



TSIRCON CO LTD

MANUFACTURERS & TRADERS
OF BUILDING MATERIALS

Ημ. έκδοσης 8/2010

TSIRCO-FLO S2

Retarding Superplasticiser

Product

TSIRCO-FLO S2 is a superplasticising/water-reducing admixture for concrete, mortars and grouts, capable of high workability retention.

Composition

TSIRCO-FLO S2 is a brown liquid based on poly- (naphthalene, -sulfonate, -sodium) salts. The product is non-toxic and does not contain calcium chloride or any other corrosive and harmful chemicals for either the concrete or the reinforcement.

Purpose

- To impart very high workability to cement/aggregate mixes without the addition of extra water.
- To improve retention of high workability with time without excessive retardation of setting.
- Advantageous in high temperature applications.

Usage

The optimum dosage should be determined by site trials with the proposed mix. As a guide, fluid concrete will require 0,40-0,70 litres/50kg cement.

Pack

20 and 210 litre drums or bulk delivery.

Advantages

- Imparts extreme fluidity to concrete and mortars, which is retained for extended period of time. In the case of pumpable grouts, high workability can be maintained for up to 4 hours.
- Facilitates rapid placing of concrete, including around congested reinforcing steel.
- Achieves good compaction without the need for excessive vibration.
- Maximises the practical utilisation of the very high workability state.

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Introduction

Plasticising admixture for concrete and mortars have now gained wide acceptance throughout the Construction Industry. Cement particles tend to clump together to form agglomerates, which do not readily disperse in water. Plasticisers work by improving the dispersion of these agglomerates within the mix, which ensures that the cement is used more efficiently. However with normal plasticising admixtures there is a limit to the amount of dispersant that can be added. Continued research has resulted in the development of the new materials, which act as a very powerful dispersants without side effects. These are known as «Superplasticisers». The incorporation of a retardant into the system enables this property to be maintained for longer periods.

Use

The powerful dispersion action and the enhanced period of fluidity, offers the following uses:

1. To impart high fluidity or workability to concrete, mortars and grouts which will maintain this property for longer periods than those achieved with TSIRCO-FLO S1 (see separate leaflet), due to its retarding properties.
2. The significant factors governing workability are «yield stress» (which embraces the *static* characteristics) and the «viscosity» (which controls the *dynamic* properties) of the unset concrete. Both these factors are significantly reduced in concrete containing TSIRCO-FLO S2. The slump test based on BS 1881-102:1983 is governed largely by the static characteristics of concrete. A more reliable estimate of the workability of highly fluid mixes is given by DIN 1048-1 «Flow Table Test», which is governed by both static and dynamic factors. A concrete giving a Flow Table reading of between 51 and 60cm is known as «fluid» concrete. Such concrete literally «flows» and is almost self-levelling.
3. It can be poured into place around congested reinforcement and requires little (or no) vibration to obtain a well-compacted concrete. Fluid concrete made without the addition of extra water should not be characterised by segregation or excessive bleed during and after placing. TSIRCO-FLO S2 treated concrete satisfies these important requirements.
4. The ability of TSIRCO-FLO S2 to extend the period of fluidity and high workability greatly extends the scope of «Superplasticisers» particularly where pours are made in areas of difficult placement or access.



5. TSIRCO-FLO S2 is ideal for use with pumped cement or cement/sand grouts where either long feed lines have to be used, or the rate of pumping is low.
6. For site-batched concrete, which is placed shortly after mixing, the measured amount of TSIRCO-FLO S2 is added to the gauging water and the concrete is discharged when is completely mixed. Due to the practical problems of transporting large quantities of fluid concrete, ready-mixed concrete should be dosed just before it is placed. Truck mixing has been found to be quite satisfactory if the measured amount of TSIRCO-FLO S2 is added directly to the mix and the load rotated at maximum r.p.m. for two minutes.

Properties

TSIRCO-FLO S2 is supplied as a non-toxic brown liquid, based on poly-(naphthalene, -sulfonate, -sodium) salts. The product is non-toxic and does not contain calcium chloride or other potentially harmful and corrosive chemicals. It can therefore be used with safety in concrete, mortars and grouts which may surround reinforcement, pre-stressing mixes and high tensile steel strands.

In mixes designed for high fluidity, there is some advantage in having an excess of fine aggregate. In many cases however the use of TSIRCO-FLO S2 obviates the need to modify the fine aggregate grading.

The very fluid nature of concrete dosed with TSIRCO-FLO S2 lasts for a period of 1-3 hours. It then reverts from a high to a low slump material 3-5 hours after dosing.

TSIRCO-FLO S2 may be used with all types of Portland Cement. If you intend to use it with other types of cement, please contact our Technical Department for advice.

TSIRCO-FLO S2 conforms to the requirements of ASTM C 494/C 494M – 99a – Type G.



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Typical Product Data

Physical state: Brown, non toxic, liquid solution

Composition: poly- (naphthalene, -sulfonate, -sodium) salts.

Specific Gravity at 20°C: 1.16



1328-CPD-0001

TSIRCON CO LTD,

Manufacturers of Building Materials

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1328-CPD-0042

EN 934-2

Retarding/High range water reducing /

superplasticizing/hardening

accelerating admixture for concrete

EN934-2: T11.1/T11.2

Maximum chloride content: 0.22 by mass

Maximum alkali content: ≤ 5.3 by mass

Dosage

As with all admixtures, the optimum dosage for a particular application, is best determined by site trials.

Normal dosage of TSIRCO-FLO S2 is in the range of 0,40-0,70 litres/50kg cement dependent upon the workability requirements.

Overdosing

Overdosing should be avoided since it may produce a concrete, which might segregate and show pronounced retardation of set.

Storage life

TSIRCO-FLO S2 has a storage life of not less than one year. The product must be kept in the manufacturer's sealed containers and it must be protected from frost and direct sunlight, especially at temperatures over 30°C. In case it becomes frozen, thawing must be allowed and thorough mixing must be made before use.

Handling precautions

TSIRCO-FLO S2 is an industrial chemical and ingestion should be avoided. It is faintly alkaline. Prolonged contact with skin should be avoided. Any splashes to the skin must be washed off with clean water. Also any splashes to the eyes must be washed off immediately with clean water and medical advice must be sought.

How to specify

TSIRCO-FLO S2 Retarding Superplasticiser to be used strictly in accordance with the instructions of the manufacturers TSIRCON CO. LTD.