CONSTRUCTION MORTAR
(PCC/SPCC/M3)

CM20 (PCC/SPCC) CONSTRUCTION MORTAR (0-2 mm)

TEST CERTIFICATES AND SUPPORTING DOCUMENTS

› PCC and SPCC concrete replacement system in accordance with ZTV-ING Part 3, Section 4, DAfStb directive SIB M3, DAfStb directive IH (RM and SRM) and DIN EN 1504-3 for statically relevant applications
› Verifications of applicability: general building inspection test certificate (abP)
› Non-combustible – Verification with a test for the classification according to building material class A1 according to DIN EN 13501-1
› High resistance against a penetration of chlorides – Verification with a test of the chloride migration coefficient according to BAW leaflet (MDCC)
› High carbonation resistance – Verification with a test of the carbonation rate according to BAW leaflet (MDCC)
› High frost and frost-deicing salt resistance - Verification by CIF and CDF procedure
› Verification of the durability in the event of a water change stress acc. to BAW recommendation
› Confirmation of the voluntary external monitoring by the QDB
› Factory production control acc. to DIN EN 1504-3
› Company certification acc. to DIN EN ISO 9001:2015

PROPERTIES

› Ready to use repair mortar, only requires mixing with water
› Reduces the ingressing of CO_2 and moist (inhibiting carbonisation), largely oil and water impermeable, at the same time equipped with a high alkaline reserve, active protection against corrosion of the reinforcement
› Soft-plastic processing consistency in the dense phase wet spraying application method with a very good stability on vertical and overhead surfaces in spraying and manual application
› Open to water vapour diffusion and highly frost and frost-deicing salt resistant
› Is supplied as a system and consists of the following system components:

RM02 CORROSION PROTECTION AND BONDING AGENT
CM20 CONSTRUCTION MORTAR (PCC/SPCC) (0-2.0 mm)
MS05 PCC SCREED (0-0.5 mm)

AREAS OF APPLICATION

› Repair of concrete, prestressed concrete and reinforced concrete structures with constructional calculation of the mortar in spraying and manual application (**MAWO**-PAGEL DENSE PHASE WET SPRAYING APPLICATION METHOD)
› Repair of chloride-damaged supports for restoring the load-bearing capacity of car parks and underground garages
› Reinforcement of damaged reinforced concrete construction elements
› Increase of the reinforcement cover to improve the fire resistance (building material class A1, non-combustible)
› Repair of concrete in the sea and inland waterways department of the BAW (Federal Waterways Engineering and Research Institute) ZTV-W LB 219 (PCC/SPCC)

MOISTURE CLASSES BASED ON CONCRETE CORROSION FROM ALKALI-SILICIC ACID REACTIONS

Moisture class	WO	WF	WA	WS
CM20 (PCC/SPCC)	•	•	•	•

The aggregates in PAGEL®'s products comply with the requirements of alkali sensitivity class E1 from non-hazardous sources specified under DIN EN 12620.

EXPOSURE CLASS ALLOCATION ACC. TO: DIN EN 206-1 / DIN 1045-2 / ZTV-W LB 219 / ZTV-ING PART 3

	XO	XC	XD	XS	XF	XA	XM	XALL	XDYN	XSTAT
		1 2 3 4	1 2 3	1 2 3	1 2 3 4	1 2 3*	1 2 3			
CM20 (PCC/SPCC)	•	• • • •	• • •	• • •	• • • •	•	• •	•	•	•

* Having sulfate attack up to 600 mg/l
With protective measures according to DIN 1045-2

TECHNICAL DATA

TYPE			CM20 (PCC)	CM20 (SPCC)
Grain size		mm	0–2	0–2
Amount of water	max.	%	12	12
Processing time	+ 20 °C	min	≥ 45	≥ 45
Consumption approx.		kg/(m² · mm)	1.85	1.85
Fresh mortar raw density approx.		kg/m³	2,200	2,200
Layer thickness (in total, 2 layers)		mm	10-60**	10-60**
Compressive strength*	1 d	N/mm²	≥ 30	n. d.
	7 d	N/mm²	≥ 40	≥ 45
	28 d	N/mm²	≥ 50	≥ 55
Bending tensile strength*	1 d	N/mm²	≥ 4	n. d.
	7 d	N/mm²	≥ 5	≥ 5
	28 d	N/mm²	≥ 8	≥ 8
Adhesive pull strength	7 d	N/mm²	≥ 2	≥ 2
E-Module	28 d	N/mm²	≥ 30,000	≥ 35,000

* Testing of bending tensile and compressive strength in accordance with DIN EN 196-1: DAfStb directive IH storage B

** permissible overall layer thickness acc. to ZTV-ING 50 mm

n. d.: not determined

Note: All fresh and solid mortars were tested at 20 °C ± 2 °C. Higher or lower temperatures result in deviating properties of fresh respectively solid mortars and test results. Depending on the temperature, the consistency can be adapted with a slight reduction of the mixing water.

Storage: 12 months. Cool, dry, free from frost. Unopened in its original container.
Delivery form: 25-kg bag, Euro palette 1,000 kg
Hazard class: Non-hazardous material, observe information on packaging.
GISCODE: ZP1

PAGEL PRODUCT COMPOSITION:

Cement: acc. to DIN EN 197-1
Aggregate: acc. to DIN EN 12620
Additions: acc. to DIN EN 450, general building inspection approval (abZ), DIN EN 13263 (fly ash, microsilica, etc.)

APPLICATION

SUBSTRATE PREPARATION:
Remove loose and unsound material such as cement slurry and dirt etc. using suitable methods, e.g. shot-blasting or similar until the underlying solid grain structure has been exposed.
A sufficient average tear strength (1.5 N/mm², KEW 1.0 N/mm²) must be ensured.

Prewetting:
Prewet the concrete substrate to capillary saturation for approx. 6-24 hours.

Reinforcing steel:
Blast all rust off exposed reinforcement bars until the underlying metal has been exposed acc. to purity grade SA 2 ½ in accordance with DIN EN ISO 12944-4.

CORROSION PROTECTION:
Apply two complete coats of **RM02** PAGEL CORROSION PROTECTION AND BONDING AGENT using a brush.

MIXING:
The dry mortar is supplied ready to use and only needs to be mixed with water. Fill the specified amount of water apart from a residual amount into a clean and suitable mixing device (e.g. compulsory mixer). Add the dry mortar and mix for at least 3 minutes. Add the remaining water and mix for at least another 2 minutes until it forms a homogeneous mass.

APPLICATION:
MANUAL APPLICATION:
BONDING AGENT: Use a brush or broom and brush **RM02** onto the prewetted, slightly moist concrete substrate until it has penetrated right down into the pores and without leaving any gaps. The subsequent mortar coating must be applied wet-on-wet.
Apply **CM20 PCC** compressively to the bonding layer before it starts setting using conventional tools, distribute and smoothen.

MANUAL APPLICATION:
CM20 SPCC in the MAWO-PAGEL DENSE PHASE WET SPRAYING APPLICATION:
The spraying of the mortar can be carried out with conventional screw feed pumps with a variable speed drive suitable for this application. Hold the nozzle preferably at a right angle with a distance of approx. 50 cm to the area to be coated. The first layer of spray mortar is sprayed on with a high compressed air flow to support the bonding layer. The application of the additional spray layers is carried out with a conveying speed correspondingly adapted to the position of the respective structural component and adapted compressed air support. The post processing and the smoothing of the surfaces can be carried out immediately after the completion of the spray works.

Air compressor:	5 m³/min, 5 bar
Temperature range:	+ 5 °C to + 35 °C
Mixing water:	Drinking water quality

FOLLOW-UP TREATMENT
Fresh mortar areas must be protected from premature water evaporation (from wind, draughts, direct exposure to sun, etc.) immediately on completion of the work for a period of 3-5 days.

Suitable curing methods:
Water spray, cover foil with jute sheets, thermofoils or moisture-retaining covering sheets.

PAGEL Spezial-Beton GmbH & Co. KG
Wolfsbankring 9 Tel. +49 201 68504 0
45355 Essen · Germany Fax +49 201 68504 31
www.pagel.com · info@pagel.com