

CETCO Europe Ltd

Birkenhead Road
Wallasey
Merseyside CH44 7BU
Tel: 0151 606 5900 Fax: 0151 606 5932
e-mail: info@cetco.co.uk
website: www.cetco.co.uk



Agrément Certificate
86/1650
Product Sheet 2

BENTONITE WATERPROOFING SYSTEM FOR STRUCTURES

WATERSTOP-RX

This Agrément Certificate Product Sheet⁽¹⁾ relates to Waterstop-RX, a sodium bentonite/butyl rubber water bar for use in waterproofing and damp-proofing construction joints in 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 pressure — the product provides an effective barrier to the passage of liquid water from the ground in construction joints (see section 6).

Durability — when fully protected, the product provides an effective barrier to the transmission of water in construction joints for the life of the building in which it is incorporated (see section 8).

The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Fourth issue: 14 March 2016

John Albon — Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

Originally certificated on 18 June 1986

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

British Board of Agrément
Bucknalls Lane
Watford
Herts WD25 9BA

tel: 01923 665300
fax: 01923 665301
clientservices@bba.star.co.uk
www.bbacerts.co.uk

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Regulations

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



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

Requirement:	C2(b)	Resistance to moisture
Comment:		The product will enable a structure to satisfy this Requirement. See section 6 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The product is acceptable. See section 8 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The product can contribute to a construction satisfying this Regulation. See section 8 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	3.4	Moisture from the ground
Comment:		The product, including joints, will enable a structure to satisfy clauses 3.4.1 ⁽¹⁾⁽²⁾ , 3.4.2 ⁽¹⁾⁽²⁾ , 3.4.5 ⁽¹⁾⁽²⁾ , 3.4.6 ⁽¹⁾⁽²⁾ and 3.4.7 ⁽¹⁾⁽²⁾ of this Standard. See section 6 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 applicable to conversions
Comment:		Comments made in relation to the product under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



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

Regulation:	23(a)(i)(iii)b(i)	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 8 and the <i>Installation</i> part of this Certificate.
Regulation:	28	Resistance to moisture and weather
Comment:		The product is an effective barrier to water in construction joints, and therefore will enable a structure to satisfy the requirements of this Regulation. See section 6 of this Certificate.

Construction (Design and Management) Regulations 2015

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

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

See section: 3 *Delivery and site handling* (3.1, 3.3 and 3.4) of this Certificate.

Additional Information

NHBC Standards 2016

NHBC accepts the use of Waterstop-RX, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapters 5.1 *Substructure and ground bearing* and 5.4 *Waterproofing of basements and other below ground structures*.

Unless it can be demonstrated that the water table is permanently below the underside of the slab, the product should be used in combination with either a Type A or Type C waterproofing protection where Grade 3 protection is required and the below ground wall retains more than 600 mm (measured from the top of the retained ground to the lowest finished floor level).

Technical Specification

1 Description

1.1 Waterstop-RX is a black, flexible, extruded strip of sodium bentonite/butyl rubber, with one side backed by a silicone-treated paper, for use as a water bar in construction joints and in conjunction with Voltex, available in two sizes:

- RX101 – 25 mm wide by 20 mm thick
- RX103 – 15 mm wide by 10 mm thick.

1.2 Ancillary components used in the installation of the product and which are included in this assessment are:

- Volclay Granules – a loose form of granular sodium bentonite used for detailing. It can be installed in a dry unactivated state or mixed with water to form a 'paste' for sealing
- Cetsel – a multi-purpose, single-component moisture-cure adhesive, to prevent Waterstop-RX from moving during the pouring and placement of concrete at construction joints and around penetrations
- Bentoseal – a trowel-grade sodium bentonite compound used for detailing work, eg around penetrations
- Revo-Fix Mesh – a metal overlay strip used to prevent Waterstop-RX from moving during placement of concrete.

2 Manufacture

2.1 The product is manufactured by a controlled batch process in which the compound is extruded into strips and cut to length.

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 manufacturer's management system has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by Q&R (Certificate Q&R_503).

3 Delivery and site handling

3.1 Coils of Waterstop RX101 are packaged six coils of 5 m length⁽¹⁾ in cartons, each carton weighing 25 kg. Coils of Waterstop RX103 are packaged eight coils of 6 m length in cartons, each carton weighing 10.5 kg.

3.2 Waterstop-RX should be stored away from direct heat, in dry conditions, under cover and away from the possibility of damage or premature contact with water.

3.3 Bentoseal is supplied in 25 kg tubs⁽¹⁾.

3.4 Volclay Granules are supplied in 20 kg bags⁽¹⁾.

(1) Weights and sizes are subject to change. Users are advised to consult current manufacturer's literature.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Waterstop-RX.

Design Considerations

4 Use

4.1 Waterstop-RX is satisfactory for use as a water bar as part of a Voltex or Voltex DS waterproofing installation.

4.2 The product is satisfactory for use as a Type B (structurally integral) protection, as defined in BS 8102 : 2009, to waterproof construction joints and penetrations in underground reinforced concrete structures.

4.3 The product is not suitable for use in expansion or movement joints.

4.4 The product swells on contact with water and must be fully confined within the concrete structure to form an effective seal.

4.5 The product will develop a significant pressure when confined within a concrete structure and must be covered by a minimum of 75 mm of concrete on all sides.

5 Practicability of installation

The product should only be installed by contractors who have been trained and approved by the Certificate holder.

6 Resistance to water pressure



When confined, Waterstop-RX forms an effective barrier to water pressure from the ground in reinforced concrete construction joints.

7 Maintenance

As the product is confined within the structure and has suitable in-situ durability (see section 8), maintenance is neither possible nor required.

8 Durability



When fully protected, Waterstop-RX provides an effective barrier to the transmission of liquid water in construction joints for the life of the building in which it is incorporated.

Installation

9 General

- 9.1 Waterstop-RX should not be applied during heavy rainfall or where there is standing water.
- 9.2 The product is not designed for use in movement or expansion joints.
- 9.3 The product must never remain permanently exposed.
- 9.4 Care must be taken to ensure that the product remains in position and is not dislodged or damaged when concrete is poured over it or during subsequent actions, eg vibration.

10 Procedure

Surface preparation

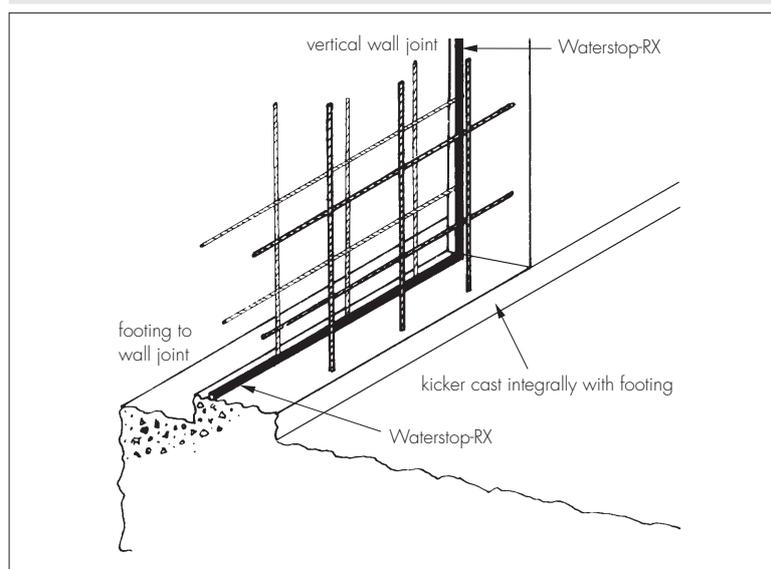
10.1 Joint surfaces should be clean, dry and free from cavities and spalling. Any irregularities in the surface do not normally need to be filled, but if necessary these can be filled with a suitable strength cement grout or mortar while the concrete is still green, and made smooth.

10.2 Waterstop-RX is positioned in the centre of the reinforced concrete construction joint, ensuring that a minimum of 75 mm concrete cover is provided to all sides of the product.

Installation

10.3 Waterstop-RX can be installed around all through wall pipes and mechanical penetrations, and around all structural elements such as steel columns penetrating the slab. Installation details are shown in Figure 1.

Figure 1 Waterstop-RX installation details



Fixing mesh method (for construction joints)

10.4 The release paper is removed, and lengths of Waterstop-RX are placed so as to minimise coil end joints, ensuring that a minimum 75 mm depth of concrete will be maintained.

10.5 Using a sharp knife or utility blade, coil ends are cut to fit tightly butted together, without overlapping, to form a continuous waterstop.

10.6 Revo-Fix strips are placed over the waterstop, and the strip-ends lapped by 25 mm maximum. The lap is nailed through using the fixings supplied, and an additional fixing is installed 300 mm centre to centre along the Revo-Fix.

Adhesive method (for construction joints and service penetrations)

10.7 A continuous bead of Cetseal (typical bead diameter 6 mm) is applied to the dry, smooth concrete surface, ensuring that a minimum 75 mm depth of concrete will be maintained.

10.8 The release paper is removed, and lengths of Waterstop-RX are placed so as to minimise coil end joints. The waterstop is pressed into the adhesive bead, so that the adhesive spreads to coat most of the bottom of the waterstop.

10.9 Using a sharp knife or utility blade, coils ends are cut to fit tightly butted together, without overlapping, to form a continuous waterstop.

Swelling

10.10 If the material exhibits considerable swelling prior to confinement in the joint, it must be replaced with new material.

Concrete casting

10.11 Casting of retaining walls and floor slabs is carried out immediately after fixing Waterstop-RX in position.

Technical Investigations

11 Tests

11.1 Tests were conducted and the results assessed to determine:

- resistance to hydrostatic pressure
- characterisation.

11.2 Observations were made of the ease of installation, in particular around obstructions.

12 Procedure

12.1 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.

12.2 Existing data on the effectiveness and durability of natural sodium bentonite/butyl rubber as a hydrophilic waterbar were examined.

12.3 Visits were made to a site in progress to assess the practicability of installation.

12.4 A survey of known users was conducted to assess the performance in use.

12.5 An assessment was made of the original data resulting in the issue of Certificate 83/1081.

Bibliography

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*

13 Conditions

13.1 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.

13.2 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.

13.3 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.

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

13.5 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.

13.6 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.