

TWO PART CASTABLE LOAD ABSORBER



Eccosorb CR is a series of castable epoxy resins which can be used to mold waveguide terminations, attenuators, loads and other custom parts to finished size. When fully cured, these materials will duplicate the physical and electrical properties of the corresponding material in the Eccosorb MF series. For example Eccosorb CR-117 is the equivalent to Eccosorb MF-117. Due to their low outgassing properties, these materials are suitable for space applications.

FEATURES AND BENEFITS

- Castable
- Low outgassing

MARKETS

- Commercial Telecom
- Security and Defense

SPECIFICATIONS

TYPICAL PROPERTIES	ECCOSORB CR
Frequency Range	>1 Ghz
Service Temperature °C (°F)	<180 (<356)
Density (g/cm ³)	1.6 – 4.6
Thermal Expansion Coefficient per°C	30 x 10 ⁻⁶
Izod Impact, ergs/cm (ft-lb/in of notch)	1.6x10 ⁶ (0.3)
Water Absorption, % 7 days immersion	0.1
Flexural Strength, kg/cm ² (psi)	1050 (15,000)
Outgassing (%TML) (%CVCM)*	0.08-0.51 / 0.001-0.01

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

* Outgassing data per ASTM E595-07; criteria for acceptability is 1.00% TML and 0.10% CVCM.

APPLICATIONS

- Eccosorb CR can be used to mold waveguide terminations, attenuators, and loads to size.
- It can also be used to precisely pot small amount of absorber in or around areas of RF leakage.

AVAILABILITY

- CR-110, CR-112, CR-114, CR-116 and CR-117 are available as standard in Europe in 1 kg packaging. All grades are available in 1 and 2 kg packaging in NA as well as 5kg for CR-124.
- Eccosorb CR is supplied as a 2-part system, consisting of a Part A (resin) and Part B (catalyst) which need to be mixed

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Asia: +86.755.2714.1166

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Two-Part Castable Load Absorber

INSTRUCTIONS FOR USE

- Prepare mold by applying a thin coat of mold release wax.
- Mix Part A in its shipping container to a uniform consistency before removing any material.
- If crystals appear in part B, gently heat to 65°C (150°F) until crystals go into solution.
- Weigh out the desired amounts of both Part A and Part B in accordance with the table below.
- Heat Part A to about 65 °C(150°F). This will reduce the viscosity substantially and improve pourability. Note: in an effort to drop viscosity do not dilute with any chemical as this would alter the electrical performance of the material.
- Thoroughly blend Part A and Part B. Remove entrapped air, if necessary, by vacuum evacuation.
- Pour into mold (pot life at 65°C is about 30 minutes) and cure per the below schedule. The mold is also preferably preheated to about 65 °C.
- Clean up can be done with a solvent such as MEK.

Recommended Cure Schedule

Temperature	Cure Time
75 °C (167°F)	12 hours
90 °C (194°F)	4 hours
120 °C (248°F)	2 hours
150°C (302°F)	1 hour

Mix ratios and recommended frequency range are given in the table below:

Series	Range (Ghz)	Part A	Part B
CR-110	26+	100	16.5
CR-112	12-18	100	11.3
CR-114	10-14	100	6.5
CR-116	6-12	100	4.3
CR-117	4-8	100	3.2
CR-124	<5	100	2.6

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RFP-DS-CR 100115

Two-Part Castable Silicone Load Absorber

TWO-PART CASTABLE SILICONE LOAD ABSORBER

Eccosorb CRS is a series of castable, magnetically loaded, RTV silicone rubber materials with high-loss in the microwave frequency range. Being a true elastomer, Eccosorb CRS, when cured, has a number of distinct advantages over rigid materials of the Eccosorb MF type.



FEATURES AND BENEFITS

- 2-component castable
- Low outgassing

MARKETS

- Commercial Telecom
- Security and Defense

SPECIFICATIONS

TYPICAL PROPERTIES	ECCOSORB CRS-117	ECCOSORB CRS-124
Frequency Range	>1 Ghz	>1 Ghz
Service Temperature °C (°F)	<160 (<320)	<160 (<320)
Density (g/cc)	4.16	4.55
Thermal Expansion Coefficient per °C (per °F)	63 x 10 ⁻⁶ (35 x 10 ⁻⁶)	59 x 10 ⁻⁶ (33 x 10 ⁻⁶)
Thermal Conductivity W/mK	0.9	1.0
Hardness, Shore A	75	75
Water Absorption, % 24h	<0.1	<0.1
Dielectric Strength volts/mil	>10	>10
Volume Resistivity, ohm-cm	>10 ¹⁰	>10 ¹⁰

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

APPLICATIONS

- Eccosorb CRS can be used to cast cones, wedges and pyramids for terminations and loads.
- It can be used to fill cavities or can be painted on surfaces to suppress the flow of currents. This product line finds use in antennas and transmission lines.
- Eccosorb CRS can also be poured in place to form microwave gaskets, where a sheet elastomer would not fit. It can also be poured around the base of microwave tubes to prevent undesired energy flow.
- When bonded to surfaces, Eccosorb® CRS will withstand temperature cycling (even to cryogenic temperatures). It can be deformed and shaped to contoured surfaces and is not subject to damage from impact or shock.

AVAILABILITY

- Eccosorb CRS is available in 2 grades : CRS-117 & CRS-124.
- Eccosorb CRS is supplied as a 2-part system, consisting of a Part A (resin) and Part B (catalyst).
- Please contact your local supplier for available sizes and packages, as there might be some regional differences.

- It does not ship as a dangerous good.
- Shelf life is approximately 6 months when stored unmixed in a well sealed container at temperatures no higher than 25°C (77°F).

INSTRUCTIONS FOR USE

- Mix the Eccosorb CRS Part A in its shipping container using a power stirrer to insure homogeneity.
- Part A is supplied as a high viscosity paste. In all cases a small amount of Part B has to be added.
- Weigh out the desired amounts of both parts in the correct mix ratio as given below.
 Mix ratio : Eccosorb CRS-117: 100 parts of A to 1.18 parts of B
 Eccosorb CRS-124: 100 parts of A to 1.00 parts of B
- To insure void-free castings, the entrapped air should be removed by vacuum de-airing.
- Pour into the cavity to be filled.
- Cure overnight at room temperature or for 3 hours at elevated temperatures of 80°C (175 °F). Where use temperature is anticipated above 120°C (248 °F), a post cure is recommended. Gradually raise cast parts to the use temperature over an 8 hour or longer period.
- If cast around inserts, they place negligible curing pressures on them.
- The Eccosorb® CRS will adhere to themselves but will release from most other surfaces. Therefore, metal or epoxy molds are suitable for cast shapes. If adhesion is required, a thin coat of a suitable primer should first be applied.

Typical Attenuation

	GHz	10 ⁻⁷	10 ⁻⁶	10 ⁻⁵	10 ⁻⁴	10 ⁻³	10 ⁻²	10 ⁻¹	1.0	3.0	8.6	10.0	18.0
CRS-117	dB/cm	0	0	0	0	0	0.03	0.27	2.8	11	46	56	119
	dB/in	0	0	0	0	0	0.08	0.69	7.1	28	117	142	302
CRS-124	dB/cm	0	0	0	0	0	0.03	0.48	6.5	20	63	67	149
	dB/in	0	0	0	0	0	0.08	1.2	16.51	50	160	170	378

*Note: Attenuation is a theoretical property calculated from the Complex Permittivity and Complex Permeability of a lossy material and is strictly a means of comparing one absorbing material to another. The attenuation properties are not an indication of how the material will perform inside a microwave device. For further electrical and physical properties of the ECCOSORB® CRS series, please see the Typical Electrical Properties Table on the ECCOSORB® MFS technical bulletin

CASTABLE SILICONE RUBBER

Eccosorb CFS-8480 is a castable, magnetically loaded, silicone rubber material that exhibits high loss in the UHF and lower end of the microwave range. It is physically similar to Eccosorb CRS, but has quite different electrical properties making it much more useful in the UHF region and the lower microwave frequency range.



FEATURES AND BENEFITS

- 2-component castable
- Low frequency performance
- High temperature resistance

MARKETS

- Commercial Telecom
- Security and Defense
- Medical

SPECIFICATIONS

TYPICAL PROPERTIES	ECCOSORB CFS-8480
Frequency Range	800 MHz – 18 Ghz
Service Temperature °C (°F)	<275 (<527)
Density (g/cc)	2.8
Thermal Conductivity, (W/m-K)	0.73
Hardness, Shore A	65
Water Absorption, % 24 hours	<0.2
Dielectric Strength, (Kv/mm)	12
Volume Resistivity, ohm-cm	>10 ¹²
Mix Ratio by weight, A:B	1000:9

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

APPLICATIONS

- Eccosorb CFS-8480 can be poured or painted on surfaces.
- When applied, Eccosorb CFS-8480 can be used to reduce surface currents or lower the Q of cavities.
- Most notably used as a coating for magnetrons and klystrons to improve insulation resistance and stop voltage flashover.
- It has been cast into transmission line attenuators and terminators.
- It has been used in medical applications as a molded RF Absorber.
- It has also been used as a potting absorber to protect sensitive components connected to conductive strips.

AVAILABILITY

- Eccosorb CFS-8480 is supplied as a two-component system, consisting of a Part A(resin) and a Part B (catalyst).
- It does not ship as a dangerous good.
- As there might be regional differences, please contact your local supplier with regard to sizes and packaging.
- The material can also be supplied as a finished cast part by in-house molding techniques.
- Shelf life is approximately 6 months when stored unmixed in a well sealed container.

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INSTRUCTIONS FOR USE

- Mix the Eccosorb CFS-8480 Part A in the container in which it is received using a power stirrer. This is to insure complete uniformity from top to bottom of the container.
- Weigh out the desired amounts of Part A. To each 1000 parts by weight of Part A, add 9 parts of Part B.
- Mix thoroughly. Accurate weighing and blending are essential for proper and uniform cure.
- Pot life is about one hour after mixed.
- Pour into cavity to be filled. If adhesion is required, apply a thin coat of Primer to the substrate and let dry for 30 minutes.
- Cure for two hours at 90°C.
- Where actual design temperature is anticipated above 120°C, a post cure is recommended. Gradually raise cast parts to the design temperature over an 8 hour or longer period.

Typical Attenuation (dB/cm)

600 MHz	1.0
1.0 GHz	2.0
3.0 GHz	7.6
8.0 GHz	11.5
10.0 GHz	9.5