

PRODUCT DATA SHEET

ART-RD180

Hardening Accelerating Type Polycarboxylate Superplasticizer

Origin Liquor and Powder

Description

ART-RD180 is a super early-strength polycarboxylate water reducer which has an extremely high water reduction rate and can significantly shorten the setting time of concrete mixtures and promote the early strength development of concrete mixtures. ART-RD180 has a special molecular structure, which achieves self-assembly effect through pH response and temperature response mechanisms, enhancing the wetting effect on the surface of cement particles. While obtaining excellent fluidity, it greatly promotes the hydration process of cement-based materials. ART-RD180 can be used for various concrete mixtures, especially suitable for precast components and other concrete mixtures with early strength requirements. It has extreme water reduction ability, excellent fluidity, moderate cohesion, ensuring excellent workability while enhancing the compactness of concrete mixtures.

Main benefits/Characteristics

- **Outstanding Early Strength Development:** Sets 30 % faster and gives 40 % higher 1-day strength than conventional superplasticizers, with no later-age strength loss.
- **Excellent Workability:** Instantly and uniformly disperses cement grains, producing a cohesive, medium-viscosity, non-segregating mix that finishes smooth and level.
- **High Water Reducing Power:** Maximum water reduction exceeds 50 %; dosage can be tuned on site to meet target levels.
- **Superior Shrinkage Control:** Reduces both drying shrinkage and creep, cutting overall

shrinkage markedly.

- **Wide Compatibility:** Performs well with almost all commercial cements, supplementary cementitious materials and aggregate types.

Applications

- Metro Shield Tunnel Segments
- Prefabricated Building
- Low-Temperature Construction Concrete
- Precast Concrete
- Superplasticized Ultra-Early Strength Concrete
- Ultra-High Performance Concrete (UHPC)

Physical and chemical indicators

Items	Performance
Appearance	Colorless transparent liquid
Solid Content /%	40±1.0
pH	4.0±1
Alkali content (as Na ₂ O)	≤1.0%
Density/g/cm ³	1.08±0.02
Chloride content	≤0.1%

Application Cases

- Subway tunnel lining concrete



In a production workshop for C50 subway tunnel linings, the use of ART-RD180 as a water reducer has significantly reduced the sensitivity of the concrete mixture's slump, meeting the requirements for the placement operation time, and the concrete has entered an accelerated hydration phase. The concrete slip-membrane phenomenon has been completely eliminated, with a compressive strength of 20MPa reached within 8 hours, an increase in mold turnover time of more than 50%, and a reduction of 150 minutes in steam curing time, with a noticeable increase in the

strength of the concrete at various hydration stages.

- Low-temperature pouring environment



At a construction site in Nanjing for C30 concrete, with a pouring temperature of 3 ° C, after using the polycarboxylate water reducer ART-RD180, the setting time of the concrete was reduced from 12 hours to 5 hours, and the compressive strength after one day reached 14.5MPa, which is an increase of more than 50% compared to ordinary

polycarboxylate water reducers.

- Precast concrete construction



At a precast component production company in the north, to improve production efficiency and save costs, the polycarboxylate water reducer ART-RD180 was chosen. The mold turnover efficiency has been increased by 50%. When used in conjunction with the ART-CASH nanocrystalline seeds early strength agent, it is possible to

completely eliminate the steam curing process, solving the issue of energy consumption.

- Self-compacting concrete



In a railway engineering bureau in Guangzhou, the requirement for C40 concrete is that the compressive strength should not be less than 15MPa within 10 hours (in summer, with a water-to-binder ratio of 0.36). By using the ART-RD 180 polycarboxylate water reducer, the T500 time is 2.3 seconds, the V-funnel time is 7.7 seconds, the

surface is free of air bubbles and pores, and the mold turnover efficiency has been increased by 30%..

Usage Instructions

- The recommended effective solids content is 0.10 % – 0.30% 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 E

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 1year. 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.
- 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.
- Users are requested to strictly follow the technical guidance and product instructions for

use.

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.