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MULTICRETE™ PRE-MIXED LIQUID ACCELERATOR

TECHNICAL DATA SHEET Pre-mixed Liquid Accelerator for use with Shotcrete

DESCRIPTION

Multicrete™ Shotcrete Liquid Accelerator is an Alkali and chloride-free accelerator designed for use with shotcrete applications.

USES

- Multicrete™ Shotcrete Liquid Accelerator is suitable for both Hybrid-Wet™ or Wet spraying processes
- A major use for this product is in accelerated shotcrete for mining, tunneling or rock stabilizations operations where rapid set or high early strength are required for structural support.
- Accelerated shotcrete is also used for rapid sealing of water seepage through rock, earth or concrete. - In situations where rapid installation of a reinforced shotcrete is needed, steel fiber reinforcement can be included in the mix to provide the required performance.

ADVANTAGES

- In addition to the advantages of rapid set and high early strength, Multicrete™ Shotcrete Liquid Accelerator has the advantage of being less caustic and less hazardous to personnel than the Portland cement products to which it is added.
- The liquid form of this product is ideal for Hybrid-Wet™ and Wet process shotcrete applications and provides added convenience for transportation, storage and application.
- No pollution of groundwater by leaching of alkalis.
- Distinct reduction in rebound.
- Improves bond of shotcrete to rock and concrete thus facilitating overhead spraying.

PROCEDURES

The most effective dosage must be determined by trial. Dosage rates will vary according to w/c ratio, materials used, ambient conditions, shotcrete methods used and the requirements of a specific project. For general applications Multicrete™ recommends a dosage between 4-8% by weight (45-86 fl.oz/100 lbs) of the total cementitious content. The performance of the Multicrete™ Liquid Accelerator will vary according to w/c ratio of the mix. Dosage rates outside the recommended range may be used where specialized materials such as microsilica are specified, extreme ambient conditions are encountered or unusual project conditions require special consideration. The effect of Multicrete™ Liquid Accelerator depends on cement type, cement age, cement content and type of subgrade.

Multicrete™ Liquid Accelerator is dosed and added on-site by a liquid dispensing system. Optimum dispersion in the shotcrete is governed by nozzle configuration and shotcreting techniques. Important information: The shotcrete temperature should not be lower than 59°F (15°C) when shotcreting in thick layers - 4 inches and above (100mm and above).

Use of Multicrete™ Liquid Accelerator requires the technically correct installation of dosing and conveying equipment. Metal components that come into direct contact with the product should be fabricated of stainless steel. Do not use brass parts.

Combination with other admixtures:

Multicrete™ Liquid Accelerator is compatible with Sika's water reducing, high range water reducing, hydration control admixtures and other admixtures. Trials with local materials is always recommended to verify performance.

TECHNICAL DATA

When added to a standard shotcrete mix with aggregate gradation meeting the requirements of ACI 506 Table 2.2.1, Gradation No. 2 shotcrete with Multicrete™ Shotcrete Liquid Accelerator gives approximately the following properties:

Accelerator added: % by wt. of cement	3.5			
Setting time: 21°C (70°F)				ASTM C266
Initial Set, Minutes	185	3		
Final Set, Minutes	2203	10		
Setting time: 2°C (35°F)				ASTM C266
Initial Set, Minutes	>720	24		
Final Set, Minutes	>720	33		

Compressive Strengths:

Panels when cured at approximately 16°C (60°F) for 8 hours, then core and most cured at 23°C (72°F).

	Mpa	psi	Mpa	psi
At 10 hrs	*	*	14	2030
At 3 days	19	2760	21	3050
At 7 days	30	4350	28	4060
At 28 days	41	5950	39	5660

*Insufficient strength for coring

Note:

The typical results shown are for shotcrete made with Type 10 Portland cement with C₃A content of 8.2%. The properties obtained will vary for other cement compositions.

Caution:

Before using Multicrete™ Shotcrete Liquid Accelerator in Portland cement mix, check that the accelerator is compatible with the cement using ASTM C1117 and/or C1140. Some Portland cements with low C₃A contents do not respond as readily to additions of this accelerator.

Test mixes should always be made to determine the amount of Multicrete™ Shotcrete Liquid Accelerator required to give the specified setting time, or to determine the effect of the accelerator on the early and later age strength of the mix. As with all set accelerators, the use of a high level of accelerator to achieve very short setting times can reduce the final strength of the mix.

PACKAGING

Multicrete™ Shotcrete Liquid Accelerator is packaged in 1040 liter plastic totes. Custom size packaging available.