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Agrément Certificate

18/5556

Product Sheet 1

BASF PLC HYDRO-EXPANSIVE WATERBARS

MASTERSEAL 910/912

This Agrément Certificate Product Sheet⁽¹⁾ relates to MasterSeal 910/912, comprising a flexible synthetic elastomer hydro-expansive waterstop and hydro-expansive mastic, used to waterproof construction joints and penetrations in underground waterproof reinforced concrete 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

Adhesion — the system has satisfactory adhesion to smooth, well-compacted, clean and dry concrete (see section 6).

Resistance to water pressure — the system provides an effective barrier to the passage of moisture from the ground (see section 7).

Durability — when fully enclosed in a concrete structure, the system will remain effective as a waterstop 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: 28 August 2018

John Albon – Head of Approvals
Construction Products

Claire Curtis-Thomas
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.*

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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Regulations

In the opinion of the BBA, MasterSeal 910/912, 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(a)	Resistance to moisture
Comment:		The system provides an effective barrier to water under hydrostatic pressure. See section 7 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The system is acceptable. See section 9.1 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 system is acceptable. See section 9.1 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 system provides an effective barrier to water under hydrostatic pressure, with reference to clauses 3.4.1 ⁽¹⁾⁽²⁾ , 3.4.5 ⁽¹⁾⁽²⁾ and 3.4.7 ⁽¹⁾⁽²⁾ of this Standard. See section 7 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 applicable to conversions
Comment:		All comments given for 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) 2012 (as amended)

Regulation:	23(a)(i)	Fitness of materials and workmanship
Comment:	(iv)(b)(i)	The system is acceptable. See section 7 and the <i>Installation</i> part of this Certificate.
Regulation:	28(a)	Resistance to moisture and weather
Comment:		The system provides an effective barrier to water under hydrostatic pressure. See section 9.1 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See section: 3 *Delivery and site handling* (3.1, 3.2 and 3.4) of this Certificate.

Additional Information

NHBC Standards 2018

In the opinion of the BBA, MasterSeal 910/12, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 5.4 *Waterproofing of basements and other below ground structures* (requiring proprietary waterproofing materials to comply with Technical Requirement R3).

Unless it can be demonstrated that the water table is permanently below the underside of the slab, the system must be used within a Type B⁽¹⁾ waterproofing protection system in combination with either a Type A⁽¹⁾ or C⁽¹⁾ waterproofing protection where Grade 3⁽¹⁾ 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).

(1) As defined in BS 8102 : 2009.

Technical Specification

1 Description

1.1 MasterSeal 910/912 comprises:

- MasterSeal 910 — a red hydro-expansive waterbar based on synthetic polymer technology that swells on contact with water. The product has nominal cross-sectional dimensions of 20 x 10 mm
- MasterSeal 912 — a grey one-component, moisture-curing synthetic polymer gun-applied mastic that swells on contact with water that is used to adhere MasterSeal 910 to concrete surfaces. The product can also be used as a waterstop around penetrations through waterproof concrete structures, eg pipes and cable ducts.

1.2 Ancillary items that may be used to aid installation of the system, and included in this assessment, are masonry nails with nominal 10 mm washers to ensure MasterSeal 910 does not move out of position at changes of direction.

1.3 Other items which may be used in conjunction with MasterSeal 912 at penetrations, but which are outside the scope of this Certificate include:

- rapid-set plugging mortars
- plugging system for tie holes.

2 Manufacture

2.1 The system components are manufactured by typical batch processes and where applicable, 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 management systems of the manufacturers have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by Lloyd's Register (LRQA) (Certificate MEA 1905076) and Euro Quality System (Certificate 031250/112B).

3 Delivery and site handling

3.1 MasterSeal 910 is supplied in cartons consisting of three rolls of 10 m lengths individually sealed in a polythene bag. Each carton has a nominal weight of 9.9 kg.

3.2 MasterSeal 912 is available in either 310 ml aluminium cartridges or 600 ml foil sausages. Cartridges are packed in cartons, with 12 cartridges per carton, weighing approximately 3.7 kg. The 600 ml sachets are packed in cartons with 12 sachets per carton, weighing approximately 7.3 kg.

3.3 The system components must be stored in cool, dry conditions away from direct sunlight. When stored in accordance with the Certificate holder's instructions, the products will have a shelf life of at least 12 months.

3.4 The Certificate holder has taken the responsibility of classifying and labelling the system components under the *CLP Regulation (EC) No 1272 / 2008 on the classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on MasterSeal 910/912.

Design Considerations

4 Use

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

4.2 The system is not suitable for use in movement joints, eg expansion joints.

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

4.4 The unconfined MasterSeal 910 and MasterSeal 912 swell by approximately 200% by volume in neutral pH water. Swelling decreases with increasing temperature but will be adequate to enable the product to form an effective seal when fully confined under normal service conditions.

4.5 The system will shrink on drying, but will re-hydrate on wetting and re-swell to provide an effective seal.

4.6 The ability of the system to expand and form an effective seal can be adversely affected by the groundwater chemistry, especially saline and acidic conditions. A detailed study of this aspect must be carried out to establish the presence of any contamination. The Certificate holder must be consulted for advice on specific applications, service conditions and groundwater chemistry.

4.7 The system has not been assessed for use in saline water conditions.

4.8 The system will develop a significant pressure when confined within a concrete structure. MasterSeal 910/912 must be covered by at least 80 mm of concrete from each edge, to absorb the forces due to swelling.

5 Practicability of installation

The system is designed to be installed by a competent general builder, or a contractor, experienced with this type of system.

6 Adhesion

6.1 The system, when applied to sound and well compacted concrete substrates, has satisfactory adhesion.

6.2 Substrates must be free from contamination that could affect the adhesion of the system.

7 Resistance to water pressure



7.1 When confined, the system forms an effective barrier to water under hydrostatic pressure from the ground in water-resistant reinforced concrete construction joints.

7.2 The results of resistance to hydrostatic pressure tests carried out on the system are given in Table 1.

Table 1 Resistance to water pressure

System	Maximum water pressure at which system remained watertight (Bar)
MasterSeal 910 bonded with MasterSeal 912	3.0
MasterSeal 912	8.0

7.3 An appropriate safety factor must be applied to the maximum water pressure given in Table 1, and the use of additional waterproofing protection should be considered, depending on the specific risks associated with any particular structure. The Certificate holder should be consulted for further advice.

8 Maintenance

As the system is confined within the structure and has suitable in-situ durability (see section 9), maintenance is neither possible nor required.

9 Durability



9.1 The system will function as a waterstop and provide an effective barrier to water under hydrostatic pressure for the life of the structure in which it is incorporated.

9.2 The durability of the system may be affected if dislodged or damaged during or following installation, therefore care must be taken to ensure that the system remains in position and is not dislodged when concrete is poured over it, nor damaged during subsequent actions, eg vibration.

Installation

10 General

10.1 Surfaces must be sound and free from standing water. Dust, dirt and other debris must be removed from the concrete substrate using a stiff brush and/or other suitable mechanical means.

10.2 The system must never remain permanently exposed and, to avoid premature swelling, it must be protected from contact with water until enclosed in the structure. Placement must not proceed during rain or when rain is forecast.

11 Procedure

Placing and fixing

11.1 MasterSeal 912 is applied centrally along the joint at a width slightly wider than MasterSeal 910.

11.2 MasterSeal 910 is then pressed into the MasterSeal 912 so that the mastic exudes at the edges.

11.3 A minimum of 80 mm concrete coverage must be ensured around all edges. The Certificate holder must be consulted on minimum wall height.

11.4 Where MasterSeal 912 is used as the primary waterstop, eg at penetrations, the product must be applied as a continuous bead at least 10 mm in diameter and positioned so as to ensure a minimum concrete coverage of 80 mm around all edges.

11.5 Roll ends and/or cut ends must be overlapped tightly by at least 5 cm and sealed with MasterSeal 912. Where necessary, such as at changes of direction, MasterSeal 910 may be temporarily secured using a masonry nail fixing and suitable washer until MasterSeal 912 is fully cured. The temporary fixing should be removed prior to concrete placement. The Certificate holder must be consulted for suitable fixings.

Enclosing

11.6 Prior to enclosing in the structure, the products must be inspected for damage and premature swelling. Damaged and/or swollen products must be replaced at this stage.

11.7 Concrete is poured to enclose the system, compacting well around the waterstop but taking particular care not to dislodge or cause damage during the process.

Technical Investigations

12 Tests

12.1 Tests were conducted on the system and the results assessed to determine:

- product characteristics
- resistance to hydrostatic water pressure
- unrestrained swelling characteristics under alkali, neutral and acidic water conditions
- effect of wet/dry cycles on swelling characteristics
- load developed when restrained.

12.2 Independent test data relating to MasterSeal 910 were assessed to determine unrestrained swelling characteristics under acidic and alkaline water conditions.

13 Investigations

13.1 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.

13.2 A visit was carried out to a site in progress to assess the practicability of installation.

Bibliography

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

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

14 Conditions

14.1 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 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.

14.2 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.

14.3 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.

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

14.5 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.

14.6 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.