

# CIKOcable Grout



## Highly fluid, high strength grout for post tensioned steel cables

### Description

CIKOcable grout is formulated to produce a pump able; non bleeding and non-shrink high strength grout. It provides corrosion protection to steel cables, anchorages and rods. CIKOcable grout is ready to mix cement based grout designed for pumping applications requiring high fluidity such as post tensioned cable duct grouting or any other types of confined spaces grouting.

CIKOcable grout is a balance blend of cement binder, rheology modifier and shrinkage compensating additive resulting in a free-flow, controlled expansion high strength grout.

### Properties & Advantages

- Single component system, easy to use requiring addition and proper mixing on site prior to use
- Shrinkage compensated and controlled expansion
- Extended working time
- High flow, can be pumped and re-circulated
- High compressive strength
- Chloride free not affecting metal cables or reinforcement bars.
- Fine powder

### Application Area & Uses

- Filling voids in post tensioned cables and highly stressed steel.
- Filling horizontal, inclined and vertical ducts, gaps and voids
- Grouting of confined joints and gaps in precast concrete structures.
- Grouting of tight clearance.

### Applicable standards

- Complies with Qatar Construction Specifications QCS.
- Complies with ASTM C1107 requirements of compressive, early height change and flow properties.

### Product Technical and Physical Properties

Form	Powder
Colour	Cement grey
W/P	0.35 to 0.37
Working time	30-35 minutes @ 25 <sup>o</sup> C
	20-25 minutes @ 35 <sup>o</sup> C
Maximum particle size	500 microns
Final Setting time ASTM C953	10 to 12 hours (Depending on ambient condition)
Fresh Density	2 ± 0.05 kg/L
Compressive Strength ASTM C109 (W/P=0.35)	≥30 N/mm <sup>2</sup> @ 3 days
	≥45 N/mm <sup>2</sup> @ 7 days
	≥60 N/mm <sup>2</sup> @ 28 days
Flexural Strength ASTM C348 (W/P=0.35)	≥4 N/mm <sup>2</sup> @ 3 days
	≥5 N/mm <sup>2</sup> @ 7 days
	≥8 N/mm <sup>2</sup> @ 28 days
Early height change ASTM C940/Volume change BS EN445	A positive expansion 0% up to 4%
*Fluidity BS EN 445 & BS EN 447 (W/P=0.36-0.37)	12 to 25 seconds (initial)
	15 to 25 seconds (30 mins)
Bleeding BS EN445:1997	<0.1 % ( W/P=0.35)
	<0.3 % (W/P=0.37)

\*Tested under laboratory conditions while material is kept agitated prior to measuring the flow.

### Yield

25 kg bag of CIKOcable grout mixed with 8.75-9.25 liters of water yields 16.5 to 17.5 liters of fresh grout.

## Application Instructions

### Equipment

CIKOcable grout to be used with equipment that allows for continuous operation with little variation in pressure and recirculation system to ensure fluidity is maintained while grouting is not in progress. CIKOcable grout should be mixed using equipment specially designed to ensure proper mixing of post tensioned material. Optimal mixing is achieved using high speed shear Vane Mixer or Jiffy mixer.

### Method

CIKO recommends to strictly following post tensioning institute procedures for surface preparation, equipment, operations, application and curing procedure. Refer to PTI specs for grouting of post tensioned structures.

### Preparation

Clean all cables, ducts, anchorages, block outs, opening, and inlets from all oxidations, dirt, oil or any loose materials or debris. Once the post tensioning tendons have been installed and pre-stressed or tensioned, ensure all the connection from grout hoses, grout lines, the inlets and outlets are airtight, without leak and clean in which can withstand the required pressure. It is recommended to test using oil free pressurized air through the system to confirm ducts are clean and can withstand the required pressure. All grout vents should be open and grout should be injected from nearest the lowest end of tendons in uphill direction. Refer to "Guide Specifications for post-tensioned grouting" for more complete information.

### Application

The grouting should be initiated as quickly as possible after the tendons are pre-stressed or tensioned. Add water gradually starting from the lowest W/P ratio going upwards to the maximum allowed until the specific fluidity is achieved and almost bleeding tends to attain 0%. Do not exceed the recommended level of water (9.25 L/25 kg bag). The grout must be mixed for 3 up to 5 minutes. It is recommended to mix only enough CIKOcable grout that can be placed within 30 minutes and kept under continuous agitation to take full advantage of the product expansive properties. Chilled water must be used to attain optimum results, the recommended temperature of grout shall be within 7°C and 35°C. Higher temperatures increase the amount of mixing water needed for a given fluidity, limit the working time and reduce the ultimate strength. Lower temperatures induce bleeding, delays setting time and impede early strength development however it permits reducing the mixing water content to its minimum for a given fluidity thus increase ultimate final strength.

CIKOcable grout is intended to be used for applications which are fully restrained or confined on all surfaces. The ducts, tendons and concrete substrate surface temperatures shall be within 10°C and 35 °C.

### Packaging

CIKOcable grout is available in 25kg moisture resistant bags.

### Shelf life

CIKOcable grout has a shelf life of 12 months if stored in accordance with CIKO instructions.

### Storage

CIKOcable grout should be stored under enclosed shaded area away from direct sunlight, moisture and water at temperatures between 5°C and 45°C

### Precautions

- Substrates shall be non-absorbent or have an SSD condition for optimum results.
- Ambient temperature during application must be between 10°C and 40°C.
- Do not re-temper the grout with water after initial mix.

### Health & safety

Use standard dust mask to avoid inhalation of dust. Powder when wet or moist can cause burns to skin and eyes, use safety goggles and impervious gloves. If comes in contact with skin/eyes, flush with plenty of fresh water and seek medical advice.

Refer Material Safety Data Sheet for further details.

### Technical Support

*For any technical support, do not hesitate to contact CIKO team at any time as CIKO offers on and off site services to end users, specifier and contractors.*

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