

# CUMING MICROWAVE

Technical Bulletin 330-2

## C-RAM RGD-S

### FLEXIBLE SILICONE RUBBER TRANSMISSION LINE ABSORBER

RoHS  
Compliant

C-RAM RGD-S is a filled silicone rubber sheet material with a high magnetic loss. It is available in three grades: -117, -124, and -192. The -192 grade has the highest loading and highest loss.

C-RAM RGD-S is used for terminations, loads, and attenuators in waveguides, coaxial lines, and microstrip circuits. It can also be used for lowering the Q of cavities and eliminating unwanted resonances.

C-RAM RGD-S is cut readily with a sharp knife, and can be sawed, die cut, waterjet cut, or otherwise machined to complex shapes. Since it is ferromagnetic, it is easily held in place during machining with magnetic chucks. It is flexible and can be bonded to contoured surfaces.

Because it is flexible, C-RAM RGD-S can withstand temperature cycling when bonded to metals. The material has good thermal conductivity and can be used to dissipate heat, including that generated by its own magnetic loss mechanism.

### METHOD OF APPLICATION

The normal method of applying C-RAM RGD-S to a substrate is with a silicone RTV adhesive. For best results, the substrate should be scuffed with sandpaper, wiped with alcohol to remove dust and grease, and a silicone primer applied, such as C-PRIME 215.

A silicone adhesive, such as C-BOND 255 or equivalent, is brushed or rolled onto one of the surfaces, and the part is then applied to the metal. An overnight cure is generally required, and a modest temperature cycle, such as a few hours at 150 °F, helps the bond.



### TYPICAL PROPERTIES

Color: Grey  
Flammability: non-flammable  
Specific Gravity: 4.0  
Thermal Expansion per °C:  $6 \times 10^{-5}$   
Thermal Conductivity: .0021 cal-cm/sec-cm<sup>2</sup>-°C  
6.0 BTU-in/hr-ft<sup>2</sup>-°F  
Service Temperature: -55 to +200 °C  
(-65 to +400 °F)  
Hardness, Shore A: 75  
Water Absorption, 24 hrs: <0.1%  
Volume Resistivity, ohm-cm:  $>10^{10}$   
Dielectric Strength, kV/mm: >400 (>100 V/mil)  
Relative Impedance ( $Z/Z_0$ ): 0.3 for -117  
0.4 for -124  
0.6 for -192

Attenuation, dB/cm:

	-117	-124	-192
1.5 GHz	2.9	5.6	7.0
3.0 GHz	11.0	20.0	24.0
8.6 GHz	46.0	63.0	70.0
10.0 GHz	51.0	69.0	80.0

(Note: attenuation is a measure of the absorption of RF energy within the material, and is not the same as insertion loss, which includes reflected energy at the air-material interface)

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C-RAM RGD-S can be supplied with a pressure sensitive adhesive, which provides good adhesion in many applications, particularly when one is bonding small pieces. Simply peel off the backing and stick the part to a clean surface.

## **AVAILABILITY**

Standard product sizes for both grades are flat sheets 12 x 12 in (305 x 305 mm), available in several standard thicknesses including:

0.030 in (0.76 mm)  
0.040 in (1.02 mm)  
0.060 in (1.52 mm)  
0.125 in (3.17 mm)  
0.250 in (6.35 mm)

Specify the product as C-RAM RGD-S-117 (or -124, -192), followed by the dimensions.

Cuming Microwave can supply RGD-S in other shapes and sizes, and can custom configure parts to your drawing.

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