

MasterFlow® 402

Epoxy Based Ultra High Strength Grout

DESCRIPTION OF PRODUCT

MasterFlow® 402, is epoxy based grout and repair mortar with three parts including well graded quartz aggregate.

Complies with EN 1504-3/R4 and EN 1504-6

FIELDS OF APPLICATION

- Repair of runways and track in airports
- Repair of concrete pavements
- Fixing of prefabricated beams in bridge joints
- Mounting heavy machines to the foundations
- Machine foundations under heavy dynamic loads
- Repair of crane runways and high strength required mountings
- Column-beam connections in the reinforced concrete bridge structures
- Mounting the steel columns to the reinforced concrete foundations
- Repair and maintenance of reinforced concrete marine structures
- Repair of underground reinforced concrete structures
- Repair and insulating of wide cracks on vertical structural elements, beams and ceilings

FEATURES AND BENEFITS

- Can be applied without primer
- Pourable
- Resists to chemicals
- High mechanical strengths
- High abrasion and impact resistance
- High bonding strength to the concrete and steel
- Long pot life
- Non-shrink
- Solvent free

APPLICATION PROCEDURE

Preparation of Substrate

The concrete surfaces must be sound, clean and dry. It shouldn't be weakened by over-troweling and lack of curing. The concrete should be free of frost, curing membranes, waterproofing treatments, oil stains, laitance, friable material and dust. If there is a water leakage it must be drained or properly plugged. Steel surfaces should be cleaned from rust by sand blasting and if needed new reinforcement should be installed. The edges of the broken surfaces should be saw cut.

Preparation of Machine Foundation

Before the mounting of the machine the loose particles should be removed from the surface and concrete surfaces should be roughened before grouting. Steel base plates of the machine should be dry and cleaned from oil, grease, rust and dust, which cause de-bonding of the

TECHNICAL DATA

Malzemenin Yapısı MasterFlow® 402 Part A MasterFlow® 402 Part B MasterFlow® 402 Part C	Epoxy Resin Epoxy Hardener Quartz Aggregate
Mixed Density	2,00 ± 0,05 kg/litre
Compressive Strength TS EN 196 (1 day) (7 days)	>35 N/mm ² >80 N/mm ²
Flexural Strength TS EN 196 (1 day) (7 days)	>20 N/mm ² >30 N/mm ²
Bonding Strength (7 days) To concrete To steel	>2,0 N/mm ² >3,0 N/mm ²
Application Thickness	Min. 4 mm Max. 50 mm
Elasticity Modulus	≥ 8 GPa
Application Temperature	+5°C +35°C
Service Temperature	-15°C +80°C
Pot Life	30 minutes
Recoat after	18-24 hours
Fully Cured at 20°C	7 days

Typical values are obtained from the test results of 4x4x16 mortar prism in 23°C and 50% relative humidity conditions. High temperatures shortens the curing and working time, lower temperatures extends the durations.

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grout. Proper holes should be drilled on to the steel base plates for draining the air under the machine during grouting. After these steps machine should be mounted and fixed to the foundation. Apply proper release agent to the shims before application.

Formwork

Forms should be made of tough materials and well mounted for resisting to fresh grout pressures. There should be min. 5 cm between the formwork and machine base plate in the grouting direction for casting the material into the form. For ensuring the filling of the spaces under machine base plate, forms should be elevated in the casting side and enough hydrostatic pressure obtained. In some cases, forms should be elevated up to 1.5m in the casting side, using custom shaped pipes etc. Should be required for grouting under huge plates. For preventing the leakage and loose of hydrostatic pressure the formwork should be done properly.

Mixing

MasterFlow® 402 has three parts in two pails and in one bag, produced according to right mixing ratio. Material temperature should be between 15-25°C before mixing. Part B should be added into the Part A without any remaining material in the pail. It should be mixed with using a proper mixer (~300 rpm) for polymer mixing. Mix the parts at least 3 minutes to have a homogenous mixture. Then the mixture should be put in to a clean, dry, mixing bucket and the Part C should be added into the bucket. Mix the parts at least 3 minutes to have a homogenous mixture.

Mixing Ratio

MasterFlow® 402	Part A	Part B	Part C
Quantity	2,00 kg	1.125 kg	12,50 kg
Mixed Density	2,00 kg/litre		

APPLICATION METHOD

MasterFlow® 402 should be applied to the prepared surface by using a steel spatula or steel trowel. Application thickness should be between 4-50 mm. Open areas should be protected from the rain, wind, and similar aggressive whether conditions during the first 2 hours after finishing repair.

Grouting

The vibration caused by the surrounding machines should be observed and if necessary all the machines shut down until the grout sets (2 hours in +20°C).

Grout should be cast in only one side of the form continuously and the grout thickness should be between 4-50mm in single layer. For preventing air gaps do not cast material in two side of the machine. Do not use vibrator. For compacting the grout a steel or plastic hooked bar should be used. Do not release the formwork

before 2 hours (in +20°C). Open areas should be protected from the rain, wind and similar aggressive whether conditions during the first 2 hours after finishing repair.

In the case of unneeded excessive mortar outside of the machine plate, the grout can be broken after removing the formwork. Don't move the shims in two days after grouting. After starting the machine all the bolts should be checked and re-fixed if needed.

COVERAGE

2.0 kg/m² for obtaining 1 mm thick layer.

WATCH POINTS

- During the application the substrate and ambient temperature should be between 5 - 35°C.
- Resinous materials' pot life and curing times vary depending on the relative humidity, substrate and ambient temperature. Reaction gets slow in low temperatures and it causes to extension on pot life and working time. On the other hand high temperatures speed up the reaction, which results to short pot life and working time. For full curing of material, both the substrate and ambient temperature shouldn't be under allowed application temperature.
- **MasterFlow® 402** is provided in ready to mix pails. Do not add any solvent etc. into the mixture during the application.
- Mixing should be made with proper mixers and do not allow mixing by hand.
- Open areas should be protected from the rain, wind, etc. Aggressive whether conditions during the first 2 hours after finishing repair.
- Do not use vibrator for compacting the grout.

CLEANING OF TOOLS

After the application all tools should be cleaned with a proper detergent or solvent such as thinner. **MasterFlow® 402** can be cleaned with only mechanical abrasion after hardening.

PACKAGING

15.625 kg set
 Part A: 2.000 kg pail
 Part B: 1.125 kg pail
 Part C: 12.500 kg bag

STORAGE

Store in original container in cool (+5°C - +25°C) and dry indoor conditions.

SHELF LIFE

18 months under proper storage conditions after production date.

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HEALTH AND SAFETY PRECAUTIONS

It is dangerous to approach the application sites. During the application, a protective apparel, protective gloves, goggles and masks which comply with the Occupational Health and Safety Rules should be used. Due to the irritation effect of the uncured materials, the mixture should not come into contact with skin and eyes; in case of a contact, the affected area should be washed with plenty of water and soap; in case of swallowing, a physician should be consulted immediately. No food or beverages should be brought to the application area. The product should be stored and kept out of reach of children. For detailed information please consult the Material Safety Data Sheet.

DISCLAIMER

The technical information given in this publication is based on the present state of our best scientific and practical knowledge. **Master Builders Solutions Yapı Kimyasalları Sanayi ve Ticaret Ltd. Şti.** is only responsible for the quality of the product **Master Builders Solutions Yapı Kimyasalları Sanayi ve Ticaret Ltd. Şti.** is not responsible for results that may occur because the product is used other than advised and/or out of instructions regarding the place and the method of use. This technical form is valid only till a new version is implemented and nullifies the old ones.

CONTACT INFORMATION

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MasterFlow® 402 Technical Data Sheet -Revision Date: 11/2021

	
1020 Master Builders Solutions Yapı Kimyasalları Sanayi ve Ticaret Ltd. Şti. Adres: Barbaros Mah. Begonya Sok. Nidakule Kuzey Ataşehir, C Kapısı No:3 E/5, 34746 Ataşehir İstanbul / Türkiye 20 1020 – CPR – 040 065838 DOP NO: 02.1504.6.003	
EN 1504-6:2006 MasterFlow 402 Çelik Donatı Çubuğunun Ankrajlanması (Anchoring of reinforcing steel bar) Epoksi Esaslı Grout Harcı (Epoxy Based Grout)	
Çekip Çıkma Dayanımı : 75kN yük etkisiyle yerdeğiştirme (Pull out strength displacement: at load of 75kN)	≤0,6mm
Klorür (Chloride ion Content)	İçeriği ≤%0,05
Camsıya geçiş sıcaklığı (Glass transition temperatures)	≥45°C
Çekme yükü etkisiyle sünme : 50kN yükün sürekli şekilde 3 ay uygulanmasından sonra yer değiştirme (Creep under tensile load displacement: after continuous loading of 50kN for 3 months)	≤0,6mm
Yangına tepki (Reaction to fire)	D-s2;d0
Tehlikeli maddeler (Dangerous substances)	Madde 5.3'e uygun (Comply with clause 5.3)

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Master Builders Solutions Yapı Kimyasalları Sanayi ve Ticaret Ltd. Şti. Barbaros Mah. Begonya Sok. Nidakule Ataşehir Kuzey C Kapısı No:3E/5 34746 Ataşehir/İstanbul 21 1020 – CPR – 040 065838 DOP NO: 02.1504.3.027	
EN 1504-3:2005 MasterFlow 402 Yapısal olan ve yapısal olmayan tamir (Structural and Non-Structural Repair Mortar) Sınıf R4 (Class R4) 3.1 Elle harç uygulaması (Concrete restoration by applying mortar by hand) 3.2 Yeniden beton dökülmesi (Concrete restoration by recasting with concrete) 7.2 Bozunmuş betonun yenilenmesi (Replacing contaminated or carbonated concrete)	
Basınç Dayanımı (Compressive Strength)	≥ 45 N/mm ²
Klorür içeriği (Chloride ion Content)	≤ % 0,05
Adezyon Dayanımı (Adhesive bond)	≥ 2,0 N/mm ²
Kontrollü Büzülme / Genleşme (Restrained shrinkage/expansion)	≥ 2,0 N/mm ²
Karbonatlaşma Direnci (Carbonation resistance)	sağlanıyor (Passes)
Yangına tepki (Reaction to fire)	D-s2;d0
Tehlikeli maddeler (Dangerous substances)	Madde 5.4'e uygun (Comply with clause 5.4)