

ADIUM 145

New generation superplasticizer for pre-cast concrete elements

Description

ADIUM 145 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 giving a high spread without requiring 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 (thus preventing cracks) 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 a high-range water reducing - concrete superplasticizing admixture, according to EN 934-2: T3.1 and T3.2, certificate number: 0906-CPR-02412007/01.

Working mechanism

ADIUM 145 is an innovative superplasticizer of the newest technology, based on modified polycarboxylate ether polymer.

Compared to the conventional superplasticizers, it predominates in performance, because it provides high water reduction at a low w/c ratio or great flowability by the same w/c ratio.

These properties are attributed to the specifically designed chemical structure, as well as the unique working mechanism of ADIUM 145 which significantly differs from the working mechanism of the 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 and the result is that 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 in the concrete plant, in case this is placed next to the construction site.

On the contrary, the 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 between the cement particles. Due to this repulsive force, maximum dispersion is reached and agglomeration can be avoided.

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Therefore, high workability of concrete and maximum hydration of cement at a low water/cement ratio are achieved creating a very compact structure of high-strength concrete.

Fields of application

ADIUM 145 is a necessary aid for preparing high-strength concrete, exposed concrete, pumpable concrete etc. It is suitable for any type of concrete element, such as foundations, basements, water tanks, tunnels, canals, sewage and wastewater treatment tanks, swimming pools etc. It is ideal for pre-cast concrete elements.

Technical data

Color:	light brown
Density:	1.04 ± 0.05 kg/l
pH:	6 ± 1
Maximum chloride content:	chloride free
Maximum alkali content:	≤ 2.0 % by weight

Directions for use

ADIUM 145 should be added to the ready concrete mixture just after its preparation in order to achieve maximum effectiveness. It can also be added into the ready-mixed concrete, just before use.

To achieve uniform dispersion into the concrete mass, the concrete mixer truck drum should rotate for an additional 4-5 minutes.

Consumption

0.30-0.70 kg per 100 kg of cement.

The consumption of ADIUM 145 depends on the initial and the desired slump at site. Before application, it is recommended to check the action of ADIUM 145 in a laboratory by mixing it with the concrete, according to the specific mix design and requirements.

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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EN 934-2:2009+A1:2012

DoP No.: ADIUM 145/1605-03

ADIUM 145

High Range Water Reducing –
Concrete Superplasticizing Admixture
EN 934-2: T3.1/T3.2

Max chloride content: chloride free

Max alkali content: ≤ 2.0% by weight

Corrosive behavior: 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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