

Maximum CA® Plus Cement High Performance Mix



Technical Data Sheet

General Description

The dry packaged, Maximum CA® Plus Cement is comprised of 100% pure-fused calcium aluminate cement with calcium aluminate aggregate. Additionally, it's designed to withstand hydrogen sulfide induced corrosion and provides excellent hydraulic abrasion resistance in sewerage workings; including sanitary sewer manholes, wastewater treatment plant structures, lift station wet wells, sewer pipes, marine environments, and refractory applications.

Characteristics

Fiber reinforced Maximum CA® Plus 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 (H₂S), sulfates, salt water, chlorides, water vapor, oils, grease and dilute acids down to pH 1.25.

Application

Maximum CA® Plus Cement is specially made to meet the requirements of low pH levels found in wastewater structures and to protect against chloride induced corrosion in marine environments. The calcium aluminate cement may be wet or dry sprayed as a protective coating for concrete and masonry surfaces. The application thickness ranges from ½" to 3" thick in a single pass; please contact us for applications outside of this range. Make no application when the ambient temperatures are less than 40°F or freezing temperature is expected within 24-hours after application. Follow the product manufacturer's installation guidelines and procedures.

Protection Levels

Corrosion Resistance: composed of pure fused calcium aluminate aggregate, the factory blended Maximum CA® Plus adds beneficial and distinctive performance properties to concrete including high-early strength, controlled set time 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.

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 ₂ O ₃	CaO	FeO + Fe ₂ O ₃	SiO ₂
38-40%	37-39%	15-18%	3-7%

Performance Properties

Property	psi	
Compressive Strength ASTM C109	24-hr 8,000	28-day >8,000
Splitting Tensile Strength ASTM C496	>550	
Flexural Strength ASTM C293	>1,400	
Bond Strength / Slant Shear ASTM C882	>2,100	
Drying Shrinkage ASTM C596	0.0%	
Chloride Permeability ASTM C1202	<300	
Freeze Thaw Resistance ASTM C666	No Damage	
Chemical Resistance – Sulfuric Acid ASTM C267	No Weight Loss	
Applied Density	±135	

**Test Results-obtained by an independent laboratory.*

Aggregate Size: 0-4 mm

Aggregate Density: 3.14 g /cm³

Working Time: 75 minutes at 70°F

Thermal Resistance: Up to 1250°C

Mixing

Mix with clean, potable water to a uniform consistency with a very low slump. Do not add Portland cement or use any other admixtures with this product.

Equipment

Only certified [approved] applicators shall apply the cement using a Sewer Manhole Masters™ Trailer or approved equal. The pumping equipment must supply low pressure spray at 350-psi and 11 cfm at the nozzle.

Placement

All loose, cracked or deteriorated surfaces should be removed and taken back to sound concrete. Water blasting, abrasive blasting, light hydro demolition or other mechanical means should be used to remove any contaminated concrete, from chemicals, oils or corrosion products. Where reinforcement is

exposed, it should be free from loose rust, scale or other deleterious matter likely to affect durability and bonding. If required a chemical bonding agent or slurry coat can be applied to the surface. Where shotcrete is to be placed against a smooth concrete surface, it should be abraded using either of these methods to achieve a concrete surface profile of CSP 5 to CSP 10, according to ICRI Guideline No. 310.2R-2013.

Place immediately using a wet or dry spray application method. Hand-Applied method is permitted for hard-to-reach areas and other special conditions. Trail batches are always recommended.

Follow ACI 201.2R “Guide for Durable Concrete” and ACI 308R-01 “Practices for Curing Concrete”.

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/m³ 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.

Safety

Caution: this product contains calcium aluminate cement - May Cause Eye and Skin Irritation. Only experienced persons are recommended for using this product. Use personal protective equipment when handling this material and refer to the product safety data sheet for details. 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.

Storage & Packaging

Store this product in a dry cool place.
Packaged in 50-pound bags.

Technical Service

The manufacturer provides onsite technical support upon request. Contact your sales representative for assistance.

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 published and free from material defects and made within the product specification tolerances. The manufacturer reserves the right to determine whether any claim is specifically related to another cause; and makes no other

warranties, either expressed or implied and in no event intends to infringe on any established patents or trademarks. Contact the manufacturer for warranty details. All rights reserved 2024©.

Standard Cement Materials, Inc.
Chappell Hill, Texas USA

Toll Free: (888) 278-1337
Email: support@standardcement.com
www.standardcement.com