

TECHNICAL INFORMATION

Cement Grouting Additives

ROLE OF ADDITIVES

Performance-enhancing additives enable stable, balanced cementitious grouts to be formulated to accommodate a wide variety of field conditions. Stable grouts that exhibit less than 5% bleed are preferred for most grouting applications. Balanced grouts resist premature blockages due to pressure filtration and thereby achieve improved penetration at lower grouting pressures.

MULTIURETHANES advocates the selection and on-site mixing of ingredients for cement grouting to enable grouting specialists to adjust grouting formulations in the field according to site conditions. The use of various ingredients for on-site mixing also achieves a lower cost grout mix than is available from using pre-packaged grout mixes.

BENTONITE

High-yield bentonite may be added where required, typically up to 2% by weight of cement, for improving grout stability under pressure and for reducing shrinkage and bleeding. Some grout formulations may use up to 4% bentonite, depending on site conditions. Bentonite should always be added to the mix water before the addition of cement.

TYPE C FLYASH

Type C Flyash is used, up to 25% by weight of cement, as a pozzolanic filler and to improve thixotropic performance of cement grouts during placement, especially in underwater conditions. The use of flyash on large grouting projects can provide significant cost savings when the flyash is available at a lower cost than cement.

SILICA FUME

Silica fume may be added where required, up to 10% by weight of cement, to enhance grout stability, to improve resistance to pressure filtration, and to reduce the permeability of cured grout.

SUPERPLASTICIZERS

Superplasticizers (high-range water-reducing admixtures) are used as dispersion agents with cement grout formulations. Typical ratios of 0.5% to 1.0% by weight of cement are suggested, although other ratios may be used as required by site conditions. On site tests are required to verify satisfactory grout performance with specific superplasticizer materials.

ACCELERATORS

Conventional concrete accelerators may be used in conjunction with cement grout formulations during cold weather grouting operations, or whenever faster set times are required than are otherwise attainable. On site tests are required to verify satisfactory setting times with specific accelerator materials and dosages.



*Cement grouting operation where colloidal mixers were used to prepare stable, balanced cement grout containing bentonite and superplasticizer additives for stabilizing loose, water-bearing soil adjacent to sheet pile wall surrounding vertical shaft; technical supervision by grouting specialist from **MULTIURETHANES***

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FLASH-SETTING ADDITIVE

Sodium Silicate can be used in grouting applications where it is necessary to “flash-set” cement grouts, especially under water inflow conditions involving high flow rates and high water pressures.

In underground mining applications, cement grout and **Sodium Silicate** are injected as a two-component system, mixing at the point of injection. By adjusting the proportions of cement grout and **Sodium Silicate**, it is possible to adjust reaction times to accommodate a wide range of site conditions.

MULTIURETHANES has suitable pumping equipment available for sale or rental to enable the use of **Sodium Silicate** as a “flash-setting” additive in conjunction with cement grouts. Call our technical specialists for specific advice when fast-setting cement grouts are required.

THIXOTROPIC MODIFIER

CELBEX 653 is a thixotropic grout modifier, supplied in powder form, that is typically used in small quantities to provide a fast thixotropic gelation of cement grouts.

CELBEX 653 is used when grouting into flowing water conditions to produce a cohesive, water-repellant grout in order to minimize grout washouts. The addition of **CELBEX 653** will not significantly alter the normal setting time of cement grout formulations, as indicated on the data sheet on the following page.

MULTIURETHANES maintains **CELBEX 653** in our inventory for immediate delivery as required by our customers

ANTI-WASHOUT ADMIXTURE

Liquid admixtures are added to cement grouts to achieve anti-washout properties when placing cement grout into water-filled cavities or underground formwork underground formwork. Call the specialists at **MULTIURETHANES** for technical advice on grouting applications for this product.

WATERPROOFING

CRACK INJECTION

CONCRETE RESTORATION

SEWER REHABILITATION

WATER CUT-OFF