

EMACO[®] Fast Fluid

Fluid or flowable, fast setting and hardening, bedding and repair mortar

Product description

EMACO Fast Fluid is a pre-bagged, ready-to-use, fast setting and hardening pourable repair and bedding mortar. The product, with specially selected fine aggregates, a special cement binder system and active chemical substances, provides rapid strength build-up – even at sub-zero temperatures – improved durability and un-matched, low drying shrinkage.

Fields of application

EMACO Fast Fluid is typically used for:


- Bedding small to large size manhole frames, using formwork
- Flowable or fluid horizontal repair
- Grouting pavement stones
- Fixing street furniture
- Inclined patching areas

EMACO Fast Fluid is intended for:

- Optimizing traffic management.
- Both internal and external use.
- Use in cold conditions or cold store rooms
- Applications under the most difficult jobsite conditions.
- Where very short traffic disruption periods are required.
- Improving public and worker safety in any kind of traffic works

Features and benefits

- Ultra rapid strength build-up
- EMACO Fast Fluid can be opened to all traffic in just 2 hours
- Excellent application properties:
 - 10 to 100 mm in repair applications
 - 25 to 150 mm in bedding applications
 - higher thickness possible with the addition of maximum 30% clean, well sized gravel
- Flowable or fluid consistency for ease of application
- Can be used at sub-zero temperatures as low as -10°C

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BASF Construction Chemicals Belgium NV Nijverheidsweg 89, B-3945 Ham 09 0749 - CPD BC2-563-0013-0002-001	
EN 1504-3 Flowable, fast setting traffic repair mortar	
Compressive strength	Class R4
Chloride ion content	≤ 0,05 %
Adhesion	≥ 2,0 MPa
Durability - Freeze/Thaw	≥ 2,0 MPa
Carbonation resistance	Pass
Skid resistance	Class I
Capillary Absorption	≤ 0,5 kg/m ² x h ^{0,5}
Fire resistance	A1
Dangerous substances	Complies with 5.4

- Very high early and final strengths
- Excellent adhesion.
- Excellent durability
- Shrinkage ≤ 0.3 mm/m
- Crack-free hardening
- Excellent freeze-thaw resistance
- Very good reinforcement protection due to very low water absorption and good carbonation resistance
- Very good skid resistance, even in wet conditions
- Very high resistance to hydrocarbons
- Cement based, no dangerous substances

Technical data

Property	Unit	Values																		
Maximum aggregate size	mm	1.6																		
Density (mixture)	g/cm ³	Approx. 2.25																		
Mixing water demand	Litres	Approx. 3.0 (min. 2.7 to max. 3.2)																		
Pot life of mixed material	Minutes	20 to 30																		
Final setting time	Minutes	30 to 40																		
Application temperature	°C	From -10 to +30 (substrates defrosted)																		
Application thickness - repair mortar - bedding mortar	mm	10 to 100 25 to 150																		
Open to traffic (at 20°C) - light traffic - all (heavy) traffic	hours	1 2																		
Compressive strength (EN 12190) - after 2 hours - after 4 hours - after 1 day - after 7 days - after 28 days	N/mm ²	<table border="1"> <thead> <tr> <th>+20°C ⁽¹⁾</th> <th>+5°C ⁽²⁾</th> <th>-5°C ⁽³⁾</th> </tr> </thead> <tbody> <tr> <td>42</td> <td>3</td> <td>9</td> </tr> <tr> <td>56</td> <td>28</td> <td>26</td> </tr> <tr> <td>72</td> <td>62</td> <td>64</td> </tr> <tr> <td>93</td> <td>83</td> <td>82</td> </tr> <tr> <td>102</td> <td>97</td> <td>89</td> </tr> </tbody> </table> <p>(1) curing; water and powder temperature +20°C (2) curing; water and powder temperature +5°C (3) curing -5°C; water and powder temperature +20°C</p>	+20°C ⁽¹⁾	+5°C ⁽²⁾	-5°C ⁽³⁾	42	3	9	56	28	26	72	62	64	93	83	82	102	97	89
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42	3	9																		
56	28	26																		
72	62	64																		
93	83	82																		
102	97	89																		
Adhesion strength (EN 1542)	N/mm ²	≥ 3.0																		
Chloride ion content (EN 1015-17)	%	≤ 0.05																		
Carbonation resistance(13295)	< dk reference concrete	Pass																		
Freeze-thaw resistance (EN 13687-1) (adhesion strength after 50 cycles with de-icing salt)	N/mm ²	≥ 3.0																		
Skid resistance (EN 13036-4)	wet tested	Class I																		
Capillary water absorption	kg.m ⁻² .h ^{-0.5}	≤ 0.1																		
Flexural strength (EN 196-1) - after 1 day - after 7 days - after 28 days	N/mm ²	≥ 7 ≥ 8 ≥ 10																		
Drying shrinkage (EN12617-4) after 28 days	mm/m	≤ 0.300																		
Crack tendency – Coutinho ring		No cracking after 180 days																		
Pull out strength of steel rebar (Rilem-CEB-FIP RC6-78)	N/mm ²	> 25																		
Modulus of elasticity (EN 13412)	N/mm ²	43000																		
<p>Hardening times are measured at 20°C and 65% R.H. Higher temperatures and/or higher R.H. can shorten these times, and vice versa. The technical data provided are the outcome of statistical results and do not represent guaranteed minima.</p>																				

Application method

(a) Surface preparation:

All substrates must be structurally sound, free of laitance and loose particles and clean of oil, grease, rubber skid marks, paint stains and other adhesion impairing contaminants.

The surface should be prepared by shot blasting, high-pressure water jetting or any other suitable mechanical method, to leave a clean and keyed surface.

Leave the circumference of the repair areas with sharp edges.

Cracks and joints should be treated as such, as EMACO Fast Fluid is a rigid material when hardened.

Any exposed reinforcement must be cleaned to a standard Sa 2, prior to the application of EMACO Fast Fluid. Heavily damaged reinforcement, or when rebar sections have decreased below the safety level, need to be replaced for structural reasons. Ensure a 2 cm rebar cover when installing additional reinforcement.

Although EMACO Fast Fluid can be applied at ambient temperatures as low as -10°C, the temperature of the substrate should be minimum > 0°C and maximum +30°C. Frozen substrates need to be defrosted just prior to the application of EMACO Fast Fluid.

Make sure that any metal parts, e.g. reinforcement and manhole frames are defrosted with a temperature above the freezing point.

Try to keep the temperature uniform during application and hardening.

The base concrete should be damp, without free standing water, at the moment of applying EMACO Fast Fluid, in order to prevent premature drying of the concrete-mortar interface.

(b) Mixing:

EMACO Fast Fluid is a ready-to-use product that should only be mixed with clean water to a fluid or flowable consistency.

Mixing is preferably done in forced action pan mixers or similar. Small quantities can also be mixed using a slow speed drill and paddle (maximum 400 rpm).
Mix full bags only.

Pour approximately 3.0 litres (2.7 lt – 3.2 lt) of clean water per 25 kg powder in the mixing container. Add EMACO Fast Fluid to the water while mixing for approximately 3 to 4 minutes, until a homogeneous, lump free mixture is obtained.

Do not mix more material as can be applied within the pot life of approximately 20 to 30 minutes at 20°C.

Do not modify EMACO Fast Fluid with any other material.

Only the addition of maximum 30% of clean, well sized gravel is permitted for applications with a thickness over 100 mm.

(c) Application:

EMACO Fast Fluid may be applied at ambient temperatures between -10°C and +30°C.

Concrete substrates and any metal parts coming in contact with EMACO Fast Fluid need to be defrosted.

As bedding mortar: Set manhole frames to the required level and install watertight formwork before the application of the material. Inflatable formwork can be used. Emaco Fast Fluid is poured onto the pre-dampened substrate.

EMACO Fast Fluid is cast in situ with flowable or fluid consistency inside the formwork and underneath the manhole frame.

The material is self-compacting. Do not vibrate.

As repair mortar: Pour EMACO Fast Fluid with flowable consistency onto the pre-dampened substrate, brushing the first poured material into the roughness of the substrate in order to create the optimum adhesion. Wet in wet, pour further material up to the required thickness.

(d) Curing

EMACO Fast Fluid is basically self-curing. Wet curing is not advised.

Under hot or windy environmental conditions, Masterkure[®] curing compounds may be used. When working at sub-zero temperatures, cover EMACO Fast Fluid with insulation materials or dry cloths until sufficiently hardened, preferably 24 hours or until EMACO Fast Fluid is to be opened for traffic.

Do not apply EMACO Fast Fluid if the temperature is expected to drop below -10°C during application or within 24 hours.

Cleaning of tools

Clean equipment and any spillages with water before the mortar has hardened.

Once hardened, the material can only be removed mechanically.

Consumption

Approximately 2.05 kg powder/dm³ of mixed material.

Packaging

EMACO Fast Fluid is supplied in 25 kg bags.
The product is available in a grey colour.

Storage

Store in dry warehouse conditions. Shelf life under these conditions is 12 months in unopened original bags.

Notes

- When applying EMACO Fast Fluid at cold or sub-zero temperatures, we advise to use warm mixing water in order not to delay the hardening of the mortar too much.
- Products that could negatively affect the properties of EMACO Fast Fluid must not be added.
- For applications over 100 mm, 7.5 kg of clean gravel (4-8 mm or 8-16 mm depending on the thickness) may be added to 25 kg of EMACO Fast Fluid powder.
- Do not wet cure the material. Prevent from rain.

Health and safety

Usual preventive measures for the handling of chemical products should be observed when using this product, for example do not eat or drink while working and wash hands when taking a break or when the job is completed.

EMACO Fast Fluid contains cement. Avoid contact with eyes and prolonged contact with skin. In case of contact with eyes, immediately flush with plenty of water for at least 15 minutes. Call a physician. In case of contact with skin, wash skin thoroughly.

Specific safety information referring to the handling and transport of this product can be found in the Material Safety Data Sheet.

Disposal of product should be carried out according to the local legislation in force. Responsibility for this lies with the final owner of the product.

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NOTE:

Similar to all the other recommendations and technical information, this technical data sheet serves only as a description of the product characteristics, mode of use and applications. The data and information given are based on our technical knowledge obtained in the bibliography, laboratory tests and in practice. The data on consumption and dosage contained in this data sheet are based on our own experience and are therefore subject to variations due to different work conditions. Real consumption and dosage should be determined on the job by means of prior tests and are the liability of the client. Our Technical Service is at your disposal for any additional advice.

BASF Construction Chemicals reserves the right to modify the composition of the products provided these continue to comply with the characteristics described in the data sheet. Other applications of the product not covered by those indicated shall not be our liability. In the case of defects in the manufacturing quality of our products we provide a guarantee, any additional claims being exempt and our liability being only to return the value of the goods supplied. The possible reservations with respect to patents or third party rights should be noted.

Edition 03/09

The present data sheet becomes null and void on issuance of a new edition.