chester molecular ®

Technical Data Sheet

July 2010

Chester Metal Rapid E

DESCRIPTION:

Chester Metal Rapid is a two-element rapid curing thixotropic epoxy-metallic composite with a very short curing time. The material contains modified epoxy resins, steel and fiber fillers. The steel-filled epoxy putty cures rapidly at room temperature and is designed for high speed emergency repairs and filling, rebuilding, and bonding metal and plastic surfaces. The material is quickly machinable.

TYPICAL APPLICATION:

- **LEAKAGES IN PIPELINES AND TANKS.**
- **PLASTIC/METAL JOINTS**
- **BEARING SEATS**
- **HOLED CASINGS**
- **PIPES**
- **DUCTS**

Technical data				
Cured Density	-----	-----	**1,9 g/cm^3**	
Mix Ratio by Volume	-----	-----	**1 : 1**	
Mix Ratio by Weight	-----	-----	**1,4 : 1**	
Color			**gray**	
Tensile Shear (Stainless Steel)	ASTM 1002	ISO 4587	**25,6 MPa**	**3710 psi**
Tensile Shear (Mild Steel)	ASTM 1002	ISO 4587	**24,9 MPa**	**3610 psi**
Tensile Shear (Aluminum)	ASTM 1002	ISO 4587	**13,5 MPa**	**1960 psi**
Tensile Shear (Brass)	ASTM 1002	ISO 4587	**12,6 MPa**	**1830 psi**
Temperature Resistance Wet	-----	-----	**80^{O}C**	**176^{O}F**
Temperature Resistance Dry	-----	-----	**140^{O}C**	**284^{O}F**
Minimal working temperature	-----	-----	**-50^{O}C**	**-58 ^{O}F**
Working Life (68^{O}F)(20^{O}C)	-----	-----	**5 min**	
Cured Hardness	ASTM D2240	-----	**85^{O}Sh D**	
Compressive Strength	ASTM D695	ISO 604	**140 MPa**	**20305 psi**
Thermal conductivity coefficient	-----	-----	**0,3 W/mK**	
Flexural strength	-----	ISO 178	**77 MPa**	**11165 psi**
Impact strength	-----	ISO 179	**7,2 kJ/m^2**	

chester molecular®

Technical Data Sheet

July 2010

Chester Metal Rapid E

DIRECTIONS FOR USE

Conditions during the application.

The product is not recommended to apply when the ambient temperature is below 4°C(39°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 degreased chemically or by gas-jet then 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 elements on the flat smooth surface 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. Necessary layer should be placed single, carefully rubbing it into the base. In case there is necessary second layer, first shouldn't be fully cured, otherwise there should be made rough surface. In the case of repairs of cracks, it is recommended to additionally reinforce the composite with a fiberglass net.

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 100°C (212°F) for a period of up to 24 hours.

CURE TIME ACCORDING TO THE TEMPERATURE.

Ambient temperature °C (°F)	Time for application [min]	Time for treatment [h]
5 (41)	8	4
10 (50)	7	3
20 (68)	5	1
30 (86)	3	0.7

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%	2
Nitrous acid 10%	2
Acetic acid 3%	2
Amines	2
Hydrochloric acid 10%	1
Ammonia 20%	1
Water 70°C(158°F)	1
Sea water	1
Ozone (dry)	1
Chlore	3
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).

ISO 9001:2000

 Chester Molecular Research and Development Department, 05-092 Łomianki, str. Krzywa 20B, Poland, tel./fax. +48 22 751 28 06/07, www.chester.com.pl