



Mapecifill

Non-shrink, quick-hardening, mortar mix for high-precision anchoring of installed equipment, columns, grouting joints in reinforced concrete structures. The maximum aggregate size is 3 mm. The application thickness varies from 10 to 100 mm



Compliance of the **Mapecifill** mortar mixture with GOST R 56378 is confirmed by the Declaration of Conformity of ROSS RU D-RU.AZH40.V.00008/19

WHERE TO USE

Mapecifill is used for high-precision anchoring of the base (frame) of installed equipment by casting, for various types of industrial equipment such as:

- metallurgical hot and cold rolling mills;
- presses;
- turbines;
- compressors;
- generators;
- machines for various purposes;
- supporting parts of metal columns (bases);
- it is also used for grouting rigid joints between prefabricated reinforced concrete elements.

DESCRIPTION

Mapecifill is a ready-to-use product in the form of a dry mortar mix, based on high-strength cement, graded sand and special expanding admixtures.

When mixed with water, it forms a highly flowable, non-segregating concrete mix. Because of expanding admixtures, **Mapecifill** is a non-shrink product characterized by a

total absence of shrinkage in both its plastic phase and the subsequent hardening phase.

In the hardened state, **Mapecifill** is a high-strength mortar with excellent adhesion to steel and concrete, high frost and water resistance.

Mapecifill does not contain metal aggregates and chlorides. The maximum aggregate size is 3 mm.

Mapecifill meets the main requirements of EN 1504-9 («Products and systems for the protection and repair of concrete structures. Definitions, requirements, quality control and conformity assessment. General principles for the use of products and systems») and the minimum requirements of EN 1504-6 («Anchoring reinforcement bars»). Passed the adhesion-force (structural) bonding strength assessment test under short-term pulling load in accordance with GOST 34277. It meets the requirements stated in GOST R 56378 and EN1504-3 («Structural and non-structural repairs») for repair mortar of class R4.

RECOMMENDATIONS

- Do not use **Mapecifill** for structural repair by pouring into formwork (use Mapecigrout Hi-Flow).
- Do not use **Mapecifill** for vertical applications by shot-creting or trowel (use thixotropic products).
- Do not add water when the mix has started to set.
- Do not use **Mapecifill** if the bag is damaged or has already been opened.



Repairing a joint of a highway bridge with Mapefill

TECHNICAL DATA

Table 1

PRODUCT IDENTITY

Class according to GOST 56378 and EN 1504-3:

R4

Type:

SS

Colour:

gray

Bulk density (kg/m³):

1300

Maximum aggregate size (mm):

3.0

Dry solids content (%):

100

Ion chloride content: - minimum requirements 0.05% according to EN 1015-17 (%):

< 0.05

APPLICATION DATA (at +22°C - 50% R.H.)

Mixing ratio:

100 parts of **Mapefill** with 14-15 parts of water (3.5-3.75 l per 25 kg bag)

Preparation of the mix:

mix the product according to EN 196-1 standard

Curing conditions:

SS according to Annex A - EN 12190.

Consistency of the mix:

fluid

Density of the mix (kg/m³):

2300

pH of the mix:

> 12.5

Workability (mm):

290-320

Application temperature:

from +5°C to +35°C

Pot life of the mix (min):

60

FINAL PERFORMANCE (14.5% mixing water)

Performance characteristics	Test method	Minimum value according to EN 1504-6 requirements	Declared product characteristics	Actual indicators*
Compressive strength (MPa):	EN 12190	> 80 % of the value declared by the manufacturer	> 30 (after 24 hours) > 55 (after 7 days) > 70 (after 28 days)	48 (after 24 hours) 83 (after 28 days)
	GOST 30744	not required		
Flexural strength (MPa):	EN 196/1 GOST 30744	not required	> 5 (after 24 hours) > 9 (after 28 days)	8 (after 24 hours) 15 (after 28 days)
Compressive modulus of elasticity (GPa):	EN 13412 GOST 24452	not required	> 27 (after 28 days)	34 (after 28 days)
Bond strength on concrete (substrate in MC 0.40 - water/cement ratio = 0.40) according to EN 1766 (MPa):	EN 1542 GOST P 56378, appendix G	not required	> 2 (after 28 days)	2.3 (after 28 days)
Free expansion in the plastic phase (%):	ASTM 827	not required	> 0.3	
Drawing resistance of the steel rods - movement under a 75 kN load (mm):	EN 1881 GOST 34277	< 0.6	< 0.6	0.55
Frost resistance grade for road and landing place concrete after 28 days, not less:	GOST 10060	not required	F ₂ 300	F ₂ 300
Water resistance grade after 28 days, not less:	GOST 12730.5	not required	W 20	W 20
Reaction to fire:	EN 13501	EUROCLASS	A1, A1 _{FL}	
Class of fire risk:	GOST 30244	not required		NF

* in accordance with the protocols of the Research Center of Construction Research Institute of Concrete and Reinforced Concrete (NIIZHB) named after A.A. Gvozdeva No. 189 dated 20.10.2020, No. 77 dated 02.04.2018, and Research Center of Construction Technologies and Materials No. 856.I-1 dated 16.11.2022

- Do not apply **Mapefill** at temperatures below +5°C.

APPLICATION PROCEDURE Preparing the substrate

Before installing the equipment, remove from the foundation surface all destroyed concrete with a light perforator, needle gun or water jet. For good adhesion, make the concrete surface rough, with roughness of at least 5 mm. Thoroughly clean the bolts and support surface of the base frame (base plate of the equipment) from grease and oil stains, dust, rust and other contaminants. Install the equipment and fasten it securely. Note that it will be impossible to change the location of the equipment after the work is completed. Before starting work, thoroughly moisten the concrete foundation surface. Remove excess water with compressed air or rags. The substrate must be damp, but not wet.

The formwork must be made of a durable waterproof material, securely fixed, sealed, excluding leakage of laitance, adequate for pressure of the mix during casting, leveling and finishing. On the **Mapefill** pouring side, provide a gap of 150 mm between the formwork and the base frame side. From the sides make gaps of at least 50 mm between the formwork and the sides of the base frame. For pouring **Mapefill**, use mortar pumps, funnels, etc. When casting under large-sized frames and in order to ensure the free flow of **Mapefill**, use the maximum amount of water indicated in Table 1.

Preparing the mortar mix Before mixing **Mapefill** with water, do the following:

- check there is enough **Mapefill** to complete the work, taking into account that the consumption of dry **Mapefill** for the preparation of 1 m³ of concrete mix is 1900 kg;
- make sure that all necessary equipment (mixers, barrows, buckets, trowels, etc.) is at hand;

For the correct preparation of concrete mixes:

- just before mixing, open the required number of bags;
- fill the mixer with the minimum amount of water indicated in Table 1, depending on the required consistency;
- turn on the mixer and continuously pour dry **Mapefill**.
For mixing, the entire bag must be used;
- stir for 1-2 minutes until the lumps disappear and the mix becomes homogeneous;
- stop the mixer for 1 minute, clean its walls from the adhering residues of the dry mix;
- if necessary, add water (in the amount indicated in Table 1), turn on the mixer and stir again for 2-3 minutes until a uniform consistency is obtained.

Mixing by hand is not allowed, since more water will be required, which will result in lower performance characteristics and formation

of shrinkage cracks. The pot life of **Mapefill** mix at +20°C is 60 minutes.

Application of the mortar mixture

Before pouring the prepared mix into the formwork, carry out the following operations:

- Make sure that no vibration is transmitted to the equipment from nearby machines. If such transmission occurs, stop these machines for at least 10-12 hours (at a temperature of +20°C), for the period of initial concrete strength development, in order to prevent the influence of vibration on the adhesion of concrete to the base frame;
- to prevent air entrainment, pour **Mapefill** continuously and from one side only. Do not pour **Mapefill** under the base plate of the equipment from two opposite sides;
- Ensure that **Mapefill** completely fills the space between the base plate and the equipment, for which use a flexible steel rod to make several forward-backward movements under the base plate of equipment.
- Make sure that the diameter of the anchor hole must be at least twice the diameter of the anchored rod.

For grouting precast reinforced concrete elements and filling rigid joints, pouring **Mapefill** with a thickness of 100 mm in one layer can be done.

The work on mixing and pouring the mortar mix of the planned volume should be carried out within 60 minutes (the pot life at an ambient temperature of +22°C).

PRECAUTIONS TO BE OBSERVED DURING AND AFTER APPLICATION

Work with **Mapefill** at an air temperature of +5°C to +35°C. At low ambient temperatures (from +5°C to +10°C), the strength develops more slowly.

If high early strength is required, we recommend the following:

- store bags with **Mapefill** in places protected from cold;
- for the preparation of the mix use hot water (from +30°C to +40°C);
- after pouring, cover the surface with heat-insulating materials.

At a high ambient temperature (above +30°C), a rapid loss of mix workability is possible. Typically, the pot life of the mix at a temperature of +20°C is 60 minutes, at higher temperatures it decreases noticeably.

At high temperatures, the following measures are recommended:

- store bags with **Mapefill** in a cool place;
- use cold water to prepare the mix;
- prepare the mortar at the coolest time of the day.

After pouring, all exposed surfaces of **Mapefill** must be immediately protected from moisture loss for at least 24 hours.



Anchoring with mortar **Mapefill**



Flow test according to the Italian norm UNI 8997/89



Measuring restrained expansion according to the Italian norm UNI 8997/89

Mapecfill



To protect the surface:

- spray water onto it;
- cover it with a film or a damp burlap;
- apply products from **Mapecure** range.

Cleaning

After the work is completed, clean all tools and equipment with water. After hardening, the product can be removed only mechanically.

CONSUMPTION

19 kg of dry Mapecfill per m² at a coat thickness of 1 cm.

PACKAGING

Dry Mapecfill is packed in special moisture-proof bags weighing 25 kg.

PRODUCT FOR PROFESSIONAL USE.

If stored in the undamaged manufacturer's packaging in a dry indoor environment, the warranty period for **Mapecfill** is 12 months from the date of manufacture.

Mapecfill can be stored for 12 months in a plastic shrink wrap according to GOST 25951, avoiding moisture and ensuring the integrity of packaging, in covered dry warehouses.

Transportation and storage of paper bags and transport packages by consumers is carried out only in a plastic shrink wrap according to GOST 25951.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

For further and complete information about the safe use of our product, please refer to the latest version of our Material Safety Data Sheet on our website www.mapei.com.

WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product.

Please refer to the current version of the Technical Data Sheet, available from our website www.mapei.com.

LEGAL NOTICE

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All relevant references for the product are available upon request and from www.mapei.com



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