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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, steel 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:

- **RESTORATION OF PUMPS HOUSINGS AND ROTORS**
- **RESTORATION OF HEAT EXCHANGERS**
- **REGENERATION OF VALVES**
- **REBUILD FAN BLADE , FAN SHAFTS**
- **REBUILD BOW THRUSTERS, KORT NOZZLE**
- **REBUILD PIPE ELBOWS**
- **RECONSTRUCTION BRANCHING TYPE T**
- **REBUILD CONDENSERS**
- **CORROSION PROTECTION OF TANKS AND PIPES**
- **REPAIR OF SHAFT S AND SHIP PROPPELERS**
- **REGENERATION FLANGE FACES**
- **SEALING AND BONDING**
- **PROTECTION OF WARM CONVEYER**

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**	**17400 psi**
Thermal conductivity coefficient	-----	-----	**0.56 W/mK**	
Flexural strength	-----	ISO 178	**110 MPa**	**15950 psi**
Abrasion resistance	-----	ISO 7784-2;disk CS17;loading ca. 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 is not recommended to apply when the ambient temperature is below 5°C(41°F) and the relative humidity is above 90% or when condensation occurs on the surface to be repaired.

Surface preparation.

Remove from the surface all contamination, greases, oils, loose corrosion products, old paint coatings. For pre-washing use Cleanrex, Cleanrex II, fast Cleaner 7. The surface in the part to be repaired shall be mechanically cleaned by means of blast cleaning, sanding, or with the help of the abrasive paper, grinders, pin-lift grinding wheels, etc.. A correctly prepared surface shall be degreased using for ex. Chester Fast Cleaner F-7 or Chester Ultra Fast Degreaser F-6. You should always aim at thoroughly remove all loose contamination and make the surface 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. Once the mix was prepared it should be directly applied, because curing starts immediately and every late could weaken 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 in temperature 80-110°C(176-230°F) in minimum 2h, after initial cure considerably improves mechanical properties, heat and chemical resistance.

Optimal cure e.g: tensile shear research, optained after 7 days in 20°C (68°F) and post-cure by heating to 80°C (176°F) for a period of up to 4 hours.

CURE TIME ACCORDING TO THE TEMPERATURE

Ambient temperature [°C] (°F)	Time for application [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

Samples were subjected to thermal stabilization. If not stated otherwise tests were carried at the temperature of 20°C(68°F)

1 – Prolonged immersion

2 – Short-term immersion

3 – Not recommended

Solvent	Chemical resistance
Petrol	1
Diesel fuel	1
Brake fluid	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).

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