

# NanoShot® AF 450

## Alkali-Free Set Accelerator Chemical Admixture for Wet-Mix Sprayed Concretes

### Product Definition

NanoShot AF 450 is an alkali-free set accelerator type of chemical admixture particularly designed for use in wet-mix sprayed concrete applications.

### Use

NanoShot AF 450 is recommended for use in the applications and purposes below.

- Wet and dry mix sprayed concrete applications.
- Concrete jacketing, lining and overhead works in tunnel constructions.
- Concreting operations for rock, soil and slope stabilization.
- High quality sprayed concrete applications for strengthening purposes.
- Sprayed concrete applications in mines.

### Advantages and Properties

- Significantly shortens the setting time and increases the strength gain rate of concrete through its special design. It is an appropriate chemical admixture for sprayed concrete applications.
- Alkali-free.
- Appropriate for glass fiber reinforced sprayed concrete that may be negatively affected from high alkaline environment.
- NanoShot AF 450 enhances the productivity and shortens the construction time of sprayed concrete applications by increasing the cohesion of the mix, shortening the setting time and increasing early strength of sprayed concrete.
- Reduces the loss of material by rebound.
- Reduces the ultimate strength loss.
- Compatible with the other types of chemical admixtures (i.e. air entraining admixtures).
- Improves the bond between rock surface and sprayed concrete layer as well as old and new sprayed concrete layers.
- Does not contain chloride or any other substances that may cause corrosion.

### Application Details, Suggestions and Warnings

- NanoShot AF 450 is added to the water at the discharge nozzle or should be added at the nozzle through a dosage unit.
- NanoShot AF 450 significantly reduces the setting time. Therefore, concreting operation should be properly planned and executed.
- NanoShot AF 450 is compatible with the other type of chemical admixtures such as lignosulfonate, naphthalene or melamine and polycarboxylate based superplasticizers.
- Water to binder ratio (cement + mineral admixtures) should be below 0.50 (preferably 0.45). For higher early strengths reduce the water to binder ratio below 0.40.
- Strength development may slow down when used with Sulphate Resistant Cements.
- The ambient temperature and fresh concrete temperature during shotcrete application should be over +1 °C and +15 °C, respectively.

**!** NanoShot AF 450 is not compatible with alkaline set accelerator type of chemical admixtures.

## Recommended Dosage

The required dosage of NanoShot AF 450 varies in a broad range depending on the cement used, ambient and fresh concrete temperature, sprayed concrete mixture properties and the layer thickness of sprayed concrete. The dosages of between 3% - 10% of the total binding material (cement + mineral admixtures) are generally enough for thickness of 200 mm sprayed concrete layer applied in one spraying operation. The optimum dosage of NanoShot AF 450 should be determined on trial batches. The presence of mineral admixtures such as silica fume, fly ash and ground granulated blast furnace slag affects the usage dosage of NanoShot AF 450 significantly. Another important factor influencing the dosage is the ambient and fresh concrete temperatures. Low temperatures may increase the required dosage. For technical support please contact R&D department of Lyksor.

## Technical Properties

Colour and form	Gray – liquid
Chemical base	Inorganic compounds
Density (kg/lt)	1.41 – 1.47 (at +20 °C)
Chloride ion content	0.1% max - Chloride free acc. to EN 934-2.
pH	~3

## Cleaning of Tools

Concreting tools contact with the product can be easily cleaned with water. Dosing pump and the other parts of the system should be cleaned with water after the use of NanoShot AF 450.

## Packaging

30 kg drum

1000 kg IBC

Bulk delivery

## Storage and Shelf Life

Shelf life of the product is 6 months when stored in its original package and recommended stored conditions. The product should be stored in dry conditions between +5 °C and +30 °C. It should be protected from direct sunlight and frost. The product should not be stored in normal steel tanks. Store the product in closed containers made of plastic, glass fiber polymer or stainless steel.

## Güvenlik

Avoid contact with the skin as much as possible. 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 results obtained from experimental studies carried out in the R&D laboratories of LYKSOR and may not be applicable to different concrete mixtures. 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. Contact LYKSOR for the appropriate product selection and usage details. LYKSOR is not responsible for the improper usage of the products.