HEAT RESISTANT MACHINABLE CERAMIC COMPOSITE
epigen XD001MG

epigen
Performance Resins & Composite Systems

TECHNICAL BULLETIN

A high performance, solventless, two component polymer composite based on a fine grading of ceramic particles dispersed in an epoxy resin designed to meet the highest standards of elevated temperature service, chemical resistance, and corrosion protection.

The polymer composite comprises fine grading of sintered ceramic of extreme hardness and abrasion resistance for the treatment of steel and brick in applications where temperatures may exceed 150 Celsius or the substrate requires protection from hot chemicals.

Extremely high cross linking density affords XD001MG the ability to resist a range of organic solvents including ketones and chlorinated aromatics . Also highly favoured where the lining is required to address hot highly corrosive acids.

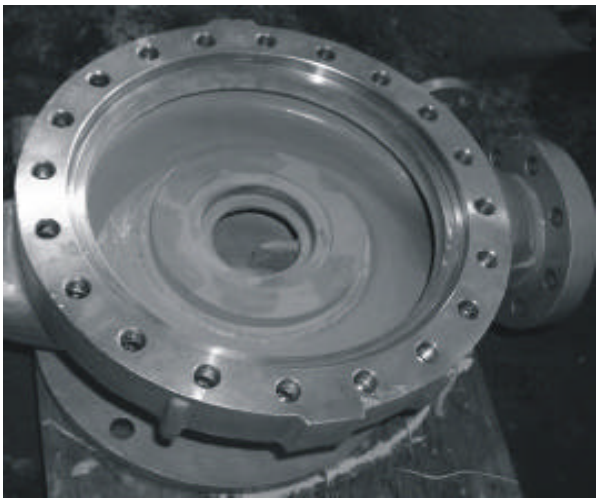
The surface finish may be laid as a thin film with 3mm recommended to be the minimum. It is acceptable to apply high builds in most situations since the thicker the application the longer the life.

TYPICAL APPLICATIONS

Pumps & Impellors	Ducting Systems
Exhaust Stacks	Tanks & Vessels
Flanges	Bearing Faces
Rail Cars	Scrubbers
Laundries	Steelwork Coating
Pipelines & Valves	Solvent Extraction

FEATURES

- Highly corrosion resistant polymer system
- Free of all solvents - zero VOC
- Engineered for high mechanical strength
- Resistant to organic solvents
- HDT 150 Celsius - Practical service beyond 200 Celsius
- Outstanding resistance to chemicals & acids
- Excellent resistance to sliding abrasion
- Fine grade for increased smoothness and slip
- Tough polymer with high adhesive strength
- Engineered for high mechanical strength



PROFILE

Ratio by weight	2 parts “A” to 1 part “B”
Pot Life minutes @ 20°C	60
Mixed consistency @ 24°C	Trowellable Paste
Specific gravity when mixed	2.0
Coverage, /m² @ 10mm	20.0kg
Tack free time @ 24°C	180 minutes

TYPICAL CURED PROPERTIES

Compressive strength ASTM D695, Mpa	>60
Tensile strength ASTM D638, Mpa	>25
Flexural strength ASTM D790, Mpa	>30
Hardness, Shore D	>90
Elongation ASTM D638, %	0.2
Thermal conductivity ASTM C177, Kcal/m.hroC	0.6
Maximum exposure temperature, ° C	240*
Heat deflection temperature ASTM D648, ° C	150
Thin Film Gel @ 10mm, Minutes	180
Thin Film Set @ 10mm, Minutes	240
Ambient cure time to Service @ 10mm, Hours	36
Thin Film Gel @ 20mm, Minutes	120
Thin Film Set @ 20mm, Minutes	180
Ambient cure time to Service @ 20mm, Hours	24

* Thermal degradation temperature. This does not necessarily represent the ultimate maximum permissable temperature.

This information is supplied as an indicative reference only. Caution should be used where direct comparisons are to be made.

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SURFACE PREPARATION

Methods for substrate preparation may include chemical means such as washing & etching, high pressure water blasting, or traditional abrasive blasting techniques . Caution should be maintained in selecting a technique that provides satisfactory anchor for the lining.
Specialist advice is available from Peerless Industrial Systems to ensure the correct preparation procedure is employed for specific applications.

APPLICATION

Mixing of product should be carried out using slow speed mixers or spatulas, and completed by adding to the component “A”, the component “B”. Ensure the mix is homogenous and free from lumps.
Application can be carried out by applying mixed compound directly to the desired area or component with gloved hands or by tools such as paint scrapers, putty knives or flat steel trowels, the latter mainly for large horizontal areas. Application can be carried out with relative ease on vertical or horizontal surfaces.
Note : Re-application or second coat application over cured XD-001MG should only be carried out after abrading back the existing application.

POSTCURE

To acheive full cross linking density and maximum performance, applied product should be allowed to “gel” or become “tack free” before applying heat cure.

Heat curing can be carried out by:
(a) Post gel at 50°C for 6 - 8 hours using heat lamps, etc.
(b) Followed by post cure for 6 - 8 hours at 120°C.
Step (b) can be carried out by insitu curing.

RECOMMENDED MACHINING PRACTICES

Although a variety of methods exist for machining Epigen Ceramic Composites, most depend on the individuals own findings and inhouse systems available. The following should only be construed as the starting point guide.

Allow 24 hours before machining, best finishes are acheived after post cure.

Maximum machinable finish is 2mm.

Acheivable tolerance is 0.03mm.

Use PCD, PCBN, or PSD tooling for optimum tool life and performance.

Tooling should be selected relative to substrate.

Cut from centre of Composite to parent metal where possible.

CHEMICAL RESISTANCE

Tested at 21°C. Samples cured for 10 days at 25°C.
Curing at elevated temperatures will improve chemical resistance.

1 = Continuous or long term immersion
2 = Short term immersion
3 = Splash and spills
4 = Avoid contact

Acetic Acid, 10 %	2	Acetone	1
Acetic Acid, Glacial	2	Ammonium Chloride	1
Hydrochloric Acid, 5 %	1	Beer	1
Hydrochloric Acid, 10 %	1	Dichloromethane	2
Hydrochloric Acid, conc	1	Diesel Fuel	1
Nitric Acid, 5 %	2	Isopropyl Alcohol	1
Nitric Acid, 10 %	2	Kerosene	1
Phosphoric Acid, 5 %	1	Petrol	1
Phosphoric Acid, 20 %	1	Salt Water	1
Sulfuric Acid, 5 %	1	Sewage	1
Sulfuric Acid, 20 %	1	Skydrol	1
Ammonium Hydroxide, 5 %	1	Sodium Cyanide	1
Ammonium Hydroxide, 20 %	1	Sodium Hypochlorite	1
Potassium Hydroxide, 5 %	1	Toluene	2
Potassium Hydroxide, 20 %	1	Trichloroethane	1
Sodium Hydroxide, 5 %	1	Wine	1
Sodium Hydroxide, 20 %	1	Xylene	1

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EVERY EFFORT SHOULD BE MADE TO PROTECT AGAINST CARBAMATE FORMATION DURING APPLICATION IF RECOATING. CONSULT WITH THE MANUFACTURER FOR MORE DETAILS.

CURE

Variations in cure may arise due to the amount of material being applied, the thickness of material being applied, the surface temperature, and the product temperature. The cure may be increased by heating product or by leaving mixed material stand for 15 minutes before use. The cure may be decreased by cooling the product before mixing.

EPIGEN **PRODUCTS**
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