

PRODUCT DATA SHEET

ART-M612

Comprehensive Type Polycarboxylate Superplasticizer Origin Liquor

Description

ART-M612 is a six-carbon comprehensive polycarboxylate superplasticizer independently developed by ARIT. This product not only exhibits excellent dispersing and slump-retention capabilities, but also demonstrates strong adaptability and anti-adsorption performance. It can significantly improve the workability of concrete, enhance various performance indicators, and meet the requirements of diverse engineering projects. It achieves an ideal balance between water reduction and slump retention, while offering outstanding workability that enhances the cohesion and water retention of concrete, effectively preventing bleeding and segregation, and ensuring construction performance and finished product quality in high-fluidity concrete systems.

Main benefits/Characteristics

- **Excellent Early Strength:**The concrete setting time can be advanced by more than 1 hour compared with conventional superplasticizers. Early strength can be increased by over 20%, and demolding time can be shortened by more than 3 hours, with no strength regression at later ages.
- **High Water-Reducing Rate:**The maximum water-reducing rate can reach over 46%. The dosage can be adjusted according to different application scenarios to meet specific requirements.
- **Outstanding Workability:**It can rapidly and uniformly disperse cement particles, enabling the concrete to exhibit a low-viscosity, smooth, uniform, and non-segregating

state. After molding, the concrete surface is smooth and dense with high strength.

- **Excellent Anti-Adsorption Effect:**It can effectively inhibit the excessive adsorption of superplasticizer by cement particles, maintaining good sustained dispersing ability even for materials with high clay content or high fines content.
- **Excellent Anti-Shrinkage Effect:**By improving the dispersibility of cement particles and water retention, it significantly inhibits drying shrinkage and plastic shrinkage of concrete, effectively reducing the risk of cracking and enhancing structural durability.

Applications

- Ready-mixed concrete and engineering concrete
- Mass concrete and long-distance transportation concrete
- High-volume supplementary cementitious materials (SCMs) concrete systems
- High-strength concrete (C60 and above)
- Precast concrete elements

Physical and chemical indicators

Items	Performance
Appearance	Colorless transparent liquid
Solid content/%	50±1
pH	6.0±1
density/g/cm ³	1.10±0.02
Alkali content（as Na ₂ O）	≤0.5%
Chloride content	≤0.1%

Application Case

- Precast Beams

In a practical application scenario involving precast components and large-structure casting for an expressway in South China, the original concrete mix designs commonly suffered from rapid slump loss over time, severe bleeding of paste, and high viscosity making vibration difficult, seriously affecting molding quality and surface finish. After adopting the ART-M612 superplasticizer, the workability of the mixture was effectively improved. During

construction, the paste flowed smoothly, pumping resistance and vibration difficulty were significantly reduced. After demolding, the structure surface was dense and smooth, free from bleeding and honeycomb defects. The 28-day compressive strength increased by approximately 8% compared with the original mix.

- **Ready-Mixed Concrete**

At a large ready-mixed concrete batching plant in Central China, the long transportation distance and extended waiting times were problematic. Concrete prepared with the original superplasticizer often exhibited rapid slump loss by the time it arrived on site, and the placed concrete was prone to bleeding and "bottom-grabbing" phenomena, seriously affecting construction progress and structural quality. After switching to the ART-M612 superplasticizer, under the same conditions, the slump showed almost no loss within 2 hours after leaving the plant, maintaining excellent workability and fillability. On-site pumping operations were smooth and unobstructed, vibration and air expulsion were rapid, and the hardened concrete surface was flat and smooth, free from harmful cracks and bleeding traces.

- **High-Volume SCMs Concrete System**

At a commercial concrete batching plant in Guangzhou, a concrete system with high-volume fly ash and slag was used to improve durability and economy. However, the high volume of supplementary materials led to reduced fluidity, sticky mixture, and severe bleeding, making construction difficult. After adopting the ART-M612 superplasticizer, the initial slump of the concrete increased by 20 mm, and after 2 hours it remained above 210 mm, significantly improving flow performance and flow retention. On-site pumping was smooth, vibration was easy, the concrete surface was flat and smooth, and the 28-day compressive strength met the design requirements.

Usage Instructions

- The recommended effective solids content is 0.05 % – 0.25% of the total cementitious materials; the exact dosage must be predetermined through trial tests according to the raw materials, job-site conditions, construction codes, and technical requirements.
- Any change in materials or environmental conditions may also cause the dosage to vary

within a certain range, so new tests are required to re-establish the optimum dosage.

Complies with the Following Standards:

GB/T 8076-2008

ASTM C494 TYPE F

EN 934-2

Packaging

IBC Tank or Flexitank for customer demand

Storage

- It should be stored in a cool and dry place, avoiding direct sunlight, and kept in a dedicated warehouse or a fixed location; maintain temperature between 5 ° C and 35 ° C.
- The effective storage period is 1 year. It can still be used after being tested and verified to be qualified if it exceeds the time limit.

Precautions

- When changing the type of cement or using newly delivered cement, a compatibility test should be conducted.
- Do not use in combination with naphthalene-based admixtures. When using in combination with other admixtures, compatibility tests should be performed.
- Strictly follow the construction specifications during application.
- The product information is only used to describe the product's characteristics and functions, and it is not a guarantee. Users are also required to carefully test the product's functions and its suitability. The functions and suitability of the product must be verified through testing conducted by qualified professionals.

Legal Notes

- Retaining or disclosing product samples without the company's explicit permission is strictly prohibited.
- In addition to the product quality itself, the actual performance also depends on other uncontrollable factors. If there are uncontrollable factors, company cannot guarantee the

performance of the product.

- Users are requested to strictly follow the technical guidance and product instructions for use. The company shall not be liable for any consequences resulting from unauthorized changes to the product usage method without the company's authorization.