

## PRODUCT DATA SHEET

# ART-M15

Precast Concrete Specialized Polycarboxylate Superplasticizer Origin  
Liquor

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### Description

ART-M15 is a specialized polycarboxylate water-reducing admixture for prefabricated components, independently developed by ARIT. This product not only demonstrates excellent dispersion and dispersion retention capabilities but also exhibits strong compatibility with various types of cement and aggregates, as well as effective anti-adsorption properties. Additionally, ART-M15 significantly enhances the workability of concrete, improves various performance indicators, and meets the requirements of different engineering projects. In the production of pipe piles, segments, and other prefabricated components, ART-M15 shows significant application advantages. It effectively improves the construction performance, early strength, and durability of concrete for pipe piles and segments, and meets the requirements of prefabricated components for high strength, high durability, and rapid demoulding.

### Main benefits/Characteristics

- High Early Strength Development: Setting time is shortened by more than 1 h compared with conventional superplasticizers, early-age strength increases by  $\geq 20\%$ , and formwork can be stripped 4 h earlier, with no later-age strength regression.
- High Water Reducing Rate: Maximum water reduction exceeds 45 %; dosage can be tuned to meet job-specific requirements.

- **Strong Anti Adsorption Performance:** Effectively curbs excessive adsorption of superplasticizer by cement particles, maintaining lasting dispersion even in mixes with high clay or fines content.
- **Marked Viscosity Reduction:** Significantly lowers paste viscosity, improves workability, and eliminates the sticky, heavy, “caking” behaviour of high-grade precast concrete, adapting to diverse production conditions.
- **Excellent Shrinkage Control:** By enhancing particle dispersion and water retention, it suppresses both drying and plastic shrinkage, markedly reducing cracking risk and improving long-term durability.

## Applications

- Precast concrete
- Prestressed component concrete
- High-volume supplementary-cementitious-material (SCM) systems
- High-strength concrete (C60 and above)
- Ordinary ready-mixed concrete and engineering concrete

## Physical and chemical indicators

Items	Performance
Appearance	Wine red or brown liquid
Solid Content /%	$50.0 \pm 1$
pH	$6.0 \pm 1$
Alkali content (as Na <sub>2</sub> O)	$\leq 0.5\%$
Density/g/cm <sup>3</sup>	$1.10 \pm 0.02$
Chloride content	$\leq 0.1\%$

## Application Case

- Precast concrete piles

In the production line of a prestressed concrete pile plant in Suzhou, the introduction of ARIT-M15, a dedicated superplasticizer for precast elements, markedly improved the fresh concrete properties. The mix became noticeably softer, flowed uniformly and was easy to compact; pumping and placing were noticeably smoother. Demoulding was advanced by 4 h

and the stripping strength increased by 25 % compared with the reference admixture. ARIT-M15 therefore upgraded both the processability and the finished quality (density and surface finish) of the piles, raising output and yield.

- Expressway precast girders

A precast beam yard on a central-China expressway had been suffering rapid slump loss, severe bleeding and poor compaction, all of which impaired girder quality and surface finish. After switching to ARIT-M15, the concrete retained its slump much longer, pumped and vibrated easily, and, upon stripping, gave a flat, dense surface free of bleed-water trails, honeycombs or pin-holes. The 28-day compressive strength rose by about 8 %, demonstrating the outstanding performance of ARIT-M15 in precast applications.

- High-volume supplementary-cementitious-material (SCM) concrete

A ready-mix plant in Guangzhou replaced a large proportion of cement with fly ash and slag to improve durability and economy, but the resulting mix was thick, poorly flowing and prone to bleeding, making placing difficult. When the mix was redesigned with ARIT-M15 polycarboxylate superplasticizer, the initial slump increased by 20 mm and still exceeded 210 mm after 2 h. Pumping and vibration were easy, the surface finished smooth and the 28-day strength met the specification.

- High-strength concrete

On a C60 high-strength concrete pour in Hangzhou the original mix was over-viscous, poorly flowing and hard to compact. Incorporating ARIT-M15 polycarboxylate superplasticizer cut the plastic viscosity sharply; the paste flowed readily and pumped without blockages while maintaining slump for more than 2 h. The mix stayed cohesive throughout batching, transport and placing, exhibiting no bleeding or segregation. The hardened concrete presented a smooth, even surface and reached the specified 28-day strength, with both construction speed and final quality substantially improved.

## **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

EN934-2

## **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.
- 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.