Maximum CA® Cement
Sewer Infrastructure Protective Coating

STANDARD CEMENT MATERIALS

GENERAL

The Maximum CA® Cement is a pre-packaged calcium aluminate cement binder composed of finely graded sand and admixtures. It possesses high-early strength with non-sag characteristics and good refractory properties. The Maximum CA® Cement protects against hydrogen sulfide (H_2S) corrosion, provides abrasion resistance and restores sewerage workings including wastewater manholes, concrete lift stations, pipelines and tunnels, wastewater treatment plant structures, and filtration basins. The Maximum CA® Cement is suitable for controlling deterioration and making repairs in horizontal, vertical and overhead concrete surface defects, and brick or fiberglass structures.

APPLICATIONS

- Protective coating for both new and existing infrastructure.
- Rehabilitate RCP, horizontal pipes, culverts and vertical shafts, corrugated metal (CMP) culverts, storm water, precast concrete components, and secondary containments where a strong and durable mortar is needed.
- **Corrosion Resistance:** provides increased resistance to chemical attack, chlorides, hydrostatic pressure, water vapor transmission and substances such as sulfates, salt water, chlorides, oils, fats, grease, gases and mild acids pH 2-11.

CHARACTERISTICS

The fiber reinforced Maximum CA® Cement adds beneficial properties to concrete, including high early strength, controlled setting and hardening, improved workability, low permeability, abrasion resistance and protection against biogenic corrosion attack. Additionally, due to its chemical composition which differs from Portland calcium silicate hydrates, it will not corrode or attack the reinforcement steel. In contrast, it restores structural integrity, stops water infiltration and protects against chemical attack. The Maximum CA® Cement can be spray applied by low-pressure spray nozzle, wet-gun [dry gun] shotcrete, or hand-applied coating from ½ inch to 4 inches.

Application: Low-pressure; wet/dry applied shotcrete
Working Time at 70˚F: 47 minutes
Density: 135 ± 2 pcf

Specifications

Maximum CA™ Cement is made of calcium aluminates and meets the following standards.

Table 1—Chemical Constituents (% by XRF Chemistry)

Al_2O_3	CaO	$FeO + FE_2O_3$	SiO_2
≥37	≤39.8	≤18.5	≤6%

TECHNICAL INFORMATION

Property		psi
Compressive Strength ASTM C 109		28-day >9,000
Flexural Strength ASTM C 293		650
Tensile Strength ASTM C 190		585
Chloride Ion Permeability ASTM C 1202	(280 coulombs)	Very Low
Bond Strength/Slant Shear ASTM C 882		2,680
Modulus of Elasticity ASTM C 469		3,849,100
Abrasion Resistance ASTM C 944		0.02% Loss
Wet Unit Weight Density		135 ± 2

MIXING

Mix with clean, potable water. Do not add Portland cement or use any admixtures with this product.

STORAGE

Store the product up off the ground in a dry place. The cement is stocked in a 50-lb plastic lined bag.

EQUIPMENT

The Contractor shall apply the cement using a SEWER MANHOLE MASTERS™ REPAIR TRAILER or approved equipment. The pump equipment must supply low pressure at 350-psi and 11 cfm at the nozzle.

PLACEMENT

Place immediately. Follow ACI 302 “GUIDE FOR CONCRETE FLOORS AND SLAB CONSTRUCTION” and ACI 308 “STANDARD PRACTICE FOR CURING CONCRETE” to avoid potential problems due to shrinkage cracking. Trail batches are always recommended.

CURING

Follow ACI 302, 308, 305 and hot weather concrete placement practices to minimize problems caused by decreased bleeding. Protect the cement mortar from hot weather extremes, air movement and dry conditions, and direct exposure to sunlight. Cure immediately as soon as the surface begins to harden, cover with plastic sheets and use a liquid membrane-forming curing compound per ASTM C 309. The curing compound shall contain a minimum of 25 % solids and prevent a maximum loss of water up to 0.4-kg/m^3 in 72 hours. Apply the curing compound in layers while the cement is still soft. Allow to cure approximately 4 ½ to 24 hours. The ambient temperatures and job conditions will govern specific cases. Normal curing is adequate, but, in some situations such as hot or cold weather, special care is sometimes needed. Keep the concrete moist and at a moderate temperature during its early hardening period. Make no application when the ambient temperatures are less than 40ºF or freezing temperature is expected within 24-hours.

SAFETY

Caution: the cement contains fused calcium aluminates—May Cause Eye and Skin Irritation. Clean up with soap and water. Avoid prolong exposure. Wash with water immediately after handling. If skin problems arise, flush with water and get medical help. Keep out of reach of children.

WARRANTY INFORMATION

Standard Cement Materials, Inc. offers this information for the user’s consideration. The corporation warrants this product to be of good quality and free from material defects within the warranty period. Report all failures to manufacturer within 30-days. Failure does not include consequential damage resulting from mechanical or chemical maltreatment, normal wear or act of God. The manufacturer’s liability and sole obligation and the Buyer’s single remedy in connection with the product warranty shall be limited, to replacement of the product only in an amount equal to the invoice. Manufacturer reserves the right to determine whether any claim is specifically related to another cause. The corporation makes no other warranties, either expressed or implied and in no event intends to infringe on any established patents or trademarks.

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