

# P4

Water-reducing admixture

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## Product Description

P4 is a liquid plasticiser or water-reducing agent used to improve workability of concrete mixes or to allow an effective reduction in the free water content to be made. The effect is achieved by its absorption onto the surface of the cement particles in a concrete mix giving a powerful deflocculating action. It can also be used to effectively reduce permeability of concrete.

P4 is formulated from carefully selected raw materials and is manufactured under controlled conditions to give a consistent product. It is based on high grade modified lignosulphonic acid derivatives and it conforms to Singapore Standard SS 320: 1987.

P4 does not contain chloride as an intentional component and is non-corrosive.

## Product Advantages

- The effective plasticising action of P4 will give increased workability to most types of concrete mixes. Harsh mixes, such as those produced with crushed rock aggregates, are considerably improved in the plastic and hardened state.
- When used for its water-reducing effect, reductions in the water content in the region of 10% can normally be achieved with subsequent increases in strength, impermeability and durability.
- P4 can be used to modify concrete mix designs to achieve cement reductions.
- The reduction in excess water which can be achieved, together with the slight air entrainment, characteristic of lignosulphonic acid derivatives, is effective in increasing the impermeability of concrete. Surface finishes can be improved and blemishes such as 'sand runs' overcome.
- P4 is of particular value in concreting operations subject to high ambient temperatures.
- It extends the period of time when the concrete can be placed and compacted.
- P4 is recommended for use where waterproofing of structural concrete is specified. Significant reductions in water permeability and penetration can be obtained.

## Typical Properties

**Appearance:** Dark brown liquid

**Specific Gravity:** 1.195kg ± 0.02kg

**Air Entrainment:** Air content of concrete mixes will normally be increased by between 1% and 2%

## Compatibility With Cements

P4 can be used with all types of Portland, Pozzolan and Blast Furnace cement. It is also compatible with cements containing fly ash and microsilica.

## Compatibility With Other Admixtures

P4 should not be premixed with other admixtures. The performance of the material may be affected by the presence of other chemicals. It is advisable to add all admixtures separately to a cementitious mix.

## Method of Use

P4 is supplied ready for use. It should be added to concrete mixes during the mixing process, at the same time as the water or the aggregates. It should not be added directly to the cement. No extension of normal mixing time is necessary.

## Dosage Rates

Range: 280mL to 850mL / 100kg of cementitious material.

The performance of P4 is best assessed after preliminary tests on site, using the actual concrete under consideration to determine the optimum dosage and effect on concrete properties such as ultimate compressive strength, early rate of gain of strength and shrinkage, when these are of consequence.

As a guide to these trials, dosage of 400mL - 850mL / 100kg cement is recommended.

## Effects of Overdosing

Overdosing of P4 will generally produce a considerable increase in workability and in certain circumstances, a slight increase in air entrainment. This particularly in cold weather, will be accompanied by a retardation of the initial and final set of the concrete. In such cases, however, provided the concrete is properly cured, the ultimate strength will generally be higher than for normal concrete. The effects of overdosing will be exaggerated when sulphate-resisting cement is used in place of ordinary Portland Cement.

## Dispensing Equipment

Please contact your local GCP representative for further information regarding the dispensing equipment for this product.

## Packaging

P4 is supplied in 205L drums or bulk deliveries can be arranged.

## Storage

P4 should preferably be stored in sealed conventional containers and protected from the elements.

### Storage Life in Manufacturer's Drums:

12 months from date of manufacture

## Bulk Storage:

12 months from date of delivery

## Health and Safety

For further information see the P4 Material Safety Data Sheet, or consult GCP Applied Technologies.

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