

# TECHNICAL INFORMATION

## TOPROC SY (SCRAP YARD)

High abrasion, impact resisting, high performance concrete specifically designed for aggressive environments

### PRODUCT DESCRIPTION

Toproc SY is a high performance, fibre hybrid, concrete containing both micro synthetic and steel fibres for improved impact resistance and toughness.

As with the entire Toproc range of concretes, Toproc SY is a very cohesive concrete with a dense micro structure imparting benefits including high strength, low permeability and increased durability.

### APPLICATIONS

- Heavy industrial applications
- Container handling areas
- Metal recycling and waste industry
- Loading bays
- Any other aggressive environments

### KEY FEATURES OF TOPROC SY

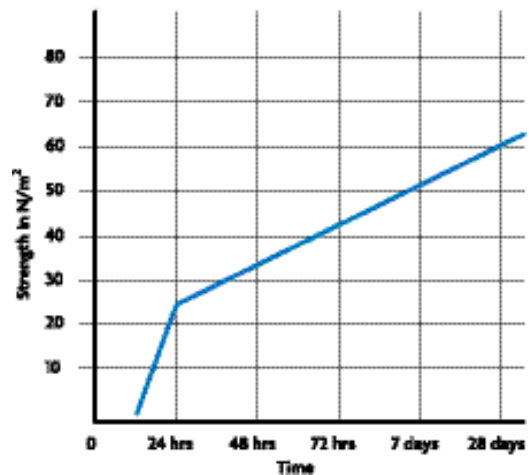
#### FRESH CONCRETE

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

#### HARDENED CONCRETE

- Improved impact resistance
- High abrasion resistance
- High early compressive strength
- Improved ultimate compressive strength
- Low permeability
- Improved durability
- Early access

Toproc SY - Typical strength development



### 24 HOUR COMPRESSIVE STRENGTH

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

### 28 DAY COMPRESSIVE STRENGTH

Toproc SY typically achieves a 28 day compressive strength of 60N/mm<sup>2</sup> but can typically achieve in the range of 70–90N/mm<sup>2</sup>.

## DURABILITY

Due to its very cohesive nature Toproc SY allows very little, if any, bleed water to migrate to the surface. Combined with a dense micro structure it results in a concrete with 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 SY 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 SY's durability is improved to a variety of conditions including weathering, chemical attack, abrasion and freeze/thaw attack.

## IMPACT RESISTANCE

Due to its combination of micro-synthetic and steel fibres, as well as its tailored admixtures, Toproc SY provides the impact resistance or 'surface toughness' by restraining movement at the point of impact helping to hold the concrete matrix together e.g. for localised impact stresses caused by the dropping of trailers onto their dolly wheels. As the fibres are dispersed throughout the matrix spalling resistance is also improved offering greater protection to exposed areas such as the joint arris. Toproc SY provides post cracking toughness/ductility, however, the degree of toughness it imparts is dependent on dosage, type and tensile strength of the steel fibre used. Further advice should be sought if post cracking toughness is a requirement.

## ABRASION RESISTANCE

Abrasion resistance will develop over time and is essentially a function of the concrete matrix, maximum water/cement ratios, minimum cement content along with effective finishing and curing techniques. Evidence has shown that moist curing for seven days produces significantly higher long-term abrasion resistance than concrete stripped and exposed after 24 hours.

If the abrasion is of a gouging nature such as objects dragged across the floor, steel fibre-reinforced concrete has substantial ability to control the micro-fracture cracking caused by this type of impact abrasion.

## SHRINKAGE

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

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

## PUMPABILITY

Toproc SY can be easily pumped, does not require specialist equipment and is typically delivered at an S3 consistence.

## TYPICAL DENSITY

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

## TYPICAL AIR CONTENT

0.5 to 1.5%.

## PLACING, COMPACTING AND FINISHING

The cohesive nature of Toproc SY 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.

The ability to produce a 'fibre-free' floor surface finish depends on several factors (see Concrete Society Technical Report 63, 8.1.5 Compacting and Finishing) the most important being that compaction must be applied from the surface, by means such as a laser screed or vibrating beam. Poker vibrators can be used to compact the lower layers in thick slabs but should not be employed to reduce fibres at the surface.

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

A brush finish is not recommended as it will lift some of the fibres that are closest to the surface. These fibres may require removal before trafficking.

## EARLY ACCESS

Due to its high early strength Toproc SY can be lightly trafficked after 24 hours, however, if abrasion resistance is paramount it is preferable to leave the concrete for at least three days (preferably seven days) prior to trafficking as abrasion resistance develops over time. Curing is still essential, so a suitable high efficiency curing membrane should be considered.

## CURING

As with all concretes, proper curing is essential to ensure that all the benefits of Toproc SY 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 the concrete is to be used in any sort of flatwork construction, such as bridge decks, slabs etc. then the concrete should be cured for a minimum of seven days. If the flatwork needs to be trafficked earlier a suitable high efficiency grade curing membrane should be used. 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 reapplication 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 SY 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. 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, which, together with Toproc SY's unique properties, makes Toproc SY easier to pump, place, pour etc.

## 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. 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 SY in accordance with B58500-2  
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 of 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

### 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  
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[toproc@tarmac.com](mailto:toproc@tarmac.com)