TOPPROOF
The ideal watertight concrete
Tarmac TopProof offers a simple, cost effective alternative to traditional watertight construction methods.

Concrete is naturally porous. This can be a problem for sites exposed to harsh weather conditions, chemical attacks, high humidity and for surfaces that are in constant contact with water. TopProof uses specialist admixtures to produce concrete with very low porosity. This makes it suitable for use with fully watertight systems in a wide range of environments. It saves time by eliminating the need for additional membranes or finishes. It also enhances resistance to chloride diffusion, reducing the risk of reinforcement corrosion and improving long term durability.
Conventional concrete contains capillaries, making it naturally porous.

Hydrophobic admixtures form a barrier inside capillaries during the hydration process.

Hydrophobic admixture forms a non-soluble crystalline structure, blocking capillaries.

Concrete is naturally porous due to its capillaries forming migratory paths for water to pass through. This porosity can be reduced by adding special active components which block these capillaries, effectively sealing the concrete permanently against the penetration of water and harmful chemicals.

Topproof is designed to meet the requirements of waterproofing as defined in BS8102 (all grades). The use of specifically tailored admixtures provides TopProof with structurally integral waterproofing. This enables concrete to be poured and compacted with ease in comparison to barrier type products or membranes which function only at the surface of the concrete. Tarmac’s TopProof concrete can provide a fully integral watertight system when used in conjunction with secondary waterproofing systems.

Tarmac are able to supply three types of waterproofing admixtures based on client requirements:

**HYDROPHOBIC POWDER**

Powder admixture using hydrophobic and pore blocking technology to create polymer barriers inside pores during the hydration process.

**CRYSTALLINE POWDER**

Powder admixture that uses self-healing crystalline technology to form a non-soluble crystalline structure, blocking capillaries.
LOW POROSITY
Very low porosity for reduced permeability to water and water vapour

HIGH PERFORMANCE
Effectively seals water in or out as part of a fully watertight system

REDUCED CORROSION
Enhances resistance to chloride diffusion, to reduce the risk of reinforcement corrosion

COMPLEX STRUCTURES
Available in as a self-compacting concrete to form complex waterproof structures

CONSISTENCY & CONTROL
Admixtures introduced during production for guaranteed consistency and control

TIME SAVING
Can eliminate the need for additional membranes or finishes, simplifying designs, saving time and helping to eliminate site waste

WEATHER PROTECTION
Improves protection for sites exposed to harsh weather and high humidity

CRITICAL ENVIRONMENTS
Helps to reduce moisture in critical environments such as basements, storage archives and plant or computer rooms

WATER RESISTING
Ideal for surfaces in frequent contact with water such as swimming pools, aquariums, reservoirs and water treatment plants

BUSINESS AS USUAL
Delivered and installed like a conventional concrete, with no special handling or safety requirements

REDUCED SHRINKAGE
Less susceptible to early age and drying shrinkage cracks, both common problems when using external membranes

RESPONSIBLY SOURCED
Tarmac has been awarded BES 6001 rating of “Very Good” for responsible sourcing across all product ranges
Topproof is designed for a range of environments and applications

- **Water retaining structures:** swimming pools; leisure centres; aquariums
- **Utilities:** dams; reservoirs; water treatment plants; tidal power stations; sewers and drainage structures
- **Aquatic and marine structures:** bridges; river and coastal defences; docks & ports; marinas
- **Moisture critical environments:** computer rooms, electrical and plant rooms; archives; storage facilities; warehouses
- **Below ground structures:** basements; car parks; lift pits; tunnels

APPLICATIONS
OUR EXPERIENCE

The Friars Walk, Newport

THE CHALLENGE
For the expansive lower area of the building, Waterman Consultants required a robust and durable waterproofing solution that could meet both Grade 3 of BS 8102:2009 and BS 8485 codes whilst at the same time being flexible for the different site details.

OUR SOLUTION
Working alongside Sika®, a dual system of more than 9,000m of the Sikaproof® A08 system together with 3,300m3 of Tarmac TopProof waterproof concrete was supplied to deliver outstanding levels of watertightness to the lower floor. TopProof is better for the environment compared to conventional methods of waterproofing. This is because many membranes contain oil-based chemicals and synthetic materials. Ordinary concrete contains fine pores which allow moisture to penetrate the surface and pass through. The size and volume of these pores is dictated by the water/cement ratio - the higher the ratio, the more porous the concrete. TopProof’s pores are filled to create high density ensuring a watertight concrete.

RESULTS AND BENEFITS
A great watertight concrete was supplied by Tarmac to Churngold Construction which was of a very high quality. Ideal for below ground and basement construction, it prevents water from migrating through the concrete. State-of-the-art Sika admixtures work within the concrete, firstly to reduce the water/cement ratio, thus increasing the density of the mix and minimising the size, volume and continuity of the concrete’s pores, and secondly to fill the remaining pores. James Rivers from Churngold Construction commented, “These are great waterproofing systems and I cannot speak highly enough of the team involved.”

Swimming Pool, Amington

THE CHALLENGE
SPR Construction Services are one of our flowing concrete/screed partners based in the West Midlands region. They came to Tarmac with a swimming pool project which required waterproof concrete but they also wanted the mix to have flowing characteristics as they only had a team of two on site.

An easy to lay, flowing waterproofed concrete allowed Tarmac’s technical team to create the Topflow and TopProof mix solution.

OUR SOLUTION
To ensure the TopProof mix design criteria was met along with flowing characteristics of Topflow, Tarmac had to use specialist, bespoke admixtures to allow the hybrid of TopProof, Topflow to be created. The flowing nature of the Topflow mix meant the labour shortage issue was eradicated.

The specialist admixtures ensured critical waterproofing requirements such as a low water cement ratio was still achieved even with the high fluidity of the mix.

RESULTS AND BENEFITS
6m³ of the TopProof, Topflow hybrid was supplied to complete the swimming pool base. With just a small team of two on site the mix was pumped in and finished within an hour.

A further 20m³ of Topflow was supplied for the area surrounding the swimming pool, again, to help this site achieve a high quality surface finish with limited labour on site. Tarmac’s Topflow is self compacting so doesn’t need vibration, allowing sites to benefit from cost saving as well as improving health and safety on site. Topflow is easy to install due to its flowing properties and can achieve high quality finishes of SR2 tolerance.