

# TECHNICAL INFORMATION

## TOPROC UW (UNDER WATER)

A high performance, high strength, low washout concrete for underwater or inter-tidal placement

### PRODUCT DESCRIPTION

Toproc UW is a high performance readymix concrete specifically designed to be placed underwater and provides an extremely high resistance to washout.

Toproc UW, as with the entire Toproc range of concretes, is a very cohesive concrete with a dense micro structure and improved bond between paste and aggregate imparting benefits including high early and ultimate strength, low permeability and washout and increased durability.

### APPLICATIONS

- Inter-tidal construction/repairs
- Canal repairs
- Any other applications where underwater construction/repairs are required
- Effluent/sewage treatment works
- Sea defence walls

### KEY FEATURES OF TOPROC UW

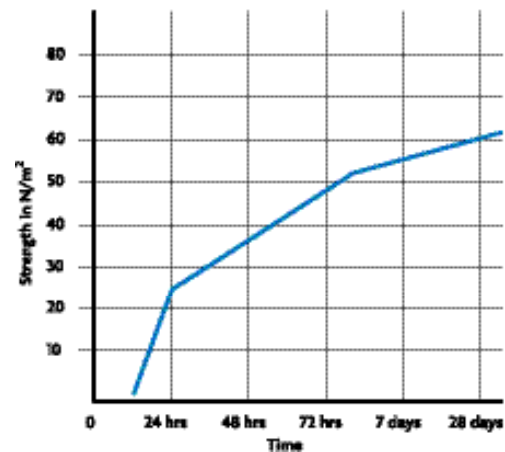
#### FRESH CONCRETE

- Easy to pump
- Increased cohesion
- Virtually no bleeding
- Less prone to segregation

#### HARDENED CONCRETE

- Improved resistance to washout
- Improved durability
- Low permeability
- High early compressive strength
- Improved ultimate compressive strength

Toproc UW - Typical strength development



### 24 HOUR COMPRESSIVE STRENGTH

Toproc UW typically achieves a 24 hour compressive strength of 25N/mm<sup>2</sup> but can often achieve in the range of 28–32N/mm<sup>2</sup>.

### 28 DAY COMPRESSIVE STRENGTH

Toproc UW typically achieves a 28 day compressive strength of 60N/mm<sup>2</sup> but can often achieve in the region of 75–90N/mm<sup>2</sup>.

Cube strengths based on 100mm cubes made and cured in accordance with BS EN 12390-2.

### PERMEABILITY/DURABILITY

Due to its very cohesive nature Toproc UW allows very little, if any, bleed water to migrate to the surface. Combined with a dense micro structure it results in a concrete with a low permeability. The effectiveness of concretes to resist the ingress of water, gases, chloride/sulfate solutions and aggressive liquids depends to a high degree on their impermeability. As a consequence, the low permeability of Toproc UW helps slow the ingress of these substances when compared to a typical RC32/40 concrete.

This, combined with a very low water/cement ratio, means Toproc UW will improve the concrete's durability to a variety of conditions including weathering, chemical and salt attack, abrasion and freeze thaw attack.

### PUMPABILITY

Toproc UW can be pumped more easily than conventional concretes, as the inclusion of tailored admixtures improves its pumpable properties.

### PLACING

Toproc UW can be placed in slow flowing water however where the flow is rapid enough the surface of the concrete should be protected.

When placing the concrete the end of the tremie or pump must be kept well immersed in the fresh concrete until the pour is complete.

### TYPICAL DENSITY

Approximately 2,400 kg/m<sup>3</sup>.

### TYPICAL AIR CONTENT

0.5 to 1.5%.

### PACKAGING AND DELIVERY

Toproc is supplied in readymix form:

- Readymix trucks up to 8m<sup>3</sup>
- Minimix trucks 2 to 3m<sup>3</sup>

### BESPOKE FORMULATIONS

In the past where the need has arisen to formulate a product to meet a specific application, Tarmac has worked alongside customers to achieve design requirements. Toproc UW can also incorporate macro fibres within the mix.

Please email [toproc@tarmac.com](mailto:toproc@tarmac.com)

### AVAILABILITY

All Toproc products are readily available across the mainland UK from Tarmac's network of readymix concrete plants.

The concrete is delivered to site in readymix concrete trucks at a consistence suitable for the application, but generally at a higher consistence than conventional concrete. This together with Toproc's unique properties, makes Toproc often easier to pump, place, pour etc.

Tarmac offers a unique information and advisory service for all applications and types of concrete to assist users and specifiers of concrete to solve problems and optimise the benefits available from Tarmac's unique range of special products.

### PHYSICAL PROPERTIES

All physical properties stated for Toproc products are typical values due to local variations in the naturally occurring constituent materials. This information is based on our considerable experience with these products and is given with the best of intentions to assist customers in obtaining the best performance from our products. Lafarge Tarmac cannot accept any liability or responsibility of any kind (including liability for negligence) for the design of any concrete components or structure or for problems caused by the acts or omissions of third parties or by poor site practices.

### TYPICAL SPECIFICATION STATEMENT

The concrete shall be Tarmac Toproc UW in accordance with BS 8500-2.

The maximum aggregate size and consistence shall be agreed between the specifier and Tarmac.

### TECHNICAL ADVISORY SERVICE

Tarmac employs a team of specialists who would be very pleased to advise or work closely with contractors as required. Our specialists are supported by a Product Development Team and Technical Services Centre.

## PRECAUTIONS OF USE

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### SAFETY

There is a real danger of contact dermatitis or serious burns if skin comes into contact with wet cement mixes such as fresh concrete, mortar or screed. Wear suitable protective clothing and eye protection. Where skin contact occurs either directly or through saturated clothing, wash immediately with soap and water. For eye contact, immediately wash out eyes thoroughly with clean water. If swallowed wash out mouth and drink plenty of water.

For more details visit  
***tarmac.com/contact***  
***toproc@tarmac.com***

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