

TECHNICAL INFORMATION

TOPROC CR (CHEMICAL RESISTANT)

A high performance, chemical resisting readymix concrete

PRODUCT DESCRIPTION

Toproc CR is a high performance concrete specially formulated from selected cements, specific admixtures and chemical resisting aggregates to provide a readymix concrete which improves resistance to aggressive chemicals. Toproc CR, as with the entire Toproc range of concretes, is cohesive with a dense micro structure and improved bond between paste and aggregate imparting performance benefits including high ultimate strength, low permeability and increased durability.

APPLICATIONS

- Applications requiring a greater resistance to chemicals
- Chemical works
- Effluent treatment plants
- Waste storage/recycling depots

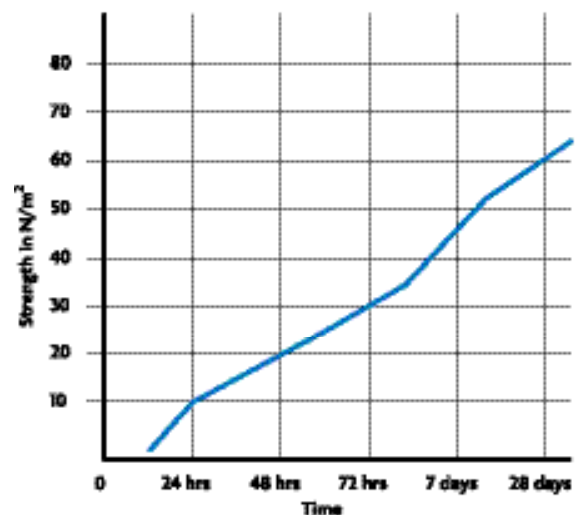
KEY FEATURES OF TORROC UW FRESH CONCRETE

- Easy to pump
- One pass finishing
- Increased cohesion
- Virtually no bleeding
- Less prone to segregation
- Reduced heat of hydration

HARDENED CONCRETE

- Improved resistance to a wide range of chemicals
- Improved ultimate compressive strength
- Low permeability
- Improved durability
- Low water/cement ratio

Toproc CR - Typical strength development



24 HOUR COMPRESSIVE STRENGTH

Toproc CR typically achieves a 24 hour compressive strength of 10N/mm² but can often achieve in the range of 12-17N/mm².

28 DAY COMPRESSIVE STRENGTH

Toproc CR typically achieves a 28 day compressive strength of 60N/mm² but can often achieve in the range of 70-85N/mm².

PERMEABILITY/DURABILITY

Due to its very cohesive nature Toproc CR 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 CR 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 CR will improve the concrete's durability to a variety of conditions including weathering, chemical attack, abrasion and freeze/thaw attack.

CHEMICAL RESISTANCE

Toproc CR's special formulation of cements and tailored admixtures makes it ideal for use in foundations, footings, slabs etc. cast into contaminated ground, or in locations with a high sulphate content.

It is important to note that the in-situ degree of resistance is dependant on three factors:

- Type of chemical
- Concentration of chemical
- Period of exposure
- The effectiveness of the in-situ cleaning regime throughout the life of the concrete is critical in determining the performance of the concrete.

SHRINKAGE

Long-term Drying Shrinkage - similar to that of conventional concrete.

Plastic Shrinkage - Toproc CR is more susceptible to plastic shrinkage cracking due to the lack of bleed water. While the polypropylene fibres in the mix will help, correct curing is essential (see curing).

TYPICAL DENSITY

Approximately 2,400 kg/m³.

TYPICAL AIR CONTENT

0.5 to 1.5%.

PUMPABILITY

Toproc CR can be pumped more easily than conventional concretes as the inclusion of specific admixtures improves its pumpable properties. Toproc CR is typically delivered at an S3 consistence.

PLACING, COMPACTING AND FINISHING

The cohesive nature of Toproc CR means that it releases very little, if any bleed water. The lack of bleeding means that finishing can commence immediately after compaction has been completed without having to wait for bleed water to evaporate. If a power floated finish is not required then a 'one pass finish' can be employed to significantly speed up construction time.

Toproc CR can be vibrated by any conventional means but, as with all concretes, it is essential that Toproc CR is vibrated fully to ensure good compaction.

Toproc CR can be finished in a similar manner to conventional concrete, except that wooden equipment (beams and floats) may drag on the surface.

Toproc CR can be laser screeded, however, we suggest the use of a reputable flooring contractor whose operators are familiar with the product and system.

Toproc CR can be power floated as normal, however, correct curing is essential (see curing section).

CURING

As with all concretes, proper curing is essential to ensure that all the benefits of Toproc CR are achieved. It is essential that curing should start as soon as possible, ideally within 10 - 15 minutes of placing to reduce the probability of plastic shrinkage cracking.

If a power floated finish is required, appropriate curing of the concrete is recommended during the interval between initial floating and application of the final trowelled finish with either a curing membrane or sheeting. A re-application of the curing membrane after the final power trowelling is also recommended.

All normal curing methods are acceptable, but the most effective curing is best achieved by using spray-on curing membranes such as 90% efficiency resin based compounds or acrylic sealers as these can be applied earlier in the construction process

PACKAGING AND DELIVERY

Toproc CR is supplied in readymix form:

Readymix trucks up to 8m³

Minimix trucks 2 to 3m³

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 CR can also incorporate macro fibres within the mix.

Please email toproc@tarmac.com.

AVAILABILITY

All Toproc CR 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 CR's unique properties, makes Toproc CR 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 CR 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. 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 CR in accordance with BS 8500-2.

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

The concrete shall be placed, compacted and cured in accordance with current good practice, the specification for the contract and any additional requirements from Tarmac.

OTHER TOPROC CONCRETES

Toproc CR is just one of the many formulations in the extensive Toproc range available from Tarmac. For details of products in the Toproc range, please refer to our website.

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

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
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