Technical Datasheet

ADIUM-132

New-generation superplastisizer 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 without requiring additional water.
- Contributes to better hydration of cement.
- Facilitates compaction of concrete, reduces segregation and bleeding and significantly improves pumpability.
- Significantly reduces setting shrinkage (crack prevention) and creeping.
- Improves water impermeability.
- Improves resistance to carbonation and chloride ion attack.
- No air-entraining effect.
- Free of chlorides and other corrosive constituents.
- Compatible with all kinds of Portland cement.

Certified according to EN 934-2: T11.1 and T11.2 and classified as set-retarding - high range water-reducing - concrete superplasticizing admixture. Certificate No.: 0906-CPR-02412007/01.
CE marked.

Working mechanism

ADIUM-132 is an innovative superplasticizer of the newest technology based on modified polycarboxylic ether polymers. Compared to conventional superplasticizers, it surpasses them in performance because it combines two important properties:

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

These properties are attributed to the specifically designed chemical structure as well as to 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.
During the hydration of cement, the polymer chains of conventional superplasticizers carrying a very high anionic charge are immediately adsorbed onto the surface of the cement particles and render it a negative charge. Due to electrostatic repulsive forces, cement particles are dispersed and thus 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 to 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 onto 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.
Furthermore, new polymer chains are continuously released and adsorbed on crystals formed on the surface of the cement particles during hydration preventing the early setting of concrete. Therefore, high workability of concrete and maximum hydration of cement at low water/cement ratio are achieved resulting in a high strength concrete with very compact structure.

ADIUM-132

Fields of application

ADIUM-132 is a necessary aid for preparing high strength concrete, exposed concrete, pumpable concrete, etc. 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 maintenance of slump and workability for at least two hours are required.

Technical data

Color:	dark brown
Density:	1.04 - 1.10 kg/l
pH:	5.50 ± 1.00
Maximum chloride content:	chloride-free
Maximum alkali content:	≤ 2 % by weight

Directions for use

ADIUM-132 should be added to the ready concrete mix just after its preparation 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

0.40-1.40 kg per 100 kg of cement.

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

Packaging

- 220 kg drums.
- 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 sunlight and frost.

Remarks

Overdosage may cause aggregate segregation or bleeding of concrete and adversely affect the final strength.

ADIUM-132

CE

0906

ISOMAT S.A.
17th km Thessaloniki – Ag. Athanasios
P.O. BOX 1043, 570 03 Ag. Athanasios, Greece

13

0906-CPR-02412007/01

EN 934-2:2009+A1:2012

DoP No.: ADIUM 132/1601-03

ADIUM 132

Set Retarding/High Range Water-Reducing/Superplasticizing Concrete 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: compliance

ISOMAT S.A.
BUILDING CHEMICALS, MORTARS & PAINTS
HEADQUARTERS – THESSALONIKI, GREECE
17th km Thessaloniki – Ag. Athanasios Road
P.O. BOX 1043, 570 03 Ag. Athanasios, Greece
T +30 2310 576000
www.isomat.eu e-mail: support@isomat.eu