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Designated by Government
to issue
European Technical
Approvals

SIKA WATERPROOFING SYSTEMS

Système d'étanchéité
Wasserdichtungsmittel

Product



- THIS CERTIFICATE REPLACES DETAIL SHEETS 2 AND 5 OF CERTIFICATE No 95/3174 AND RELATES TO SIKA WATERPROOFING SYSTEMS, A RANGE OF PRODUCTS USED TO PRODUCE WATERPROOF RENDERS AND SCREEDS.

- The systems are used for internal and external waterproofing on new or existing structures of concrete, brickwork or stone.
- The systems are used to waterproof Type A basement structures to give a level of protection of up to grade 3 as defined in BS 8102 : 1990.
- The systems must be applied by Sika Ltd's recommended contractors.

Regulations

1 The Building Regulations 2000 (as amended) (England and Wales)



The Secretary of State has agreed with the British Board of Agrément the aspects of performance to be used by the BBA in assessing the compliance of waterproofing/tanking (walls and floors) with the Building Regulations. In the opinion of the BBA, Sika Waterproofing Systems, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement: C2(a)(b)

Resistance to moisture

Comment:

The systems satisfy this Requirement. See sections 12.1 and 12.2 of this Certificate.

Requirement: Regulation 7

Materials and workmanship

Comment:

The systems are acceptable. See section 14 of this Certificate.

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



In the opinion of the BBA, Sika Waterproofing Systems, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and Mandatory Standards as listed below.

Regulation: 8

Fitness and durability of materials and workmanship

Regulation: 8(1)

Fitness and durability of materials and workmanship

Comment:

The systems can contribute to a construction satisfying this Regulation. See section 14 and the *Installation* part of this Certificate.

Regulation:	9	Building standards — construction
Standard:	3.3	Flooding and ground water
Standard:	3.4	Moisture from the ground
Standard:	3.10	Precipitation
Comment:		The systems are an effective barrier to liquid water and water vapour, with reference to clauses 3.3.1 ⁽¹⁾⁽²⁾ , 3.4.1 ⁽¹⁾⁽²⁾ , 3.4.2 ⁽¹⁾⁽²⁾ , 3.4.5 ⁽¹⁾⁽²⁾ , 3.4.6 ⁽¹⁾⁽²⁾ , 3.4.7 ⁽¹⁾⁽²⁾ , and 3.10.1 ⁽¹⁾⁽²⁾ respectively. See sections 12.1 and 12.2 of this Certificate.
Regulation:	12	Building standards — conversions
Comment:		All comments given for these systems under Regulation 9, 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).

3 The Building Regulations (Northern Ireland) 2000 (as amended)



In the opinion of the BBA, Sika Waterproofing Systems, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The systems are acceptable. See section 14 of this Certificate.
Regulation:	C4	Resistance to ground moisture and weather
Comment:		The systems satisfy the requirements of this Regulation. See sections 12.1 and 12.2 of this Certificate.

4 Construction (Design and Management) Regulations 2007 Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, CDM co-ordinator or planning supervisor, designer and contractors to address their obligations under these Regulations.

See section: 6 Delivery and site handling (6.1, 6.3, 6.5, 6.6 and 6.8).

Technical Specification

5 Description

5.1 Sika Waterproofing Systems consist of four pre-bagged cementitious mortars for use with Sika-1 integral waterproofing admixture and Sika Damp-Proofing Slurry.

5.2 Quality control is exercised over raw materials, during the manufacturing processes and on the final products.

Sika-1 systems

5.3 The Sika-1 Systems can be used to produce polymer/cement-based waterproof coatings and the multicoat renders as described in Clauses 4.1.7 and 4.1.8 of BS 8102 : 1990 respectively and can also be used to produce waterproof screeds.

5.4 Sika-1 liquid admixture is an aqueous colloidal silicate solution with chemical additives, produced by a batch-blending process.

5.5 The Sika-1 mortars are pre-batched blends of dried graded aggregates and Portland cement⁽¹⁾. Their characteristics are given in Table 1.

(1) Versions of all four mortars are available using sulfate-resisting Portland cement for use where sulfates are present in the soil (see section 11). Advice from the Certificate holder should be sought in such circumstances.

Sika Damp-Proofing Slurry

5.6 Sika Damp-Proofing Slurry can be used to produce a polymer-cement-based waterproof coating conforming to Clause 4.1.8 of BS 8102 : 1990.

5.7 Sika Damp-Proofing Slurry is a one-component, polymer-modified, cement-based, protective and waterproof slurry coating. It is available in grey and off-white grades.

Table 1 Sika product characteristics

Mortar type	Aggregate/cement ratio	Mixed wet density (kgm ⁻³)
Sika-1 Spritz and Bonding	1:1.0	2080
Sika-1 Render	1:1.5	2220
Sika-1 Finishing	1:2.5	2130
Sika-1 Screed	1:3.0	2100
Sika Damp-Proofing Slurry	1:1.76	1880–2080

6 Delivery and site handling

6.1 The Sika-1 liquid admixture is supplied in 5 litre, 25 litre and 200 litre containers bearing the BBA identification mark incorporating the number of this Certificate, or in bulk by tanker.

6.2 The admixture should be stored in frost-free conditions.

6.3 The pre-batched Sika-1 mortars are supplied in 25 kg bags colour coded thus:

- Sika-1 Spritz and Bonding — red band
- Sika-1 Render — brown band
- Sika-1 Finishing — green band
- Sika-1 Screed — blue band.

6.4 The mortars should be stored in dry conditions in unopened bags.

6.5 Sika Damp-Proofing Slurry is supplied in 12.5 kg plastic buckets and 25 kg bags.

6.6 Sika Damp-Proofing Slurry is classified 'irritant' under The Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP3).

6.7 The shelf-life of the materials when stored unopened, in temperatures between 10°C and 30°C, is at least six months.

6.8 The normal health and safety procedures associated with cementitious materials should be observed, during transportation, storage and on site.

Design Data

7 General

7.1 Sika Waterproofing Systems are satisfactory for internally or externally waterproofing new or existing Type A structures (structure type defined in Clause 3.2.4 of BS 8102 : 1990) of brickwork, blockwork or concrete construction. They provide an effective barrier against the transmission of liquid water, and for basements gives a level of protection suitable for grades 1 to 3 (see Table 2).

Table 2 Basement usage (as defined in BS 8102 : 1990, Table 1)

Grade	Basement usage
1	Car parking; plant rooms (excluding electrical equipment); workshops
2	Workshops and plant rooms requiring drier environment; retail storage areas
3	Ventilated residential and working areas such as offices, restaurants and leisure centres
4	Archives and stores requiring controlled environment

7.2 Additional treatment (outside the scope of this Certificate) will be required for a grade 4 basement (see Table 2). The Certificate holder can advise on this application.

7.3 New buildings must be designed to withstand the hydrostatic pressure expected in service. The products should not be applied until structural movement due to curing is complete.

7.4 The Sika-1 liquid admixture is used with the pre-batched mortars in the proportions defined in

section 17 of this Certificate to produce Sika-1 renders or screeds.

7.5 The Sika-1 Mortar System is suitable for tanking all basements subject to the structure withstanding the imposed loads, including maximum external water head.

7.6 Sika-1 renders are satisfactory for use as:

- a two- or three-coat system for external or internal waterproofing above ground level
- a three- or four-coat system for waterproofing basements, swimming pools or water retaining structures by internal rendering.

7.7 Sika-1 screeds are satisfactory for use as a three-coat system to waterproof:

- basement floors in conjunction with Sika-1 internal render to the walls
- floors in wet areas (eg shower rooms).

7.8 The surface is installed using conventional rendering and screeding techniques. Inter-coat adhesion is achieved by the use of spatter coats rather than by scratching, and all joints between successive applications are lapped.

7.9 The nominal thicknesses (in mm) are:

- two-coat render — 12
- three-coat render — 20
- four-coat render — 26
- three-coat screed — 30 (minimum)

7.10 Sika-1 admixture used in Portland cement concrete is suitable for use in contact with potable water. It is approved by the Drinking Water Inspectorate (DWI) under the appropriate Statutory Instruments in connection with the provision of public supplies of water for drinking, washing, cooking or food production purposes and is listed in Section 4 *Sealants and Repair Materials for Cement* of the DWI Approved List.

7.11 Sika Damp-Proofing Slurry is suitable for the waterproofing of basements up to 4 m deep as defined in Clause 3.4 of BS 8102 : 1990. Basements subject to potential water pressure should be waterproofed using Sika-1 Mortar systems.

7.12 Sika Damp-Proofing Slurry is satisfactory for use:

- for interior and exterior waterproofing of concrete, brickwork and blockwork structures
- as a waterproofing system for tanks and pools.

7.13 The slurry is not a decorative treatment (although it can be overcoated) and may display signs of 'blooming' after rain or in damp conditions. Advice from the Certificate holder is sought for overcoating.

8 Fixings

8.1 To avoid breaching the waterproofing when attaching fixings, one of the following techniques should be used:

- use of epoxy resin or polyurethane adhesives to bond lightweight fixings to the surface (the Certificate holder should be consulted for advice on suitable materials)
- recesses, made in the substrate to accept heavy duty fittings, lined with the render to form waterproof pockets; the pockets are packed with mortar to hold the fixings in position
- use of floor-standing supports.

8.2 If these techniques cannot be applied and it is necessary to breach the waterproof coating, the recess formed in the substrate must be packed with the waterproofing system.

9 Resistance to movement

9.1 A Sika-1 render or screed is unable to accommodate substrate movement. However, a structure showing live cracks can be waterproofed by following the procedure given in section 17.20.

9.2 Sika Damp-Proofing Slurry is slightly flexible and can be used to bridge hairline cracks, but cannot accommodate the movement of designed expansion joints. The Certificate holder can advise on such details.

10 Resistance to damage

The coatings are vulnerable to damage during installation and in service, particularly when left unprotected in heavily trafficked areas where there is a risk of impact or abrasion.

11 Sulfate resistance

A conventional Sika-1 system based on Portland cement or Damp-Proofing Slurry System may only be used in soils of Class DS1 as defined in BRE Special Digest 1 : 2005 *Concrete in aggressive ground*, Table C1. A Sika-1 render based on sulfate-resisting Portland cement may be used in soils of Class DS2 (see Table 3).

Table 3 Concentrations of sulfates in the ground expressed as SO_4

Class	In soil		In ground water (g per litre)
	Total SO_4 (%)	SO_4 in 2:1 water: soil extract (g per litre)	
DS1 ⁽¹⁾	<0.24	<0.5	<0.4
DS2 ⁽²⁾	0.24 to 0.6	0.5 to 1.5	0.4 to 1.4

(1) Use Portland cement-based product.

(2) Use sulfate-resisting Portland cement-based product.

12 Water resistance



12.1 Sika Waterproofing Systems provide an effective barrier to the transmission of liquid water.

12.2 The water vapour resistances of the various products are given in Table 4.

Table 4 Water vapour resistances

Product	Water vapour resistance (MNs_g^{-1})
Sika-1 two-coat render	5.76
Sika-1 three-coat render	27.57
Sika-1 four-coat render	32.31
Sika-1 Screed	47.49
Sika Damp-Proofing Slurry	3.0

13 Internal application on a basement wall

13.1 When the systems are applied to the inside of a basement wall, the wall structure behind the waterproofing may remain wet, with subsequent risks of condensation and frost damage in cold conditions.

13.2 The condensation risk can be minimised by the application of a coat of proprietary lightweight cement-based renovating plaster, the provision of adequate heating and ventilation and, if required, the use of a dehumidifier.

14 Durability



Under normal conditions of use, the systems will provide an effective barrier to the transmission of liquid water for the life of the building to which they are applied.

Installation

15 General

15.1 Installation of Sika Waterproofing Systems should be carried out in accordance with the Certificate holder's instructions by their recommended contractors. Workmanship should comply with BS 8000-4 : 1989.

15.2 The systems may be installed under most normal site conditions, but external application should not be attempted during rain nor at temperatures below 5°C.

16 Surface preparation

16.1 All surfaces must be clean, sound and free from previous coatings and surface water.

Walls

16.2 Before application as an external waterproofing treatment for brickwork or blockwork masonry, the surface must be wire-brushed, all defective mortar joints raked out squarely 10 mm to 12 mm deep, and the surface washed thoroughly.

16.3 All joints and surface defects should be made good using Sika-1 Finishing Mortar prepared with clean water.

16.4 Before application as internal tanking, the surface is bush-hammered or grit/water blasted. All defective mortar joints raked out, squarely 10 mm to 12 mm deep, and the surface washed thoroughly.

16.5 When casting new concrete, a suitable surface for the application of the product can be obtained using shutters treated with a surface retarder⁽¹⁾. When the shutters are removed the surface is wire-brushed and washed thoroughly. Other new concrete surfaces are prepared by bush-hammering or grit/water blasting.

(1) The Certificate holder should be consulted for advice on suitable materials.

Floor

16.6 For floors, all existing coverings must be removed and the surface prepared by bush-hammering or grit/water blasting, followed by washing to remove debris.

16.7 Any defects are made good and water infiltration through the surface to be treated is either diverted by drainage or concentrated at points to be plugged⁽¹⁾ after three coats of a four-coat Sika-1 render have been applied.

(1) The Certificate holder should be consulted for advice on suitable materials.

16.8 Immediately prior to application the substrate should be soaked with clean water, however, free surface water must not be present.

17 Application

Sika-1 liquid admixture

17.1 Sika-1 liquid is diluted (1:10 by volume) with clean water. Care must be taken to prevent lumps forming.

17.2 Unless otherwise indicated, all mixes are prepared using the appropriate pre-batched mortar and the 1:10 diluted Sika-1 solution.

17.3 The approximate quantities of Sika-1 solution (in litres) required for the mixes are:

Sika-1 Spritz and Bonding mortar — 5.7

Sika-1 Render mortar — 3.3

Sika-1 Finishing mortar — 3.3

Sika-1 Screed mortar — 2.5

17.4 Mixing of the diluted Sika-1 admixture with the mortars should be undertaken in a force action mixer or in a clean drum using a paddle mixer. A tumble action mixer is not suitable.

17.5 Other materials should not be added to the mix at any stage.

Rendering

17.6 A Sika-1 Spritz and Bonding mortar is prepared and vigorously applied as a 6 mm coat over the wall surface.

17.7 Four to five hours later, when the first coat has stiffened, a 6 mm thick coat of Sika-1 Render mortar is applied by trowel, with a cove trowel used at internal corners. A spatter coat of the same mortar, gauged with plain water to form a slurry, is applied to serve as a key for the next coat.

17.8 The next day a Sika-1 Finishing mortar is applied at a 6 mm thickness and finished with a wooden float.

17.9 In a two-coat external application, above ground level, the Sika-1 Render mortar coat is omitted.

17.10 In a four-coat internal application, the Sika-1 Render mortar coat is repeated and the Finishing mortar applied on the third day.

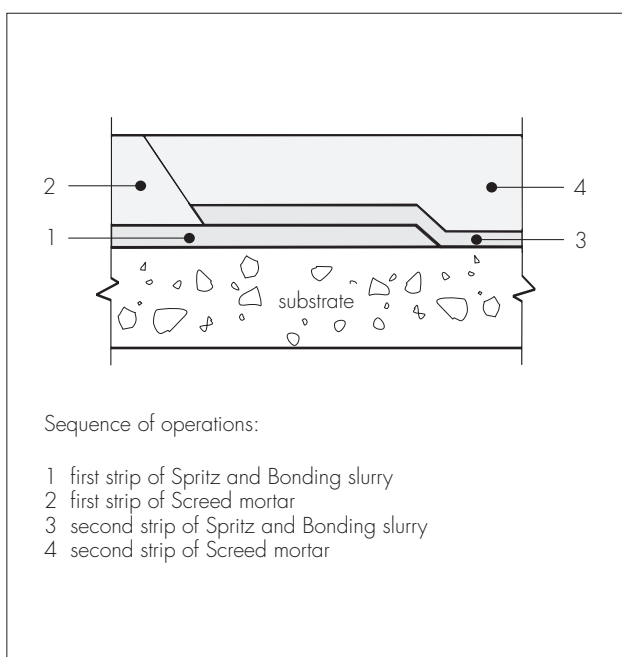
Floor screed

17.11 A Sika-1 Spritz and Bonding slurry is prepared and applied in strips by brush or broom.

17.12 While the first coat is still wet, a Sika-1 Spritz and Bonding mortar coat is trowel applied at a plastic consistency, to a minimum thickness of 10 mm.

17.13 While the bonding coat is still wet, a Sika-1 screed is prepared, and is applied to a minimum thickness of 20 mm and is tamped vigorously. Care is taken to leave a strip of the bonding coat uncovered at the edge ensuring a lap joint is formed with the next strip, as shown in Figure 1.

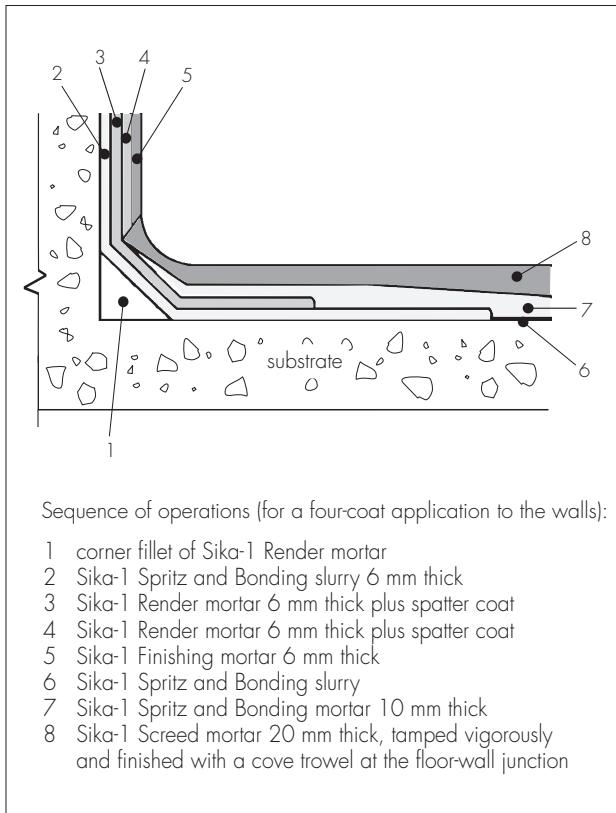
Figure 1 Formation of lap joint



Continuity between waterproofing on wall and floor

17.14 The first two coats on the wall are continued over a corner fillet onto the floor surface. The corner fillet mortar can be omitted if a corner strip is used (the Certificate holder can provide details). The whole corner lap sequence is illustrated in Figure 2.

Figure 2 Formation of corner joint



17.15 The applied system must be cured by keeping it moist for seven days. Sudden changes in temperature and humidity should be avoided during this period. The system must be protected from frost during curing.

Sika Damp-Proofing Slurry

17.16 The powder is mixed with water using a drill and paddle stirrer (speed 500 rpm) in a plastic or steel bucket, until the mix is free from lumps. Depending on the method of application, the 25 kg pack requires the following amount of water (in litres)⁽¹⁾:

- brush — 4.5–4.7
- trowel — 4.0–4.25
- spray — 4.0–4.5

(1) Quantity should be reduced by 50% for the 12.5 kg pack

17.17 The resultant mortar mix should be applied within its workable life (approximately 30 minutes at 20°C).

17.18 The product should be applied in a minimum of two layers to give a total thickness of between 2 mm and 5 mm using one of the following methods:

- brush — the product should be applied in even layers using a flat fibre brush on vertical surfaces and a rubber squeegee or brush for horizontal surfaces. The first coat is allowed to stiffen (normally after two to six hours) and a second coat applied within 24 hours at the same coverage rate
- trowel — the first layer may be applied using a trowel with 3 mm to 4 mm teeth. Once the first coat has hardened, a smooth edged trowel may be used to apply the second coat
- spray — both coats are applied using wet spray equipment ensuring the first coat has hardened sufficiently to prevent damage from the second spray application. The second coat may be smoothed using brush or trowel.

17.19 Whilst curing, the product should be protected from direct sunlight and strong winds, using damp hessian or polythene sheeting.

Detailing

17.20 In all cases, joints or live cracks should be sealed and reflected through the waterproofing system with a suitable flexible sealant. The Certificate holder can advise on the appropriate sealant for a particular application.

17.21 Penetrations by such features as pipes must be securely sealed to maintain watertightness. The advice of the Certificate holder should be sought on suitable systems.

Technical Investigations

The following is a summary of the technical investigations carried out on Sika Waterproofing Systems.

18 Tests

18.1 Tests were carried out by the BBA on the Sika-1 System to determine:

- resistance to water penetration
- water vapour transmission rate
- adhesion to substrates
- inter-coat adhesion.

18.2 An examination was made of independent test data on Sika Damp-Proofing Slurry covering:

- water diffusion
- water vapour diffusion
- carbon dioxide diffusion
- compressive and flexural strength
- static modulus of elasticity
- coefficient of thermal expansion
- frost resistance
- pull-off strength (adhesion)
- alkali resistance.

18.3 An examination was made of the Certificate holder's test data for Sika Damp-Proofing Slurry covering:

- flow
- density
- air content
- compressive strength
- drying shrinkage
- modulus of elasticity
- pull-off strength (adhesion).

19 Investigations

19.1 The manufacturing processes were examined, and the raw material specifications, formulations and quality control procedures were established.

19.2 The methods of application and durability of the product was assessed.

19.3 Visits were made to sites to assess the practicability of installation.

19.4 User surveys of treated properties were conducted.

19.5 An examination was made of the Certificate holder's approval procedures for contractors.

19.6 An assessment was made of the effect of the products on the potability of water.

19.7 A re-examination was made of the data and investigations on which the previous Certificates were based. The original conclusions remain valid.

Additional Information

The management systems of Sika Ltd have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2000 by British Standards Institution Quality Assurance (Certificate No FM 12504). Sika Ltd also comply with the requirements of BS EN ISO 14001 : 1996 (Certificate No EMS 45308).

Bibliography

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 EN ISO 9001 : 2000 *Quality management systems — Requirements*

BS EN ISO 14001 : 1996 *Environmental Management systems, Specification with guidance for use*

Conditions of Certification

20 Conditions

20.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- 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 References in this Certificate to any Act of Parliament, Statutory Instrument, Directive or Regulation of the European Union, British, European or International Standard, Code of Practice, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

20.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant 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 In granting this Certificate, the BBA is not responsible for:

- 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 the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

20.5 Any information relating to the manufacture, supply, installation, use and maintenance 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 and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date 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. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.



In the opinion of the British Board of Agrément, Sika Waterproofing Systems are fit for their intended use provided they are installed, used and maintained as set out in this Certificate. Certificate No 00/3761 is accordingly awarded to Sika Ltd.

On behalf of the British Board of Agrément

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

Date of Third issue: 30th April 2007

Chief Executive

**Original Certificate issued 8th January 2001. This amended version includes the addition of grit/water blasting to the surface preparation section and new Conditions of Certification.*