Waterproof concrete

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Heidelberg Materials

Expertise and experience

Heidelberg Materials UK is the country's largest supplier of ready-mixed concrete and has a national network of over 180 static and mobile production plants. We produce quality-assured ready-mixed concrete, designed to suit any application. Our ready-mixed concrete solutions have been specially developed for the civil engineering professional.

Combining this capability with our partner Sika®, who are a leader in concrete admixture technology and experts in waterproofing, we have developed a product range for structural waterproofing.

The Heidelberg Materials waterproof concrete range is based around a three-tier product offering (see page 5), which incorporates:

- The Heidelberg Materials waterproof concrete system
- SikaProof® A+ – a fully bonded membrane system

Waterproof concrete systems:

- Basements
- Lift pits
- Concrete façades
- Residential and industrial buildings such as housing, commercial and leisure facilities such as swimming pools
- Engineered structures such as retaining walls and tunnel shafts

Contents

Waterproofing concept and considerations

Key considerations

To define the appropriate waterproofing strategy and type of system for a specific project, it is important to consider not only the ground conditions but also the project requirements.

The British Standard BS 8102:2022 describes different levels of watertightness required for the end use of a structure.

For waterproofing structures below ground, BS 8102:2022 outlines three different waterproofing methods, the choice of which should take all of the relevant project requirements into consideration.

- **Type A:** also known as tanking, is an externally or internally applied barrier system applied to the walls and floors of the structure that can withstand ground water from entering the building under pressure.
- **Type B:** an inbuilt characteristic of the actual structure by adding waterproofing additives to the concrete used to form the floors and walls of the structure.
- **Type C:** essentially a set of dimpled membranes called Cavity Drain Membrane (CDM) installed externally or internally to the walls and floors of the structure. A type C system does not aim to prevent water coming into the structure but instead manages it and diverts it into either a pumping chamber or external land drain.

Grade 1A

- Car parking
- Plant rooms/workshops
- EXCLUDING electrical equipment
- Seepage and damp areas are tolerable dependent on intended use

Grade 1B

- Car parking
- Plant rooms/workshops
- EXCLUDING electrical equipment
- No seepage, damp areas are tolerable dependent on intended use

Grade 2

- Retail storage areas
- Plant rooms/workshops
- INCLUDING electrical equipment
- No water penetration is acceptable
- Damp areas caused by internal air moisture or condensation are tolerable
- Ventilation may be required

Grade 3

- Residential
- Commercial
- Archives
- No water penetration is acceptable
- Ventilation, dehumidification, or air conditioning is necessary and should be appropriate for the intended use

Selecting your waterproof concrete system

Heidelberg Materials waterproof concrete – using concrete pore blocking admixture, available as a liquid or powder. The powder is a combined water-resisting and HRWR/Superplasticising admixture, used to enhance the workability and reduce the permeability of concrete. However, joint sealing systems may well be needed for construction and movement joints.

Benefits

- Integral waterproofing solution
- High range water reduction, resulting in higher density, durability and strength performance
- Reduced water penetration under hydrostatic pressure

Heidelberg Materials waterproof concrete system – a waterproofing system integrated into the concrete. Liquid water penetration is stopped by the structure itself and cannot entirely pass through into the structure. The watertight concrete is combined with the appropriate Sika® joint sealing systems for construction and movement joints.

Benefits

- Complete solution – includes design, support and ancillary materials
- Peace of mind – expertise in the waterproofing and concrete industry
- All relevant approvals and standards
- On-site assessment and support
- 15-year guarantee

Dual system approach: BS 8102:2022 suggests consideration is given to the use of dual systems. For example, Type A plus Type B protection where the assessed risks are deemed to be high, or the consequences of a failure to achieve the required internal environment are too high.

Heidelberg Materials is able to offer a complete solution in these circumstances by providing the Heidelberg Materials waterproof concrete system together with the SikaProof® A+ fully bonded membrane system.

Benefits

All the benefits of the Silver offering, plus:

- Two lines of defence
- Compatible systems
- Engineered solutions
- Single company providing support and guarantee
- 25-year guarantee

Why choose waterproof concrete?

Utilising the latest admixture technology from admixture partner Sika®, Heidelberg Materials waterproof concrete gives confidence to all those involved in the project. Even good quality concrete will allow the passage of water through it as a function of capillarity; when there is water on one side of the structure and air on the other, the volume of capillary pores in the concrete mix is proportional to the water/cement ratio.

The Sika® Watertight Concrete System incorporates a range of admixtures to improve its resistance to water ingress:

Sika® Watertight Concrete Powder – a combined hydrophobic and HRWR/Superplasticiser.

Sika® WT-200 P – a combined crystalline pore blocker and HRWR/Superplasticiser.

SikaControl® WT-250 P – a combined water resisting, crystalline waterproofing admixture that is compliant with regulation 31 for drinking water applications.

Sika® 1+ – a liquid hydrophobic waterproofing admixture.

A two-step process is used to achieve a watertight concrete:

Step 1: Reduce the water-cement ratio, increasing the density of the mix and minimising the size of the pores, whilst producing a highly workable concrete to aid placement and compaction.

Step 2: Block the remaining capillary pores by using the Sika® hydrophobic or crystalline admixture ensuring a complete watertight finish.

As well as the concrete technology it is important to consider how to deal with construction joint protection.

SikaSwell® – sealing profiles which swell in contact with water.

Sika® Waterbar-125 – a hybrid FPO-based waterstop with a rough texture. Embedded in fresh concrete, it bonds fully as it cures, ensuring a durable, watertight seal that prevents lateral water underflow.

Sika® MetalSheet FBV – a galvanised sheet with a layer of composite film on one side. The special coating bonds closely and permanently to the concrete to provide a watertight seal.

SikaFuko® – injectable hoses for sealing and resealing construction joints in watertight structures against water ingress.

Sikadur®-Combiflex® SG System – a high performance joint and crack sealing system for construction joints, expansion (movement) joints and cracks.

Sika® Waterbar – flexible waterstops based on plasticised PVC are used to waterproof expansion (movement) joints.

Where to use it

- All below-ground waterproofing
- Basements
- Lift pits
- Reservoirs
- Water tanks
- Dams
- Sewage treatment works
- Liquid storage tanks
- Underground car parks
- Plant rooms
- Archive storage areas

Features

- Complies with BS 8102:2022 type B integral waterproofing construction
- Quality-assured
- Sustainable
- Greatly reduces waste on-site
- Reduces vehicle movements to site
- 100% recyclable

Benefits

- Keeps water in or out as required
- Enhanced long term performance including increased durability
- Reduced risk of reinforcement corrosion
- Reduced installation time and cost
- Available as a pumpable or flowing mix
- Backed by a Sika® guarantee and BBA certificate

Benefits subject to good concreting practice (placement, finishing and curing).

Case study: BDP Studio

Heidelberg Materials UK supplied waterproof concrete during the construction of the stunning new BDP (Building Design Partnership) Studios in Manchester, in order to ensure a dry basement that conforms to BS 8102 Grade 3. Situated right on the water's edge at 11 Ducie Street, on the Piccadilly Basin, it was essential that the basement should have a controlled environment capable of storing archives, sensitive materials or for computer rooms.

In order to achieve this, Heidelberg Materials waterproof concrete incorporating Sika® admixtures was chosen for these basement areas. The studio building was constructed by Kier North West for BDP as part of the £250 million, Town Centre Securities city centre mixed-use scheme. Before building work could be started on the project, a sealed sheet piled cofferdam was put in place by Adana Construction to create a dry dock. Heidelberg Materials UK then supplied waterproof concrete for the construction of the basement.

Heidelberg Materials waterproof concrete works by including Sika® ViscoCrete®, a powerful superplasticiser to reduce the water content and in turn reduce the capillary pores within the matrix, and in this project, Sika® 1+ pore blocker to block the remaining pores. Construction joints and other details were sealed using products from Sika's range of jointing solutions, from basic hydrophilic strips to injectable hydrophilic profiles.

BDP chose Heidelberg Materials waterproof concrete because:

"The product was technically well developed and Heidelberg Materials UK in partnership with Sika® offered support during site operations, in addition to an effective guarantee on the achievement of the watertight construction. The basement of our studios houses the IT servers which support all of BDP's UK offices, therefore it was essential to have an effective waterproof barrier adjacent to the Rochdale Canal."

SikaProof® A+ – a fully bonded membrane system

An innovative waterproofing system that will simplify your way of working.

The SikaProof® A+ system is an external pre- and post-applicable FPO based sheet membrane system fully bonded to the reinforced concrete structures for below ground concrete protection, waterproofing and gas proofing. Unique to SikaProof® A+, the same membrane can be used for both pre-application and post-application. Alongside a simple suite of tapes and accessories, SikaProof® A+ provides a simple, durable and robust system for structural waterproofing.

SikaProof® A+ is classified as a type A barrier under BS8102:2022.

It is suitable for residential and commercial projects (basements), as well as for infrastructure projects (cut & cover tunnels and station boxes).

Thanks to the A+ technology, the SikaProof® A+ system creates a dual bond with the concrete structure.

Features and benefits

SikaProof® A+

- Dual bond to concrete
- Resistant to lateral water migration up to 7 bar
- Proven radon barrier
- Robust against soiling

Application

- Same membrane pre and post- application
- Up to 90 days exposure
- Applicable on young concrete

Joints and details

- Various joint solutions
- Several tapes
- Thermal jointing
- Fast and easy detailing

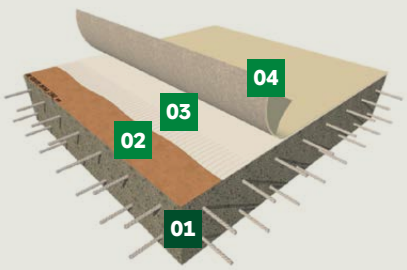
Durability

- +50 years of experience
- Proven durability through in-depth testing
- Highly chemically resistant FPO membrane

SikaProof® A+ pre-applied

01 SikaProof® A+ membrane
a) FPO membrane
b) Bonding layer
02 Reinforced concrete

SikaProof® A+ post-applied



01 Reinforced concrete
02 SikaProof® primer-02
03 SikaProof® adhesive-02
04 SikaProof® A+ membrane

Case study: Guildford new sewage treatment works

To unlock land for much-needed housing, Guildford Borough Council is relocating its sewage treatment works as part of the Weyside Urban Village regeneration. By building on an old landfill site, the project protects surrounding Green Belt land while making way for up to 1,550 new homes, plus community and employment spaces.

Heidelberg Materials, working alongside BAM Enpure JV and trusted supplier Sika®, played a key role in delivering watertight concrete for the primary settlement tank and activated sludge plant. Activity began in late 2023 and is scheduled for completion by the end of 2025.

Given the landfill constraints, tanks had to be built above ground – creating large, exposed surfaces that demanded high-performance, watertight reinforced concrete.

Heidelberg Materials supplied 660m³ of waterproof concrete containing Sika® WT-200 P, a crystalline admixture that seals concrete from within. Additional Sika® admixtures ensured strength, durability, and a quality finish throughout.

The project was a showcase of strong collaboration, with early design input, technical trials, and seamless coordination between all partners.

Richard Scott, Design Lead at BAM Enpure JV, also commented:

“Heidelberg Materials’ and Sika’s concrete technology was essential in ensuring watertightness for our largest hydraulic tank structures. The collaborative mix design development, site trials, and ongoing site verification have enhanced our technical offering to Thames Water, and we’re proud to be part of this important infrastructure project.”

Other concrete solutions from Heidelberg Materials

Like waterproof, our other ready-mixed concrete solutions have been specially developed for the civil engineering and construction professional, each with its own unique qualities and characteristics.

Whether you're faced with challenging ground conditions, difficult applications or limited access, Heidelberg Materials UK's solutions have the answer.

Colourcrete

A range of coloured concretes that can add a whole new dimension to your project. It can be used wherever conventional concrete is specified and can be colour-matched to blend with the surrounding area or help your project stand out from the crowd.

Duracrete

A durable, high-performance concrete which can achieve strengths in excess of 100N/mm^2. The use of microsilica provides a dense structure and gives excellent chemical and abrasion resistance. Duracrete develops its strength very quickly and allows early use. High abrasion resistance means it can withstand heavy trafficking such as loading bays, while impact resistance and durability are also greater than conventional concrete. Duracrete is ideal for use in varied heavy industrial applications including warehouse floors, service yards, scrap yards, waste transfer stations and waste recycling centres.

EasyFill

A highly air-entrained concrete developed for trench reinstatement and void fill applications in various environments. It's a lightweight material produced by incorporating a powerful concentrated air entraining admixture into a base concrete or mortar.

EasyFlow

A self-compacting concrete that offers huge benefits and cost savings by allowing placement of concrete in difficult situations. It is easy and quick to place, needs no vibration, and moves effortlessly through intricate or congested reinforcement, with no bleeding or segregation. This can mean a substantial reduction of labour and equipment. The faster, unassisted placing, brings lower site costs and reduced risk and exposure to noise and vibration.

EasyPile

A unique product range that has been specifically formulated for piling concrete. The range consists of a mix specifically designed for CFA structural piling which can be used in all ground conditions but is particularly suitable in difficult areas where there is a high risk of damage to cages. The range also consists of mixes engineered for use in secant pile construction. Heidelberg Materials' EasyPile concrete range offers the ideal solution to many of today's engineering challenges facing the piling and foundation specialist.

evoBuild

Heidelberg Materials has developed a range of evoBuild low carbon concretes to make it easier to specify low carbon concretes and target carbon reduction on all construction projects. evoBuild low carbon concretes offer a CO_2 reduction of at least 30% compared to a fixed Global Cement and Concrete Association (GCCA) reference value[1].

Fast-Track

A range of high early-strength concretes which speed up construction by allowing quick release of formwork. It can save time, energy and money by ensuring production deadlines can be met with confidence, reducing the requirement for external heating, reducing production time and increasing productivity.

Fibrecrete

A range of fibre-reinforced concretes, offering benefits in both the fresh and hardened state. When fresh, both bleed and plastic cracking are considerably reduced. The effect on early age tensile strength during hardening is also beneficial, and after hardening the fibres improve the toughness and general durability. One of its main applications is in pavement and floor slabs where crack control and durability are of particular importance.

[1] The evoBuild reference value is at least 30% CO_2 reduction vs. the global reference values from the Global Cement and Concrete Association (GCCA) for CEM I from 2020, which translates to ≤552 kg CO_2/t cementitious material and ≤ 5.5 kg CO_2/m^3/MPa for ready-mixed concrete.

Contact us

Easy order

Heidelberg Materials waterproof concrete is available nationwide from all Heidelberg Materials concrete plants. For a free quote or more information, please contact your regional customer service office.

Contact us

To discuss a bespoke mix, please contact the technical team at your local customer service office using the contact details below:

- North: 0330 678 1305 **northtechnicalvetting@uk.heidelbergmaterials.com**
- Central: 0330 678 1306 **centraltechnicalvetting@uk.heidelbergmaterials.com**
- South: 0330 678 1307 **southtechnicalvetting@uk.heidelbergmaterials.com**
- London: 0330 678 1308 **londontechnicalvetting@uk.heidelbergmaterials.com**

Heidelberg Materials UK is a leading supplier of heavy building materials to the construction industry.

We are part of Heidelberg Materials, one of the world's largest integrated manufacturers of building materials and solutions with leading market positions in cement, aggregates, and ready-mixed concrete.

In the UK, the company is split into five business lines – aggregates (crushed rock, sand and gravel), concrete, asphalt and contracting, cement and recycling – which together operate around 280 manufacturing and distribution sites and employ more than 3,500 people.

For detailed information on all areas of Heidelberg Materials UK and our products visit **heidelbergmaterials.co.uk**

Bulk cement
- evoBuild low carbon GGBS
- CEM I / II A-LL / III
- White
- NHL 5

Aggregates
- Sand and gravel
- Crushed rock
- Bulk decorative aggregates
- Agricultural lime
- Rock armour
- Silica sand

Asphalt
- era® – low temperature asphalt
- CarbonLock
- AgeLast
- RecyclePlast

Concrete
- evoBuild low carbon concrete
- Ready-mixed concrete
- Fibrecrete
- Coloured concrete – Colourcrete
- Easyflow concrete
- Easyflow screed
- Early Strength – FastTrack
- Easyfill/Foam concrete
- Piling concrete – EasyPile
- Waterproof concrete
- Sprayed concrete
- Reinforced concrete – Fibrecrete
- Lightweight
- High strength concrete
- Home range and Farm range concrete

Contracting
- Highway maintenance
- Road surfacing

Packed products
- Cement
- Low carbon cement
- Ready-to-use mortar
- Ready-to-use concrete
- Asphalt
- Construction aggregates
- Decorative aggregates
- Sands
- Rock salt

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