

MasterEmaco[®] A 640

(MACFLOW)

Plasticized high-expansion cement

DESCRIPTION

The MasterEmaco A 640 plasticized high-expansion cement is a mix of Portland cement and a complex additive conferring and regulating expanding and plasticizing properties.

ADVANTAGES

- Production of non-shrink injection grouts with a high flow capability at a low water-cement ratio;
- Production of concrete mixtures with a high workability, without the addition of additional plasticizers;
- Allows receiving of non-shrink concretes and mortars;
- Allows receiving of concretes and mortars with high early and final strength.

FIELD OF APPLICATION

1. Production of concretes and mortars used in the repair and construction of road and airport paving, bridge structures and civil structures;
2. Installation of anchors in concrete bases as well as in soils and rocks;
3. Preparation of injection grouts used for:
 - Injecting cracks in concrete and masonry structures;
 - Filling channels, which accommodate prestressed reinforcement or anchors under high mechanical stress;
 - Injecting soils.
4. Installation of equipment and steel structures in case of grouting the space between the concrete base and metal elements with a thickness of 5 to 10 mm;
5. Grouting of reinforced concrete elements and structural joints.

PACKING

The MasterEmaco A 640 cement is available in 25 kg paper bags.

SPECIFICATIONS

In terms of compressive strength, cement is subdivided into Grade 52.5 and Grade 62.5.

Required physical and mechanical properties of the cement are presented in Table 1.

(Table 1)

Indicator	Value for the cement of the following grade:	
	52.5	62.5
Compressive Strength, MPa, minimum, for the age:		
1 day	25.0	30.0
28 days	52.5	62.5
Cement paste fluidity, mm, minimum	280	
Setting time:		
Beginning, minutes, not earlier than	30	
End, hours, no later than	8	
Linear expansion in a limited state at the age of 1 day, %, minimum	0.05	
Water gain, %, maximum	3.5	
Watertightness, atm, minimum	8	
Frost resistance, cycles, minimum	300	
Specific effective activity of natural radionuclides, Bq/kg, maximum	370	
Sulphate resistance, minimum	0.95	

*The data specified in the table are based on the test results at W/C ratio=0.32 according to the procedure set out in the STO 70386662-002-2014.

MIXING

To obtain a cement mix, the dry mortar shall be mixed with water.

Water consumption at W/C ratio = 0.32 is 8 liters per 25 kilograms of the dry mix, resulting in the production of 16.5 liters of a plastic mortar.

APPLICATION

1. Crack grouting using the MasterEmaco A 640 cement

This procedure is based on the available experience of performing similar operations, but

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requires modification from case to case depending on the crack opening width and depth.

The procedure includes the following steps:

- a. Drill holes at an angle to the crack at the pitch of about 50 cm in a staggered order, on the both sides of the crack, so that the drilled channel would cross the crack at a maximum depth, if the crack is not through, or 1/2 of the thickness of the element cross-section, if the crack is through;
- b. Fix tubes in the channels, using MasterEmaco S.
- c. Inject water in the channels as long as the water comes out clean;
- d. Inject the MasterEmaco A 640 at W/C ratio of about 0.4-0.45 in the upward direction;
- e. In case of a large opening, preliminary fill the crack with MasterEmaco S mix to prevent leakage of the MasterEmaco A 640 suspension (Fig. 1).

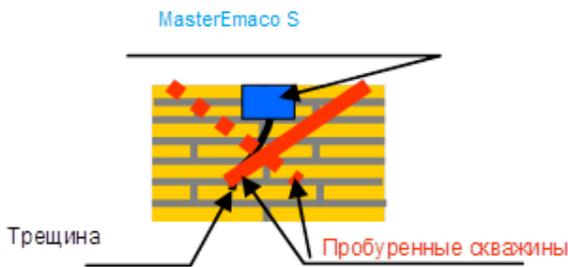


Fig. 1 Sample crack injection procedure

Russian	English
Трещина	Crack
Пробуренные скважины	Drilled boreholes

2. Anchor fixing procedure

To install the anchors, using the MasterEmaco A 640 cement, minimum diameter of the borehole may be $D_{\text{borehole}} = d_{\text{anchor}} + 6\text{mm}$.

Boreholes should be prepared for anchor installation: wash the borehole to remove dust and dampen the walls, then remove excess water with compressed air or with a rag. First, fill the borehole with a fixing composition and then insert an anchor by turning. Cast-in-situ concrete and

mortar are poured along one wall, preventing the formation of air-filled cavities (Fig. 2).

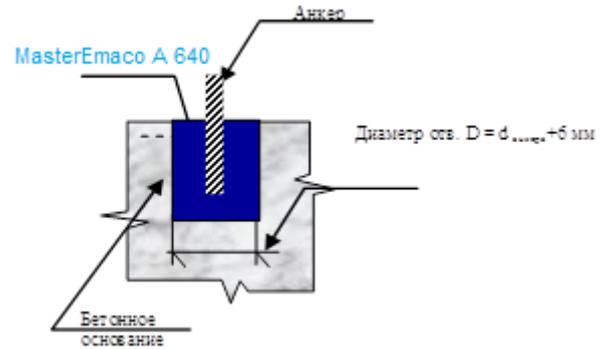


Fig. 2. Anchor fixing procedure

Russian	English
Анкер	Anchor
Диам. отв.	$D_{\text{borehole}} = d_{\text{anchor}} + 6\text{mm}$
БЕТОННОЕ ОСНОВАНИЕ	Concrete base

3. Grouting the space between the concrete base and steel structures at the clearance thickness of 5 ... 20 mm

3.1. Surface preparation

This process involves the removal of dirt, dust, traces of oils and lubricants as well as the saturation of the concrete base of the foundation slab with water. Typically, the following sequence of operations is assumed for surface preparation:

- Remove large debris by hand.
- Remove oils and lubricants from the surface
- Install and align steel structures
- Remove washes, fine dirt and dust, and saturate with water (integrated into a single process), by water-blasting equipment under pressure of 300 bar.
- Remove the remaining water (avoid puddles on the foundation slab) by air blowing (compressor must be equipped with a moisture and oil knock out drum).

3.2. Space grouting

The concrete mix is supplied through a hole in the support part or from one side of the pouring equipment or steel structure until the level of the mix on the opposite side becomes 30 mm higher than the elevation of the supporting surface of the

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equipment (steel structure), but not greater than its thickness.

The mix is poured without interruptions. Since the application life of the ready-to-use mix is about one hour (at +20°), the entire amount should be placed within this time interval.

The material may be laid by hand or by using concrete pumps, and only on the one side (to avoid air entrapment).

Due to a good flowability, the material is poured without additional vibration that may affect the alignment of the equipment. You may simply move the steel cable forward and backward (Fig. 3).

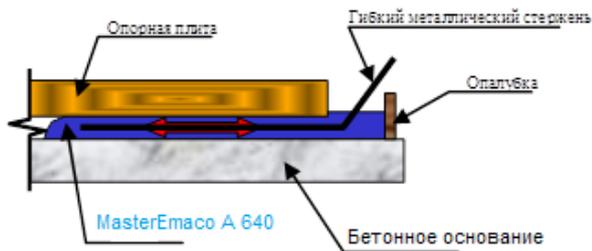


Fig. 3. Equipment and steel structure installation procedure

Russian	English
Опорная плита	Base plate
Гибкий металлический стержень	Flexible metal rod
Опалубка	Formwork
Бетонное основание	Concrete base

SHELF LIFE AND STORAGE CONDITIONS

Shelf life in original undamaged packaging is 6 months from date of manufacture. Upon the expiry of the shelf life, the cement must be verified for compliance with STO 70386662-002-2014. If relevant requirements are met, the cement may be used for intended purpose.

PRECAUTIONS

The product contains cement, irritating the skin and mucous membranes. Therefore, avoid contact with eyes and skin. In case of irritation, thoroughly rinse the affected areas with water and consult a doctor, providing the information about the product properties.

Represented information is based on our current experience. In case of various factors affecting the result, information does not mean legal responsibility. For additional information, please contact your local advisor.

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