

## PRODUCT DATA SHEET

# ART-ZJL

## Tunnel Grouting Material

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### Description

ART-ZJL is a tunnel grouting material, used in the crown grouting construction with formwork, is composed of cement, mineral admixtures, fine aggregates, and admixtures, which are uniformly mixed in a certain proportion. After mixing with water, it exhibits excellent fluidity, pumpability, and non-segregation properties. Once hardened, it has a slight expansion characteristic and good bonding performance with the lining concrete.

### Main benefits/Characteristics

- Good fluidity and pumpability
- No segregation and bleeding
- Slight expansion
- Rapid early strength development
- High bond strength
- Water resistance and durability

### Applications

Crown Grouting with Formwork for Tunnel Lining

## Physical and chemical indicators

Serial Number	Test Item	Technical Index	Measured Value
1	Moisture Content	$\leq 1.0$	0.1
2	Fineness (Residue on 0.63 mm Square Mesh Sieve) (%)	$\leq 15$	2
3	Apparent Density (kg/m <sup>3</sup> )	2260 $\pm$ 40	2250
4	Initial Flow (mm)	380~410	395
5	Flow after 30 min (mm)	$\geq 330$	380
6	Flow after 90 min (mm)	$\geq 320$	350
7	Separation Degree (%)	-1.0~1.0	0.3
8	Bleeding Rate (%)	0	0
9	Plastic Expansion Rate (%)	3h	0.3~2
		The difference between 24 hours and 3 hours	0~0.5
		12h	$\geq 1.0/3.5$
10	Flexural/Compressive Strength (MPa)	1d	$\geq 4.0/18.0$
		3d	$\geq 8.0/35.0$
		28d	$\geq 10.0/50.0$

## **Construction Process**

- The grouting material slurry should be mixed with water at a water-to-material ratio of 0.18. The mixing time should not be less than 3 minutes.
- After the grouting material slurry is thoroughly mixed, the discharge valve of the mixing tank should be opened to allow the slurry to flow quickly into the storage tank. The discharge valve of the mixing tank should then be closed immediately, and grouting should be carried out promptly.
- During grouting, the sequential grouting method should be adopted. It is recommended to use a digital pressure gauge. The pressure gauge of the grouting machine should have a range of 10 MPa with an accuracy not lower than 0.2 MPa; the pressure gauge below the grouting valve should have a range of 4 MPa with an accuracy not lower than 0.1 MPa.
- When grouting through grouting holes, the process should be carried out in sequence. When the grouting hole that has not been grouted yet discharges slurry with the same density as that in the mixing machine's storage tank, and the pressure gauge below the grouting valve reaches 1.0 MPa, the grouting should be switched to the next hole, and the current hole should be sealed. Grouting is completed when all grouting holes have been grouted and the density of the slurry discharging from the highest point of the end formwork is consistent with that in the mixing tank.
- After grouting is completed and the grouting connectors are replaced or removed, the pre-embedded grouting pipes should be sealed promptly. The slurry inside the pre-embedded grouting pipes should be full to prevent leakage.

## **Packaging**

In bags, 25kg/bag

## **Storage**

When stored in the original sealed packaging under normal temperature (5~40 ° C) and dry conditions, the product has a shelf life of 6 months.

## **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.