

EMACO[®] Fast Fibre

Flowable, fast setting and hardening, fibre reinforced repair and road nosing mortar for exposure to very high traffic loads

Product description

EMACO Fast Fibre is a pre-bagged, ready-to-use, fast setting and hardening flowable repair and road / joint nosing 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 Fibre is typically used for:


- Bedding large size manhole frames, using formwork
- Flowable large size horizontal repair
- Repairing defective joints
- Road nosing applications
- Exposure to extreme traffic loads

EMACO Fast Fibre 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 Fibre can be opened to all traffic in just 2 hours
- Excellent application properties:
 - 10 to 150 mm thickness
 - higher thickness possible with the addition of maximum 30% clean, well sized gravel
- Flowable consistency for ease of application
- Can be used at sub-zero temperatures as low as -10°C
- Ultra high ductility due to the presence of special metallic fibres

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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 Fast setting, steel fibre reinforced 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 × h ^{-0,5}
Fire resistance	A1
Dangerous substances	Complies with 5.4; steel fibre

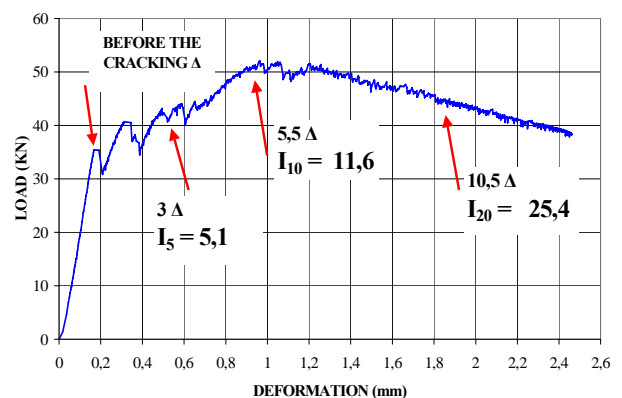
- Very high early and final strengths
- Resists high dynamic loads or impact
- Excellent adhesion.
- Excellent durability
- Shrinkage ≤ 0.3 mm/m
- Crack-free hardening
- Excellent freeze-thaw resistance
- Very good reinforcement protection due to very low water absorption and good carbonation resistance
- 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	3.0
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	mm	10 to 150
Open to traffic (at 20°C)	hours	
- light traffic		1
- all (heavy) traffic		2
Compressive strength (EN 12190)		
- after 2 hours	N/mm ²	+20°C ⁽¹⁾ 47, +5°C ⁽²⁾ 2, -5°C ⁽³⁾ 9
- after 4 hours		59, 24, 25
- after 1 day		75, 64, 62
- after 7 days		92, 84, 83
- after 28 days		104, 97, 91
(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		
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)	N/mm ²	
- after 1 day		≥ 15
- after 7 days		≥ 20
- after 28 days		≥ 25
Tensile strength after 2 hours	N/mm ²	> 5
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	> 30
Modulus of elasticity (EN 13412)	N/mm ²	40000
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.		



EMACO Fast Fibre contains special metallic fibres for ultra high ductility. The mortars ductility is determined on ground of the toughness index I_{20} . EMACO Fast Fibre is characterized by $I_{20} > 25$, which means that the material is 25 times more ductile as non-fibre reinforced materials.



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 Fibre is a rigid material when hardened.

Any exposed reinforcement must be cleaned to a standard Sa 2, prior to the application of EMACO Fast Fibre. 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 Fibre 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 Fibre.

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 Fibre, in order to prevent premature drying of the concrete-mortar interface.

(b) Mixing:

EMACO Fast Fibre is a ready-to-use product that should only be mixed with clean water to a 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 Fibre 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 Fibre with any other material.

Only the addition of maximum 30% of clean, well sized gravel is permitted for applications with a thickness over 150 mm.

(c) Application:

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

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

As bedding or road / joint nosing mortar: Set manhole frames or road / bridge joint to the required level and install watertight formwork when necessary before the application of the material. EMACO Fast Fibre is cast in situ with flowable consistency inside the formwork and underneath the manhole frame or in the gap between the road surface and the bridge / road joint..

The material is self-compacting. Do not vibrate.

As repair mortar: Pour EMACO Fast Fibre with flowable consistency directly onto the pre-dampened substrate up to the required thickness. Level the mortar with the parent concrete using e.g. a screeding bar.

(d) Curing

EMACO Fast Fibre 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 Fibre with insulation materials or dry cloths until sufficiently hardened, preferably 24 hours or until EMACO Fast Fibre is to be opened for traffic.

Do not apply EMACO Fast Fibre 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 Fibre 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 Fibre 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 Fibre must not be added.
- For applications over 150 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 Fibre 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 Fibre 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. EMACO Fast Fibre contains metallic fibres. Wear the necessary protective gloves.

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.