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Agrément Certificate
12/4934
Product Sheet 1

ICOPAL SAS TANKING MEMBRANES

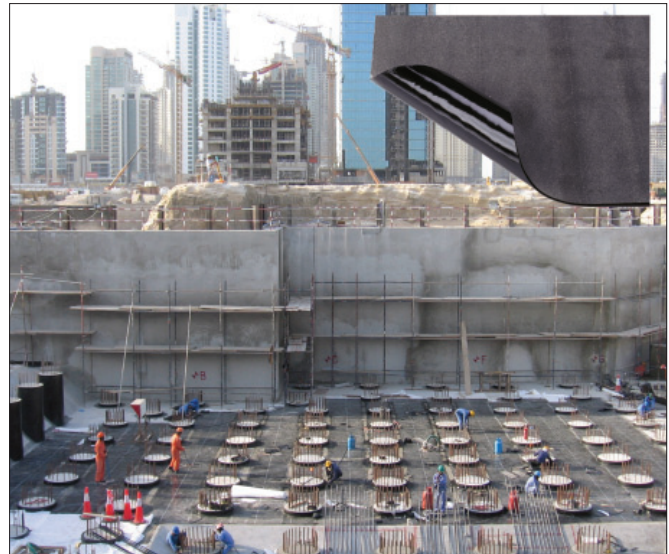
TERANAP TP TANKING SYSTEM

This Agrément Certificate Product Sheet⁽¹⁾ relates to the Teranap TP Tanking System, a SBS-modified bituminous membrane system for tanking and damp-proofing underground 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 system, including joints, will resist the passage of moisture into a structure (see section 6).

Resistance to mechanical damage — the system will accept without damage the limited foot traffic and loads associated with installation and the effects of thermal or other minor movement likely to occur in practice (see section 7).

Durability — under normal service conditions, the system will provide an effective barrier to the transmission of moisture for the life of the structure in which it is incorporated (see section 9).

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




Date of First issue: 12 September 2012

Simon Wroe
Head of Approvals — Materials

Greg Cooper
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.

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Regulations

In the opinion of the BBA, the Teranap TP Tanking System, if installed, used and maintained in accordance with this Certificate, will meet or contribute to meeting 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)

| | | |
|--------------|--------------|---|
| Requirement: | C2(a) | Resistance to moisture |
| Comment: | | The system, including joints, will enable a structure to satisfy this Requirement. See section 6.1 of this Certificate. |
| Requirement: | Regulation 7 | Materials and workmanship |
| Comment: | | The system is acceptable. See section 9 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 use of the system satisfies the requirements of this Regulation. See section 9 and the <i>Installation</i> part of this Certificate. |
| Regulation: | 9 | Building standards – construction |
| Standard: | 3.4 | Moisture from the ground |
| Comment: | | The system, including joints, will enable a structure to satisfy the requirements of this Standard, with reference to clauses 3.4.2 ⁽¹⁾⁽²⁾ and 3.4.5 ⁽¹⁾⁽²⁾ to 3.4.7 ⁽¹⁾⁽²⁾ . See section 6.1 of this Certificate. |
| Standard: | 7.1(a)(b) | Statement of sustainability |
| Comment: | | 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. |
| Regulation: | 12 | Building standards – conversions |
| Comment: | | 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 ⁽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 system is acceptable. See section 9 and the <i>Installation</i> part of this Certificate. |
| Regulation: | C4(a) | Resistance to ground moisture and weather |
| Comment: | | The system, 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 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* (1.1) and 3 *Delivery and site handling* of this Certificate.

Additional Information

NHBC Standards 2011

NHBC accepts the use of the Teranap TP Tanking System, provided it is installed, used and maintained in accordance with this Certificate, in relation to *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).

CE marking

The Certificate holder has taken the responsibility of CE marking the system in accordance with harmonised European Standard BS EN 13969 : 2004. An asterisk (*) appearing in this Certificate indicates that data shown is given in the manufacturer's Declaration of Performance.

1 Description

1.1 The Teranap TP Tanking System consists of Teranap 431 TP, a SBS-modified bitumen membrane reinforced with non-woven polyester (250 g·m⁻²) and Parafor M3S, a SBS polymer-modified bitumen membrane reinforced with non-woven polyester (180 g·m⁻²) for use as covering strips over joints. Nominal characteristics of the components of the system are given in Table 1.

| Characteristic | Teranap 431 TP | Parafor M3S |
|--|----------------|-------------|
| *Thickness (mm) | 4 | 3 |
| *Width (m) | 2 | 1 |
| Roll Length (m) | 20 | 10 |
| Roll weight (kg) | 201 | 36.5 |
| Mass per unit area (kg·m ⁻²) | 4.88 | 3.62 |
| *Tensile strength (N per 50 mm) | | |
| Longitudinal | 1300 | 850 |
| Transverse | 1000 | 600 |
| *Elongation (%) | | |
| Longitudinal | 49 | 40 |
| Transverse | 53 | 49 |
| *Low temperature flexibility (°C) | -20 | -20 |
| *Tear resistance | | |
| Longitudinal | 220 | 200 |
| Transverse | 240 | 220 |

1.2 The system may be used in conjunction with the following ancillary materials:

- Siplast Primer — a cold impregnation coating made with SBS-modified bitumen and hydrocarbon solvent
- Neodyl — a waterproof membrane for use over expansion joints
- Terastop A 240/4 — waterstop profiles for partitioning
- Terastop DA 540/4 — waterstop profiles for expansion joints
- Injection flange – a flexible polypropylene mixture to detect leakage and to permit injection for repair
- Parafor M4S – for use in pile cap treatments.

2 Manufacture

2.1 The system membranes are manufactured by coating a reinforcement on both sides with a blend of bitumens, limestone and elastomeric products to form a laminate, which is then coated with sand and a film applied to prevent bitumen adhesion.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of Icopal SAS has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by Bureau Veritas (Certificate 1.927.221/b).

3 Delivery and site handling

3.1 The membranes are delivered to site in wrapped rolls and on pallets. Roll labels are colour coded and bear the product name and the BBA identification mark including the number of this Certificate.

3.2 The rolls must be stored on end on a clean, level surface and kept under cover.

3.3 Siplast Primer is delivered to site in 2, 10 or 25 litre cans. The product is classified as harmful and flammable under the *Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP4)/Classification Labelling and Packaging of Substances and Mixtures (CLP Regulations)* and bears the appropriate hazard warning label. The flashpoint is 25°C.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Teranap TP Tanking System.

Design Considerations

4 Use

4.1 The Teranap TP Tanking System is suitable for use as a damp-proof and waterproof system for solid concrete floors, underground structures and for internally and externally applied tanking below ground in accordance with BS 8102 : 2009.

4.2 The system is compatible with concrete, smooth brick and blockwork and screeded substrates, and is resistant to those chemicals likely to occur in normal service conditions. However, care must be taken to prevent contact with mould, oils and hydrocarbons.

4.3 Where contact with materials used as damp-proof courses is likely, consideration must be given to the thermal stability of that material, due to the high temperatures reached during the installation of the membrane.

4.4 The system must always be fully protected immediately after installation, in accordance with the Certificate holder's instructions.

5 Practicability of installation

The system is only installed by installers who have been trained by the Certificate holder.

6 Resistance to water and water vapour



6.1 The system, including joints, when completely sealed and consolidated, will adequately resist the passage of moisture from the ground 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 — Regulation 9, Mandatory Standard 3.4, clauses 3.4.2⁽¹⁾⁽²⁾ and 3.4.5⁽¹⁾⁽²⁾ to 3.4.7⁽¹⁾⁽²⁾

Northern Ireland — Regulation C4(a).

(1) Technical Handbook (Domestic)

(2) Technical Handbook (Non-Domestic)

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

7 Resistance to mechanical damage

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

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

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

7.4 Provided sufficient care is taken, the system will not be damaged by normal foot traffic.

8 Maintenance

As the system is confined and has suitable durability, maintenance is not required. Any damage occurring during installation must be repaired in accordance with section 12, prior to backfilling.

9 Durability



The system, when fully protected and subjected to normal service conditions, will provide an effective barrier to the transmission of liquid water and water vapour for the life of the structure in which it is incorporated.

Installation

10 General

10.1 The Teranap TP Tanking System must be installed in accordance with the relevant requirements of BS 8102 : 2009, BS 8000-4 : 1989, CP 102 : 1973, Section 3, and the Certificate holder's instructions.

10.2 Concrete or screeded surfaces must have a smooth finish, be dry and be free from loosely-adhering material, sharp protrusions and dust.

10.3 Vertical surfaces of brickwork, blockwork and, if necessary, masonry should be rendered to provide an even surface. Brickwork or blockwork not rendered must be flush pointed to give a smooth surface without sudden changes in level.

10.4 The system may be installed under most normal site conditions at temperatures $\geq 5^{\circ}\text{C}$. Care must be taken to ensure that surface condensation is not present at low temperatures.

10.5 Surfaces must be primed with Siplast Primer, typically at a coverage rate of 250g per m^2 , and allowed to dry before the application of the system.

10.6 Reinforcing angles must be applied at all changes of direction. This is achieved by using strips of Parafor M3S and folding in half lengthways so that 150 mm is in the vertical plane and 150 mm is in the horizontal plane. The strip is fully torch-bonded into place, taking care that the plastic coating on the back of the membrane is completely removed by the action of the gas torch.

11 Procedure

Vertical applications

11.1 Teranap 431 TP can either be mechanically fastened or torch bonded when applied vertically.

11.2 The membranes are cut to the required length and rolled up, ensuring that the plastic film is on the outside.

11.3 The roll is held tight against the wall and, working up the wall, the membrane is torched across the roll until the plastic coating has been burnt off. This should result in a stream of molten bitumen ahead of the roll.

11.4 The membrane is pressed onto the wall using firm hand pressure so that it is fully bonded to the surface. Correct torching will result in a bead of bitumen being extruded along all edges.

11.5 Subsequent lengths of the membrane are fixed in the same way, ensuring that joints are staggered and that side laps are at least 100 mm. The joints must be overlapped by a torch-applied, 200 mm width cover strip of Parafor M3S.

11.6 Where vertical drops require more than one length of the membrane, a minimum overlap of 150 mm must be ensured, with the lower end of the upper length overlapping the upper end of the lower length, allowing any moisture to flow over the lap joint.

11.7 The top of the membrane is batten fixed or sealed into a chase.

11.8 The membrane must immediately be protected with the specified protection layer in accordance with the Certificate holder's instruction.

Horizontal applications

11.9 When applied horizontally, the membrane is loose laid.

11.10 Subsequent lengths of the membrane are laid, ensuring that joints are staggered and that side laps are at least 100 mm. The joints must be overlapped by a torch-applied, 200 mm width cover strip of Parafor M3S.

11.11 Where more than one length of membrane is required, a minimum overlap of 150 mm must be ensured.

11.12 The membrane must immediately be protected with the specified protection layer, in accordance with the Certificate holder's instructions.

Detailing and service penetrations

11.13 Consideration must be given to detailing and all service penetrations in tanking installations. The advice of the Certificate holder must be sought.

12 Repair

Any damage to the system must be repaired, normally by patching prior to the application of backfilling. The advice of the Certificate holder must be sought.

Technical Investigations

13 Tests

13.1 An assessment was made of data to EN 13969 : 2004 in relation to:

- visible defects*
- dimensions and tolerance*
- resistance to impact*
- reaction to fire*
- water vapour resistance*
- tensile strength and elongation*
- flexibility at low temperature*
- shear resistance of joints*
- resistance to static loading*
- watertightness on controls and following 12 weeks of heat ageing at 70°C and 4 weeks of exposure to chemicals*.

13.2 Tests were carried out to determine:

- mass per unit area and dimensions
- dimensional stability
- resistance to chisel impact at 0°C and 23°C
- tensile strength and elongation at break
- resistance to static loading
- nail tear
- impact resistance
- water vapour transmission and resistance
- watertightness on controls and following 12 weeks of heat ageing at 70°C
- flexibility at low temperature on controls and following 12 weeks of heat ageing at 70°C
- tensile strength of joints on controls and following 12 weeks of heat ageing at 70°C and 1 week of water exposure at 60°C
- peel strength from concrete
- leakage of joints.

14 Investigations

14.1 The manufacturing process was evaluated, including the methods adopted for quality control.

14.2 An evaluation of a site in progress was made to assess the practicability of installation.

Bibliography

BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*

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

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

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

EN 13969 : 2004 *Flexible sheets for waterproofing — Bitumen damp proof sheets including bitumen basement tanking sheets — Definitions and characteristics*

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
- 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.

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.