

Corrosion protection and mechanical protection all in one

Product description

In addition to multi-layer systems that combine polyethylene and polypropylene coatings or polyethylene and polyamide, other systems based on GFRP or cement mortar are used in trenchless projects. The common feature of all these coating systems is the well-established corrosion protection coating of polyethylene with an additional top coat for averting mechanical damage. With all these systems, the pipe joint areas can be sealed with MAPUR®, a polyurethane-based casting resin system.

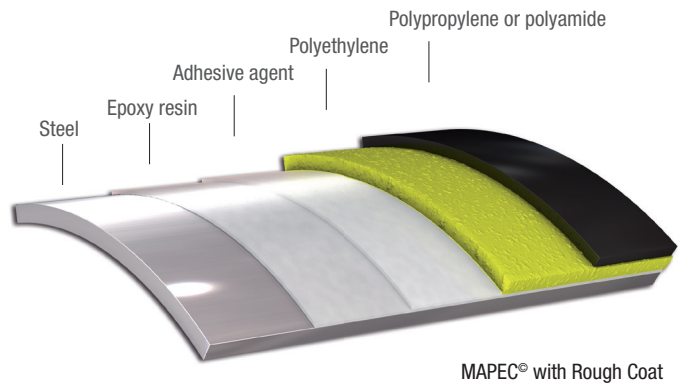
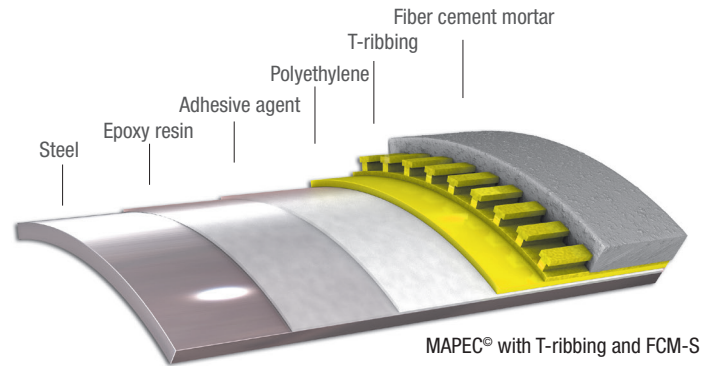
Application

There are two types of casting systems for field coating. In the case of cement mortar or GFRP coating, a sand-filled polyurethane system is used (MAPUR®). The casting mix for field coating steel pipes with a multi-layer coating has no sand filling (MAPUR® 2012).

The pipe end structure provides for high shear bond strength in the transition area. With cement mortar coatings (FCM-S), this is ensured by the PE-coating's T-ribbing, while multi-layer coating systems use a "rough coat" for this purpose. This is produced by spraying coarse PE granules onto the freshly extruded polyethylene coating while the pipe string is still hot.

Product properties

The distinctive feature of a cast field coating is that it does not overlap with the mill-applied coating. This design has proven particularly advantageous in trenchless projects where the pipe string is pulled through the drilled bore. A corresponding reference to the high tensile shearing loads involved here is included in the current draft version of DIN 30675-1.



Practical testing

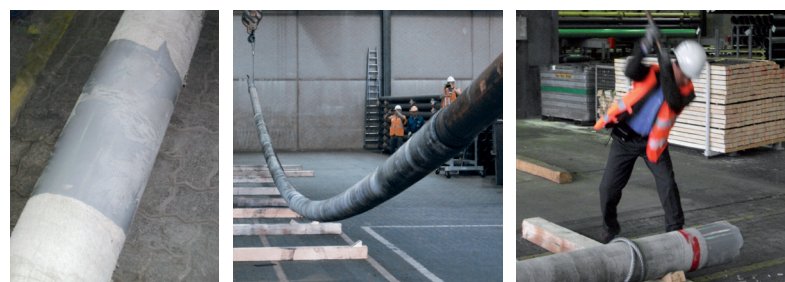
Practical tests have verified the material's suitability in terms of both its flexibility during pipe bending and its impact resistance.



Cast field coating of cement mortar coated pipe joints



Cast field coating of pipes with multi-layer coating systems



Polyurethane (PUR) field coating before and after bending

Impact test

Corrosion protection and mechanical protection all in one

FCM field coating systems (T-ribbing and 10 mm FCM)

Joists/Steel pipe	Cardboard molds ¹⁾		Casting mortar	MAPUR® casting resin ²⁾
outside diameter [mm]	Length [mm]	Width [mm]	Bucket (A = 7.9 kg/B = 12.1 kg) Value in brackets = Number of joints	Mass/joint [kg]
114.3	41	61	A (2)	5.3
139.7	49	61	B (2)	6.3
168.3	58	61	B (2)	7.4
219.1	74	61	A (1)	9.4
273	91	61	B (1)	11.5
323.9	107	61	B (1)	13.6
355.6	117	61	B (1)	14.8
406.4	133	61	2 A (1)	16.8
508	165	61	2 A (1)	20.8
610	297	61	A + B (1)	24.9

Field coating system for multi-layer coatings (2 + 2 mm)³⁾

Joists/Steel pipe	Cardboard molds ¹⁾		MAPUR® 2012 casting resin ²⁾
outside diameter [mm]	Length [mm]	Width [mm]	Mass/joint [kg]
114.3	36	51	1
139.7	44	51	1.2
168.3	53	51	1.5
219.1	69	51	2.1
273	86	51	2.7
323.9	102	51	3.2
355.6	112	51	3.5
406.4	128	51	4
508	160	51	5
610	191	51	6

¹⁾ The data apply to pipe whose cement mortar coating has been cut back approx. 25 mm, and the PP or PA top coat (in the case of multi-layer systems) by approx. 20 cm.

²⁾ The data are reference values and may vary with the care applied in fitting the mold.

³⁾ Field coating system on request.

Application examples

Cement mortar coating

In the case of FCM-coated pipes, the joint area is initially field coated using one of the customary corrosion protection systems to DIN 30672 or DIN EN 12068. This is then complemented with a sand-filled polyurethane resin system (MAPUR®), until the thickness of the anti-corrosion coating (min. 7 mm) is reached. The resin is cast into a re-usable, rigid mold of polypropylene or aluminum sheet lined with foil.



Multi-layer systems

The joint areas in pipe with a multi-layer coating system are field coated with pure casting resin (MAPUR® 2012). Here, too, a re-usable, rigid mold of polypropylene or aluminum sheet lined with foil is used.



Mannesmann Line Pipe GmbH

In der Steinwiese 31
D-57074 Siegen
Germany

Phone: +49 271 691-0

Fax: +49 271 691-299

Email: info.mlp@mannesmann.com

www.mannesmann-linepipe.com



MANNESMANN. Das Rohr.