Technica®

Civil Chemical®
Global

Hybrid Polymer α

～Multi-functional and high-performance polymer～

The highly fluid mud improves immediately!

In the engineering works such as foundation work and shield tunneling work, it generates a large amount of mud that has high water content and fluidity. When transporting the generated mud, it will be difficult to handle. When you dispose of mud, there is possibility to occur many problems that including the environmental impact on the surrounding. Hybrid Polymer α is acrylic water-soluble polymer that can solve these problems, is possible to improve immediately in small amount.

It is effective to prevention of the blow-off!

In mud pressure type shield tunneling method, it is necessary to form a high-quality plug that does not lose to groundwater in the high pressure section. By using Hybrid Polymer α that has thickening and water cut-off properties, it is effective for the prevention of blow-off. Therefore, the excavation of soil will become smooth because it is easy to take the earth pressure balance. Also, it forms a better water stop plug by using the bentonite.

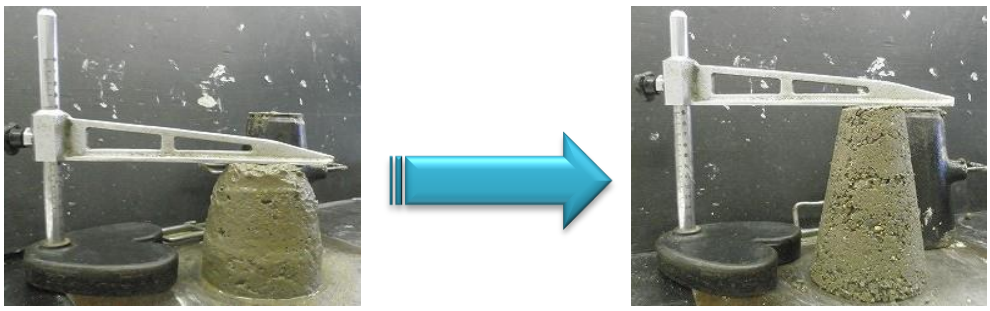
Characteristics

- It has an excellent dispensability because it is a liquid product, and will improve handling and workability.
- Since it can be improved immediately, it does not require a curing time.
- Since the improvement effect is exerted even with a small amount, stock space is significantly reduced.
- There is no toxicity, and there is no environmental impact because the pH is neutral.
- Since it confines the moisture in the soil by aggregating of the mud, the adhesion of soil will decrease significantly.

Mud improvement (Solidification)

- After you have added 1.0~3.0 kg/m^3 in the target soil, please take sufficient mixing and stirring.
- When the water content ratio is low or binder ratio is high, it can be improved by addition of auxiliary agent.
- By using the cement and lime-based solidifying material, effect of solidification will improve.

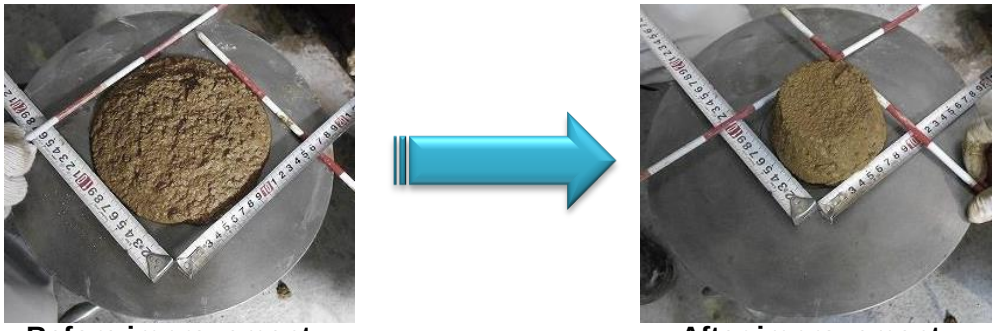
Mini-slump test — Confirmation test of fluidity and self-supporting properties.
Internal standards value is less than 1.0 cm



Before improvement
Mini-slump value 5.0 cm

After improvement
Mini-slump value 0.0 cm

Table flow test — Confirmation test of free water and fluidity by vibration.(dump transportation)
Internal standards value is less than 12.5 cm × 12.5 cm

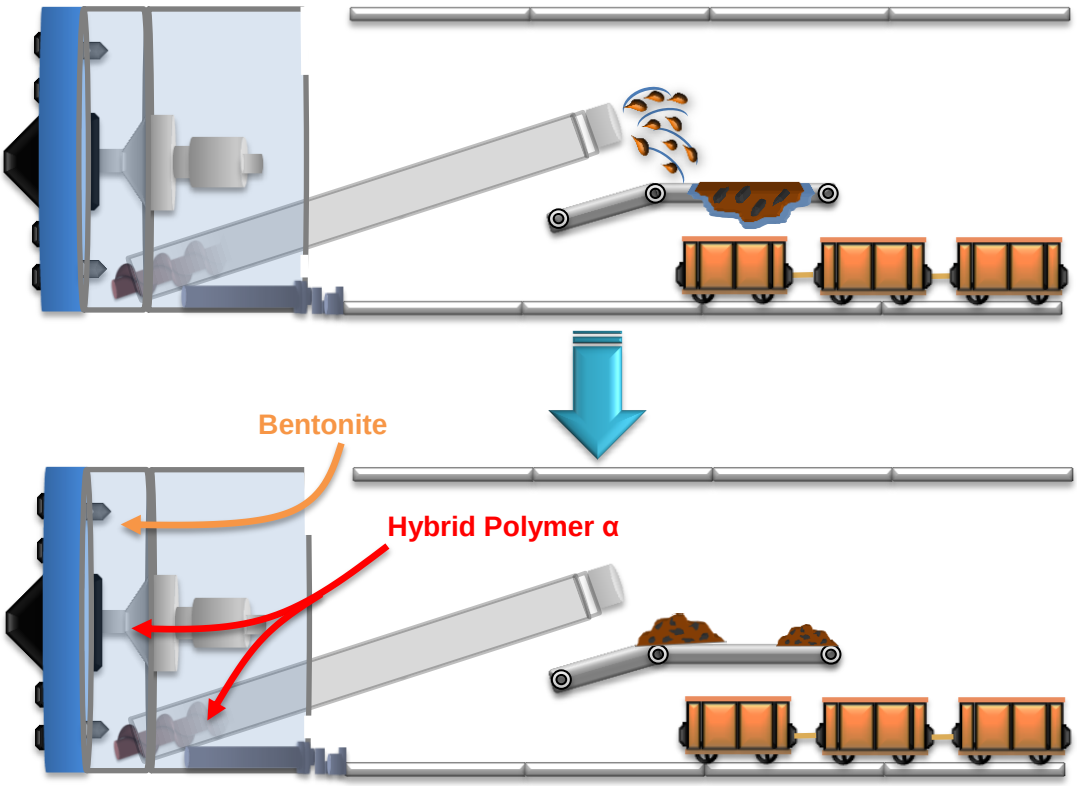


Before improvement
Flow value 16.0 cm×16.0 cm

After improvement
Flow value 10.0 cm×10.5 cm

Prevention of the blow-off

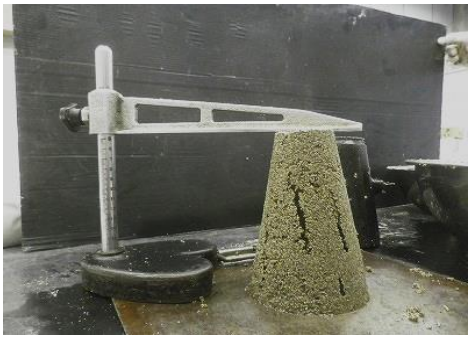
- When you excavate aquifer that is applied high water pressure, it is possible to suppress the blow-off.
- It exhibits the effect by injecting an original solution directly into the chamber and screw conveyor.
- It is promoted the gelation by using the bentonite, form a better water stop plug.



By adding Hybrid Polymer α when the blow-off occurs, it can improve self-supporting properties and is lost the fluidity of excavation soil.

Before improvement

Mini-slump value 11.0 cm

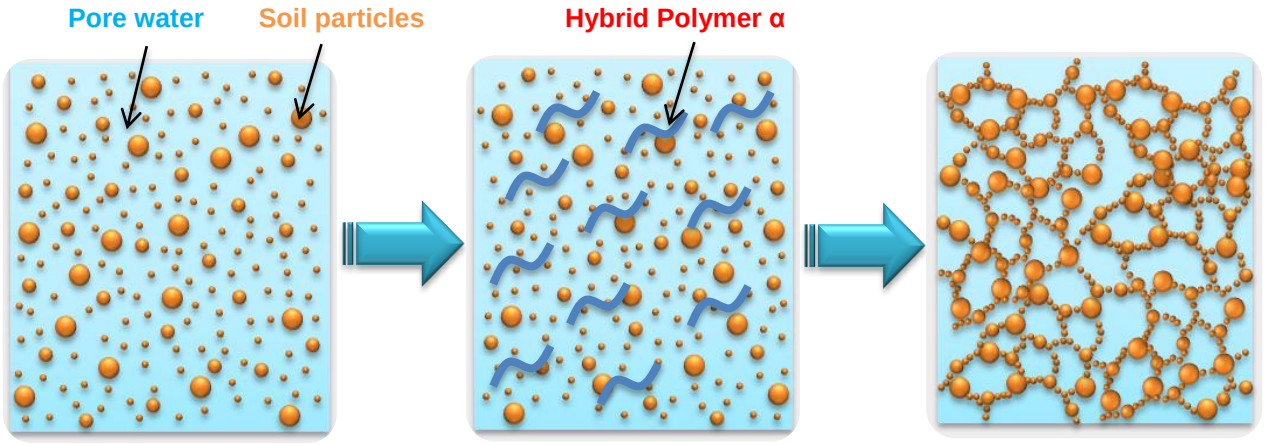


After improvement

Mini-slump value 0.5 cm

Improvement action

Hybrid Polymer α is adsorbed the soil particles contained in the mud having high water content. By adhesion and cross-linking action of the soil particles, it becomes aggregation soil while holding the pore water. As a result, it can have the self-supporting properties, and the fluidity of mud is lost.



The mud | After adding Hybrid Polymer α | After improvement

Performance comparison

Compared to general cement-based solidifying materials, Hybrid Polymer α has little influence on the environmental. (Ex. pH changes and dust)

In the case that requires immediate carry-out in the work field, it can exhibit excellent effect.

Product name	Hybrid Polymer α	Cement-based solidifying materials
Additive amount	1.0 ~ 3.0 kg/m^3	30 ~ 100 kg/m^3
p H	Neutral	Alkaline
Dust	○	×
Workability	○	×
Improvement time	○	×
Stock space	○	×
Strength	×	○

Properties and Standards

Product name	Hybrid Polymer α
Appearance	Light yellow liquid
p H (0.2 % water solution)	7.0 ~ 9.0
Specific gravity	1.0 ~ 1.2
Package	18 kg cans、1 m^3 container

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