

ECCOSORB SF

THIN, FLEXIBLE RESONANT, MICROWAVE ABSORBER

Description:

Eccosorb SF is a narrow banded, magnetically loaded resonant absorber sheet for free-space applications. These silicone rubber sheets are designed to be bonded to flat or curved metallic surfaces to reduce the reflectivity in a narrow band of frequencies. Eccosorb SF reflects -20 dB or less of normally incident microwave energy at the design frequency in the range of 1 to 26 GHz.



Features and Benefits:

- High power performance
- Narrow band performance
- Low outgassing properties

Typical Properties:

- **Maximum service temperature (°C):** 163
- **Power Handling (W/cm²):** 0.2
- **Hardness (Shore A):** 73
- **Density range (g/m³):** 2.4 to 4.5
- **Tensile strength (MPa):** 1.0 to 6.0
- **Elongation at break (%):** 20 to 100
- **Tear strength (N/mm):** 0.2 to 2.0

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

Applications:

- Lining radar nacelles and the exterior of airframes particularly where high power is present.
- Lining of cavity backed and shrouded telecommunication antennas where narrowband performance is required.
- Lining metal surfaces of vehicles to reduce overall radar signature.
- Attaching to masts of ships, walls, etc. to reduce reflections and echoes from nearby antennas.
- Lining magnetron housings to prevent detuning.
- Fabricating into tapered shapes for impedance matching in waveguide or microstrip applications.
- Lining metal surfaces to attenuate surface currents, suppressing reflections inside microwave modules, and dampening cavity resonances in microwave modules.
- For module interference, cavity resonance and surface current problems, ECCOSORB® GDS, ECCOSORB® MCS and ECCOSORB® BSR are recommended due to their high magnetic loss properties, broad band performance, as well as the availability of a wider range of thicknesses (0.010" to 0.100").

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Availability:

- Standard sheets are 305 x 305mm (12"x12")
- Thickness varies depending on resonant frequency desired.
- Other resonant frequencies from 0.7 to 40 GHz can be supplied on special order.
- The material can also be supplied in customized shapes and can be supplied with a pressure sensitive adhesive (PSA).

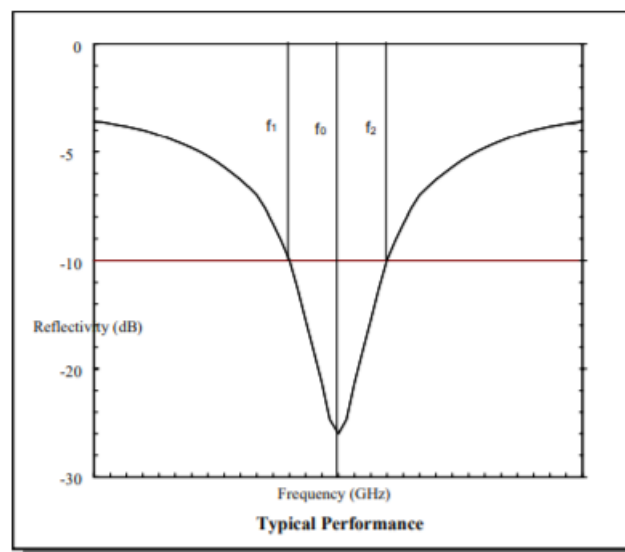
Instructions for Use

- Eccosorb SF is designed to function directly in front of a metallic surface. If this is not the case, a metallic foil should first be bonded to the object.
- For optimum performance, material is recommended and can be supplied with a metal backing (-ML)
- To obtain a strong bond of the absorber to the object, clean the surface with a degreasing solvent, apply a thin coat of primer to the dried surface and apply an RTV silicone adhesive.
- Eccosorb SF can be readily cut with a sharp knife and template. It is a very flexible material and will conform to mild curvatures.

Related Products

- For corrosive environments, see Eccosorb® DSF
- For better abrasion resistance, see Eccosorb® SF-U

Typical Reflectivity Performance



The performance of ECCOSORB® SF is defined by reflectivity at a single frequency. A generalized performance curve is shown above. The design frequency f_0 , has a $\pm 5\%$ bandwidth, designated as f_1 and f_2 . Although performance degrades with increased incidence angle, at incident angles out to 45° , reflectivity of -16dB has been demonstrated.

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Resonant Frequency	Nominal Thickness		Nominal Weight		Outgassing	
Designation	inch	cm	lb/ft ²	kg/m ²	% TML	% CVCM
SF-1.0	0.180	0.46	4.2	20.6	0.17	0.04
SF-1.5	0.120	0.30	2.8	13.7	0.14	0.06
SF-2.0	0.105	0.27	2.7	13.2	0.13	0.06
SF-2.5	0.085	0.22	2.2	10.7	0.10	0.04
SF-3.0	0.073	0.19	1.9	9.3	0.13	0.06
SF-3.5	0.064	0.16	1.7	8.3		
SF-4.0	0.105	0.27	2.1	10.3	0.22	0.08
SF-4.5	0.091	0.23	1.9	9.3	0.26	0.10
SF-5.0	0.080	0.20	1.6	7.8	0.21	0.09
SF-5.5	0.092	0.23	1.7	8.3	0.27	0.10
SF-6.0	0.086	0.22	1.6	7.8	0.25	0.09
SF-6.5	0.082	0.21	1.5	7.3	0.28	0.09
SF-7.0	0.078	0.20	1.4	6.8	0.23	0.09
SF-7.5	0.074	0.19	1.3	6.3	0.26	0.10
SF-8.0	0.070	0.18	1.3	6.3	0.25	0.10
SF-8.5	0.066	0.17	1.2	5.9	0.35	0.15
SF-9.0	0.063	0.16	1.1	5.6		
SF-9.5	0.060	0.15	1.1	5.3	0.31	0.15
SF-10.0	0.056	0.14	1.0	5.0	0.30	0.16
SF-10.5	0.052	0.13	0.9	4.6	0.24	0.11
SF-11.0	0.070	0.18	1.1	5.4	0.34	0.12
SF-12.0	0.066	0.17	1.0	4.9	0.27	0.13
SF-13.0	0.062	0.16	0.9	4.4	0.34	0.13
SF-14.0	0.058	0.15	0.9	4.4	0.39	0.13
SF-15.0	0.054	0.14	0.8	3.9		
SF-16.0	0.050	0.13	0.8	3.9	0.34	0.13
SF-17.0	0.048	0.12	0.7	3.5		
SF-18.0	0.046	0.12	0.7	3.5	0.33	0.14