

### General information

ISTRA 50 5.0 is a next generation Calcium Aluminate Cement. It is normal setting, rapid hardening and has high early- and high final strength. ISTRA 50 5.0 has a beige color and is made of special Calcium Aluminate clinker. Its optimized particle size distribution and mineralogy improves flow and strength in refractory and most demanding building chemistry products like:

- Flooring products
- Technical mortars and tile adhesives
- Regular- and Low Cement Castables
- Insulating Refractory Castables

ISTRA 50 5.0 meets the requirements of EN 14647 for Calcium Aluminate Cements and is controlled in accordance with EN 14647. ISTRA 50 5.0 has a shelf-life of approx. six (6) months when stored under dry conditions. The normal safety measures for cement must be followed. You will find further information in our safety data sheet.

### Production

ISTRA 50 5.0 is produced by melting selected raw materials (bauxite and limestone) in special kilns. After cooling, the special clinker is ground using ball mills.

### Quality

Like all other Calucem products, the production of ISTRA 50 5.0 is subject to stringent quality control. Constant monitoring of all components ensures a consistent quality. The production plant is certified according following standards: ISO 9001:2015; ISO 14001:2015; ISO 50001:2018 and ISO 45001:2018

### Technical data

The following information represents typical values for the quality control carried out in our plant.

#### Chemical composition (%)

SiO <sub>2</sub>	≤ 6
Al <sub>2</sub> O <sub>3</sub>	50–55
Fe <sub>2</sub> O <sub>3</sub>	≤ 3
CaO	≤ 40
MgO	≤ 1.5
SO <sub>3</sub>	≤ 0.4

#### Mineralogical composition

ISTRA 50 5.0 contains mainly monocalcium aluminate (CA). This mineral phase is responsible for the high early strength. Fast setting minor phases (C<sub>12</sub>A<sub>7</sub>) are minimized. When mixed with water ISTRA 50 5.0 forms calcium aluminate hydrates as its hydration products.

#### Mineral phases of ISTRA 50 5.0

Main mineral phase:	CA > 60
Minor mineral phases:	C <sub>2</sub> AS, CT, C <sub>12</sub> A <sub>7</sub>

#### Cement technical properties

Residue on sieve at	90 µm < 3%
Fineness (Blaine) approx.	4100–4700 cm <sup>2</sup> /g
Bulk density approx.	1 g/cm <sup>3</sup>
Specific gravity	3.0–3.1 g/cm <sup>3</sup>
Refractoriness in cement approx.:	1440 °C

#### Setting time and water demand

The testing of the setting time is performed using the mortar in order to describe the behavior of the ISTRA 50 5.0 in mixtures with a workable consistency. A mixture containing CEN-standard sand and using a water/cement ratio of 0.40 is produced for testing the mortar based on EN 14647.

	Mortar
Initial set	2:00 – 5:00 h
Final set	maximum 120 min after initial set
Water demand	27 ± 2%

### Development of strength

After setting, strength develops very rapidly. ISTRA 50 5.0 is a cement with very high early strength and high compressive strength. After one (1) day, the compressive strength is higher than of high grade Portland cements CEM I 52.5 R after 28 days.

#### Development of strength [N/mm<sup>2</sup>]

Time	6 h	1 d
Compressive strength	>18	> 60