

# CEMENT ISTRA 40

## General Information

ISTRA 40 is a normal setting, rapid hardening calcium aluminate cement (CAC) with high early strength. It differs substantially from the usual calcium silicate cements (Portland cements) in its manufacturing process, chemical composition and rapid strength gain. ISTRA 40 is composed of calcium aluminates with the following characteristics:

- high early strength
- refractoriness
- high abrasion resistance
- resistance to biogenic sulphuric acid corrosion (BSAC)

ISTRA 40 meets the requirements of EN 14647 for Calcium Aluminate Cements and is controlled in accordance with EN 14647.

ISTRA 40 has a shelf-life of approx. six (6) months when stored under dry conditions.

## Chemical Analysis

Al <sub>2</sub> O <sub>3</sub>	38 - 42 %
SiO <sub>2</sub>	≤ 6 %
Fe <sub>2</sub> O <sub>3</sub>	13 -17 %
CaO	36 - 40 %
MgO	< 1.5 %
SO <sub>3</sub>	< 0.4 %

## Mineralogical Composition

ISTRA 40 contains mainly monocalcium aluminate (CA). This mineral phase is responsible for the high early strength. When mixed with water ISTRA 40 forms calcium aluminate hydrates as its hydration products.

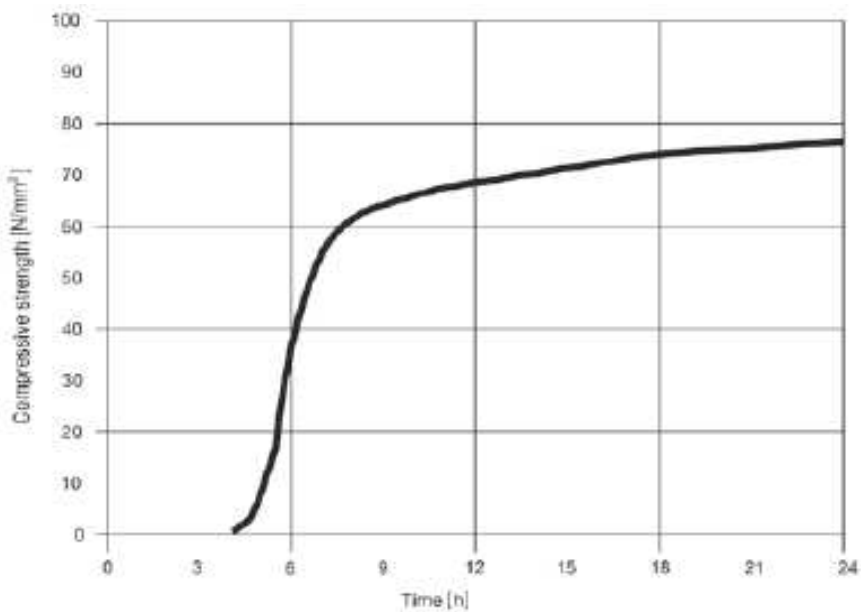
Main mineral phase	CA
Secondary phases	C4AF, C2AS, C12A7

## Physical Properties

Residue on sieve at 90 $\mu\text{m}$	< 5 %
Specific Surface (Blaine)	aprox. 3100–3700 $\text{cm}^2/\text{g}$
Bulk density	aprox. 1,15 $\text{g}/\text{cm}^3$
Specific gravity	3,2–3,3 $\text{g}/\text{cm}^3$
Refractoriness in cement	aprox. 1270 $^{\circ}\text{C}$
Setting time (w/c: 0.4)	1 – 4 hours
Initial set	Max 120 min after initial set
Final set	
Water demand	23 $\pm$ 2 %

## Mechanical Properties

Compressive strength	6 h	24 h	
	> 30	> 50	$\text{N}/\text{mm}^2$



## Other Information

### **Resistance to corrosion**

High resistance to waste waters in combination with extraordinary abrasion resistance and high resistance to biogenic sulphuric acid corrosion (BSAC) makes ISTRA 40 an ideal product for sewer systems and waste water plants. When ISTRA 40 is mixed with water, the hydration products of calcium aluminate are formed.

They are extremely resistant to aggressive, slightly acid waters (pH factor > 3) including water soluble sulphates.

### **Refractoriness**

After drying out, mortars and concretes made from ISTRA 40 slowly emit their hydrate water without destroying the matrix. At high temperatures (> 1000 °C), ceramic bonding occurs between the high alumina cement parts and the refractory aggregates. These ceramic bonds make ISTRA 40 an excellent binder in refractory concretes and other refractory mortars or gunning mixes.