

NOVAMIX 4000

High range, Water-reduced, Retarding Superplasticiser for High Performance Concrete

Description

Novamix 4000 is an admixture based on fourth generation hybrid polycarboxylic ether polymer with high early strength gains. **Novamix 4000** is free of chloride and low alkali. It is compatible with all types of cement. It is in-built with viscosity modifying agent which helps in the production of concrete with enhanced viscosity and controlled rheological properties.

Recommended Uses

- ✓ Reinforced concrete
- ✓ Production of free flow concrete
- ✓ Self-compacting concrete
- ✓ High performance concrete for durability
- ✓ High early and ultimate strength concrete
- ✓ Precast and pre-stressed concrete
- ✓ Fair-finish concrete
- ✓ Parking structures

Features and Benefits

- ✓ Produces flowing concrete with controlled delay of slump loss and workability
- ✓ Highly reduces water requirement
- ✓ Reduces segregation and bleeding in the plastic concrete
- ✓ Reduces cracking and permeability of hardened concrete
- ✓ When used to produce flowing concrete, significantly reduces concrete placement time and cost.

Chemistry and Mechanism of Action

Novamix 4000 is differentiated from the traditional superplasticisers by a new, unique mechanism of action that greatly improves the effectiveness of cement dispersion.

Traditional superplasticisers based on melamine and naphthalene sulphonates are polymers which are absorbed by the cement granules.

They wrap around the granules' surface areas at the very early stage of the concrete mixing process. The sulphonic groups of the polymer chains increase the negative charge of the cement particle surface and disperse these particles by electrical repulsion.

This electrostatic mechanism causes the cement paste to disperse and has the positive consequence of requiring less mixing water to obtain a given concrete workability.

Novamix 4000 has a different chemical structure from the traditional superplasticisers. It consists of a carboxylic ether polymer with long side chains. At the beginning of the mixing process, it initiates the same electrostatic dispersion mechanism as the traditional hyper plasticisers, but the side chains linked to the polymer backbone generates a steric hindrance which greatly stabilises the cement particles' ability to separate and disperse. Steric hindrance provides a physical barrier (alongside the electrostatic barrier) between the cement grains. With this process, flowable concrete with greatly reduced water content is obtained.

Technical Properties

Appearance	Light brown liquid
pH	≥ 6
Chloride content	< 0.2%

Test Certification/Approvals

- ✓ ASTM C494 Type F
- ✓ IS 9103:1999
- ✓ IS 2645:2003
- ✓ AASHTO M 194

Dosage

Optimum dosage of **Novamix 4000** should be determined in trial mixes.

Dosage range: 0.3% to 1.5% weight of cementitious material.

Effects of Overdosage

A severe over-dosage of **Novamix 4000** can result in the following:

- ✓ Extension of initial and final set
- ✓ Bleed/segregation of mix, quick loss of workability

A slight overdosing may not adversely affect the ultimate strength of the concrete and can achieve higher strengths than normal concrete, provided it is properly compacted and cured. Due allowance should be made for the effect of fluid concrete pressure on formwork, and stripping times should be monitored.

In the event of over dosage, consult your CCI chemicals immediately.

Application

Novamix 4000 is a ready-to-use liquid which is dispensed into the concrete together with the mixing water. The plasticising effect and water reduction are higher if the admixture is added to the damp concrete after 50% to 70% of the mixing water has been added. The addition of **Novamix 4000** to dry aggregate or cement is not recommended. Automatic dispensers are available.

Thorough mixing is essential and a minimum mixing cycle after the addition of **Novamix 4000** of 60 seconds for forced action mixers is recommended.

Compatibility

Novamix 4000 is compatible with all types of cement including green cement.

Packaging

Novamix 4000 is supplied in 230 kg HDPE barrels and in bulk tankers on request.

Storage

Novamix 4000 must be stored where temperatures do not drop below +5°C. If product has frozen, thaw at +5°C or above and completely reconstitute using mild mechanical agitation. Do not use pressurized air for agitation. Store under cover, out of direct sunlight and protect from extremes of temperature.

Shelf life

12 months when stored as above.

Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice, consult CCI chemicals.

Precautions

As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs (which can also be tainted with vapour until product fully cured or dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek immediate medical attention. Keep away from children and animals. Reseal containers after use. Do not reuse containers for storage of consumable items.

Safety

Before use, refer to the Material Safety Data Sheet (MSDS). The MSDS is available on www.ccichemicals.in or contact us at info@ccichemicals.in.

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