

# ADIUM 132

## New generation superplasticizer for concrete with extended slump retention

### Description

ADIUM 132 is a new generation polycarboxylate-based superplasticizer, specially developed for the production of ready-mix concrete where high workability, excellent slump retention, high strength and durability are required. It offers the following advantages:

- When added during the preparation of concrete, it reduces the water demand up to 25% and the resulting water/cement ratio, thus significantly increasing both initial and final strength.
- When added to the ready-mixed concrete, it significantly improves its workability with a spread of more than 63 cm (self-compacting concrete) without need of additional water.
- It contributes to better hydration of cement.
- It facilitates compaction of concrete, reduces segregation and bleeding and significantly improves pumpability.
- It significantly reduces setting shrinkage (crack prevention) and creep.
- It improves water impermeability.
- It improves resistance to carbonation and chloride ion penetration.
- It does not have air-entraining action.
- It is free of chlorides and other corrosive constituents.
- It is compatible with all kinds of Portland cement.

Certified with the CE marking as set retarding - high-range water reducing - concrete superplasticizing admixture, according to EN 934-2: T11.1 and T11.2, certificate number: 0906- CPR-02412007/01.

### Working mechanism

ADIUM 132 is an innovative superplasticizer of the newest technology based on modified polycarboxylic ether polymer.

Compared to conventional superplasticizers, it predominates in performance, because it combines two important properties:

- High water reduction or high flowability, in low doses.
- Slump retention for at least two hours.

These properties are attributed to the specifically designed chemical structure as well as the unique working mechanism of ADIUM 132, which significantly differs from the working mechanism of conventional superplasticizers based on polymer chains of modified lignosulfonates, sulfonated naphthalene-based and melamine-based polycondensates.

The polymer chains of conventional superplasticizers carrying a very high anionic charge are immediately adsorbed on the surface of the cement particles and render it a negative charge. Because of the repulsive electrostatic forces, the cement particles are dispersed; as a result, less mixing water is required to achieve the desired concrete workability. However, the adsorbed polymer chains are rapidly overlapped by crystals developed during the hydration of cement and this leads to an early loss of the superplasticizing action. Therefore, conventional superplasticizers must be added directly into the concrete on the construction site or at the concrete plant, in case it is close to the construction site.

On the contrary, new generation superplasticizers act by a very different working mechanism. They are copolymers consisting of an anionic backbone with carboxylic groups and long polyethylene oxide-side chains.

After the addition of the superplasticizer to concrete, the anionic main chain is adsorbed on the positively charged surface of the cement particles, whereas the side chains induce a steric repulsion effect among the cement particles.

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Due to this repulsive force maximum dispersion is reached and agglomeration can be avoided.

Furthermore, new polymer chains are continuously released and adsorbed on the crystals which are formed on the surface of the cement particles during the hydration and prevent the early setting of concrete. Therefore, high workability of concrete and maximum hydration of cement at low water/cement ratio are achieved causing a very compact structure of high-strength concrete.

## Fields of application

ADIUM 132 is a necessary aid for preparing high-strength concrete, exposed concrete, pumpable concrete etc. It is suitable for any type of concrete elements, such as foundations, basements, water tanks, tunnels, canals, sewage and wastewater treatment tanks, swimming pools etc. Ideal for long-distance transport of ready-mixed concrete when we need to maintain slump and workability for at least two hours.

## Technical data

Color:	light brown
Density:	1.06 ± 0.2 kg/l
pH:	6.0 ± 1.0
Maximum chloride content:	chloride free
Maximum alkali content:	≤ 2 % by weight

## Directions for use

ADIUM 132 should be added to the ready concrete mixture just after its preparation in order to achieve maximum effectiveness. To achieve uniform dispersion into the concrete mass, the concrete mixer truck drum should rotate for an additional 4-5 minutes.

## Consumption

0.35-0.80 kg per 100 kg of cement.

The consumption of ADIUM 132 depends on the initial and the desired slump at site. Before application, it is recommended to check the action of ADIUM 132 in a laboratory by mixing it with the concrete, in order to achieve the desired workability.

## Packaging

- 20 kg plastic containers.
- 1000 kg tanks.

## Shelf-life/Storage

12 months from production date, if stored in original, unopened packaging, at temperatures between +5°C and +35°C. Protect from direct sun exposure and frost.

## Remarks

An overdose could cause segregation or bleeding of concrete, as a result the final strength is reduced.

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DoP No.: ADIUM 132/1601-03

## **ADIUM 132**

Set Retarding/High Range Water Reducing -  
Concrete Superplasticizing Admixture  
EN 934-2: T11.1/T11.2

Max chloride content: chloride free

Max alkali content: ≤ 2.0 % by weight

Corrosive behaviour: contains components only  
from EN 934-1:2008, Annex A.1

Dangerous substances: none

## **ISOMAT S.A.**

**BUILDING CHEMICALS AND MORTARS**

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