

PRODUCT DATA SHEET

ART-RD180

Ultra High Early Strength Type Polycarboxylate superplasticizer

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

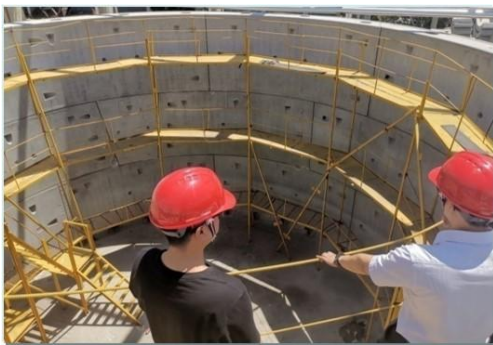
- It can provide a maximum water reduction rate of over 50%, and the dosage can be adjusted according to actual applications to meet the water reduction requirements on site.
- It is compatible with other additives and can be used in combination with conventional additives such as delayed-release polycarboxylate dispersants, retarders, and air-entraining agents to achieve different effects.
- The early strength (1 day) is increased by more than 40%.
- Suitable for Portland cement and calcium sulfoaluminate cement.
- Excellent plasticizing and water-retaining properties (for pumping or bucket conveying).
- Improves shrinkage and the creep of concrete.
- Rapid adsorption reduces competitive adsorption interference.

Applications

- Subway shield tunnel segments
- Prefabricated construction
- Low-temperature construction concrete
- Precast concrete components
- Super plasticized, super early-strength concrete
- Ultra-high performance concrete (UHPC)

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-CSH 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%..

Physical and chemical indicators

Items	Performance
Appearance	Red-brown liquid
Solid Content /%	40±0.5
pH	6.0±1
Alkali content (as Na ₂ O)	≤0.5%
Chloride content	None

Recommended Dosage

0.1% to 2.0% weight of binder

Pre-testing must be performed to determine the exact dosage rate

Packaging

IBC tank/liquid bag/tank truck

Storage

Store in undamaged, original sealed packaging in dry conditions.

Protect product from direct sunlight

A minimum shelf life of 12 months under normal storage conditions. Shelf life may be greater than stated depends on storage conditions.

LEGAL NOTES

It is prohibited to retain or disclose samples of the product without the company's permission.

In addition to the product quality itself, the actual performance also depends on other factors.

If there are factors beyond our control, we cannot guarantee the performance of the product.

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