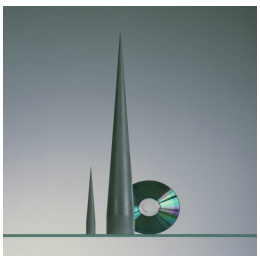
Eccosorb®MF500F

High Temperature, Magnetically Loaded, Machinable Stock



HIGH TEMPERATURE MAGNETICALLY LOADED MACHINABLE STOCK

Eccosorb MF500F is a rigid, completely solid, magnetically loaded, high temperature absorber. Physical and electrical properties are the same as those of the corresponding member of the Eccosorb MF series. Eccosorb MF500F can be used for short periods at 260°C(500°F) permitting use at high ambient and/or high power levels.

FEATURES AND BENEFITS

- Rigid and machinable
- High Temperature

MARKETS

- Commercial Telecom
- Security and Defense

SPECIFICATIONS

TYPICAL PROPERTIES	ECCOSORB MF500F
Frequency Range	>1 GHz
Short Time Service Temperature °C (°F)	<260 (<500)
Density g/cc	1.6 – 4.9
Hardness, Shore D	85
Tensile Strength (MPa)	55
Thermal Expansion per °C	~30 x 10^{-6}
Water Absorption, % 24 hours	<0.3
Thermal Conductivity W/mK	1.44

Data for design engineer guidance only. Observed performance varies in application. Engineers are reminded to test the material in application.

APPLICATIONS

- Eccosorb MF500F is widely used as absorbers, attenuators, and terminations in waveguides and coaxial lines.
- It has also been successfully used as a high-Q inductor-core material in such devices as slug tuners. It is also useful in many other magnetic components.

AVAILABILITY

- Eccosorb MF500F is available in six standard loadings. In general, as the frequency of operation increases, the MF500 loading series decreases.

MF500F-110	MF500F-114	MF500F-117
MF500F-112	MF500F-116	MF500F-124

- Eccosorb MF500F is available in the following standard stock sizes :
- Sheets 30.5 cm x 30.5 cm (12” x 12”) in thicknesses of 0.32, 0.64, 0.95, 1.27, 1.59, 1.91, 2.54, 3.81, 5.08, 6.35, 7.62 cm (1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 1.0, 1.5, 2.0, 2.5 & 3.0”).
- Rods 30.5 cm long (12”) in diameters of 0.32, 0.64, 0.95, 1.27, 1.59, 1.91, 2.54, 3.81, 5.08, 6.35, 7.62 cm. (1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 1.0, 1.5, 2.0, 2.5 & 3.0”)
- Bars 30.5 cm long (12”) in squares of 0.64, 0.95, 1.27, 1.59, 1.91, 2.54, 3.81, 5.08 cm (1/4, 3/8, 1/2, 5/8, 3/4, 1.0, 1.5 & 2.0”).
- Other sizes, shapes, thicknesses, and configurations are available on special order.

INSTRUCTIONS FOR USE

- Exposure to high temperatures should be limited. Slow changes in physical and electrical properties occur at temperatures above about 177°C (350°F).

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MACHINING RECOMMENDATIONS

Most of the discussion below applies not only to the basic Eccosorb MF500F series of materials, but also to several high temperatures, castable and molding-powder equivalents. Eccosorb MF500F can be formed readily to close tolerances with standard metal-working machine tools, i.e.: lathes, milling machines, drills, saws, grinders, generally using conventional techniques but observing the precautions and limitations described below.

Tooling :

- For turning, milling, drilling and tapping, carbide tools should be used, for example Type 883, a general purpose carbide that works well under most conditions. Use solid carbide taps for long life. Standard size tap drills should be satisfactory.
- External threads are formed best, not with conventional thread-cutting dies but by lathe turning or grinding, with light feeds and shallow cuts.
- Sawing can be done with best finish and tolerance using circular saws, 20.3 to 25.4 cm diameter, with grinding coolant and high RPM. Thin carborandum wheels, 0,079 cm thick or carbide saws may be used where requirements are less stringent. Best results are attained by moving the saw and keeping work stationary, with saw rotating so it tends to climb into the work.
- Surface finishing of flat sheets, etc. is best performed with a Blanchard grinder. Eccosorb MF is held readily with magnetic chucks. Sheet size is limited by the size of the machine.

Coolants :

- Use of a coolant liquid is recommended, especially for all close tolerance operations. Commercial grinding fluid is preferred, or water-soluble oil, with rust-resisting properties to protect the machines. Spark producing operations in particular must not be run dry, since smoldering fires might result.
- Where coolant run-off is collected for recirculation, a two-cavity recovery system should be used to minimize pick-up of grinding dust, sawdust or chips by the coolant pump. Where a re-circulating system is not available, best results will be obtained with air-powered spray or mist equipment.

Use of tapped metal inserts should be considered where electrical performance will not be degraded. Inserts may be cast in place, or bonded with castable material of suitable composition.

Suggested Speeds and Feed Rates

The following speeds and feed rates are suggested to be modified as necessary to suit job conditions:

OPERATION	SPEED	FEED
Sawing, turning	21.3 - 27.4 m/min (70-90 ft/min)	0.13 - 0.20 mm/revolution (.005-.008 in/revolution)
External threading	21.3 - 27.4 m/min (70-90 ft/min)	0.038 mm/pass (.001 in/pass)
Tapping	450 rpm	Tapping Head
Milling	21.3 - 27.4 m/min. (70-90 ft/min)	0.038 - 0.076 mm/tooth (.0015-.003 in/tooth)

- For complete properties and design considerations, see the Eccosorb MF technical bulletin.