

High-Water Cementitious Backfill Material

OVERVIEW

High water content material is a special cementitious material capable of rapid setting under high water–cement ratio conditions ($W/C = 1.3:1-3:1$). The material is based on sulphoaluminate cement clinker, with the addition of gypsum, lime, composite retarders, suspending agents, and composite accelerators.

The finished high-water material consists of two powder components (A and B) packaged separately. After mixing with water, they form Slurry A and Slurry B. Each slurry can be mixed and transported independently without solidifying; however, once the two slurries are mixed, they rapidly set and harden. The setting time can be adjusted as required (initial setting time: 7–20 minutes; final setting time: 22–75 minutes).

By adjusting the water–cement ratio, the compressive strength of the hardened filling body can be selected within a wide range (3–50 MPa) to meet different engineering strength requirements. After solidification, the filling body exhibits clear plastic material characteristics, allowing relatively large plastic deformation under pressure. The strength attenuation is relatively slow while maintaining high residual strength.

Our company aims to utilise the characteristics of high water content materials with our hydraulic double-cylinder dual-liquid grouting pumps—the proportional pumping construction process can effectively address various underground coal mine filling and reinforcement challenges, including:

- Goaf filling along the mining face
- Void filling
- Rib (sidewall) filling
- Roadway sealing filling
- Grouting reinforcement around rock

We provide integrated solutions for these applications.

Technical support services include:

- On-site investigation and consultation
- Successful case studies introduction
- Solution verification
- Equipment selection
- Installation and commissioning
- Construction guidance and follow-up technical support

SYSTEM LAYOUT DIAGRAM

