NanoCast® 500

High-Range Water-reducing / Superplasticizing Chemical Admixture for Flowable Concrete

Product Definition

NanoCast 500 is a polycarboxylate based, high-range water reducer / superplasticizer type of chemical admixture designed for the precast concrete industry which flowable and high early strength concrete production is needed.

Use

NanoCast 500 is recommended for use in the applications and purposes below.

- Concrete production in high workability classes.
- Self-compacting concrete production.
- High early and ultimate strength concrete production.
- Concretes designed for sections of closely spaced and congested reinforcing steel.
- Concrete production in low water to cement ratio without slump loss.
- High strength concrete production.

Advantages and Properties

- NanoCast 500 is polycarboxylate based, high-range water reducer / superplasticizer type of chemical admixture designed for making flowable concrete. Due to its specially designed and optimized chemical structure it provides very effective dispersion of cement particles and prevents the flocculation.
- Provides high early and ultimate strength.
- Provides high workability retention performance.
- NanoCast 500 is chemically a polymer with backbone and side chains. It is adsorbed on the surface of the cement particles and provides excellent dispersion of the cement particles by steric effect of its side chains. This mechanism makes NanoCast 500 a very effective dispersant to obtain self compactability in very low water to cement ratios.
- A water reduction up to 40% by satisfying the target workability can be obtained through the appropriate usage of NanoCast 500. This significant amount of water reduction and decreased water to cement ratio results in increased early strength gain, increased ultimate strength, enhanced durability and the other beneficial properties associated with low water to cement ratio such as decreased chloride-ion penetration.
- Provides significant increase in workability without increasing the quantity of mixing water and hence procures considerable convenience in mixing, transporting, placing and compaction of fresh concrete.
- Does not contain any compounds that may cause corrosion of reinforcing steel.

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Application Details, Suggestions and Warnings

- NanoCast 500 should be added to the mixing water. As an alternative way, it can be mixed by 1/3 of the mixing water and added to the fresh mixture produced by 2/3 of the mixing water by a visual observation of workability and segregation. In case of the direct addition to the fresh mixture, an additional mixing time should be introduced. NanoCast 500 is not added to the dry mixture.
- As the dosage of the chemical admixtures is greatly influenced from cement type, properties of the concrete ingredients and mix design, it is recommended that the optimum dosage of admixture should be determined on trial batches.
- NanoCast 500 is generally compatible with the Portland cement types described in EN 197-1. In addition, it can be used in concrete mixes containing mineral admixtures such as silica fume, fly ash and ground granulated blast furnace slag. It should be noted that, the presence of mineral admixtures in concrete greatly influences the required dosage of the admixture for a specified target or performance. The optimum dosage of NanoCast 500 should be determined on trial batches.

⚠ NanoCast 500 is not compatible with sulfonated naphthalene and sulfonated melamine based chemical admixtures. There is no known incompatibility with the other type of chemical admixtures and can be used with the others in the same mixture. In case of the combined usage, the different types of chemical admixtures should not be mixed together and be used separately. Please contact R&D department of Lyksor for further information.

Recommended Dosage

The recommended dosage rate of NanoCast 500 for general concreting operations is between 0.8 % - 1.5 % of the weight of binding material (cement + mineral admixture). The maximum water reduction and superplasticizing property increases as the dosage increases up to a saturation point. However, it should be considered that the required dosage varies with the type and amount of cement and mineral admixtures, water to binder ratio, properties of the other ingredients and the ambient temperature. Exceeding the recommended or determined dosage may cause significant segregation and setting time increase. In addition, the required dosage of NanoCast 500 to achieve a target performance will be different for each concrete mixture. The appropriate dosage should be determined on trial batches as it will not cause any segregation and/or undesirable side effects. It is known that there is a significant effect of C_3A, SO_3 content and fineness of cement on the appropriate dosage of NanoCast 500.

Technical Properties

Colour and form	Opaque - liquid
Chemical base	Polycarboxylate ether
Density (kg/lt)	1,05 - 1,09 (at +20 ^{o}C)
Chloride ion content	Max 0.1% - Chloride free acc. to EN 934-2
Alkali content	Max. %3
pH	3 – 7
Conformity	TS EN 934-2 Table 3.1 – 3.2

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Cleaning of Tools

Concreting tools contact with NanoCast 500 can be easily cleaned with water.

Packaging

25 kg drum
1000 kg IBC
Bulk delivery

Storage and Shelf Life

Shelf life of NanoCast 500 is 12 months when stored in its original package and recommended storage conditions. NanoCast 500 should be stored in dry conditions between +5 °C and +35 °C. It should be protected from direct sunlight.

Security and Health

In case of contact with skin, wash with clean water. In case of contact with eye, wash with clean water. Eye contact should be medically consulted immediately. For further information please refer to Material Safety Data Sheet (MSDS) of the product.

Legal Liability

The technical recommendations in this product data sheet are based on the experimental studies performed on reference concrete mixtures designed in the R&D laboratories of LYKSOR. The results may not be applicable to different concrete mixtures produced with different materials than the ones used in the experiments in Lyksor. All customers and users are required to determine the appropriate LYKSOR products for their intended use and to test the suitability of LYKSOR product for their application. Please contact LYKSOR for the appropriate product selection and usage details. LYKSOR is not responsible for the improper usage of the products.

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