laid to ensure they overlap the previous sheet by 80 mm along the adhesive selvedge. Adjacent full sheets should be staggered half a sheet length to avoid coinciding end joints.

15.3 The ends of sheets and cut edges are butt jointed using Proofex Engage Detail Strip. The upper surface of the joint can be further sealed using Proofex LM with Proofex LM Mesh, the overseal should extend 80 mm either side of the joint or with Fosroc Polyurea WCS sealant to extend 30 mm either side of the joint.

15.4 All overlaps and butt joints must be firmly rolled to ensure bonding between layers.

15.5 In cold or damp weather conditions the selvedge adhesive may be tackified by gently heating. Proofex Engage Detail Strip may also be gently heated to remove moisture and improve initial adhesion in cold conditions using a heat gun or gas torch on a low setting.

15.6 Gentle heating may also be used to assist in bending of the membrane at floor to wall junctions.

15.7 When installed vertically the membrane must be secured to the substrate/formwork, with the net side facing towards the concrete pour, using Proofex Engage Detail Strips applied at one metre intervals or appropriate mechanical fastenings, eg staples fixed through the selvedge. The advice of the Certificate holder must be sought for the most suitable fixing method that will depend on the type and condition of the substrate.

15.8 Once installed the membrane does not require any further protection prior to backfilling.

15.9 Concrete is then poured and compacted to ensure a good mechanical bond is achieved with the membrane.

15.10 When installed using removable formwork, a minimum concrete compressive strength of $10 \text{ N}\cdot\text{mm}^{-2}$ must be achieved before the formwork is removed.

16 Penetrations

16.1 At wall pipe penetrations, the Proofex Top Hat is placed over the pipe and sealed to the back of Proofex Engage with Proofex Total Tape. Alternatively, for non-standard pipe diameters and/or orientations, Proofex LM can be used.

16.2 Nitoseal MS60 is gunned between the Proofex Top Hat and pipe before being sealed with a cable tie, which is tightened so that Nitoseal MS60 extrudes.

16.3 At floor pipe penetrations the Proofex Top Hat is placed over the pipe and Proofex Total Tape placed onto the flange of the top hat. Alternatively, for non-standard pipe diameters and/or orientations, Proofex LM can be used.

16.4 The release paper is removed from the Proofex Total Tape prior to applying the Proofex Engage membrane.

16.5 Nitoseal MS60 is gunned between the Proofex Top Hat and pipe wall before being sealed with a cable tie, which is tightened so that Nitoseal MS60 extrudes.

17 Repair

17.1 Damage to the membrane must be repaired, normally by patching with Proofex 3000, prior to back filling. The advice of the Certificate holder must be sought.

17.2 Where damage to the net needs to be repaired prior to the concrete pour, the advice of the Certificate holder must be sought.

Technical Investigations

The following is a summary of the technical investigations carried out on Proofex Engage.

18 Tests

18.1 Tests were conducted on samples of Proofex Engage and the results assessed to determine:

- tensile strength and elongation
- dimensional stability
- heat aged for 56 days at 70°C followed by tensile strength and elongation
- UV aged for 100 light hours using UVB 313 lamps cycling 4 hours UV at 50°C followed by 4 hours condensation at 50°C followed by tensile strength and elongation
- water vapour transmission
- water vapour resistance
- resistance to water pressure
- chisel impact
- static indentation
- dynamic impact
- bond strength to concrete
- joint tensile strength
- butt joint tensile strength

- resistance to leakage at joints
- heat aged for 28 days at 70°C followed by joint tensile strength
- water soak for 7 days at 60°C followed by joint tensile strength.

18.2 Dimensional properties were measured to determine:

- thickness
- width
- weight per unit area.

18.3 Test data from independent test laboratories on methane-permeability were also evaluated.

19 Investigations

19.1 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.

19.2 A site in progress was visited to assess the practicability of installation.

Bibliography

BS 8102 : 2009 *Code of practice for protection of below ground structures against water from the ground*

BS 8485 : 2015 *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*

BS ISO 15105-1 : 2007 *Plastics — Film and sheeting — Determination of gas-transmission rate — Differential-pressure methods*

EN 13967 : 2012 *Flexible sheets for waterproofing — Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet — Definitions and characteristics*

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

CP 102 : 1973 *Code of practice for protection of buildings against water from the ground*

20 Conditions

20.1 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 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.

20.2 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.

20.3 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.

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

20.5 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.

20.6 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.