

ECCOSORB® SF

Thin, Flexible, Resonant Absorbers

Material Characteristics

- Thin, flexible, narrow banded, magnetically loaded, resonant absorber sheets for free-space applications
- Good for high power performance
- Low out-gassing properties for space applications
- Frequency range from 1-18 GHz
- Reflectivity of -20 dB or less of the normal incident microwave energy at the design frequency. Note this is slightly less for frequencies below 2.5 GHz

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.
- 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 magnetic properties, broad band performance, as well as the availability of a wider range of thicknesses (0.010" to 0.100")

Availability

- Standard sheets are 12" x 12" (30.5cm x 30.5cm)
- Thickness depends on resonant frequency desired
- Can be supplied with a Pressure Sensitive Adhesive (PSA). Product designation denoting ECCOSORB® SF with a PSA is ECCOSORB® SF-XX/SS6M
- For optimum performance, material is recommended and can be supplied with a metal backing (ML)
- Other resonant frequencies from 0.7 GHz to 40 GHz can be supplied on special order and is available in customer specified configurations

Related Products

- For corrosive environments see ECCOSORB® DSF
- For better abrasion resistance see ECCOSORB® SFU

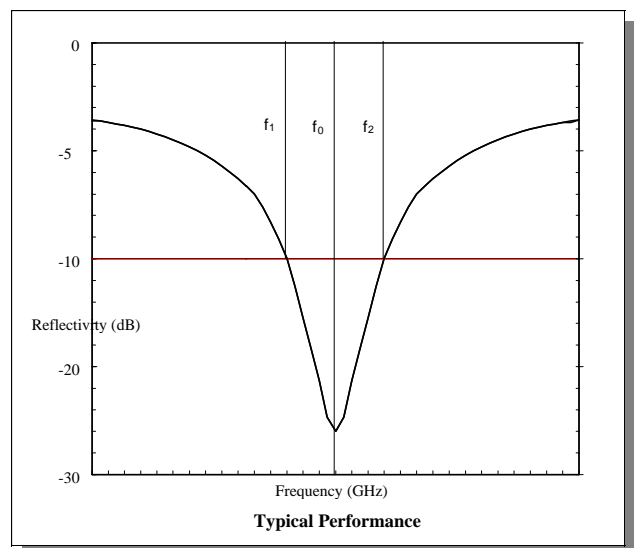
Instructions for Use

- The performance of ECCOSORB® SF requires that it be intimately backed with a metal surface. If a metal surface is not available, ECCOSORB® SF can be supplied metal backed with aluminum foil (ML).
- To bond ECCOSORB® SF to a metal surface, clean surface with a degreasing solvent, apply a thin coat of primer to the dried surface and apply a RTV silicone adhesive.
- For applications where the service temperature is between -40 and 149°C, and where the speed and convenience of a pressure sensitive adhesive is desired, ECCOSORB® SF can be bonded to a surface using the factory installed SS6M pressure sensitive adhesive

Typical Properties

Color	Gray
Service Temperature, °F (°C)	-65 to 325 (-54 to 163)
Power Handling	0.2 W/cm ²
Thermal conductivity	0.6 to 1.2 W/m.K
Hardness (will vary with thickness)	73 Shore A

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.



Resonant Frequency Designation	Nominal Thickness		Nominal Weight		Outgassing	
	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

Product designation is keyed to the resonant frequency. For example, ECCOSORB® SF-10 reflects -20 dB of incident energy at 10 GHz. Thickness is determined by the resonant frequency and may vary from batch to batch. Standard resonant frequencies, thickness and weights are shown above. Outgassing data above was carried out in accordance with ASTM E-595-90. Criteria for acceptability as outlined in ASTM E-595-90 are a maximum of 1.00 %TML and a maximum of 0.10 %CVCM. Missing outgassing data has not yet been tested.

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