Technical Datasheet

FRS-PC 11 Epoxy Repair Mortar

Characteristics

- Fast curing epoxy-based repair mortar for structurally relevant concrete repair in combination with FRS-BA Bonding Agent
- Ultra-high compressive (≥ 140 N/mm²) and flexural strength (40 N/mm²)
- High elastic modulus (≥ 20 GPa) in compression
- Component of European Technical Assessment ETA-24/0281
- DoP according to EN 1504-3, Class R4 concrete repair mortar
- Low shrinkage, low thermal expansion and low capillary absorption for enhanced substrate compatibility
- Low chloride ion content (< 0,05%)
- Form-stable and suitable for overhead application

General Information

Composition	Firm thixotropic 3-component epoxy repair mortar
Appearance	Concrete grey inherently form stable mortar
Delivery Unit and packaging	1 x steel can (Filling weight 11 kg, A+B+C Comp.)
Mixing ratio	Component A : Component B : Component C = 9 : 1 : 17,5 by weight
Art.-No.	561931
Shelf life	36 months
Storage conditions	Storage in dry conditions at temperatures between + 5 °C and + 40 °C. Before using the product, please ensure that the product is at application temperature. The product must be protected from direct sun exposure.

Approvals and Assessments

ETA 24/0281	According to EAD 160086-01-0301
EN 1504-3, Class R4	EN 1504-3:2005

Technical data of the components

Property	Performance	Unit	Remark
Chemical base	Epoxy mortar with amine hardener		
Solid content	≥ 99	% by mass	
Consistency component A (mortar)	Viscous Paste		
Consistency component B (hardener)	Fluent liquid		
Consistency component C (aggregates)	Dry aggregates		
Density component A (mortar)	2,12	g/cm³	EN ISO 2811
Density component B (hardener)	0,99	g/cm³	EN ISO 2811
Viscosity Component A (mortar)	8000	Pa*s	Brookfield, spindle 6
Viscosity Component B (hardener)	-	-	
Colour Component A (mortar)	Beige		
Colour Component B (hardener)	Black		
Colour component C (aggregates)	Beige		
Flashpoint	> 100	°C	

The values stated represent typical characteristics of the product and are not to be understood as binding products specifications.

Technical data of the mixture

Property	Performance	Unit	Remark
Workability time at 10 °C - 20 °C (11 kg)	≥ 80	min.	EN ISO 9514
Workability time at 20 °C - 30 °C (11 kg)	≥ 40	min.	EN ISO 9514
Workability time at 30 °C - 40 °C (11 kg)	≥ 20	min.	EN ISO 9514
Curing time at 10 °C - 20 °C	96	h	
Curing time at 20 °C - 30 °C	48	h	
Curing time at 30 °C - 40 °C	24	h	
Viscosity, mixture	-	-	-
Density, mixture	2,12	g/cm³	EN ISO 2811-1 / EN 12190
Consistency, mixture	Firm thixotropic mortar		
Colour of mixture and cured mortar	Grey		

The values stated represent typical characteristics of the product and are not to be understood as binding products specifications.

Technical data of the cured mortar

Property	Performance	Unit	Remark
Temperature range of use	- 40 to + 40	°C	Without long term load reduction
Temperature range short-term	80	°C	With load reduction during temperature exposure above 40°C
Water resistance	Resistant		
Weathering resistance	Resistant		
UV resistance	Conditionally resistant, in case of permanent UV radiation an adequate coating is recommended		
Tensile strength	≥ 20	N/mm^2	ISO 527-1, after 7 d at RT
Young's modulus (tension)	≥ 8 000	N/mm^2	ISO 527-1, after 7 d at RT
Young's modulus (compression)	≥ 20 000	N/mm^2	EN 13412, after 7 days at RT
Compressive strength	≥ 110	N/mm^2	EN 196-1, after 1 d at RT
	≥ 140	N/mm^2	EN 196-1, after 3 d at RT
	≥ 145	N/mm^2	EN 196-1, after 7 d at RT
Flexural strength	≥ 30	N/mm^2	EN 196-1, after 1 d at RT
	≥ 35	N/mm^2	EN 196-1, after 3 d at RT
	≥ 40	N/mm^2	EN 196-1, after 7 d at RT
Capillary water absorption	≤ 0,01	$Kg \cdot m^{-2}$	EN 13057
Shrinkage	≤ 0,10	%	EN 12617-1
Coefficient of thermal expansion	≤ 20	$10^{-6} K^{-1}$	EN 1770
Glass transition temperature	≥ 40	°C	EN 12614, after 24 h at RT
	≥ 50	°C	EN 12614, after 72 h at RT
	≥ 50	°C	EN 12614, after 7 d at RT

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System components of ETA-24/0281

CFRP laminates	fischer FRS-L-H / FRS-L-S / FRS-L-S NSM
Cleaning agent for the laminate	fischer FRS-CA
Epoxy mortar for the application of the CFRP laminate	fischer FRS-CS
Epoxy repair mortar	fischer FRS-PC 11
Bonding agent	fischer FRS-BA

Measurement data

The technical data given in this datasheet are based on laboratory testing according to given EN or ASTM norms. Actual measured data may deviate depending on the measurement procedures, devices and norms used.

Processing instructions

Mixing ratio epoxy (A) to hardener (B) and aggregates (C)

- Component A to component B to component C: 9 to 1 to 17,5 parts by weight

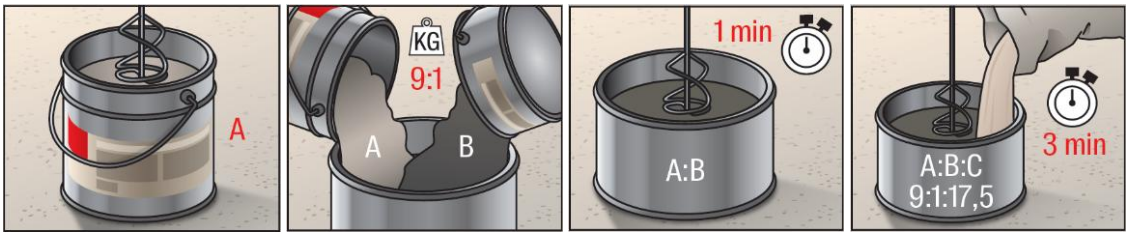
Material, underground and air temperature before application:

- at least + 10 °C (and at least 3 K above dew point)
- maximum + 40 °C

FRS-PC 11 consists of three components, supplied in prepacked quantities. When taking subsets, please take care to ensure the exact mixing ratio by using a sufficiently accurate scale. Stir up component A, then add component B completely. Stir the mixture with a hand-held stirrer (max. rotation speed 300 rpm) until a homogeneous mass is formed for 2 min. at least in the mortar can. The hardener needs to be evenly distributed. While mixing, please ensure that the sides and bottom of the pail are stirred for long enough. Pour the mixture into the main bucket, add component C slowly while stirring and continue stirring until a homogeneous mixture is obtained. Mixing time needs to be at least 3 min. Care should be taken to keep entrainment of air to a minimum while mixing. After mixing, the resin must be refilled into a clean container or pail and mixed again for 1 minute.

The FRS-BA Bonding Agent is used to promote a better adhesion between the concrete substrate and the FRS-PC 11 Epoxy Repair Mortar. FRS-PC 11 can be applied e.g. by using a trowel or similar tool but is recommended to be crammed into spallings or formwork if used. The FRS-PC 11 Epoxy Repair Mortar is to be applied wet-in-wet into the previously applied FRS-BA Bonding Agent layer.

Caution! Protective gloves should be used while handling epoxy material. Please take notice of the safety data sheet.



Cleaning of tools

The stirrer and all application tools must be clean before mixing FRS-PC 11 Epoxy Repair Mortar. No substances may be used during cleaning that have separating or accelerating properties on the epoxy resins. After application FRS-CA Cleaning Agent or other potent organic solvents such as acetone, toluene, ethyl acetate, butyl acetate or others can be used. Take care to clean all equipment within pot life. Cured material can only mechanically removed.

Chemical resistance

The hardened resin is largely resistant to diluted acids and alkalis as well as to many solvents, mineral oils, diesel, and gasoline. The long-term exposure of solvents can lead to a product volume increase and affects the performance. Short-term contact (24 h – 48 h) should not have significant impact on the product performance. Concentrated acids and alkalis, in particular organic acids such as acetic acid can impair performance, especially upon prolonged or repeated exposure.

Please take notice of the safety information and advice given on the packaging labels and safety data sheets.