



BREEDON Aquatight® WATERTIGHT CONCRETE

POWERED BY
Sika Watertight Admixtures



www.breedongroup.com

Breedon Group, a leading construction materials group in Great Britain and Ireland, has teamed up with Sika®, the specialist in concrete admixture technology, to offer an effective watertight concrete system for a wide variety of applications.

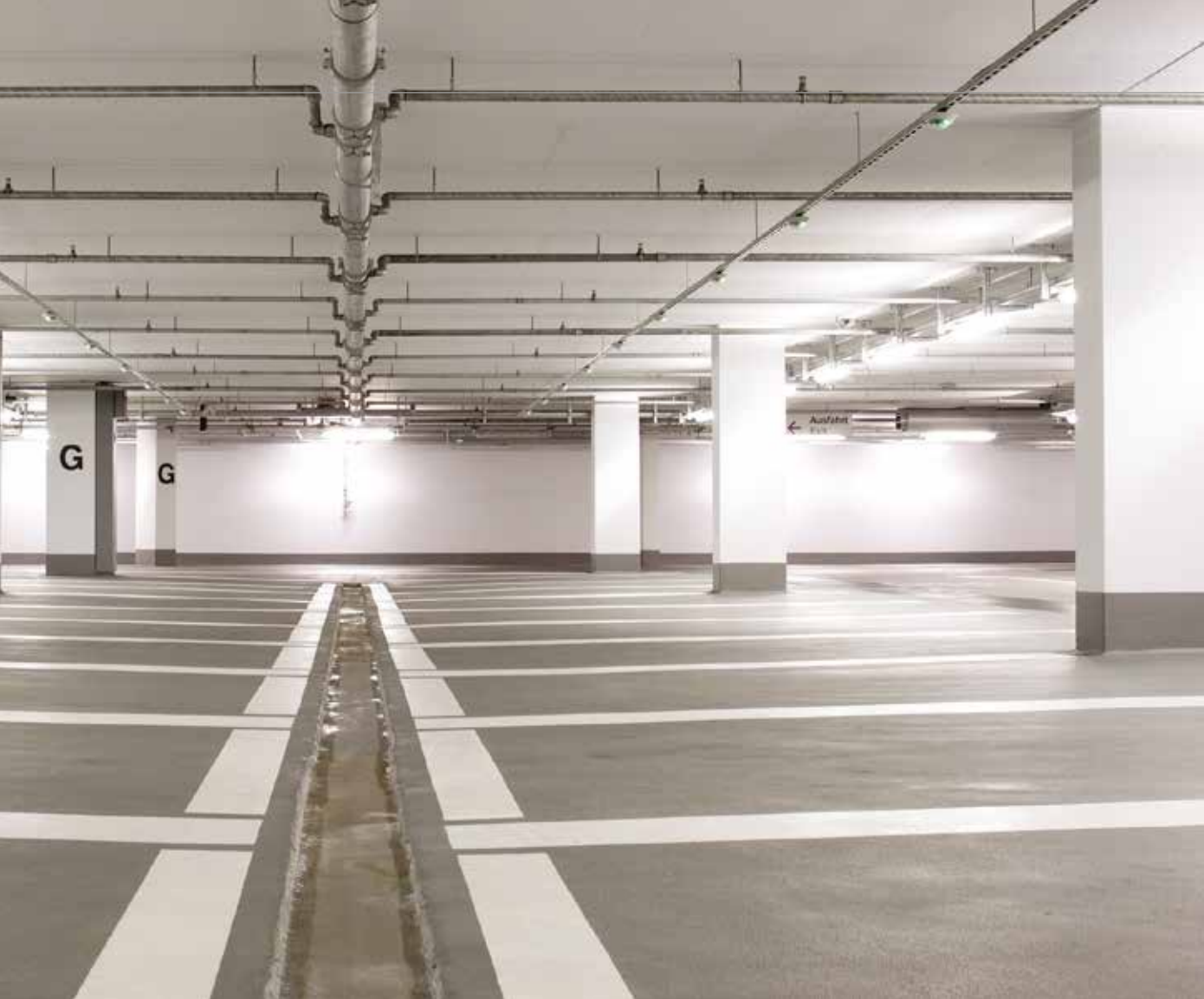
BREEDON Aquatight® is a range of ready-mixed waterproof concretes designed specifically for structures that require efficient waterproofing – to keep water in or out, as required. It combines Breedon's expertise in high-performance concretes with Sika's longstanding proficiency in waterproofing technology to provide an exceptional solution for everything from basements and cellars to swimming pools, reservoirs and liquid storage tanks.



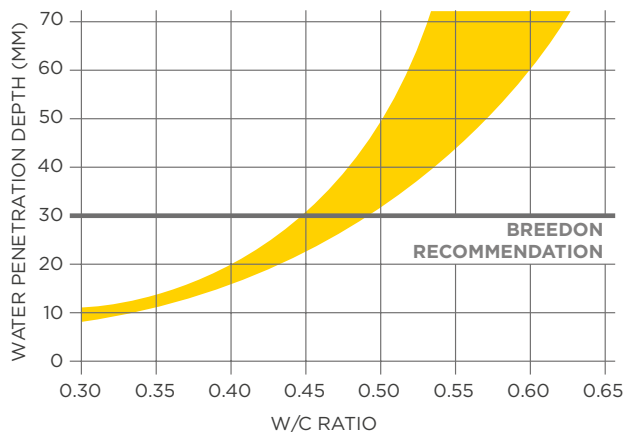
What is watertight concrete?

Standard concrete is a naturally porous material, because its capillaries are potential migratory paths for water to pass through. Concrete's ability to withstand water penetration, or impermeability, is determined by its binder matrix.

The impermeability of concrete can be improved by adding special active components which will form non-soluble materials throughout the pores and capillary structure of the concrete and effectively seal it permanently against the penetration of water and other liquids. In addition, there are other special ingredients which can enhance the self-healing properties of concrete and improve its ability to heal any cracks that form.



For concrete to be impermeable, the volume of water that penetrates the structure on one side has to be lower than the volume of water that can evaporate on the opposite side. This is established via a water conductivity test:



A fully watertight concrete depends upon a number of criteria:

- A water penetration depth of less than 30mm
- Water conductivity of less than 6g/m²/h
- Drying shrinkage of less than 0.05%
- Water absorption
- Self-healing properties

What type of waterproof concrete system do I need?

This will depend on the ground conditions and project requirements. Functionality, future use, service cost and total cost of ownership are all important factors.

The British standard BS 8102:2009 describes the different levels of watertightness required for different types of structures.

GRADE 1: BASIC UTILITY

Some seepage and damp areas are tolerable*

- Underground car parks
- Plant rooms
- Workshops

** Dependent on use*

GRADE 2: BETTER UTILITY

No water penetration. Ventilation may be required.

- Underground car parks
- Storage areas
- Workshops
- Electrical plant rooms

GRADE 3: HABITABLE

No water penetration. Totally dry environment.

- Ventilated residential units and offices
- Restaurants and commercial areas
- Leisure facilities

Basement waterproofing

BS 8102:2009 outlines three different waterproofing methods (Type A, B and C) for basements. Breedon and Sika® provide a range of concrete and barrier materials to meet these standards. In many cases a dual system (e.g. Type A plus Type B) may be appropriate.

EXTERNAL WATERPROOFING SYSTEM

TYPE A

This is recommended for new construction, providing all three grades of watertightness with low to high durability, depending upon the application. A waterproofing barrier is applied to the external surfaces of the concrete that are exposed to groundwater. The structure is protected against water ingress and against any aggressive substances or influences.



ADDITIONAL REQUIREMENTS

Other considerations for the internal environment.

- Air conditioning
- Ventilation
- Radon and methane protection
- Special-purpose facilities and areas

All these solutions will usually require a waterproof concrete complemented by other materials depending upon the conditions. These may include bitumen coatings or membranes, mortars or screeds, polymeric sheet membranes or liquid applied reactive membranes and compartmentalised membranes with control and injection back-up. All these complementary materials are available from Sika®.

INTERNALLY APPLIED WATERPROOFING SYSTEM

TYPE A

This provides all three grades of watertightness and is generally recommended for refurbishment or as an additional waterproofing measure. A waterproof barrier is applied to the internal surfaces of the concrete.

INTEGRAL WATERPROOFING SYSTEM

TYPE B

Recommended for new construction, this provides all three grades of watertightness with very high durability (for non-aggressive groundwater), based on Breedon's Aquatight® range of waterproof concretes. Liquid penetration is stopped by the structure itself. The concrete is combined with appropriate joint-sealing systems for connections, construction and movement joints.

INTERNALLY APPLIED DRAINED PROTECTION SYSTEM

TYPE C

Recommended for both new construction and refurbishment, this provides all three grades of watertightness, directing penetrating water into a cavity drainage system and collection sump which is then pumped from the building.

The BREEDON Aquatight® range

Three different concrete mix designs are available, each using a proprietary Sika® admixture and suitable for BS 8102: 2009 Type B construction (Grades 1-3):

➤ BREEDON Aquatight® with watertight concrete powder

Incorporates Sika® Watertight Concrete Powder, a combined water-resisting and HRWR/Superplasticising admixture which enhances the workability and reduces the water permeability of concrete. It uses Sika® ViscoCrete® superplasticiser technology and, depending on the material package, will produce watertight concrete at an S3 consistency with a w/c ratio of <0.45 without the addition of a separate HRWR/Superplasticiser.

BENEFITS

- Reduced water absorption
- Reduced water penetration
- Accurate control of w/c ratio
- In combination with a Sika® ViscoCrete® HRWR/ Superplasticiser, self-compacting concrete can be produced
- Reduced shrinkage and creep
- Consistent performance

➤ BREEDON Aquatight® with crystalline waterproofing

Incorporates Sika® WT-200 P combined crystalline waterproofing and HRWR/ Superplasticising admixture (using Sika® ViscoCrete® superplasticiser technology), which enhances the workability and reduces the water permeability of concrete. Sika® WT-200 P consists of a mixture of cements, amino alcohols and fillers. These active materials form non-soluble barriers throughout the pores and capillary structure of the concrete and seal it permanently against penetration of water and other liquids.

BENEFITS

- Reduced water penetration under pressure
- Accurate control of w/c ratio
- Reduced water absorption
- Enhances self-healing properties of the concrete
- In combination with a Sika® ViscoCrete® HRWR/Superplasticiser, self-compacting concrete can be produced
- Improved resistance against chemical attack
- Reduced shrinkage and creep
- Consistent performance
- Reduced vapour transmission





BREEDON Aquatight® with liquid waterproofing

Incorporates Sika® -1+ liquid water-resisting admixture, which reduces the water permeability of concrete. Used in combination with Sika® ViscoCrete® superplasticiser technology, watertight concrete can be produced.

BENEFITS

- Suitable for large concrete pours
- Reduced water absorption
- Reduced water penetration
- Accurate control of w/c ratio
- Used in combination with Sika® ViscoCrete® superplasticiser technology, self-compacting concrete can be produced
- Reduced shrinkage and creep
- Consistent performance

BREEDON GB MATERIALS

01382 537600 (Scotland)

01332 694010 (England/Wales)

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BUILDING TRUST



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