

Product Data Sheet

**GENERAL DESCRIPTION**

The dry packaged, Maximum CA™ Plus Cement is comprised of 100% pure-fused calcium aluminates with a calcium aluminate aggregate. Additionally, it's designed to withstand hydrogen sulfide induced corrosion and provide abrasion resistance in sewerage workings including manholes; lift station wet wells, concrete pipelines, water clarifier walls and headworks; and other existing structures.

**CHARACTERISTICS**

The fiber reinforced Maximum CA™ Plus Cement is spray applied at low pressure to produce a protective coating for both new and existing structures within the sewerage system. It provides toughness, durability and corrosion resistance to gases caused by hydrogen sulfide (H<sub>2</sub>S), sulfates, salt water, chlorides, water vapor, oils, grease and dilute acids to pH 2-11.

**APPLICATIONS**

The Maximum CA™ Plus Cement is specially made to meet the requirements of low pH levels found in wastewater structures. Additionally, the cement may be dry gun applied as a protective coating to concrete and masonry surfaces. The thickness ranges from ½ to 4 inches. Please contact us if you are looking for something special.

**PROTECTION LEVELS**

**Corrosion Resistance:** composed primarily of pure fused calcium aluminates, the factory blended Maximum CA™ Plus Cement adds beneficial and distinctive properties to concrete including high early strength, controlled setting and hardening, improved workability, low permeability and biogenic corrosion resistance. Additionally, due to its production method, its chemical composition differs significantly from the common Portland calcium silicate hydrate cements. The fused calcium aluminates and aggregates will not corrode or attack the reinforcement steel. In contrast, it restores structural integrity, stops water infiltration and protects against substances such as fats, hydrostatic pressure and water vapor transmission.

- Application:** wet mixed shotcrete
- Aggregate Size:** 0-4 mm
- Aggregate Density:** 3.14 g /cm<sup>3</sup>
- Working Time at 70°F:** 75 minutes
- Porosity:** none
- Temperature Range/ Thermal:** 1150°C to 2102°C

**CHEMICAL COMPOSITION**

Maximum CA™ Plus is made of fused calcium aluminates typically used in a new and existing wastewater construction and rehabilitation applications including sewer manhole renewal.

Table 1 — Chemical Analysis of the Main Constituent

Al <sub>2</sub> O <sub>3</sub>	CaO	FeO + Fe <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>
38-40%	37-39%	15-18%	3-7%

**TECHNICAL INFORMATION**

Property	psi		
Compressive Strength ASTM C 109	24-hr >5,500	7-day >7,000	28-day >8,000
Tensile Strength ASTM C 190	*	*	>550
Flexural Strength ASTM C 293		*	>1,400
Bond Strength/ Slant Shear ASTM C 882	>2,100		
Shrinkage at 90% RH ASTM C 596	0.0%		
Chloride Permeability AASHTO T 277	<300		
Freeze Thaw Durability-300 Cycles ASTM C 666	No Damage		
Sulfides Resistance-90 days: 20,000 ppm (sulfuric acid) ASTM C 267	No Weight Loss		
Applied Density (28 days)	135		

\*Test Results-obtained by an independent laboratory.

## MIXING

Mix with clean, potable water to a uniform consistency. Do not add Portland cement or use any other admixtures with this product. The cement is stocked in a 50-lb plastic lined bag.

## EQUIPMENT

The manufacturer or the certified [approved] applicator 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 using a wet applied shotcrete method. Trail batches are always recommended. 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.

## 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 or use an acceptable 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<sup>3</sup> 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. Therefore, it is important to keep the concrete moist and at a favorable temperature during the early hardening period. Make no application when the ambient temperatures are less than 40°F or freezing temperature is expected within 24-hour.

## SAFETY

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

## STORAGE

Store the product in a dry cool place.

## TECHNICAL SERVICE

Standard Cement Materials Inc provides technical and on-site assistance within 48-hours notice.

## 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 performance as specified and is free from material defects within the warranty period. "Failure" will be determined (1) upon inspection of each sanitary sewer application (2) within each specific pH limit (3) maintain its adherence to the existing structure wall. If failure occurs within the specified period, the damage will be repaired to its previous state at no cost to the Owner (or within 30-days after written notification). "Failure" does not include consequential damage resulting from mechanical or chemical maltreatment or act of God. Mechanical or chemical abuse means exposing the cement liner surface to any mechanical force or action taken or chemical substance not customarily used in connection with normal wear and typical use of the structure. Report all product failures within one year from the application date. The manufacturer's liability and sole obligation and the Buyer's single remedy in connection with the product shall be limited, at its option, to either replacement of the product not conforming to this warranty only or credit to Buyer's account in the amount of the invoiced product. Standard Cement Materials Inc 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. © All rights reserved 2011.

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