



MC-DUR CFK-System

Structural strengthening of construction components

EXPERTISE
STRUCTURAL STRENGTHENING



MC-DUR CFK-System

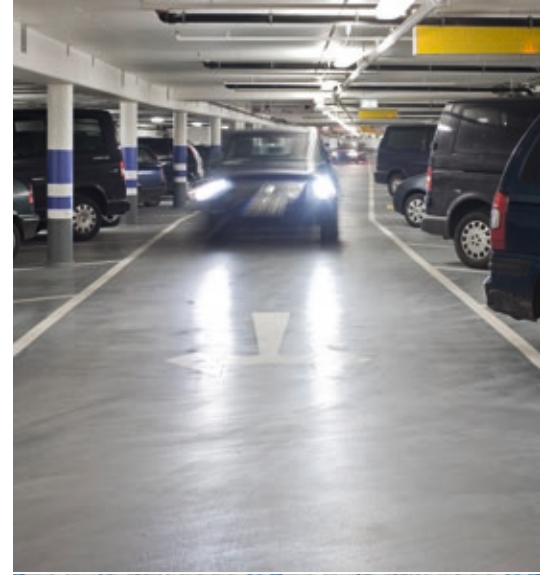
Strengthening with high-performance composites

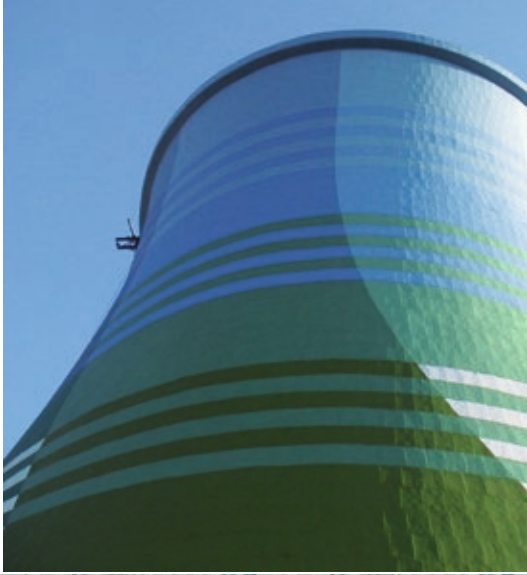
Carbon-fiber-reinforced plastic (CFRP / German: CFK) has become a fixture in civil engineering. CFRP has been used for years to restore and increase the load capacity of structural components, either in form of lamellas or CF-sheets as subsequently bonded tensile reinforcement.

The tested and approved system components allow for the following retrofitting measures at reinforced concrete components:

- Flexural strengthening by means of surface-bonded CFRP-lamellas and CF-sheets
- Flexural strengthening by means of slot-applied CFRP-lamellas
- Increase of shear force by means of surface-bonded CF-sheets and steel plates
- Structural strengthening of columns by means of wrapping with CF-sheets

Our engineers at MC provide support and advice in all aspects of static calculation, design and application of structural reinforcement with MC-DUR CFK-Lamellas and MC-DUR CF-Sheets. In addition, LASOFT is the supporting software for pre-dimensioning and structural design.





MC-DUR CFK-Lamellas

Easy handling and extremely high bond capacity

The MC-DUR CFK-System consists of tested and approved components, especially developed for structural strengthening. This applies to both approved methods of application: surface-bonded and slot-applied.

MC-DUR CFK-Lamellas

MC-DUR 1280

MC-DUR 1000 Parat 09

MC-DUR 1009 HB

or

Nafufill KM 250

Zentrifix KMH

Colusal VL

Carbon-fiber-reinforced plastic lamellas

Duromer adhesive

Levelling mortar based on epoxy resin (PC)

Bonding coat for MC-DUR 1000 Parat 09

Cement-bound levelling mortar (PCC)

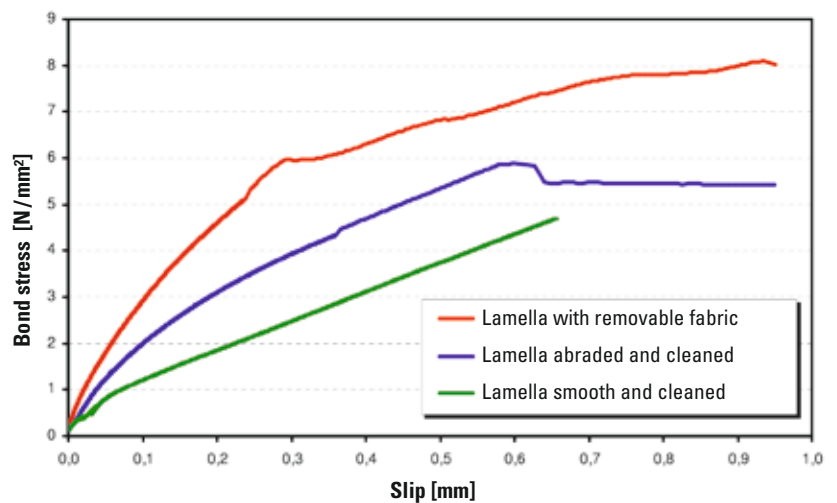
Bonding coat for Nafufill KM 250

Corrosion protection primer for steel

Maximum bond capacity – not without reason

The MC-DUR CFK-Lamella O and S are equipped on both sides with a removable protective fabric, ensuring a clean contact surface for the adhesive. In combination with the profiled surface of the MC-DUR CFK-Lamellas you achieve up to 40 % higher bond strengths – compared to smooth lamellas.

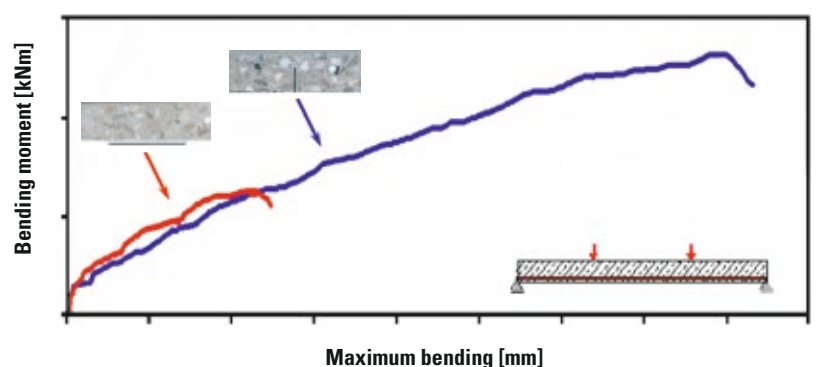
Optimized bond strength due to protective fabric and profiled surface

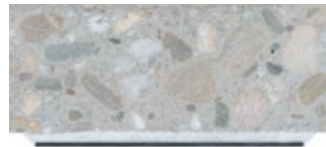


Double-sided bond – improved strengthening

Due to the double-sided adhesive bond of the slot-applied CFRP-lamellas to the concrete, the bond capacity is considerably higher compared to surface-bonded lamellas. As a result, the high tensile strength of the lamella can bear much more economic potential.

Higher bond strength with slot-applied lamellas





Characteristic	Surfaces bonded MC-DUR CFK-Lamella E		Surface bonded MC-DUR CFK-Lamella O		Slot adhered MC-DUR CFK-Lamella S	
		<ul style="list-style-type: none"> many various profiles available supply of any length, no joints/offsets required substrate preparation required UV-protection required abraded lamella, cleaning is required 	<ul style="list-style-type: none"> German general approval low concrete cover sufficient supply of any length, no joints/offsets required substrate preparation required UV-protection required removable protective fabric on both sides 	<ul style="list-style-type: none"> German general approval high load factor due to optimized bond excellent anchoring of tensile forces substrate preparation not required UV-protection not required removable protective fabric on both sides 		
Type	160 / 2800 standard	160 / 2800 standard	200 / 3000 High-modulus	160 / 2800 standard	200 / 3000 High-modulus	
Tensile strength [N/mm ²]	≥ 3,000	≥ 3,200	≥ 3,200	≥ 2,950	≥ 2,950	
E-Modulus [N/mm ²]	≥ 165,000	≥ 164,000	≥ 190,000	≥ 167,000	≥ 200,000	
Elongation at break [%]	≥ 1.70	≥ 1.80	≥ 1.50	≥ 1.67	≥ 1.30	

Delivery program	Surfaces bonded MC-DUR CFK-Lamella E			Surface bonded MC-DUR CFK-Lamella O			Slot adhered MC-DUR CFK-Lamella S		
	Profile [mm/mm]	cross-sectional area [mm ²]	Roll length [m]	Profile [mm/mm]	cross-sectional area [mm ²]	Roll length [m]	Profile [mm/mm]	cross-sectional area [mm ²]	Roll length [m]
	50/1.2	60	100	50/1.2	60	150	15/2.5	38	250
	80/1.4	96	100	80/1.4	96	150	20/3.0	60	250
	100/1.4	140	100	100/1.4	140	100	Additional profiles on request		
	120/1.4	168	100	120/1.4	168	100			
	Additional profiles on request			Additional profiles on request					

MC-DUR CF-Sheets

Flexible structural strengthening with carbon fibres



Bonding coat MC-DUR 1209 TX



Application with laminating roller



Application of MC-DUR 1209

The MC-DUR CF-Sheets consist of unidirectional carbon fibres. These sheets are laminated onto the structural surface to absorb tensile forces. Main areas of application: lacing of pillars, restriction of crack widths and increase of the load bearing capacity of shear walls and sheathed structures.

Benefit from the advantages of this approved complete system when planning your next project.

MC-DUR CF-Sheets	Carbon-fiber mat
MC-DUR 1209 TX	Bonding coat
MC-DUR 1209	Laminating resin

System advantages

- Flexible – easy handling even at curved areas
- Removable protective fabric on both sides for clean contact surfaces and perfect results
- Larger force transmission area for weak substrates
- May be overcoated with surface protection systems and mortar systems

Application

MC-DUR CF-Sheets are mainly used on concrete and masonry substrates. Following substrate preparation, e.g. blasting, the CF-Sheets can be applied in one or more layers. Afterwards the reinforced surface can be colour-designed with the MC-Color surface protection system. If the reinforcement should not be visible, the sand-gritted surface can additionally be overcoated with a mineral fine filler to achieve an even structure.

Technical Properties



Technical properties:

	MC-DUR CF-Sheets S	MC-DUR CF-Sheets E
Weight	300 g/m ²	300 g/m ²
Tensile strength	≥ 2,800 N/mm ²	≥ 4,900 N/mm ² (non-laminated)
E-Modulus	≥ 242,000 N/mm ²	≥ 230,000
Elongation at break	≥ 0.9 %	≥ 2.0 % N/mm ² (non-laminated)
Width	300 mm	500 mm
Roll length	100 m	100 m

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- Flexural strengthening by means of surface-bonded CFRP-lamellas and CF-sheets
- Flexural strengthening by means of slot-applied CFRP-lamellas
- Increase of shear force by means of surface-bonded CF-sheets and steel mounting plates
- Structural strengthening of columns by means of wrapping

MC-Bauchemie Müller GmbH & Co. KG
INFRASTRUCTURE, INDUSTRY & BUILDINGS
Am Kruppwald 1-8
46238 Bottrop, Germany

Phone: +49 2041 101-190
Fax: +49 2041 101-188

IN@mc-bauchemie.com
www.mc-bauchemie.com



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Contact details

