

Torggler

UMAFLOW

One-component, pre-mixed, fluid, non-shrinking, fibre-reinforced, fast setting and hardening mortar with high mechanical strength. Type CC and class R4 according to EN 1504-3, for fixing manhole covers, localised repair of interior and exterior industrial floors and repair of reinforced concrete.

- Rapid hardening and development of mechanical strength
- Resistant to the penetration of CO₂
- Withstands freezing/thawing cycles
- Resistant to thawing salts

APPLICATION RANGE

- Fast fixing and levelling of manhole covers, chambers and drains.
- Fast fixing of poles, road signs and street furniture.
- Fast repair of interior and exterior concrete flooring (localised repairs must not exceed an area of 9 m² and the length of the longest side must not exceed 3 metres).

TYPES OF SUBSTRATE

Reinforced concrete in general.

ATTAINABLE THICKNESS

10 cm. For greater thicknesses, add washed gravel (3 - 7 mm).



FEATURES

Umaflow is a one-component cement mortar, pre-mixed, with fast setting and hardening, available in grey and anthracite colours, based on a mix of special cements, selected aggregates, fibres and specific additives. A fluid and cohesive mix is obtained after mixing with water. A slight expansion during both the plastic and the post-hardening phases compensates for hydraulic shrinkage, with a considerable improvement of the final adhesion characteristics, and at the same time preventing fracturing. The optimum water retention reduces the risk of "burning" when it applied in small thicknesses (which, in any case, must not be less than 2 cm) and, if suitable care is taken, even during critical weather conditions (summer temperatures and windy); however, in this case it is necessary to adopt suitable precautions (do not expose to direct sunlight, mix with cold water, apply the product preferably at coolest times of the day and in the shade, etc). Specific additives make the hardened mortar impermeable to water and resistant to the penetration of CO₂. **Umaflow** is a product for the structural repair of concrete structures using hydraulic mortar type CC and class R4 in accordance with EN 1504-3.

ATTENTION

- Do not mix with other binders such as cement, hydraulic lime, gypsum, etc.
- Do not add water once the mix has started to set.
- Do not use the mixed product when it has already started to set.
Therefore, always prepare quantities of mix which can be used within the workability time.
- Do not use in temperatures which are too high or when it is very windy. Protect from direct sunlight. During the summer months wait for the coolest hours of the day before application, mix with cool water and protect the surface against strong winds, spraying the surface with water or covering it with polyethylene sheets.
- Do not apply **Umaflow** when the temperature is less than +5 °C or more than +30 °C.

CONSUMPTION

The coverage of **Umaflow** is approx. 21 kg/m² per cm of thickness.

STORAGE

Store **Umaflow** in a dry, protected place. Unopened in its original bags, the product can be stored for at least 9 months.

PACKAGING

25 kg bags

CERTIFICATION

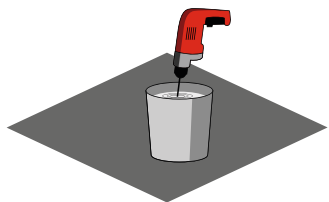
Product classified as R4 CC according to EN 1504-3. CE Declaration of Performance (DoP) of the product, with copy of official test reports, is available on request.

INSTRUCTIONS FOR USE



PREPARATION

Remove all crumbling and loose parts from the substrate by careful hammering and chiselling, until a sound and strong substrate is reached. Scrape down to a depth of at least 2 cm. The scraped substrate must also be carefully roughened, with bumps of at least 5 mm, and then cleaned, so as to be free of dust, loose material and dirt of any kind. Any oil or grease residue must be carefully removed. In the case of repairs to flooring and other reinforced concrete elements, fully expose the reinforcement bars which can be seen and remove completely any concrete, cleaning them by wet or dry sandblasting. In order to provide an effective anti-corrosion protection, apply two coats of **Antol CLS System Ferri 1K** on the reinforcing bars and leave to harden to prevent damage by subsequent applications (see technical data sheet for further details). Wet the substrate well with pressurised water and leave the excess water to evaporate or remove with a sponge. It is necessary to roughen the substrate and saturate it with water to guarantee the adhesion and contrast the expansion of the expansive action of **Umaflow**.

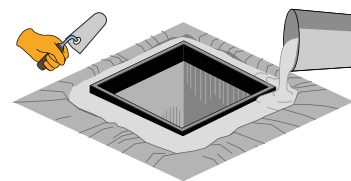
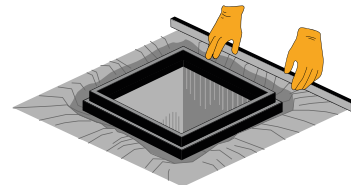
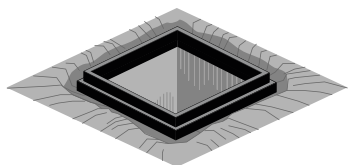


MIXING THE PRODUCT

Mix **Umaflow** with approx. 12 - 14 % of water (which is equal to approx. 3,0 - 3,5 litres for a 25 kg bag), mixing it with a mechanical mixer (low-speed drill with mixer attachment or mortar mixing plant) until the mix is homogeneous and free from lumps. In the cases of small quantities of mixes, do not mix manually with a trowel, as the amount of water needed to prepare the mix would be greater, with consequent worsening of the mechanical performance and reduction of the resistance to carbonation (if the mixing water is much greater than that specified there can be the risk of cracking caused by excessive hydraulic shrinkage).

APPLICATION

The mix prepared in this way is workable for approx. 30 minutes under normal conditions (20 °C).



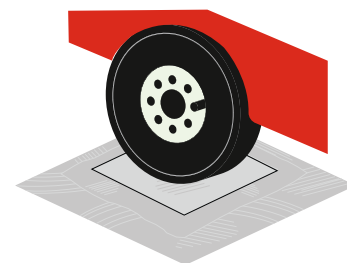
The workability time is shortened at higher temperatures and increased at lower ones. Place the **Umaflow** mix directly into the space to be filled. Smooth the surface using a trowel or palette knife. The minimum application thickness is approx. 2 cm, so do not smooth "flush". The maximum total thickness which can be applied is approx. 10 cm. For thicknesses greater than 10 cm, dilute **Umaflow** with up to a maximum of 30 % by weight of washed gravel (3 - 7 mm), that is, approx. 3 parts by weight of **Umaflow** and 1 part by weight of gravel; in practical terms, this corresponds to approx. 2 builder's buckets of 3 - 7 mm gravel for every 100 kg (four 25 kg bags) of **Umaflow**. This addition results in a modification of the mixing water, which changes from 12 - 14 % to 10 - 12 %, and a reduction by approx. 10 % in the mechanical strength, guaranteeing a compressive strength after 28 days of more than 55 MPa. Carry out any finishing with a plastering trowel when the mortar starts to set, that is, when it is only possible to make a slight impression when pressing with a finger. The inserts and repairs carried out with **Umaflow** must be suitably protected during the summer months and in the presence of strong winds by spraying the surface with water or covering with polyethylene sheets, in order to avoid the formation of cracks in the mortar when it is still in the plastic state due to too fast an evaporation of the mixing water.

CLEANING

The tools used can be cleaned with water before the mortar hardens. Once hardened, the mortar must be scraped off.

SETTING / HARDENING TIMES

At 20 °C, **Umaflow** can be walked on 1 hour after placing. If the product is used at approx. 20 °C the road may be re-opened to traffic after 2 hours in the case of lightweight traffic (motorcycles and cars), but it is necessary to wait at least 4 hours from its application in the case of heavy traffic (lorries, HGV and industrial vehicles).



TECHNICAL SPECIFICATIONS

PARAMETER	METHOD	EN 1504-3 REQUIREMENT	VALUE
MEASURED ON POWDER PRODUCT			
Consistency:			Powder
Colour:	visual		Grey, Anthracite
Apparent density:	MIT 13 *		1,300 kg/litre
Grain size:	EN 12192-1		0 - 2,5 mm
Content of chlorine ions:	EN 1015-17	≤ 0,05 %	< 0,01 %
Hazardous substances:	EN 1504-3		Compliant with point 5.4
MEASURED ON FRESH MIX			
Mixing water:			12 - 14 % (3,0 - 3,5 litres per 25 kg bag)
Mix consistency:	visual		fluid
Mix pH:			> 12
Mix density:	EN 1015-6	Range of declared values	2,250 kg/l
Mix pot life:	EN 13395		approx. 30 minutes
Setting times - start of setting: - end of setting:	EN 196-3		40 minutes 50 minutes
Application temperature:			from + 5 °C to + 30 °C
Coverage:			approx. 21 kg/m ² per cm of thickness

* Torggler Internal Methods (MIT) are available on request.

SPECIFICATION CLAUSE

Application of high strength, fibre-reinforced liquid mortar, with fast setting and hardening, type CC and class R4 according to EN 1504-3 for fixing manhole covers, localised repair of industrial flooring and repair of concrete for casting (such as **Umaflow** from Torggler Chimica spa) with approximate coverage of kg/m².

PARAMETER	METHOD	EN 1504-3 REQUIREMENT	VALUE
MEASURED ON HARDENED PRODUCT			
Operating temperature:			from -20 °C to +90 °C
Bending strength - after 1 day: - after 3 days: - after 7 days: - after 28 days:	EN 12190		6,0 MPa 7,0 MPa 8,0 MPa 11,0 MPa
Compressive strength - after 2 hours: - after 8 hours: - after 18 hours: - after 1 day: - after 3 days: - after 7 days: - after 28 days:	EN 12190	≥ 45,0 MPa (after 28 days)	10,0 MPa 16,0 MPa 30,0 MPa 35,0 MPa 45,0 MPa 55,0 MPa 65,0 MPa
Compression modulus of elasticity:	EN 13412	≥ 20,0 GPa (after 28 days)	28,0 GPa
Adherence on concrete:	EN 1542	≥ 2,0 MPa	≥ 2,0 MPa
Capillary absorption:	EN 13057	≤ 0,5 kg/(m ² ·min ^{0.5})	0,1 kg/(m ² ·min ^{0.5})
Resistance to carbonation:	EN 13295	d _k ≤ control concrete	Test passed
Thermal compatibility (freezing/thawing cycles with de-icing salts):	EN 13687-1	≥ 2,0 MPa (after 50 cycles)	≥ 2,0 MPa
Fire reaction:	EN 13501-1	Value declared by manufacturer	Class A1
Product classification:	EN 1504-3		R4 CC

To the best of our knowledge the information given in this document is true and accurate. However, since we have no direct control over the actual conditions of use, our recommendations and suggestions are provided as a guide only and do not constitute a guarantee. If you have any doubts we recommend that you test the product before use or contact our specialists for further advice. Torggler Chimica Spa reserves the right to change, substitute or delete items or otherwise make variations to the product data in this document without prior notice. It is possible therefore that the information given in this document is no longer valid. This document substitutes the previous version. Version 05.2014