chester molecular®

Technical Data Sheet

April 2015

Chester Metal Ceramic FHT

DESCRIPTION:

Chester Metal Ceramic FHT is a two-element liquid epoxy-ceramic composite. Contains modified epoxy resins, ceramic, steel and fiber fillers. **High temperature coating** systems for protecting metals **working in high temperatures** from the effects of erosion, cavitations, corrosion and bonding metal surfaces. The ceramic-filled epoxy coating cures at room temperature.

TYPICAL APPLICATION:

- **PUMPS**
- **HEAT EXCHANGERS**
- **VALVES**
- **PROPELLERS**
- **BOW THRUSTERS**
- **PIPE ELBOWS**
- **CONDENSERS**
- **PIPES**
- **TANKS**
- **AUTOCLAVES**
- **DISTILATION UNITS**
- **PUMP CASINGS**
- **EVAPORTATORS**

Technical Data

Cured Density	-----	-----	**1,51 g/cm^3**	
Mix Ratio by Volume	-----	-----	**whole pack**	
Mix Ratio by Weight	-----	-----	**9 : 1**	
Color			**gray**	
Tensile Shear (Stainless Steel)	ASTM 1002	ISO 4587	**21 MPa**	**3050 psi**
Tensile Shear (Mild Steel)	ASTM 1002	ISO 4587	**22,6 MPa**	**3280 psi**
Tensile Shear (Aluminum)	ASTM 1002	ISO 4587	**13,6 MPa**	**1970 psi**
Tensile Shear (Brass)	ASTM 1002	ISO 4587	**16,3 MPa**	**2365 psi**
Temperature Resistance Wet	-----	-----	**120^{o}C (-50^{o}C)**	**248^{o}F (-58^{o}F)**
Temperature Resistance Dry	-----	-----	**220^{o}C (-50^{o}C)**	**482^{o}F (-58^{o}F)**
Minimal working temperature	-----	-----	**-50^{o}C**	**-58^{o}F**
Heat Distortion Temperature Ambiet Cure Post Cure	ASTM D648	-----	 **57^{o}C** **146^{o}C**	 **151^{o}F** **330^{o}F**
Heat Distortion Temperature Ambiet Cure Post Cure	-----	DIN 53462	 **55^{o}C** **125^{o}C**	 **151^{o}F** **169^{o}F**
Working Life (20^{o}C) (68^{o}F)	-----	-----	**80 min**	
Cured Hardness	ASTM D2240	-----	**87 Sh D**	
Compressive Strength	ASTM D695	-----	**1223 kg/cm^2**	**17404 psi**
	-----	ISO 604	**120 MPa**	**17404 psi**
Thermal conductivity coefficient	-----	-----	**0,3 W/mK**	
Flexural strength	-----	ISO 178	**105 MPa**	**15229 psi**
Impact strength	-----	ISO 179	**5,8 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 18°C(64°F) and the relative humidity is above 90% or when condensation occurs on the surface to be repaired.

Surface preparation.

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. You should always aim at thoroughly remove all loose contamination and make the surface roughened. A correctly prepared surface shall be degreased using for ex. Chester Fast Cleaner F-7 or Chester Ultra Fast Degreaser F-6.

Mixing and application of the composition.

Use two different spatulas to take the Base and the Reactor. Mix both components until obtaining a uniform color. It is recommended to mix total content of the packaging. It is the best to place the necessary coat at once, carefully rubbing it into the base.

Once the mix was prepared it should be directly applied, because curing starts immediately and every late could weaken the adhesion..

Two coats of 0,4 mm (0.016") thickness are recommended for applying. Whereas the second coat of the material applying the first one can not to be fully cured. Recommended is using of brush or roller for applying this material.

Coverage rate

Using 1kg of the product you can obtain 0,83m^2 coat of 0,8mm (0.03") thickness. To cover a surface of 1m^2 of 0,8mm (0.03") thickness - you need 1,21kg 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%

COURSE OF CURING

Minimal application temperature - 18°C(0 °F)

Maximal working life after mixing:

20°C(68°F)	80 min
30°C (86°F)	60 min
40°C (104 °F)	40 min

Maximal time for recoat:

20°C(68°F)	4,5 hours
30°C(86°F)	3,5 hours
40°C(104 °F)	1,25 hours

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.

Stage I (dry)

Min. 24 hours in temperature 20°C(68°F) or
Min. 16 hours in temperature 40°C(104 °F).

Stage II

Min. 20 hours post curing by medium (air or water) in temperature 90 – 110°C (194-230°F), and then increase the temperature up to working temperature

CHEMICAL RESISTANCE

Tests were carried at the temperature of 20°C(68°F). The tests were carried after 7 days of curing 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%	1
Amines	1
Hydrochloric acid 10%	1
Ammonia 20%	1
Water 120°C(248°F)	1
Sea water	1
Ozone (dry)	1
Chlorine	1
Acetone	3
Methylene Chloride	3

Full table of chemical resistance is on the website
http://www.chester.com.pl/GBA/multimedia/2/51/

OTHER INFORMATION

Storage

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