

RF MICROWAVE

# Absorbers



LAIRD IS A GLOBAL  
MICROWAVE AND  
mm WAVE EMC  
SOLUTION LEADER

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

## General Selection Guide

### LAIRD™ ECCOSORB™ MICROWAVE ABSORBER

NEAR FIELD NOISE SUPPRESSION	CAVITY RESONANCE				FREE SPACE					TRANSMISSION LOAD/ TERMINATION	
					ISOLATION	REFLECTION REDUCTION					
						NARROW BAND	BROADBAND				
10 MHz-3 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
NS1000 NS1000 C/F/H NS1000Q <b>NS1000HTRC</b> <b>RF-LB</b>	MCS Softzorb™ MCS <b>RF-LW</b>	BSR LS QR-13AF Thermo- plastic MF	GDS (FR) <b>5GMeF1</b> LS QR-13AF Thermo- plastic MF Softzorb™ GDS	MMI <b>JCS-Next</b> <b>5GHIF1</b> JCP-PBT 252 <b>JCP-PA</b> <b>JCP-PP</b>	LS QR-13AF <b>JCS-Next</b> <b>JCP-PA</b> <b>JCP-PP</b> JCP-PBT 252	SF	AN	AN FGM HR	HR <b>JCP-PA</b> <b>JCP-PP</b> ( <b>Rezorb™</b> 60-90 GHz) CV	MF500F CR/CRS/ CFS BSR	BSR Thermo- plastic MF

## Absorber Product Lines (\*New Product Release)

### ECCOSORB<sup>™</sup> | CAVITY RESONANCE

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

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

ELASTOMER	THIN SILICONE	FREQUENCY RANGE
Softzorb <sup>™</sup> MCS*	Soft High Loss Absorber Gas Filler	800 MHz-18 GHz
Softzorb <sup>™</sup> GDS	Soft High Loss Absorber Gap Filler	18 GHz-35 GHz
Eccosorb <sup>™</sup> MCS	High loss UL rated sub 6 GHz absorber sheet	800 MHz-6 GHz
<b>Eccosorb<sup>™</sup> RF-LW*</b>	High attenuation sub 6 GHz thin absorber	800 MHz-6 GHz
Eccosorb <sup>™</sup> BSR	High loss flexible sub 18 GHz absorber sheet	6-18 GHz
Eccosorb <sup>™</sup> GDS	Medium frequency UL rated absorber sheet	18-35 GHz
Eccosorb <sup>™</sup> MMI	Harsh environment mm wave absorber sheet	35-100 GHz
<b>Eccosorb<sup>™</sup> JCS-Next*</b>	High dielectric loss UL rated mm high frequency thin absorber	35->100 GHz
<b>Eccosorb<sup>™</sup> 5GMeF1*</b>	Medium 5G frequencies performance UL rated absorber sheet	18-40 GHz
<b>Eccosorb<sup>™</sup> 5GHIF1*</b>	High 5G frequencies performance absorber sheet	40-100 GHz
FOAM	LIGHTWEIGHT POLYURETHANE	FREQUENCY RANGE
Eccosorb <sup>™</sup> LS	Insertion loss flexible sheet series	>1 GHz
Eccosorb <sup>™</sup> QR-13AF	Antimony free UL rated flexible sheet	>1 GHz
THERMOSET	RIGID MACHINEABLE	FREQUENCY RANGE
Eccosorb <sup>™</sup> MF500F	High temperature 260 degree Celsius epoxy stock series	1-18 GHz
COMPOUNDS	CASTABLE/DISPENSABLE LIQUID	FREQUENCY RANGE
Eccosorb <sup>™</sup> CR	2-parts castable rigid epoxy series	1-18 GHz
Eccosorb <sup>™</sup> CRS	2-parts castable silicone series	1-18 GHz
Eccosorb <sup>™</sup> CFS-8480	2-parts castable high temperature silicone	0.6-10 GHz
THERMOPLASTIC	HIGH VOLUME INJECTABLE	FREQUENCY RANGE
Eccosorb <sup>™</sup> MF-PP	High loss polypropylene grade	1-35 GHz
Eccosorb <sup>™</sup> MF-PA	High temperature 170 degree Celsius polyamide grade	1-35 GHz
<b>Eccosorb<sup>™</sup> MF-LCP-115</b>	ULVO High temperature stability LCP grade	5-40 GHz
Eccosorb <sup>™</sup> MF-TPE	Flexible thermoplastic	1-35 GHz
<b>Eccosorb<sup>™</sup> JCP-PBT 252*</b>	High mechanical performance polybutylene terephthalate grade	35-100 GHz
<b>Eccosorb<sup>™</sup> JCP-PA*</b>	High mechanical performance polyamide grade	35-100 GHz
<b>Eccosorb<sup>™</sup> JCP-PP*</b>	General purpose weldable polypropylene grade	35-100 GHz

## MANUFACTURING CAPABILITIES

Injection molding

Molding

Dispensing

Impregnation

Water jet cutting

Die cutting

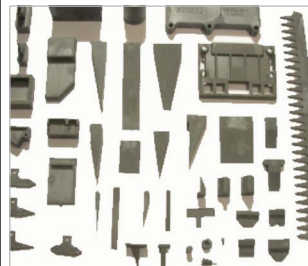
Kiss cutting

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<sup>™</sup> | 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 <sup>™</sup> SF	Frequency tuneable, narrow band high performance resonant sheet	0.7-40 GHz
Eccosorb <sup>™</sup> FGM	High temperature, low outgassing broadband sheet	2-18 GHz
FOAM	LIGHTWEIGHT POLYURETHANE	FREQUENCY RANGE
Eccosorb <sup>™</sup> HR	Controlled gradient open cell series	5-90 GHz
Eccosorb <sup>™</sup> AN	Multi layer gradient sheet series	600 MHz-20 GHz
Eccosorb <sup>™</sup> CV	High reflectivity convoluted thick foam absorber	6-100 GHz

### ECCOSORB<sup>™</sup> | NEAR FIELD

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

ELASTOMER	THIN SHEET	FREQUENCY RANGE
NS1000	Ultrathin, down to 0.06 mm, high permeability noise suppressor	20 MHz-2 GHz
NS1000 C/F/H*	Ultrathin tuned noise suppressor permeability 110 to 180	20 MHz-3 GHz
NS1000 Q	Ultrahigh permeability noise suppressor film	20 MHz-6 GHz
NS1000HTRC*	High temperature reflow compliant noise suppressor film	20 MHz-3 GHz
RF-LB*	High temperature noise suppressor permeability 30	10 MHz -4 GHz

### ECCOSTOCK<sup>™</sup> | 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 <sup>™</sup> LoK	Rigid syntactic foam rod, bar and sheet stock	<0.004	1.7
Eccostock <sup>™</sup> Flex-LoK*	Flexible thin silicone version	0.002	1.7
THERMOSET	RIGID	LOSS TANGENT	DIELECTRIC CONSTANT
Eccostock <sup>™</sup> 0005	Crosslinked polystyrene rod and sheet	0.0005	2.53
Eccostock <sup>™</sup> HIK	Tuneable dielectric constant stock	<0.002	3 to 15
Eccostock <sup>™</sup> HIK500F	High temperature tuneable dielectric constant stock	<0.002	3 to 30
COMPOUNDS	TERAPHTALATE GRADE	LOSS TANGENT	DIELECTRIC CONSTANT
Eccostock <sup>™</sup> 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 MF, Softzorb™ MCS/GDS, RF-LB, NS1000 Q and HTRC	
Cavity resonance control	Telecom, Automotive, Industrial, Aerospace, Defense, Consumer	ECU, RRU, Amplifier, Test box, Satcom equipment, ADAS, Optical transceiver	MCS, BSR, GDS, MMI, JCS-Next, 5GMeF1, 5GHIF1, Softzorb™ MCS/GDS	
Reflectivity reduction	Automotive, Industrial, Telecom	ADAS, anechoic chamber, scanner	FGM, SF, HR, AN, Rezorb™ JCP-PP, JCP-PA	
Radar cross section reduction	Aerospace, Defense	Radar, automotive radar and camera, lidar, test boxes, ADAS calibration equipment	FGM, SF, HR, AN	
Antenna crosstalk reduction	Telecom, Industrial, Consumer	Mobile infrastructure, Handset	HR, AN, MCS, RF-LW	
Antenna side lobe reduction	Telecom, Industrial, Consumer, Automotive	Infrastructure, Radar, Testing and Measurement equipment, ADAS	HR, AN, JCP-PBT 252, MMI, JCS-Next, LS JCP-PA, JCP-PP	
Surface current attenuation	Telecom, Industrial, Consumer, Automotive, Aerospace	Handset, Infotainment, ECU, Cabling, Connector	LS, NS1000, SF, LS NS1000, CFH Softzorb™ MCS, NS1000HTRC	
Waveguide termination	Telecom, Aerospace, Defense, Medical, Industrial	Transmission line Radar, Medical imaging, oscillator	CR	
Space/insulator	Telecom, Industrial, Consumer	Antenna, connector, coaxial transmission, wave guide support		Lok, 0005, HIK, FFP, Flex loK
Radome	Telecom, Industrial, Consumer, Aerospace, Medical	Antenna cover/housing, Diagnostic equipment, Probes and sensors, ADAS, Radar	JCP-PBT 252, JCP-PA	Lok, 0005, Flex loK
Thermal barrier	Aerospace, Defense, Industrial	High application, Space, Satellite		HIK

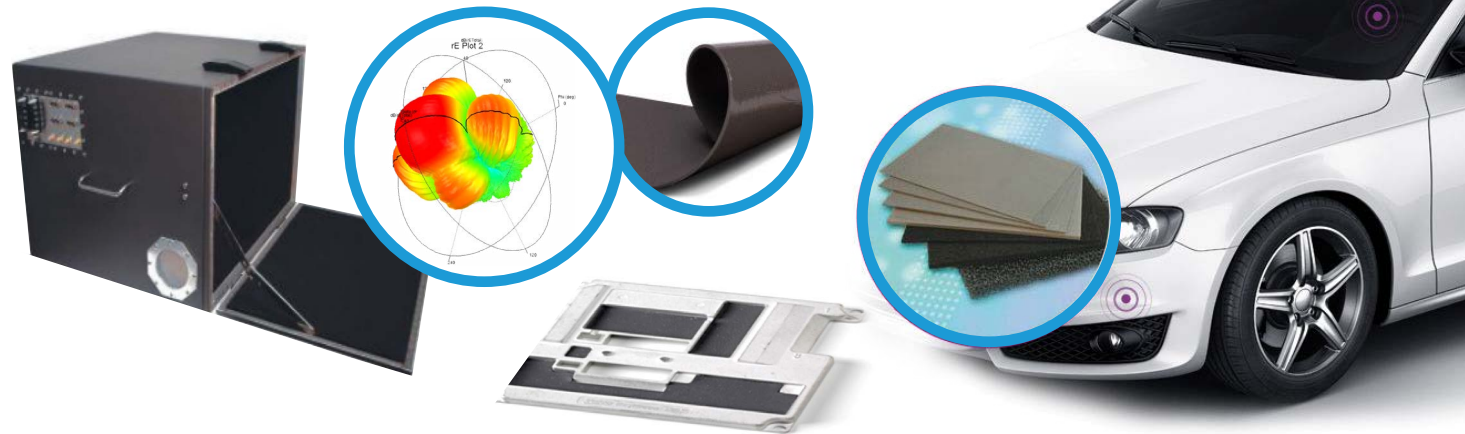
### COMING SOON

#### Rezorb™ S

Wide-frequency band elastomeric absorber with unique pyramidal design to limit noise, EMI disturbances, and antenna side lobe distortion.

#### Robzorb™ GDS

First dispensable cavity-fill elastomeric absorber with self-levelling characteristics (18-40 GHz range).



[www.laird.com/contact](http://www.laird.com/contact)

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