



# CMID-4I

## ADDITIVE FOR FABRICATION OF CEMENT-BASED INJECTION MORTARS

CMID-4I IS A COMPLEX ADDITIVE FOR FABRICATION OF CEMENT-BASED INJECTION MORTARS. IT INCLUDES A COMPLEX OF RHEOLOGICAL, SURFACE-ACTIVE AND ANTISHRINKING COMPONENTS.

**CMID-4I** is a finely dispersed powder of a light colour with a faint odor. It is non-combustible, fire- and explosion-proof substance, when interacting with cement does not change the toxico-hygienic characteristics of the hardened mortar.

### AREA OF APPLICATION

**CMID-4I** is used to obtain the injection mortar based on Portland cement for the following types of work:

- repair of hidden defects, filling voids;
- creation of anti-seepage curtains;
- injection of cracks with opening of more than 0.5 mm;
- filling gaps in channels with pre-stressed reinforcement.

### PROPERTIES OF MORTAR

- high mechanical compressive and tensile strength;
- high fluidity with a low water-cement ratio;
- high adhesion to concrete, metal, glass, some types of plastic;
- non-shrinkage.

### DOSING

5-6% of the cement weight (5-6 kg of additive per 100 kg of cement).

### PROCEDURE OF WORK

#### 1. Preparatory work

Preparation of the base is carried out in accordance with the current SP. Then, the injection packers are installed, the location and quantity of which depends on the type of the injection works performed (filling of voids, injecting cracks, creating of anti-seepage curtains, etc.). Before starting the injection of structures made of absorbent materials, it is necessary to carry out pumping with water to wet the internal surfaces and when filling voids to determine the volume of the required injection mortar (hydro-testing).

#### 2. Preparation of working mortar

Procedure of preparation of working mortar in the forced mixer:

1. 75-80% of the required amount of water is introduced into the mixer (0.3-0.35 kg of water per 1 kg of cement). The exact amount of mixing water is determined experimentally;
2. the mixing mode is activated;
3. **CMID-4I** additive is fed into the operating mixer at the rate of 5-6% of the cement weight (optimal consumption of additive is selected experimentally);
4. cement is added to the operating mixer;
5. mixing is carried out for 1-2 minutes, then the remaining water is introduced and mixing

is carried out for 3-5 minutes until a homogeneous consistency with high slump is formed.

### **3. Work performance**

Piston, rotary or vacuum mortar pumps are used to supply ready-mixed mortar.

The working pressure for supplying the mortar is selected taking into account the structural features, the supply distance and the diameter of hoses so that after pumping there are no signs of mortar layering. Recommended supply pressure is within the range of 0.3-20 atm. The minimum inner diameter of the injection packers should be 8 mm.

The prepared batch of the mortar must be used until the viscosity of the mortar increases for more than 60 seconds.

### **4. Treatment**

No special treatment is required. For 3 days or more, ensure temperature condition within +5...+35°C.

### **5. Packing and storage**

CMID-4I additive is delivered in paper bags in 20-25 kg package.

Storage period in a dry enclosed space in undisturbed original package at temperature of +5...+35°C – at least 6 months from the date of manufacture.

<b>CHARACTERISTICS OF CMID-4I ADDITIVE</b>	
Appearance	Fine dispersed powder with pale pink to white colour
Bulk density, kg/m <sup>3</sup>	300-700
Smell	Slight chemical odor
<b>Parameters of mortar mixture with CMID-4I additive</b>	
Additive consumption, % of the cement weight	5-6
Amount of mixing water, l/kg	0.3-0.35
Volumetric weight, kg/m <sup>3</sup>	2000-2070
Conventional viscosity, sec (time of flowing through the hopper is similar to EN 445): Immediately after mixing After 30 minutes After 60 minutes	 19-25 20-30 25-35
<b>Parameters of hardened mortar</b>	
Compressive strength, MPa at least, at the age of: - 1 day - 7 days - 28 days	 20.0 60.0 65.0
Bending tensile strength, MPa at least, at the age of: - 1 day - 7 days - 28 days	 4.0 8.0 10.0
Relative linear strain (shrinkage / expansion), % maximum	no / 0.05

\* The values specified are achieved when using cement of PC 500 D0 grade and/or cement I 52.5N with normal settling period.