

CUMING MICROWAVE

C-RAM PAINT (U,S,E) HP C-RAM PAINT (U,S,E) VHP

RoHS
Compliant

TECHNICAL BULLETIN 340-1

C-RAM paints are available in a urethane, silicone, or epoxy binder system. They are all room temperature curable systems. Simply designate the binder system when ordering. C-RAM PAINT comes in two loadings, High Permeability, and Very High Permeability. Both loadings can be ordered in any of the three binder systems. C-RAM HP and C-RAM VHP are also available in sheet form in both the silicone and urethane versions. C-RAM Paint can be supplied loaded to duplicate performance of the FLX product line to provide resonant performance. C-RAM HP and VHP, when used in their base form minus solvent, can be molded into complex shapes with special tooling and dispensing equipment; consult the factory for specific details. Customer specified loadings are available on special request.

APPLICATIONS

C-RAM Magnetic Paint is ideally suited for broadband, specular, off-normal, and surface wave attenuation. Silicone or urethane binder systems should be selected for dynamic applications, epoxy should be selected when a hard coating is needed or chemical resistance is desired.

C-RAM Magnetic Paints will provide high levels of attenuation in multi-bounce, off-normal, or travelling wave applications. C-RAM VHP is particularly effective at very high angles of incidence. For proper operation C-RAM paints should be applied to a reflective surface.

BINDER SELECTION

SILICONE

Typical Hardness-Shore A: 60-70
Temperature Range: -80 to 400 °F

Advantages: Excellent heat resistance, good flexibility at low temperature, excellent ozone and sunlight.

Disadvantages: Silicone adhesives are necessary to bond. Fair resistance to solvents, poor abrasion resistance.

Typical Use: *The elastomer of choice for high and low temperature applications.*

URETHANE

Typical Hardness Shore A: 80-85
Temperature Range: -80 to 275 °F

Advantages: Excellent abrasion resistance and tear, good weather resistance, excellent tensile strength and elongation.

Disadvantages: poor resistance to hot water, acids, and alkalis.

Typical Use: Tough and durable urethane is the most popular elastomeric coating. Urethanes are readily painted and work well in most applications.

EPOXY

Typical Hardness, Shore D: 70-80
Temperature Range: -40 to 350 °F

Advantages: Epoxy coatings are hard and have excellent chemical resistance.

Disadvantages: Can be brittle and prone to cracking in dynamic applications.

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DENSITY OF APPLIED COATING

HP VHP
 Density: 3.33 g/cm³ 3.92 g/cm³

MIXING C-RAM PAINT BASES BY WEIGHT

	HP		VHP	
	A to B by wt.		A to B by wt.	
Silicone	98.18:	1.81	98.63:	1.36
Urethane	98.18:	1.81	98.63:	1.36
Epoxy	97.33:	2.66	98.00:	2.00

DILUTING FOR BRUSHING

In general, very small amounts of solvent are required, 2-5 grams for every 100 grams of C-RAM Paint mix, to thin to a brushable consistency. A 50/50 blend of MEK/MIBK blend is the solvent of choice for silicone and urethane, lacquer thinner is used for thinning of epoxy. It will take approximately 5-15 minutes for the urethane and silicone coatings to tack up and be ready to accept a second coating application. Be careful not to mix too much base, one should mix only enough for two coating applications. Solvent

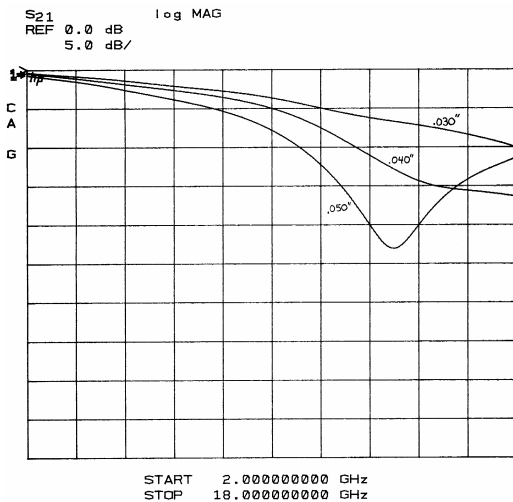
will slow the reaction time and prolong potlife. As each application is different, small pieces should be coated prior to large area applications.

DILUTING FOR PAINTING

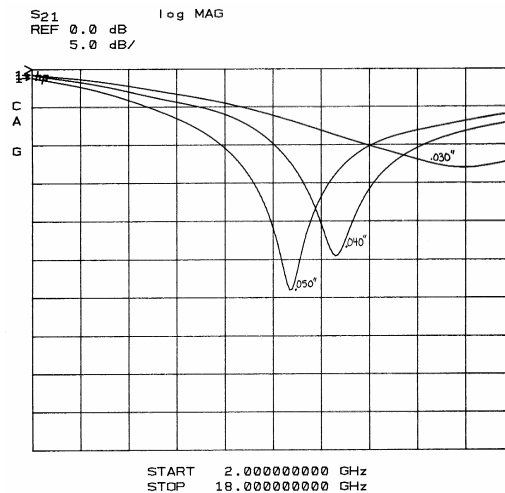
C-RAM paint mixture will require more solvent to dilute to a sprayable consistency. For every 100 grams of mix, dilute with 20 +/- 5 grams, 50/50 blend of MEK/MIBK for silicone and urethane, lacquer thinner for epoxy. It will take 15 minutes for each spray coating of silicone and urethane to tack up and be ready for a second coating, approximately 30 minutes for the epoxy. Be careful not to apply too much or the coating will run. Potlife is approximately 30 minutes for silicone and urethane, 60 minutes for epoxy.

ELECTRICAL PERFORMANCE

The graphs below show typical reflectivity of HP and VHP epoxy and silicone based coatings on a metal plate:



HP Epoxy Paint



VHP Silicone Paint

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