

# Shield PCG 277

High Range, Water-Reducing and Retarding Admixture for Concrete



## Description

**Shield PCG 277** is a ready-to-use, high-performance, and highly effective liquid superplasticizer based on polycarboxylate technology, used in the production of free-flowing concrete, self-compacting concrete, or as a water-reducing agent for promoting ultimate strength, suitable for extending the slump retention of concrete and considerably reducing the mixing water as well as enhancing concrete strength.

## Uses

- Production of Self-compacting concrete (SCC) with high workability.
- Production of ready-mixed concrete.
- Pre-cast concrete elements and pre-stressed concrete.
- High-strength concrete and pumped concrete.

## Characteristics / Advantages

- Workability retention is greatly improved allowing for easier placement of the concrete.
- SCC requires no compactive effort, making it ideal for slender elements where reinforcement is densely packed.
- Production of low permeability, high durability concrete.
- Improved the rheology of the mix, hence significantly reducing the risk of segregation and allowing greater time for placement.
- High water reduction capability.
- Suitable for use in hot and humid climatic conditions.
- Improved workability retention.

## Standard Compliance

- ASTM C494/C494M: Type G
- EN 934-2: Tables 11.1 and 11.2

## Typical Properties

|                                     |                    |
|-------------------------------------|--------------------|
| <b>Appearance / Color</b>           | Light brown liquid |
| <b>Specific Gravity @ 23°C</b>      | 1.056 ± 0.01       |
| <b>Freezing Point</b>               | 0°C                |
| <b>Chloride Content (EN 480-10)</b> | Nil                |
| <b>Nitrate Content</b>              | Nil                |

## Application Instructions

### 1. Direction of Use

**Shield PCG 277** should be added into the gauging water of the concrete mix, or into the ready-mixed concrete at site, just before discharge. In this case, the concrete truck mixer should rotate additionally for 3 minutes, to achieve uniform dispersion of the admixture into the concrete mass.

### 2. Dosage

0.5 – 1.8% by weight of cement and supplementary cementitious materials.

It is always recommended to carry out trial mixes, since the exact dosage rates depend on many factors such as required slump, quality of cement and aggregates, water/cement ratio, ambient temperature etc.

- An excessive dosage may cause retardation of setting time, without negatively affecting the final strength of concrete.
- Never add **Shield PCG 277** to dry cement or dry aggregates.
- It must be considered that a low water/cement ratio increases the water impermeability of concrete.

### 3. Dispensing

**Shield PCG 277** is best dispensed into the mixer via automated dosing equipment as part of the batching process or, alternatively, added to the gauging water or simultaneously poured with it into the concrete mixer at the batching plant.

**Shield PCG 277** is suitable for use with all types of Portland cement (OPC and SRC) and cement blends with supplementary cementitious materials such as GGBS, PFA, and micro-silica.

### 4. Concrete Placement and Curing

When using **Shield PCG 277** in concrete, it is important to observe the rules for best-demonstrated concreting practices in production, placing, and curing. ACI Manual of Concrete Practice can provide valuable guidance.

Fresh concrete must be cured properly especially at high temperatures in order to prevent plastic and drying shrinkage. Apply a curing compound or use wet hessian and polythene.

### 5. Cleaning

Collect and dispose of spillage. Do not discharge into drains or watercourses or onto the ground. Soak up with an inert absorbent or container and remove in the best available method.

### Shelf Life and Storage

**Shield PCG 277** has a shelf life of 12 months when stored in its original unopened packaging in cool and dry conditions, protected from direct sunlight, heat, and moisture. Shelf life may be reduced if the recommended storage conditions are not followed.

### Packaging

**Shield PCG 277** is supplied in 1000-liter tanks. Bulk delivery on request.

### Safety Instructions

Refer to the most recent Material Safety Data Sheet for information and advice on the safe handling, storage and disposal of the product.

### Limitations

- The mix design must be proportioned for the local materials used and trial mixes performed to verify admixture dosage to give the required concrete properties.
- If frozen and/or if precipitation has occurred, only use the admixture after it has been totally thawed and mixed.
- Do not add directly onto dry cement or aggregates.
- When using high-workability concrete, take special care that formwork is properly installed and secured.
- Do not use with naphthalene-based admixtures.
- If the setting time of the concrete is extended, ensure proper curing. In this case, other properties may not be affected, and a higher ultimate strength can be achieved.
- Overdosage may cause an extended setting time. Bleeding and segregation of the mix will be observed if the water content is not reduced.
- Check compatibility when using with other admixtures.

### Technical Support

Refer to technical information, method statement, or contact technical support team for any inquiry.

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