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Agrément Certificate
03/4042
Product Sheet 1

FOSROC MEMBRANES

PROOFEX ENGAGE

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Proofex Engage, a polyolefin membrane with a polyolefin net for use to provide a mechanical key in waterproofing new-build underground concrete structures.

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

Resistance to water and water vapour — the product, including joints, will resist the passage of moisture into the structure (see section 6).

Resistance to underground gases — the product will provide an effective barrier to radon, methane and carbon dioxide (see section 7).

Resistance to mechanical damage — the product will accept without damage the limited foot traffic and loads associated with the installation of the system and the effects of thermal or other minor movement likely to occur in practice (see section 8).

Durability — under normal service conditions the product will provide an effective barrier to the transmission of moisture and will restrict the ingress of radon, methane and carbon dioxide for the life of the structure in which it has been incorporated (see section 11).

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

Greg Cooper
Chief Executive

Date of Second issue: 3 January 2012

Originally certificated on 29 August 2003

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.

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Regulations

In the opinion of the BBA, Proofex Engage, 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)

Requirement:	C1(2)	Preparation of site 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 7.1 of this Certificate.
Requirement:	C2(a)	Resistance to moisture
Comment:		The product, including joints, will enable a structure to satisfy this Requirement. See sections 6.1 and 6.2 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The product can contribute to a construction satisfying this Regulation. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards — 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 7.1 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 7.1 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 sections 6.1 and 6.2 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		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.
Regulation:	12	Building standards — 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) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	C2(1)(2)	Preparation of site and resistance to dangerous and harmful substances
Comment:		The product, including joints, can contribute to a structure satisfying this Regulation with regards to radon, methane and carbon dioxide. See section 7.1 of this Certificate.
Regulation:	C4(a)	Resistance to ground moisture and weather
Comment:		The product, including joints, will enable a structure to satisfy the requirements of this Regulation. 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* (3.1) of this Certificate.

Additional Information

NHBC Standards 2011

NHBC accepts the use of, Proofex Engage, when installed and used in accordance with this Certificate, as meeting *NHBC Standards Chapter 5.1 Substructure and ground bearing floors* clauses M8 *Damp-proof membrane*, for use below the slab and in sandwich constructions, and M10 *Tanking materials* for use as part of an external basement tanking system.

Technical Specification

1 Description

1.1 Proofex Engage is a polyolefin membrane and polyolefin net with nominal characteristics of:

Overall thickness (mm)	4.0 to 5.0
Membrane thickness (mm)	0.8
Roll width (m)	1.27
Roll length (m)	30.0
Edge lap (mm)	68.0
Roll weight (kg)	58.0
Colour	Grey

1.2 Items used in conjunction with the membrane are:

- Proofex Engage Detail Strip — a 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
- 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
- Proofex Total Tape — a 50 mm x 30 m tape used to adhere Proofex Top Hat to Proofex Engage membrane
- Proofex 'L' Section — a 250 mm wide, self-adhesive jointing strip
- Proofex Corner Pieces, Internal and External — for jointing at corners
- Proofex Top Hats — for detailing at service penetrations.

2 Manufacture

2.1 Proofex Engage is manufactured by heat welding a blended polyolefin membrane to a polyolefin blended net. The membrane includes a self-adhesive sealing strip on the selvedge for jointing membranes.

2.2 To ensure product quality is consistently maintained to the required specifications, the BBA has assessed the manufacturer's documented factory production control procedure, its implementation and the production process.

2.3 Management system checks include monitoring of equipment for proper testing and calibration, assessment of product conformity and that non-conforming products are managed accordingly. Production control checks on the products are carried out on the incoming materials, during production and on the finished products.

2.4 For continued compliance, the quality control procedures and tests to be adopted have been agreed with manufacturer and regular surveillance audits of the factory are undertaken.

3 Delivery and site handling

3.1 The membrane 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 identification mark incorporating the number of this Certificate. The product packaging includes the CE mark as described in the *Assessment and Technical Investigations* section.

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 part of the Certificate gives a summary of the assessment and technical investigations carried out on Proofex Engage.



The presence of a UK map and blue tint indicates that the subject is related to the Building Regulations in the region(s) depicted.

The Certificate holder has taken the responsibility of CE marking the product in association with harmonised Standard reference, BS EN 13967 : 2004. An asterisk (*) appearing in this Certificate indicates that the details referred to have been taken from the manufacturer's Declaration of Performance, and have been verified by the BBA.

General

The management systems of Fosroc Limited have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by BSI (Certificate Q05288).

4 Use

4.1 Proofex Engage is satisfactory for use as a waterproofing and damp-proofing membrane for solid floors, underground structures and for internally and externally applied tanking below ground in accordance with the relevant Clauses of CP 102 : 1973, Section 3 and all grades of basement constructions as defined in BS 8102 : 2009, Table 2. The product will also restrict the ingress of radon, methane and carbon dioxide into buildings from landfill and naturally occurring sources.

4.2 The mechanical bond between the membrane and concrete is satisfactory.

5 Practicability of installation

The product should only be installed by installers who have been trained by the Certificate holder.

6 Resistance to water and water vapour



6.1 The membrane including joints, when completely sealed and consolidated, will adequately resist the passage of moisture from the ground into the structure and enable a structure to comply with the requirements of the national Building Regulations:

England and Wales — Approved Document C, Requirement C2(a), Section 4.7

Scotland — Mandatory Standard 3.4, clause 3.4.7

Northern Ireland — Regulation C4(a).

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

7 Resistance to underground gases



7.1 The membrane, including joints, will restrict the ingress of radon, methane and carbon dioxide from landfill and naturally-occurring sources into the building.

7.2 Buildings in areas at risk from landfill gas should be constructed in accordance with the recommendations laid out in BRE Report 212 (BR 212 : 1991) *Construction of new building on gas-contaminated land* and BRE Report 414 (BR 414 : 2001) *Protective measures for housing on gas-contaminated land*.

7.3 Buildings in areas at risk from radon gas should be constructed in accordance with BRE recommendations laid out in BRE Report 211 (BR 211 : 2007) *Radon : Guidance on protective measures for new buildings* and BRE Report (BR 414 : 2001).

7.4 BRE Reports 211, 212, 376⁽¹⁾, 413⁽²⁾ and 414 recommend that the minimum required thickness for a polyethylene gas-resistant membrane is 300 µm. It is generally accepted that other materials with comparable or higher gas resistance can be suitable, provided they can withstand the construction processes. Proofex Engage has a nominal thickness of 800 µm and, in the opinion of the BBA meets these criteria.

(1) BRE Report (BR 376 : 1999) *Radon : Guidance on protective measures for new dwellings in Scotland*.

(2) BRE Report (BR 413) *Radon : guidance on protective measures for new dwellings in Northern Ireland*.

8 Resistance to mechanical damage

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

8.2 Results of tests indicate that the system can accept the limited foot traffic and light loads associated with the installation and maintenance operations.

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

8.4 Provided sufficient care is taken the membrane will not be damaged by normal foot traffic (see section 15).

9 Effect of temperature

Once installed the membrane will not be adversely affected by temperatures likely to occur on site prior to backfilling.

10 Maintenance

As the product is confined and has suitable durability maintenance is not required. Any damage occurring during installation must be repaired in accordance with section 16, prior to backfilling.

11 Durability



Proofex Engage, when subject to normal service conditions, will provide an effective barrier to the transmission of moisture and will restrict the ingress of radon, methane and carbon dioxide for the life of the structure in which it has been incorporated.

12 Reuse and recyclability

The product comprises polyethylene and polypropylene that can be recycled, however the product is confined within the final structure and its re-use and recyclability will be restricted.

Installation

13 General

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

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

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

13.4 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.

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

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

14 Procedure

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

14.2 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.

14.3 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.

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

14.5 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.

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

14.7 When installed vertically the membrane must be secured to the substrate/formwork, with the net side outermost, 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.

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

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

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

15 Penetrations

15.1 At wall pipe penetrations the Proofex Top Hat is placed over the pipe and sealed to the back of Engage with Proofex Total Tape.

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

15.3 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.

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

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

16 Repair

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.

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

17 Tests

17.1 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.

17.2 Dimensional properties were measured to determine:

- thickness
- width
- weight per unit area.

17.3 Test data from independent test laboratories on methane and carbon dioxide permeability were also evaluated.

18 Investigations

18.1 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.

18.2 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 EN 13967 : 2004 *Flexible sheets for waterproofing — Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet — Definitions and characteristics*

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

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

19 Conditions

19.1 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.

19.2 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.

19.3 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.

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

19.5 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
- any claims by the manufacturer relating to CE marking.

19.6 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.