

ELECTROSEAL CONDUCTIVE ELASTOMER

CASE STUDY

TABLE 1

| Elastomer Type | Low Temperature | Upper Temperature |
|----------------|-----------------|-------------------|
| EPDM | -58°F (-50°C) | 257°F (125°C) |
| Silicone | -49°F (-45°C) | 392°F (200°C) |
| Fluorosilicone | -67°F (-55°C) | 347°F (175°C) |

TABLE 2

| Fluid | Silicone | Fluorosilicone | EPDM |
|------------------------------------|-----------|----------------|-------------|
| Impermeability to Gases | Poor | Fair | Good |
| Ozone and Ultraviolet | Excellent | Excellent | Excellent |
| ASTM 1 Oil | Fair | Good | Don't Use |
| Hydraulic Fluids (Organic) | Fair | Good | Don't Use |
| Hydraulic Fluids (Phosphate ester) | Fair | Fair | Excellent |
| Hydrocarbon Fuels | Don't Use | Good | Don't Use |
| Dilute Acids | Fair | Good | Good |
| Concentrated Acids | Don't Use | Don't Use | Fair / Good |
| Dilute Bases | Fair | Good | Excellent |
| Concentrated Bases | Don't Use | Don't Use | Good |
| Esters / Ketones | Don't Use | Don't Use | Excellent |
| DS-2 (Decontaminating Fluid) | Poor | Poor | Good |
| STB (Decontaminating Fluid) | Good | Good | Good |
| Low Temperature | Excellent | Excellent | Excellent |
| High Temperature | Excellent | Good | Good |
| Compression Set | Good | Good | Good |
| Radiation Resistance | Good | Poor | Good |

TABLE 3

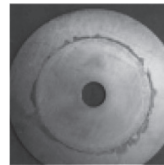
| Metal Substrate | 80 Sil AG/CU | 81 Sil AG/AL | 84 Sil AG/NI | 85 Sil AG/ Glass | 89 FSil AG/AL | 92 FSil NI/ Graphite | 93 Sil NI/ Graphite | 96 EPDM AG/AL |
|-------------------|-----------------|-----------------|-----------------|------------------------|------------------|----------------------------|---------------------------|---------------------|
| Chromated Al | • | • | • | • | • | • | • | • |
| Galvalume® | • | • | • | • | • | • | • | • |
| Tin Plated Steel | • | • | • | • | • | • | • | • |
| Zinc Plated Steel | • | • | • | • | • | • | • | • |
| Stainless Steel | • | • | • | • | • | • | • | • |

TABLE 4

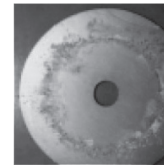
| Material Thickness | Compression Force PSI (MPa) at Deflection of: | | | |
|--------------------|---|-----------|-----------|-----------|
| | 5% | * 10% | 15% | 20% |
| 0.045 (1,1) | 40 (0,3) | 100 (0,7) | 155 (1,1) | 280 (1,9) |
| 0.062 (1,6) | 85 (0,6) | 165 (1,1) | 240 (1,7) | 345 (2,4) |
| 0.125 (3,2) | 115 (0,8) | 180 (1,2) | 245 (1,7) | 290 (2,0) |

TABLE 5

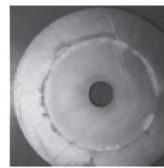
| Cross Section Shape | Deflection |
|---------------------|---------------|
| Flat Strip | 5-10 Percent |
| Solid O | 20-25 Percent |
| Solid D | 15-20 Percent |
| Hollow O | 20-50 Percent |
| Hollow D | 25-50 Percent |
| Hollow P | 25-50 Percent |
| Interference Fit | 15-25 Percent |



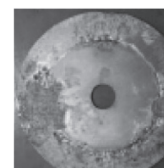
Little to no weight loss on metal coupon; less than 0.25%. Acceptable in all environments.



Substantial amount of weight loss on metal coupon; between 0.50% and 1.25%. Not acceptable in corrosive environments; for less corrosive applications consult with Laird applications engineer.



Moderate amount of weight loss on metal coupon; between 0.25% and 0.50%. May not be acceptable in very corrosive environments.



Extreme amount of weight loss on metal coupon; greater than 1.25%. Not recommended in any environments.

ELECTROSEAL CONDUCTIVE ELASTOMER MATERIAL



ELECTROSEAL™ CONDUCTIVE ELASTOMER EMI SHIELDING

Laird electrically conductive elastomer products are ideal for both military and commercial applications requiring both environmental sealing and EMI shielding. Compounds can be supplied in molded or extruded shapes, sheet stock, custom extruded, or die-cut shapes to meet a wide variety of applications.

Our conductive extrusions offer a wide choice of profiles to fit a large range of applications. The cross-sections shown on the following pages are offered as standard. Custom dies can be built to accommodate your specific design.

- Available in a wide variety of conductive filler materials
- Shielding effectiveness up to 120 dB at 10 GHz

SHEET MATERIAL

The Table below lists thicknesses and sizes for our molded sheet material, while Table 3, page 82, shows the compounds available for all of our conductive silicone elastomers.

HOW TO SPECIFY ECE

Decide on molded sheet stock or extruded shapes. Select the desired configuration and dimensions from Table 1 (for sheet stock) or page 85 (for extruded shapes). Select the desired material from Table 3. Insert material number from Table 3, page 82, in place of the letters XX in the Laird part number.

Example

1. From page 87, for a rectangular strip measuring 0.500 in. (12,7 mm) x 0.075 in. (1,9 mm), part number is 8861-0130-XX.
2. From Table 3, on page 82, for silver-nickel filler, material number is 84.
3. Ordering part number is 8861-0130-84.*

Note: Rectangular and D-shaped extrusions can be supplied with pressure sensitive adhesive tape.

*If pressure sensitive adhesive is required, replace the fifth digit with a 9 (i.e. 8861-9130-84).

| THICKNESS/TOLERANCE | 10 X 10 SHEET | 10 X 15 SHEET | 15 X 20 SHEET | 18 X 18 SHEET |
|---------------------------|------------------|------------------|------------------|------------------|
| 0.020 ± 0.004 (0,5 ± 0,1) | 8860-0020-100-XX | 8860-0020-150-XX | 8860-0020-300-XX | N/A |
| 0.032 ± 0.005 (0,8 ± 0,1) | 8860-0032-100-XX | 8860-0032-150-XX | 8860-0032-300-XX | 8860-0032-324-XX |
| 0.045 ± 0.005 (1,1 ± 0,1) | 8860-0045-100-XX | 8860-0045-150-XX | 8860-0045-300-XX | 8860-0045-324-XX |
| 0.062 ± 0.007 (1,5 ± 0,2) | 8860-0062-100-XX | 8860-0062-150-XX | 8860-0062-300-XX | 8860-0062-324-XX |
| 0.093 ± 0.010 (2,3 ± 0,3) | 8860-0093-100-XX | 8860-0093-150-XX | 8860-0093-300-XX | 8860-0093-324-XX |
| 0.100 ± 0.010 (2,5 ± 0,3) | 8860-0100-100-XX | 8860-0100-150-XX | 8860-0100-300-XX | 8860-0100-324-XX |
| 0.125 ± 0.010 (3,2 ± 0,3) | 8860-0125-100-XX | 8860-0125-150-XX | 8860-0125-300-XX | 8860-0125-324-XX |