Buzzi Unicem USA

CSA

Hydraulic binder made with Calcium Sulfoaluminate Clinker

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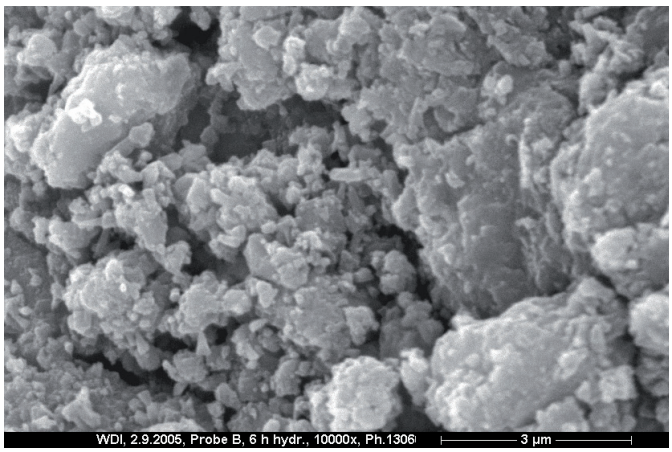
Buzzi Unicem USA produces a hydraulic binder based on calcium sulfoaluminate clinker obtained by burning a mix of bauxite, gypsum and limestone at a temperature of approximately 2,400°F. CSA contains CSA clinker and anhydrite at the optimal ratio for most uses. In the products where it is added, CSA guarantees constant performances over time and excellent stability in terms of durability. CSA can be used as a quick binder or in combination with Portland cement to obtain products characterized by low shrinkage rate and quick development of strength in short curing periods. CSA allows to formulate products with a wide range of performance, since it is compatible with all types of additives that regulate setting time, plasticity, viscosity, expansion, etc. CSA gives to the products where it is used excellent durability, low permeability to aggressive substances and extremely high resistance to sulfate attacks.

Physical characteristics

Chemical analysis

CaO	43 – 49%
Al_2O_3	18 – 22%
SiO_2	6 – 10%
SO_3	15 – 21%
Cl-	< 0.05%



Mineralogical Analysis

C_4A_3S–	>42%
C_2S	<24%
CS	<24%

Blaine Specific Surface
[Standard ASTM C-204]: >5,500

Color: light grey

Initial Setting Time
[Standard ASTM C-191]: <20 min.

Average Compressive Strength
in compliance with standard ASTM C - 1600

Time	[PSI]
1.5 h	> 2,200
3 h	> 3,000
1 day	> 4,500
28 days	> 7,000

Applications

CSA can be used by itself or in combination with Portland cement in a large number of applications typical of the pre-mix dry mortar and small precast industry, high strength mortar and tiles adhesives.

- Quick-hardening pre-mix plasters, dry mortar and concrete.
- Pre-mix dry mortar and concrete for applications at low temperatures.
- Pre-mix dry mortar and concrete with low permeability and high resistance to sulfates.
- Pre-mix dry mortar and concrete packaged in bags, retain their performances after the package has been opened for a longer time compared to the same products made with calcium alumina cements.
- Injection and shotcrete products.
- Latest-generation self-levelling screeds.
- Quick-drying self-levelling screeds.
- Self-levelling screeds with low Alkali-Silica Reaction (ASR) risk.
- Self-levelling screeds subject to sulfate attack or to freezing and thawing cycles.
- Small precast elements that must be quickly demoulded.
- Small precast elements of any color.
- Small precast elements with high resistance to sulfates and to freezing and thawing cycles.

Warnings

- When developing different formulations of ternary binders it is recommended to maintain the CSA in Portland cement in percentages included between 40% and 60 %(in weight) of the total binder.
- By changing the retarder (citric or tartaric acid) or the lithium carbonate accelerator, setting time and strength development will change.
- If CSA is used as accelerator of Portland cement, it must be added in a percentage between 10% and 20% of the total binder in order to obtain satisfactory results.
- The use of CSA is not recommended for the production of products exposed to extremely high temperatures, such as refractory or mortars used to build ovens or similar products.
- CSA can be supplied in bulk, in 50 lb. bags, in 2,000 lb. super sacks or bulk.
- For additional information, it is recommended to read the user manual of CSA.
- Consult the safety data sheet, which can be downloaded from the website: **www.buzziunicemusa.com**

Environmental sustainability

Binders made with Calcium Sulfoaluminate can be considered eco-sustainable for the following reasons:

- The production cycle is characterized by reduced CO_2 emissions in the environment for the low content of calcium carbonate of the raw materials and for the lower fuel consumption during the burning phase.
- Compared to Portland cement, the energy impact is lower, since the temperatures reached in the kiln during meal burning are approximately 200°C less than the temperatures used for the production of regular Portland clinker.
- CSA clinker requires less grinding energy compared to Portland clinker.

Note: *The instructions provided above are the result of our best experience and are merely indicative. No responsibility is taken for defects or damages caused by misuse of the product or when the conditions of its use differ from our instructions. The Technical Assistance Department is always available for any advice and suggestions concerning proper use of the product and for the performance of technical tests.*

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