

|        |  |        |     |  |
|--------|--|--------|-----|--|
| CI/SfB |  | (13.9) | Ln6 |  |
|--------|--|--------|-----|--|

## BRE CERTIFICATION

CERTIFICATE NUMBER

083/01

ISSUE DATE: JUNE 2001

REISSUE DATE: AUGUST 2006

REVISION 1: APRIL 2008

## PRODUCT

Visqueen Radon Membrane

## SUPPLIED BY

Visqueen Building Products

Maerdy Industrial Estate

Rhymney

Tredegar

South Wales

NP22 5PY

Tel: 01685 840672

Fax: 01685 842580

e-mail: [enquiries@visqueenbuilding.co.uk](mailto:enquiries@visqueenbuilding.co.uk)

website: [www.visqueenbuilding.co.uk](http://www.visqueenbuilding.co.uk)

## SUMMARY

Visqueen Radon Membrane is a red low density polyethylene (LDPE) sheet radon gas and moisture resistant membrane for incorporation into the ground floor of a building in situations where there is a risk of contamination to the internal environment of the building arising from radon evolution from the ground.

The characteristics of the membrane and its method of application in conjunction with specific Visqueen ancillary products (outside the scope of this certificate), have been reviewed with respect to the Building Regulations current in the United Kingdom and Ireland. The assessment has referred to British Standards and other publications current in April 2008.

This revision includes updated test data to BS EN 13967 *Flexible sheets for waterproofing. Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet. Definitions and characteristics*.

The assessment is described in the following pages which form integral parts of this certificate and should be read in its entirety.

## LIMITATIONS OF USE

0.1 Visqueen Radon Membrane and the specific ancillary components (outside scope of this certificate) to complete the installation must be installed in accordance with the Certificate holder's instructions and the requirements of this certificate. For buildings in the UK the recommendations of the BRE Reports BR 211 *Radon: guidance on protective measures for new dwellings* (BR 376 *Radon: Guidance on protective measures for new dwellings in Scotland*) and BR 212 *Construction of new buildings on gas-contaminated land* must be followed. Further guidance on detailing for common constructions can be obtained from BR 414 *Protective measures for housing on gas-contaminated land*. In Ireland reference should also be made to the Department of the Environment publication *Radon in Buildings*.

0.2 The performance of the product depends on correct installation in accordance with the supplier's installation instructions and the requirements of this certificate. The quality of installation achieved on site is not covered by this certificate and therefore it is recommended that the quality of installation and workmanship is subject to appropriate checks by a competent person.

0.3 The product is not intended for use in conditions where it may become subjected to hydrostatic pressure from the ground. Where there is a risk of the ground becoming waterlogged, sub-soil drainage in accordance with CP 102 *Code of practice for protection of buildings against water from the ground* and BS 8102 *Code of practice for protection of structures against water from the ground*, should be provided.

0.4 Current information on the areas in the UK delineated by Communities and Local Government (CLG), with respect to the risk of radon infiltration levels for the purposes of the Building Regulations can be obtained from building control inspectors. In Ireland areas at risk of radon infiltration are designated in the Radiological Protection Institute of Ireland (RPII) publication *Radon in Irish Dwellings*. This document is frequently updated and thus the latest version should be consulted.

0.5 Visqueen Radon Membrane has not been assessed for resistance to methane.

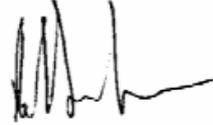
0.6 The product is intended for use in ground conditions having a pH value greater than 4 and less than 9. It must remain protected from UV light degradation and physical damage until immediately prior to use. Contact with organic solvents, volatile organic compounds and fuel oils must be avoided.

**STATEMENT**

It is the opinion of BRE Certification that Visqueen Radon Membrane is satisfactory for use within the stated conditions provided that it is used in accordance with the certificate holder's instructions and the requirements of this certificate.

**CONFIRMATION**

For and on behalf of BRE Certification




Date: 3 April 2008

**1. TECHNICAL SPECIFICATION**

**1.1 Description of Product**

1.1.1 Visqueen Radon Membrane is a red unreinforced low density polyethylene (LDPE) sheet manufactured in accordance with BS EN 13967, Type A. The membrane has the nominal characteristics given a Table 1.

Table 1: Nominal characteristics

| Characteristic            | Nominal value          |
|---------------------------|------------------------|
| Membrane thickness        | 0.3 mm                 |
| Membrane weight/unit area | 0.28 kg/m <sup>2</sup> |
| Roll width                | 4 m                    |
| Roll length*              | 25 m                   |
| Roll weight               | 27.6 kg                |
| Colour                    | Red                    |

\* other lengths available

1.1.2 The Visqueen Radon Membrane is for use in conjunction with Visqueen Double-sided Jointing Tape, Visqueen Girth Jointing Tape, Visqueen Zedex High Performance DPC and Visqueen Top Hat Units (for sealing at penetrations by service pipes or ducts passing through the membrane into the building) allowing complete sealing over the footprint of the building. These components which are outside the scope of this certificate are listed and identified in Table 2.

Table 2: Visqueen Components

| Component                                  | Description   | Use   |
|--|---|---|
| Visqueen Radon Jointing System             | 1. Double-sided Jointing Tape Butyl-based mastic strip. Roll 50 mm x 10 m, black<br>2. Single-sided Girth Jointing Tape polyethylene. Roll 100 mm x33 m | For sealing overlaps between adjacent runs of Visqueen Radon Membrane and making joints with DPC and sealing collars. |
| Visqueen Zedex CPT High Performance DPC    | Polyethylene 100-1400 mm width 20 m long  | For provision of continuous protection across cavities  |
| Visqueen Gas-resistant Self-adhesive DPM   | HDPE, 1.0 mm thick 1.05 m x 20 m  | For seals around non uniformly shaped entry points  |
| Visqueen Top Hat Unit                      | Pre-formed polyethylene for 50 mm to 200 mm diameter services, base 150 to 350 mm square  | For seals around pipe entry points  |
| Visqueen Zedex Pre-formed Cavity Tray Unit | Polyethylene available in both standard cavity widths or bespoke.   | For use during installation of DPC at complex corners to reduce installation time                                     |
| Visqueen Radon Sump                        | Prefabricated HDPE 430 x 430 x 220 mm   | For 'full' protection areas with sub-floor depressurisation   |

- 1.1.3 Ancillaries (outside scope of Certificate) for use with the product include:
- 300 gsm non-woven needle punched protective geotextile membrane or similar
  - self-adhesive primer
  - suitable damp proof course to BS 8215 *Code of practice for design and installation of damp-proof courses in masonry construction*
  - Preformed wall/slab corner units
  - cold applied sealant
  - penetration seals
  - Jubilee Clips
  - air vents

## 2. PRODUCT PERFORMANCE

2.1 The membrane being 1200 gauge (300 µm) Low Density Polyethylene (LDPE) sheet complies with the recommendation made in BRE Report BR 211 as an adequate radon resistant membrane.

2.2 The membrane is loose laid and when used in conjunction with the stated components with all joints lapped and sealed provides resistance to the ingress of radon into a building provided that it is installed in accordance with the manufacturer's instructions (see 4.4), the recommendations of this certificate and BRE report 211 which states: 'With careful design and selection of material and good workmanship, a single barrier will satisfy the requirements of both damp-proofing and radon protection'.

2.3 When used in accordance with CP 102 and this Certificate, the membrane additionally provides a means of providing a damp proofing membrane for ground-supported floor constructions, when not subjected to hydrostatic pressure.

2.4 The Visqueen Radon Membrane is considered by BRE Certification to be adequately resistant to mechanical damage during the normal installation and construction processes provided no loads are placed on the material. The use of a superimposed geotextile membrane or Visqueen Protection Board should be considered if there is to be any trafficking. The integrity of the membrane must be checked prior to permanent covering and any necessary repairs carried out as detailed in Clause 4.4.14.

2.5 For sites where the presence of gaseous contaminants are suspected, a site investigation should be carried out following the guidance of BS 10175 *Investigation of potentially contaminated sites. Code of practice*. Further general information on site investigations is given in BS 5930 *Code of practice for site investigations*.

2.6 The Visqueen Radon Membrane can be used as the primary protection measure in combination with either a suspended concrete floor with a ventilated subfloor void or a ground-supported concrete floor. A high level of care must be exercised with detailing and joining and provision must be made for any anticipated settlement (see Section 4.4.5). Further guidance on additional secondary protection measures such as subfloor depressurisation are given in the BRE Reports BR 211 and BR 414.

2.7 In Ireland additional measures for protection from radon (subfloor depressurisation) should be taken in susceptible areas as indicated within Dept. of the Environment, Heritage and Local Government (DOEHLG) Document *Radon in Buildings* as recommended in Technical Guidance Document C of the Ireland Building Regulations.

2.8 The membrane will remain an effective barrier to moisture and radon ingress into a building during the lifetime of the screed or concrete under which it is installed, provided it has been installed in accordance with the Certificate Holder's instructions and the provisions of this certificate.

2.9 The product should be permanently covered as soon as possible after installation and within one month of installation.

### 3. BUILDING REGULATIONS

The relevant Building Regulations requirements for these products are:-

#### 3.1 The Building Regulations (England and Wales) 2000 (as amended)

Requirement

##### C1(2) Preparation of site and resistance to contaminants

The installation of Visqueen Radon Membrane within the floor is considered to be an acceptable precaution to avoid danger to health and safety caused by the permeation of radon from the ground.

##### C2(a) Resistance to moisture (ground moisture)

When installed in floors in accordance with this certificate, Visqueen Radon Membrane will adequately resist the passage of moisture to the inside of the building. See Section 2.3.

Regulation 7 Materials and workmanship

Visqueen Radon Membrane is manufactured from appropriate materials and can be installed satisfactorily with good workmanship. See Section 2.8.

#### 3.2 The Building (Scotland) Regulations 2007

Regulation

##### 8(1). Fitness and durability of materials and workmanship

The membrane is manufactured from appropriate materials for the intended application and is able to resist deterioration under the intended service conditions, provided that it is installed in accordance with the requirements of this certificate.

#### 9. Building standards - construction

Regulation

##### 3.1 Site preparation - harmful and dangerous substances

Visqueen Radon Membrane within the floor will contribute to the safety of the building and the people in the building by limiting radon ingress.

##### 3.2 Site preparation - protection from radon gas

When installed in accordance with this certificate, Visqueen Radon Membrane within the floor will contribute to the health and safety of people in the building by limiting radon ingress.

##### 3.4 Moisture from the ground

When installed in a floor in accordance with this certificate, Visqueen Radon Membrane will prevent moisture from the ground reaching the inner surface of any part of the building which it could damage. See Section 2.3.

#### 3.3 The Building Regulations (Northern Ireland) 2000

Regulation

##### B2 Fitness of materials and workmanship

Visqueen Radon Membrane is manufactured from materials of a suitable nature for the intended purpose and can be installed satisfactorily with good workmanship. See Section 2.8.

##### C2 Preparation of site and resistance to dangerous and harmful substances

When installed in accordance with this certificate, Visqueen Radon Membrane within the floor will contribute to the safety of the building and the occupants by limiting radon ingress.

##### C4 Resistance to ground moisture and weather

When installed in a floor in accordance with this certificate, Visqueen Radon Membrane will prevent the passage of moisture to the inside of the building from the ground. See Section 2.3.

### 3.4 The Building Regulations 1997 Ireland (as amended)

BRE Certification have also considered the Visqueen Radon Membrane against the requirements of the Irish Building Regulations (Statutory Instrument Number 497) and have the following opinion concerning compliance:

Regulation

#### C3 Dangerous substances

When installed in floors in accordance with this certificate, Visqueen Radon Membrane will contribute to health and safety of the occupants by limiting radon ingress from the ground.

#### C4 Resistance to weather and ground moisture

When installed in a floor in accordance with this certificate, Visqueen Radon Membrane will prevent the passage of moisture to the inside of the building. See Section 2.3.

#### D1 Materials and workmanship

Visqueen Radon Membrane is manufactured from appropriate materials for the application and can be installed satisfactorily with good workmanship. See Section 2.8.

### 3.5 NHBC Standards 2007

Zurich Building Guarantee Technical Manual 2007

### 3.6 CDM Regulations

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Safety, Health and Welfare Regulations 2006 (Ireland)

The Certificate should form part of the information used by the client, planning supervisor, designer and contractors to discharge their responsibilities under these Regulations.

## 4. INSTALLATION/PRACTICAL APPLICATION

### 4.1 General

4.1.1 The performance of Visqueen Radon Membrane depends on correct installation. It shall be installed in accordance with the Certificate holder's installation instructions, taking account of the delivery, storage and handling requirements and the requirements of this Certificate. The quality of installation actually achieved on specific sites is not covered by this Certificate. Therefore it is recommended that the quality of installation and workmanship is subject to appropriate checks by a competent person for each installation.

4.1.2 Only trained and skilled operatives or competent contractors, who are familiar with the Certificate holders installation instructions should carry out the work.

### 4.2 Identification

4.2.1 Visqueen Radon Membrane is supplied in rolls wrapped in polythene on pallets. Each roll is secured by circumferential tapes and displays a label showing the manufacturer's and product name including batch number, nominal dimensions and BRE Certification logo incorporating the number of this Certificate. The Visqueen ancillary components are supplied wrapped or in boxes.

### 4.3 Storage and Handling

4.3.1 Rolls of membrane should be protected from sunlight and accidental damage. The rolls must not be stored on their ends. The Visqueen ancillary components should be protected from rain, frost and exposure to sunlight during storage. It should be ensured that the temperatures of these materials do not fall below 5°C or exceed 30°C at any time.

4.3.2 Care should be taken when handling these materials on site in order to avoid accidental perforation. If repairs are required they must be carried out as stated in Clause 4.4.14 below.

### 4.4 Installation (Informative)

4.4.1 These instructions are informative and based on current guidance. Installation will be specific to each site and is outside the scope of the Certificate.

4.4.2 The Visqueen Radon Membrane must be installed in accordance with the Certificate holder's instructions, the recommendations of BRE Report 211, clause 11 of CP 102 and BS 8102. In all cases the workmanship must meet the requirements laid down in BS 8000-4 *Workmanship on building sites. Code of practice for waterproofing* taking sufficient care to ensure sealing over the whole footprint of the building making all joints gastight.

4.4.3 The membrane can be installed in all site conditions provided the air temperature is not below 5°C to prevent the risk of surface condensation forming.

4.4.4 The radon protection must be made continuous through the external walls of the building traversing any cavities. The sealing of the overlaps must be continued across the cavity and the membrane or dpc supported by consolidated concrete placed in the cavity. Alternatively the membrane may be jointed to the Visqueen dpc extended horizontally onto the slab to allow at least a 150 mm overlap by the radon membrane and joining the two components with Visqueen Jointing Tape subject to the precautions detailed in clause 4.4.8 below.

4.4.5 Where the membrane is to be used for ground supported or floating slab applications, (as can be the case in Ireland) provisions must be made for any anticipated movement of the slab during the life of the building (determined from a prior site investigation) to ensure that the membrane integrity is not compromised as follows:-

- where no movement is predicted with certainty the membrane may be taken right through the outer wall but a separate dpc must be incorporated preferably not in contact with the membrane
- where an upstand is formed in the construction a predicted settlement of no more than 20% of the upstand height can be accommodated without further precautions being necessary
- where predicted settlement is greater than 20% or cannot be predicted with certainty, folds should be incorporated into the perimeter upstand of the dpc as detailed in the manufacturer's instructions.

4.4.6 Surfaces which are to receive Visqueen Radon Membrane should be prepared to avoid any damage to the membrane occurring. Concrete slab or masonry surfaces should have a smooth clean and dry finish free of projections or indentations. If the slab surface is very rough, apply a sand blinding to cover all sharp projections.

4.4.7 Installation of Visqueen Radon Membrane must be over prepared ground or sub-floor. When the membrane is to be installed below a concrete slab it should be loosely laid to accommodate any small movements that may occur.

4.4.8 Prior to the application of the bonding tape to join adjacent pieces or components of the system all surfaces must be dried thoroughly to ensure adequate adhesion. The surface of the components to be joined must be free of any mortar droppings, loose matter, grease or other deleterious substance.

4.4.9 Jointing of components with the tapes must not be carried out below 5°C and some warming with a hot air gun may be required between temperatures of 5 and 10°C to ensure a satisfactory seal. The self-adhesive primer must not be applied to surfaces at or below 5°C.

4.4.10 A strip of Visqueen Double-sided Jointing Tape is unrolled over the membrane, the protective paper removed from one of its surfaces which is then stuck with its nearest edge approximately 50 mm from the edge of the membrane. Immediately prior to laying the next adjacent 'run' of membrane the protective paper is removed from the upper surface of the tape and the adjacent 'run' of membrane is carefully unrolled overlapping it by at least 150 mm. The joint should then be consolidated, preferably with a wall-paper roller. Finally seal the edge of the overlap with Visqueen Girth Jointing Tape.

4.4.11 Corners must be dealt with according to the Certificate holder's instructions ensuring that continuity of the membrane installation is maintained at all positions and all gaps are sealed. Internal or external corners should be rounded where possible. It must be ensured that no bridging by the membrane should be allowed to occur at internal corners where concreting is to be carried out; the membrane should be laid sufficiently loosely so that it is not stretched or torn.

Where sharp corners are unavoidable, internal and external angles must be strengthened with a 300 mm wide strip of membrane fixed as appropriate and interleaved with the adjacent layers of membrane.

4.4.12 In order to ensure the continuity of the membrane, it will be necessary to construct an airtight seal around all service entry points and features such as structural columns. Polyethylene 'top hat' units should be used for sealing around pipe entries. The perimeter must be jointed to the membrane using Visqueen Radon Jointing Tape. It should be noted that any gap between the inside of any service duct and an encased service pipe or cable should also be sealed preferably with a minimum of 150 mm depth of cold applied sealant. Service entry points should not be coincident with lapped joints in the membrane. Sealing to steel or concrete structural columns must be accomplished using bitumen based self-adhesive sheet. All concrete surfaces to receive the self-adhesive sheet must be primed with the designated primer.

4.4.13 Where the membrane is to be laid over, for example, a slab movement joint it should be loosely folded back on itself during laying.

4.4.14 The Visqueen Radon Membrane and ancillary components must be protected from site damage immediately that installation work is completed. Before the permanent protection is placed, the membrane area must be inspected for defects which should be repaired with an overlay of membrane extending beyond the point of damage by a minimum of 150 mm in all directions and securely taped in position.

4.4.15 The Visqueen Radon Membrane must be protected as soon as expedient e.g. by a concrete slab or thermal insulation and a screed topping of minimum thickness 50 mm. Where insulation is to be incorporated in a ground supported floor construction reference should be made to BRE Report BR 262 *Thermal insulation: avoiding risks*.

## 5. TECHNICAL APPRAISAL

### 5.1 Performance Tests

Tests and investigations have been carried out by BRE Certification to determine the properties of the membrane to include:-

- watertightness
- resistance to tearing (nail shank)
- thickness
- mass per unit area
- dimensional stability

5.2 An examination was made of test data relating to:

- weight per square metre
- tensile strength
- tear strength before and after heat ageing
- water penetration
- resistance to cracking at low temperature
- shear strength of joints.

5.3 The results of membrane performance tests are presented in Table 3.

Table 3: Technical Data for Visqueen Radon Membrane

| Property   | Test method            | Result   |
|--|------------------------|--|
| Thickness  | BS EN 1849-2           | 0.30 mm  |
| Mass per unit area   | BS EN 1849-2           | 271 g/m <sup>2</sup>   |
| Tensile strength   | BS EN 12311-2 Method B | 22 N/mm <sup>2</sup> MD<br>22 N/mm <sup>2</sup> CD   |
| Tensile elongation (1) at max. load  | BS EN 12311-2 Method B | 514 % MD<br>670 % CD   |
| Resistance to nail shank tearing (1)   | BS EN 13859-1 Annex B  | 185 N MD<br>195 N CD<br>118 N  |
| Water vapour transmission:<br>permeability<br>Flow rate<br>Moisture resistance factor<br>Diffusion equivalent air layer<br>thickness | BS EN 1931 Method B    | 0.2 g/m <sup>2</sup> /24h<br>2.4x10 <sup>-9</sup> kg/m <sup>2</sup> /s<br>μ=1.0x10 <sup>5</sup><br>S <sub>d</sub> =132 m |
| Water tightness  | BS EN 1928 Method A    | Dry, no leakage, pass  |

|  |  |  |
|--|--|--|
| Water tightness after heat ageing            | BS EN 1296<br>BS EN 1928 Method A                        | Dry, no leakage, pass                        |
| Water tightness after exposure to bitumen    | BS EN 1548,<br>BS EN 1928 Method A                       | Dry, no leakage, pass                        |
| Compatibility with bitumen                   | BS EN 1928   | Pass   |
| Impact /puncture resistance                  | BS EN 12691 and BS EN 13967                              | No leakage with 30 and 40 mm puncturing tool |
| Joint strength                               | BS EN 12317-2<br>50 mm overlap with double sided tape    | Max. av. force 2.8 N/50 mm                   |
| Static loading resistance                    | BS EN 12730 Method B                                     | No puncture after 20 kg applied load         |
| Flexibility on unrolling at low temperatures | MOAT No 27 (5.4.3)<br>-5 °C                              | No cracking or tearing                       |
| Radon gas permeability                       | BS ISO 2782  | $8 \times 10^{-12}$ m <sup>2</sup> /s/Pa     |
| Radon transmittance                          | SP Swedish National Testing & Research Inst. Test method | $26 \times 10^{-9}$ m/s                      |
| Resistance to passage of radon               | Equivalence to 1200 gauge LDPE<br>Compliance with BR 211 | Minimum thickness LDPE 0.3 mm                |
| Visible defects                              | BS EN 1850-2   | Free from defects                            |
| Dimensional stability – mean shrinkage       | BS EN 13967  |  |
| Reaction to fire                             | BS EN 13501-1  | F (=NPD)                                     |

(1). Results quoted for these tests are the minimum value obtained with test-piece taken from either the longitudinal, or the transverse, roll alignment.

MD = Machine direction

CD = Cross direction

NPD = No performance determined

5.4 A site visit was carried out to assess the practicability of installation.

#### 5.5 Quality Control

The Visqueen Radon Membrane is supplied under a quality system independently certificated to BS EN ISO 9001 *Quality management systems. Requirements*. Traceable quality records are maintained by the manufacturer. The manufacturer carries out checks at regular intervals to ensure that the quality of the product is maintained within the defined product specification. BRE Certification undertakes regular monitoring of the factory production control audits on the manufacture of the product against an agreed Quality Plan for the product.

#### 5.6 Standards and other publications

The following Standards and publications have been referred to for this assessment:-

|                  |  |
|------------------|--|
| CP 102:1973      | Code of practice for protection of buildings against water from the ground   |
| BS 5930:1999     | Code of practice for site investigations   |
| BS 8000-4:1989   | Workmanship on building sites. Code of practice for waterproofing  |
| BS 8102:1990     | Code of practice for protection of structures against water from the ground  |
| BS 8215:1991     | Code of practice for design and installation of damp-proof courses in masonry construction   |
| BS 10175:2001    | Investigation of potentially contaminated sites. Code of practice  |
| BS ISO 2782:2006 | Rubber, vulcanized or thermoplastic. Determination of permeability to gases  |
| BS EN 1296:2001  | Flexible sheets for waterproofing. Bitumen, plastic and rubber sheets for roofing. Method of artificial ageing by long term exposure to elevated temperature |

|   |  |
|---|--|
| BS EN 1548:2007   | Flexible sheets for waterproofing. Plastic and rubber sheets for roof waterproofing. Method for exposure to bitumen  |
| BS EN 1849-2:2001   | Flexible sheets for waterproofing. Determination of thickness and mass per unit area. Plastic and rubber sheets for roof waterproofing                       |
| BS EN 1850-2:2001   | Flexible sheets for waterproofing. Determination of visible defects. Plastic and rubber sheets for roof waterproofing  |
| BS EN 1928:2000   | Flexible sheets for waterproofing. Bitumen, plastic and rubber sheets for roof waterproofing. Determination of watertightness                                |
| BS EN 1931:2000   | Flexible sheets for waterproofing. Bitumen, plastic and rubber sheets for roof waterproofing. Determination of water vapour transmission properties          |
| BS EN 12311-2:2000  | Flexible sheets for waterproofing. Determination of tensile properties. Plastic and rubber sheets for roof waterproofing                                     |
| BS EN 12317-2:2000  | Flexible sheets for waterproofing. Plastic and rubber sheets for roof waterproofing  |
| BS EN 12691:2006  | Flexible sheets for waterproofing. Bitumen, plastic and rubber sheets for roof waterproofing. Determination of resistance to impact                          |
| BS EN 12730:2001  | Flexible sheets for waterproofing. Bitumen, plastic and rubber sheets for roof waterproofing. Determination of resistance to static loading                  |
| BS EN 13501-1:2007  | Fire classification of construction products and building elements. Classification using data from reaction to fire tests                                    |
| BS EN 13859:2005  | Flexible sheets for waterproofing. Definitions and characteristics of underlays.   |
| BS EN 13967:2004  | Flexible sheets for waterproofing. Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet. Definitions and characteristics |
| MOAT No 27:1983   | General Directive for the Assessment of Roof Waterproofing Systems   |
| BRE Report 211:1999   | Radon: guidance on protective measures for new dwellings   |
| BRE Report 262:2002   | Thermal insulation: avoiding risks   |
| BRE Report 293:1995   | Radon in the workplace   |
| BRE Report 376:1999   | Radon: Guidance on protective measures for new dwellings in Scotland   |
| BRE Report 413: 2001  | Radon: Guidance on protective measures for new dwellings in Northern Ireland   |
| BRE Report 414:2001   | Protective measures for housing on gas-contaminated land   |
| Radiological Protection Institute of Ireland (RPII) publication | Radon in Irish Dwellings   |
| DOE publication   | Radon in Buildings   |
| DOELG Document  | Radon in Buildings   |
| NHBC Standards 2007   |  |
| Zurich Building Guarantee Technical Manual 2007                 |  |

## 6. CONDITIONS OF CERTIFICATE ISSUE

### 6.1 Validity

This certificate is valid for a period of three years from the date of re-issue. It will remain valid in so far as:

- a) The materials and methods of manufacture are unchanged or BRE Certification has assessed any changes and found them to be satisfactory.
- b) The designs and specifications are unaltered from those examined by BRE Certification.
- c) Visqueen Building Products continues to have the product checked by BRE Certification through factory production control inspections.

### 6.2 Health and Safety

This certificate and the recommendations herein do not purport in any way to restate the requirements of the Health and Safety at Work Act 1974 or any statutory or common law duty of care which exists now or in the future; nor is compliance with these recommendations to be assumed as satisfying the requirements of the said Act or any existing or future statutory or common law duty of care.

### 6.3 Reference to Other Documentation

Where reference is made in this certificate to any Act of Parliament, Regulation, Code of Practice, British or other Standard or other publications, it shall be construed as reference to such publication in the form in which it is in force at the date of the certificate.

### 6.4 Patents

BRE Certification makes no representational warranty that any patent or similar industrial property right is valid or that the manufacture, use, sale, lease or any other dealing or disposition of the products in whole or in part is not an infringement of any patent or industrial property right not owned by Visqueen Building Products.

Confirmation that a certificate is current may be obtained from the BRE Certification website ([www.RedBookLive.com](http://www.RedBookLive.com))

Copyright BRE Certification 2008