NanoFlow® 2000

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

Product Definition

NanoFlow 2000 is polycarboxylate based, high-range water reducer / new generation superplasticizer type of chemical admixture designed for making different concretes from normal flowability to self-compacting concretes. NanoFlow 2000 provides high flowability and slump retention performance.

Use

NanoFlow 2000 is recommended for use in the applications and purposes below.

- Concrete production in normal and high workability classes.
- Self-compacting concrete production.
- Ready-mixed 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

- NanoFlow 2000 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 flowability without increase in setting time.
- Provides high workability retention performance.
- NanoFlow 2000 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 NanoFlow 2000 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 NanoFlow 2000. 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.
- Improves the strength and durability by ensuring that the specified target consistency is achieved with lower water to binder ratios.
- It is non-chloride admixture and does not contain any compounds that may cause corrosion of reinforcing steel.

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Application Details, Suggestions and Warnings

- NanoFlow 2000 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. NanoFlow 2000 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.
- NanoFlow 2000 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 NanoFlow 2000 should be determined on trial batches.

⚠ NanoFlow 2000 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 NanoFlow 2000 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 NanoFlow 2000 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 NanoFlow 2000.

Technical Properties

Colour and form	Brown - Liquid
Chemical base	Polycarboxylate
Density (kg/lt)	1.04 – 1.08 (at +20 ^oC)
Chloride ion content	Max 0.1% - Chloride free acc. to EN 934-2
Alkali content	Max. 5%
pH	3 – 7
Conformity	TS EN 934-2 Table 3.1 – 3.2 ASTM C494 Type G

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Cleaning of Tools

Concreting tools contact with NanoFlow 2000 can be easily cleaned with water.

Packaging

25 kg drum
1000 kg IBC
Bulk delivery

Storage and Shelf Life

Shelf life of NanoFlow 2000 is 12 months when stored in its original package and recommended storage conditions. NanoFlow 2000 should be stored in dry conditions between +5 ℃ and +35 ℃. It should be protected from direct sunlight and frost.

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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