chester molecular®

Technical Data Sheet

May 2016

Chester Metal Ceramic FSL

DESCRIPTION:

Chester Metal Ceramic FSL is a two-element liquid epoxy-ceramic composite **with extended working life**. Contains modified epoxy resins, ceramic, silicon-metallic and fiber fillers. Coating systems for protecting metals from the effects of erosion, cavitations, corrosion and bonding metal surfaces. The ceramic-filled epoxy coating cures at room temperature.

TYPICAL APPLICATION:

- **REBUILDING OF WORN IMPELLERS AND PUMP CASINGS**
- **REPAIR OF HEAT EXCHANGER BOTTOMS**
- **RESURFACE OF VALVES AND GATE VALVES**
- **FAN REPAIR**
- **KORT NOZZLES REPAIR**
- **REGENERATION OF BOW THRUSTERS**
- **REBUILDING OF ELBOW CONNECTIONS**
- **REPAIR OF CONDENSERS**
- **PROTECTION OF PIPES AND TANKS**
- **REPAIR OF SHAFTS AND SHIP PROPELLERS**
- **FLANGE RESURFACING**
- **BONDING AND PASTING**
- **WELDS SEALING**
- **PROTECTION OF SCREW CONVEYORS AND PRESSES**

Technical data

Cured Density	-----	-----	**1,85 ± 0,05 g/cm^3**	
Mix Ratio by Volume	-----	-----	**whole pack**	
Mix Ratio by Weight	-----	-----	**9 : 1**	
Color			**gray and blue**	
Tensile Shear (Stainless Steel)	ASTM 1002	ISO 4587	**22,0 MPa**	**3190 psi**
Tensile Shear (Mild Steel)	ASTM 1002	ISO 4587	**23,5 MPa**	**3410 psi**
Tensile Shear (Aluminum)	ASTM 1002	ISO 4587	**14,0 MPa**	**2030 psi**
Tensile Shear (Brass)	ASTM 1002	ISO 4587	**15,1 MPa**	**2190 psi**
Temperature Resistance Wet	-----	-----	**100^{O}C**	**212^{O}F**
Temperature Resistance Dry	-----	-----	**200^{O}C**	**392^{O}F**
Minimal Working Temperature	-----	-----	**-50^{O}C**	**-58 ^{O}F**
Heat Distortion Temperature	-----	DIN 53462	**76 ^{O}C**	**168 ^{O}F**
Working Life (20^{O}C) (68^{O}F)	-----	-----	**60 min**	
Cured Hardness	ASTM D2240	ISO R868	**87^O Sh D**	
Compressive Strength	ASTM D695	ISO 604	**120 MPa**	**17405 psi**
Thermal conductivity coefficient	-----	-----	**0,56 W/mK**	
Flexural strength	-----	ISO 178	**110 MPa**	**15950 psi**
Abrasion resistance	-----	ISO 7784-2;disk CS17;loading 1kg	**11 mm^3**	
Impact strength	-----	ISO 179	**5,6 kJ/m^2**	

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DIRECTIONS FOR USE

Conditions during the application.

The product cannot be used at a temperature lower than 5 ° C (41°F)or a relative air humidity higher than 90% and in conditions in which moisture condensation occurs on the surface to be repaired.

Surface preparation.

From the surface to be protect you need to delete all kinds of impurities, grease, oil, loose corrosion products, old paint coatings. For pre-cleaning is recommended to use the product Cleanrex, Cleanrex II, Fast Cleaner F-7. The surface of the part to be repaired should be degreased chemically or with a gas burner and mechanically cleaned - by shot blasting, sandblasting or with the use of angle grinders, pin grinding wheels, sandpaper, etc. and then if necessary degrease using the e.g. Chester Fast Cleaner F-7 or Ultra Fast Degreaser F-6. Always strive to thoroughly remove surface contamination and make the surface well roughened.

Mixing and application of the composition.

The entire contents of the container labeled **Reactor** pour into a container labeled **Base** and mix both components until obtaining a uniform color. Efforts should be made to apply immediately after preparing the mixture, because the curing reaction starts immediately and any delay reduces the adhesion.

Two coats of 0,5–1,2 mm (0.02”- 0.05”) thickness are recommended for applying. This material is found as two colors: grey and blue to make the correct application easier.

Whereas the second coat of the material applying the first one can not to be fully cured. Recommended application with a brush or spatula. Application should be carried out at temperatures above 5°C.

Coverage rate

Using 1kg of the product you can obtain 0,64 m^2 coat of 0,85 mm (0.03”) thicknesTo cover a surface of 1m^2 of 0,85mm (0.03”) thickness - you need 1,57 kg of the product. Values given above are theoretical ones. In practice because of various roughness of the surfaces, decrements, irregularity – efficiency of the product may differ by +/- 15%

Post curing

Post curing at a temperature of 80-100°C (176-212°F) for minimum 2h, after initial cure considerably improves mechanical properties, heat and chemical resistance. Optimal curing process: 7 days in 20°C (68°F) and post-curing at 80°C (176°F) for 4 hours.

CURE TIME ACCORDING TO THE TEMPERATURE

Ambient temperature [°C] (°F)	Working life [min]
5 (41)	180
10 (50)	110
20 (68)	60
30 (86)	25

It should be remembered that the rate of the reaction significantly depends, apart from the ambient temperature, on the quantity of the used material (the bigger mass of the mixed material, the reaction rate increases). The above presented times refer to the mass of 0,25 kg of the composite.

CHEMICAL RESISTANCE

The samples were subjected to optimal curing process. Unless otherwise stated, the tests were carried out at 20 ° C (68°F).

1 – Prolonged immersion
2 – Short-term immersion
3 – Not recommended

Solvent	Chemical resistance
Petrol	1
Diesel fuel	1
Antifreeze	1
Motor oil	1
Petroleum	1
Nitric acid 10%	1
Nitrous acid 10%	1
Acetic acid 5%	2
Amines	1
Hydrochloric acid 10%	1
Ammonia 20%	1
Water 100°C(212°F)	1
Sea water	1
Ozone (dry)	1
Chlorine	1
Acetone	3
Methylene Chloride	3

Full table of chemical resistance is on the website

Storage

The product should be stored in original packaging at temperature between +0°C (32 °F) to +30°C (86 °F).