

RF MICROWAVE

Absorbers



LAIRD IS A GLOBAL
MICROWAVE AND
mm WAVE EMC
SOLUTION LEADER

- Recognized global brand
- Broadest product and technology portfolio
- Simulation, modeling & testing capabilities
- Co-engineering services & sample support
- Integrated and value added multi-functional solutions

General Selection Guide

ECCOSORB MICROWAVE ABSORBER

NEARFIELD NOISE SUPPRESSION	CAVITY RESONANCE				FREE SPACE						
					ISOLATION	REFLECTION REDUCTION				TRANSMISSION LOAD/TERMINATION	
						NARROW BAND	BROADBAND				
20 Mhz - 2 Ghz	800 Mhz - 6 Ghz	6-18 Ghz	18-35 Ghz	35-100 Ghz	> 1 Ghz	700 Mhz - 40 Ghz	600 Mhz - 2 Ghz	2-18 Ghz	> 18 Ghz	1-18 Ghz	18-35 Ghz
NS 1000 NS1000 C/F/H	MCS Softzorb MCS	BSR LS QR-13AF Thermo-plastic MF	GDS (FR) 5GMeF1 LS QR-13AF Thermo-plastic MF Softzorb GDS	MMI JCS 5GHIF1 JCP PBT 252 JCP PA JCP PP	LS QR-13AF JCS JCP PA JCP PP JCP PBT 252	SF	AN	AN FGM HR	HR JCP PA/PP (Rezorb 60-90 Ghz)	MF MF500F CR/CRS/CFS BSR	BSR Thermo-plastic MF



Absorber Product Lines (*New Product Release)

ECCOSORB | CAVITY RESONANCE

Dampening resonance solutions in enclosed space applications when the volume is on the order of a wavelength with non propagating waves.

Underlined product names are links which access detailed product information on the Laird website.

<u>ELASTOMER</u>	<u>THIN SILICONE</u>	<u>FREQUENCY RANGE</u>
Softzorb MCS*	Soft High Loss Absorber Gas Filler	800 Mhz - 18 Ghz
Softzorb GDS	Soft High Loss Absorber Gap Filler	18 Ghz-35 Ghz
Eccosorb MCS	High loss UL rated sub 6 Ghz absorber sheet	800 MHz - 6 GHz
Eccosorb BSR	High loss flexible sub 18 Ghz absorber sheet	6-18 Ghz
Eccosorb GDS*	Medium frequency UL rated absorber sheet	18-35 Ghz
Eccosorb MMI	Harsh environment mm wave absorber sheet	35-100 Ghz
Eccosorb JCS	Electrically conductive mm wave absorber sheet	35-100 Ghz
Eccosorb 5GMeF1*	Medium 5G frequencies performance UL rated absorber sheet	18- 40 GHz
Eccosorb 5GHIF1*	High 5G frequencies performance absorber sheet	40-100 GHz
<u>FOAM</u>	<u>LIGHTWEIGHT POLYURETHANE</u>	<u>FREQUENCY RANGE</u>
Eccosorb LS	Insertion loss flexible sheet series	>1 Ghz
Eccosorb QR-13AF	Antimony free UL rated flexible sheet	>1 Ghz
<u>THERMOSET</u>	<u>RIGID MACHINEABLE</u>	<u>FREQUENCY RANGE</u>
Eccosorb MF	Epoxy stock series	1-18 Ghz
Eccosorb MF500F	High temperature 260 degree Celsius epoxy stock series	1-18 Ghz
<u>COMPOUNDS</u>	<u>CASTABLE/DISPENSABLE LIQUID</u>	<u>FREQUENCY RANGE</u>
Eccosorb CR	2-parts castable rigid epoxy series	1-18 Ghz
Eccosorb CRS	2-parts castable silicone series	1-18 Ghz
Eccosorb CFS-8480	2 -parts castable high temperature silicone	0.6-10 Ghz
<u>THERMOPLASTIC</u>	<u>HIGH VOLUME INJECTABLE</u>	<u>FREQUENCY RANGE</u>
Eccosorb MF-PP	High loss polypropylene grade	1-35 Ghz
Eccosorb MF-PA	High temperature 170 degree Celsius polyamide grade	1-35 Ghz
Eccosorb MF-PPS*	Reflow compliant UL rated grade	1-35 Ghz
Eccosorb MF-TPE	Flexible thermoplastic	1-35 Ghz
Eccosorb JCP PBT 252*	High mechanical performance PolyButylene Teraphtalate grade	35-100 Ghz
Eccosorb JCP PA*	High Mechanical Performance Polyamide grade	35-100 Ghz
Eccosorb JCP PP*	General Purpose Weldable PolyPropylene grade	35-100 Ghz

MANUFACTURING CAPABILITIES

Injection Molding

Molding

Dispensing

Impregnation

Water jet cutting

Die cutting

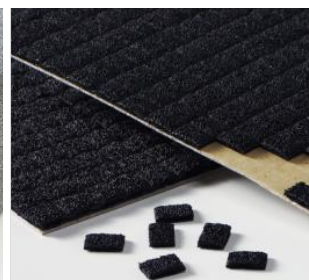
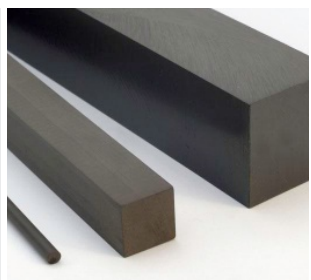
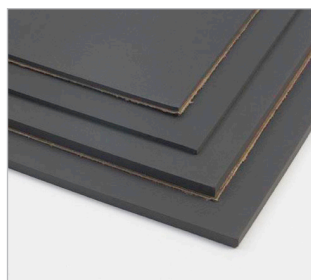
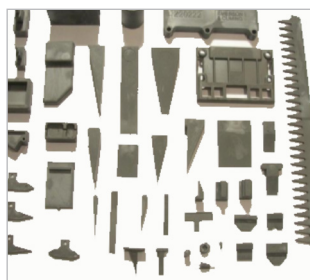
Kiss cutting

Spraying

Wrapping

Machining

Lamination



TESTING CAPABILITIES

Laird is leading the absorber expertise in the market thanks to its high level equipment and contributions to the establishment of new standards and testing methods. Full parameters from 0.1-90 GHz are available in CST material library and upon request.

- Modeling and testing capabilities
- 2D and 3D modeling
- RF simulation and modeling
 - Ansys HFSS
 - CST
- RF measurement from 10 Mhz to 100 Ghz
- Reliability testing

ECCOSORB | FREE SPACE

Free space solutions reduce reflections from surfaces and provide signal isolation and energy barrier between adjacent components. Involve propagating waves where the volume is large relative to wavelength of energy.

ELASTOMER	THIN SILICONE	FREQUENCY RANGE
Eccosorb SF	Frequency tuneable, narrow band high performance resonant sheet	0.7-40 Ghz
Eccosorb FGM	High temperature, low outgassing broadband sheet	2-18 Ghz
FOAM	LIGHTWEIGHT POLYURETHANE	FREQUENCY RANGE
Eccosorb HR	Controlled gradient open cell series	5-90 Ghz
Eccosorb AN	Multi layer gradient sheet series	600 Mhz - 20Ghz

ECCOSORB | NEAR FIELD

Noise suppressor are board level solutions for EMI control to achieve better signal integrity.

ELASTOMER	THIN SHEET	FREQUENCY RANGE
NS 1000	Ultrathin, down to 0.06 mm, high permeability noise suppressor	20 Mhz - 2 Ghz
NS 1000 C/F/H*	Ultrathin tuned noise suppressor permeability 110 to 180	20Mhz-3Ghz

ECCOSTOCK | LOW LOSS DIELECTRIC

Dielectrics have ability to compress waves and allow transmission of microwave energy useful in designing smaller circuit and lens.

FOAM	LOW DENSITY	LOSS TANGENT	DIELECTRIC CONSTANT
Eccostock LoK	Rigid syntactic foam rod, bar and sheet stock	<0.004	1.7
Eccostock Flex-LoK*	Flexible thin silicone version	0.002	1.7
Eccostock PP	Flexible closed cell sheet	0.0001	1.03-1.06
Eccostock SH	Rigid closed cell high temperature polyurethane sheets	0.001-0.005	1.04-1.25
THERMOSET	RIGID	LOSS TANGENT	DIELECTRIC CONSTANT
Eccostock 0005	Crosslinked polystyrene rod and sheet	0.0005	2.53
Eccostock HIK	Tuneable dielectric constant stock	<0.002	3 to 15
Eccostock HIK500F	High temperature tuneable dielectric constant stock	<0.002	3 to 30
COMPOUNDS	TERAPHTHALATE GRADE	LOSS TANGENT	DIELECTRIC CONSTANT
Eccostock FFP	1-part epoxy free-flowing powder, curing into lightweight foam	0.005	1.25

REFERENCE USE CASES

CHALLENGE/FUNCTION	MARKET	APPLICATION	ECCOSORB	ECCOSTOCK
EMI Interference reduction	Telecom, Automotive, Industrial, Aerospace, Defense, Consumer	Connectors, ADAS, ECU	LS, NS1000, MF Thermoplastic Softzorb MCS/GDS	
Cavity resonance control	Telecom, Automotive, Industrial, Aerospace, Defense, Consumer	ECU, RRU, Amplifier, Test box, Satcom equipment, ADAS, Optical transceiver	MCS, BSR, GDS, MMI, JCS, 5GMeF1, 5GHIF1, MF xx Softzorb MCS/GDS	
Reflectivity reduction	Automotive, Industrial, Telecom	ADAS, anechoic chamber, Scanner	FGM, SF, HR, AN	
Radar Cross section Reduction	Aerospace, Defense	Radar	FGM, SF, HR, AN	
Antenna crosstalk reduction	Telecom, Industrial, Consumer	Mobile infrastructure, Handset	HR, AN, MCS	
Antenna side lobe reduction	Telecom, Industrial, Consumer, Automotive	Infrastructure, Radar, Testing and Measurement equipment, ADAS	HR, AN, JCP PBT 252, MMI, JCS, LS JCP PA, JCP PP	
Surface current attenuation	Telecom, Industrial, Consumer, Automotive, Aerospace	Handset, Infotainment, ECU, Cabling, Connector	LS, NS1000, SF, LS NS 1000 CFH Softzorb MCS	
Waveguide termination	Telecom, Aerospace, Defense, Medical, Industrial	Transmission line Radar, Medical imaging, oscillator	MF, CR	
Space/Insulator	Telecom, Industrial, Consumer	Antenna, connector, coaxial transmission, wave guide support		PP, Lok, 0005, HIK, FFP, SH, Flex IoK
Radome	Telecom, Industrial, Consumer, Aerospace, Medical	Antenna cover/housing, Diagnostic equipment, Probes and sensors, ADAS, Radar	JCP PBT 252 JCP PA	Lok, 0005, Flex IoK
Thermal barrier	Aerospace, Defense, Industrial	High application, Space, Satellite		SH, HIK

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