



TSIRCON CO LTD

MANUFACTURERS & TRADERS
OF BUILDING MATERIALS

Ημ. έκδοσης 03/2011

TSIRCO-FLO N1

Highly efficient plasticizer /water reducer for concrete

Product

A highly efficient plasticiser and water reducer for concrete conforming to the requirements of CYS EN934-2, Table 1 & 2.

Composition

A liquid of brown colour, based on processed calcium lignosulphonate. It does not contain any harmful chemicals for either the concrete or the reinforcement.

Purpose

- To reduce water/cement ratio without loss of the workability.
- To reduce the cement content of concrete mixes without loss of strength.

Usage

0.14-0.20 litres of TSIRCO-FLO N1 per 50kg of cement. Dosages of less than 0.14 litres per 50kg of cement may be used if only 5% water reduction is required.

Pack

20, 210 litre drums and in bulk delivery.

Advantages

- Increased workability of concrete mixes allowing easier placing, compaction and finishing.
- Lower water requirement for the same workability.
- Higher strength and durability.
- Lower cement requirement for a given strength and workability.
- Reduced shrinkage.



Introduction

TSIRCO-FLO N1 is a plasticising admixture for concrete and mortars specially formulated to ensure that cement is used more efficiently. It works by dispersing agglomerates of the cement, which are formed during the mixing process. By breaking down these agglomerates TSIRCO-FLO N1 ensures that cement particles are evenly dispersed throughout the concrete mix and the result is a more efficient economic use of the cement.

Use in Concrete

TSIRCO-FLO N1 is an efficient low cost plasticiser for concrete and may be applied to concrete mixes to give any of the following benefits or a combination of them.

- 1. *Water reducer:*** The workability of concrete mixes can be kept unchanged while the use of TSIRCO-FLO N1 into the concrete mix reduces the required quantity of gauging water by 10%-20%. This in effect brings about higher strengths and a more durable concrete.
- 2. *Workability aid:*** The workability of concrete mixes can be greatly improved incorporating TSIRCO-FLO N1 into the mix, without increasing the quantity of the gauging water.
The result is a mix that can be placed and compacted more easily saving time and labour. In addition, TSIRCO-FLO N1 produces a denser concrete, which is less permeable to water.
- 3. *Cement economy:*** TSIRCO-FLO N1 can be incorporated into concrete mixes to reduce cement requirements thus reducing costs. An 8-12% reduction of cement for nominal 300kg mix can be obtained without loss of workability or strength. Such corresponding mixes incorporating TSIRCO-FLO N1 are more durable than control mixes under freezing and thawing.

All the above benefits can be used incorporated for all types of concrete works, especially in difficult placing conditions where maximum workability with minimum water/cement ratio is required. The use of TSIRCO-FLO N1 in such situations will prevent shrinkage and surface laitance, at the same time reducing permeability and improving durability. TSIRCO-FLO N1 will also improve poor concrete mixes, which are made from low quality aggregates having a higher water demand.



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Typical Product Data

Physical state: Liquid

Colour: Brown

Specific Gravity at 20°C: 1.17

Application Standard:

EN 934-2:2009

Compatibility

TSIRCO-FLO N1 is compatible with Portland cement (Ordinary or Rapid Hardening) as well as with Alumina cement. For use with other cements, please apply to our Technical Department for advice. TSIRCO-FLO N1 may also be used together with other admixtures provided these are not mixed together but added separately to the mix.

Durability

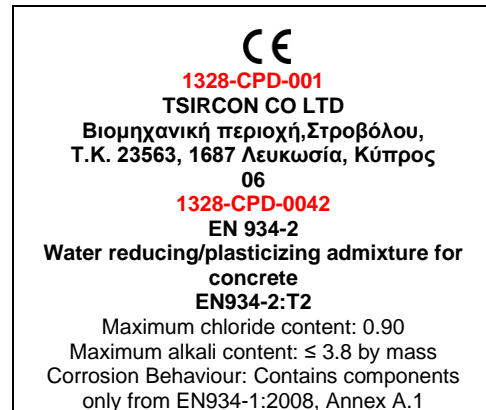
Concrete incorporating TSIRCO-FLO N1 presents greater durability against concrete not incorporating the admixture. This has been indicated by tests based on the BS 73/10489 Freeze/Thaw cycling method which has been carried out to determine the durability of concrete dosed with TSIRCO-FLO N1 both as a workability aid as well as a cement saver.

Dosage

TSIRCO-FLO N1 comes ready for use and should be added to the mix together with the gauging water. Sufficient time should be allowed for the mixing of the concrete to ensure that TSIRCO-FLO N1 has been thoroughly and evenly dispersed through the mix.

The dosage rate for TSIRCO-FLO N1 is 0.14 litres per 50kg of cement (0.28% wt. of cement for normal concrete mixes). For some particular mixes the dosage rate might need to be increased slightly (up to 0.20 litres per 50kg of cement). A few trials with the proposed mix will determine the optimum dosage for each application.

It is recommended to use a dispenser for accurate dosing when TSIRCO-FLO N1 is to be used on large jobs.





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Overdosing

No harmful effects will occur with doses up to about 0.3 litres TSIRCO-FLO N1 per 50kg of cement, however above this ratio some retardation and decrease in strength will be experienced.

Storage life

TSIRCO-FLO N1 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 N1 is an industrial chemical of very slight acidity. Avoid prolonged contact with the skin to prevent skin irritation. Protect the eyes from splashes which must be washed away immediately using clean water and medical advice sought.

How to specify

TSIRCO-FLO N1 concrete plasticiser to be used at the rate of 0.14 litres per 50kg of cement, and strictly in accordance with the instructions of the manufacturers, TSIRCON CO. LTD.

Test results

The table below shows typical results obtained using a mix design as specified by B.S. 5075: 1982, Part 1.

Test	TSICO-FLO N1 content	Cement Content kg/m ³	Water/Cement Ratio	Slump (mm)	Comprehensive Strength (N/mm ²)	
					7 days	28 days
Control	Nil	300	0.63	62	29	36
Water Reducing	0.14 litres per 50kg cement	300	0.58	65	36	45
Cement Saving	"	275	0.62	59	32	41
Extra Workability	"	300	0.63	147	33	43