



EMI-Shielded O-rings and Seals

Superior sealing and EMI suppression in one, from Apple Rubber Products

Today's electronic enclosures — from laptops and PDAs to portable medical devices and consumer electronics — require cost-effective, high performance EMI shielding. Now, Apple Rubber Products offers custom designed, EMI-Shielded O-rings and seals for a variety of electronic applications. Apple Rubber provides an alternative to metallic coating of parts and other methods utilized for EMI shielding, while delivering a reliable sealing solution.

Sealing and shielding in one.

Made with conductive, particle-filled elastomers, our O-rings and seals provide high EMI shielding effectiveness in an environmental or pressure seal. The microscopic particles establish a conductive path within the elastomer to create a versatile seal for use in EMI suppression.

Particle fillers include silver, copper, nickel and graphite. Elastomers can be formulated in a range from 7 to .002 resistances in ohms centimeters. These materials are low outgassing with low TML and CVCM to help prevent interference with electrical contacts.



The solution for a variety of applications.

Our EMI-Shielded seals are designed to provide a conductive interface/seal for applications in a variety of industries including:

- Telecommunications ◦ Military ◦ Medical ◦ Aerospace
- Automotive ◦ Consumer and industrial electronics

Available Fillers

- Pure Nickel ◦ Silver/Glass ◦ Silver/Nickel
- Silver/Aluminum ◦ Silver/Copper
- Low Density Silver ◦ Pure Silver

Available Elastomers

- Silicone ◦ Fluorosilicone ◦ EPDM



Custom-designed for your exact specifications.

Apple Rubber offers seals utilizing commercial grade and military grade shielding elastomers and can produce EMI-Shielded seals in an unlimited variety of shapes and sizes. We have a broad range of experience in the electronics industry and offer the design engineering capabilities to deliver the exact solution for your applications.

- Composite seals combining elastomers with plastic, metal or mesh material
- MicroSeals™ EMI-Shielded microminiature seals and O-rings
- Molded inserts
- Expert prototyping and fast turnaround
- Advanced production systems
- ISO 9001:2000 Certified
- You buy direct from our USA plant

Conductive Elastomer Specifications

Filler	Units	Method	Carbon	Nickel Graphite	Nickel Graphite	Silver Aluminum	Silver Aluminum	Pure Silver	Pure Silver	Nickel Graphite
Polymer		ASTM	Silicone	Silicone	Fluoro-silicone	Silicone	Fluoro-silicone	Silicone	Fluoro-silicone	EPDM
Volume Res.	Ohm-cm		7	0.1	0.1	0.008	0.012	0.002	0.002	5
Operating Temp. (C)	Min		-55	-55	-55	-55	-55	-55	-65	-30
	Max		200	150	150	160	160	160	160	100
Hardness	Shore A	D2240	70	30-70	65	65	70	65	75	75
Specific Gravity	g/ccm	D792	1.2	1.95	1.95	2	2	2	2	2.1
Compression Deflection	% (min)		3.5	3.5	3	3.5	3.5	2.5	3.5	2
Tensile Strength	psi	D412	650	150	150	200	180	300	250	200
Elongation	% (min)	D412	100	100	100	100	60	200	100	75
Compression Set	%	D395	40	35	25	32	30	45	60	40
22 hours at 100°C										
Tear Strength	lbs/in	D624	40	40	35	30	35	50	40	70
Shielding Effectiveness as tested per Mil-DTL-83528	100 MHz		80	100	100	120	120	120	120	90
	500 Mhz		80	100	100	120	120	120	120	90
	2 GHz		60	100	100	115	115	120	120	80
	10 GHz		50	100	100	115	115	120	120	80

* All Mil-83528 TYPE materials available upon request.

Apple Rubber can custom blend a material to meet your exact specifications.

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Seal it right. Right from Apple.™

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