CHOMERICS

- *Conductive elastomers • Knitted wire mesh*
- *Conductive coatings, sealants, adhesives*
- *Cable shielding products • EMI/ESD shielding laminates*
- *Shielded vents and windows*
- *Commercial and military EMI testing*

Parker Seals

LEADER IN EMI SHIELDING INNOVATION, DESIGN, AND TEST TECHNOLOGY

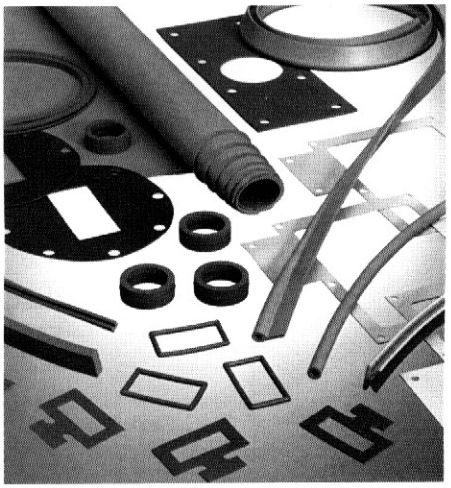
TECHNICAL BULLETIN **58**

CHO-SEAL® 1285 Conductive Elastomer with Improved Corrosion Resistance

CHO-SEAL® 1285 conductive silicone elastomer features significantly improved corrosion resistance in salt spray environments over silver-plated copper-filled silicone, the dominant EMI gasket material for military/aerospace applications since 1962. In addition to being more corrosion resistant, CHO-SEAL 1285 elastomer is lighter weight than the previously used conductive elastomers. Shielding performance is within 10 dB of the best silver-copper materials at 1 GHz, and in many instances is equivalent to silver-copper in shielding performance.

CHO-SEAL 1285 elastomer is recommended when system shielding specifications are up to 90 dB at 1 GHz. It is a medium-durometer silicone with excellent low- and high-temperature properties and electrical stability. Because of its exceptional aging characteristics and improved corrosion resistance, CHO-SEAL 1285 elastomer contributes to overall system maintainability. For the highest performance corrosion-resistant material, use CHO-SEAL 1298 (Technical Bulletin 19).

Although corrosion resistance is better than that of pure silver-filled or silver/copper-filled elastomers, CHO-SEAL 1285 elastomer is not recommended for use on external aluminum aircraft structure or in shipboard deck environments requiring compatibility against aluminum. For such applications, CHO-SEAL 1298 elastomer and CHO-SHIELD 2000 series flange protection coatings are recommended.



Aging qualities of CHO-SEAL 1285 conductive elastomer are excellent, because the silver-plated aluminum filler particle is extremely stable in air, moisture and high temperatures and the silicone elastomer is fully cross-linked. Since the material contains silver, packaging and storage conditions should be similar to those for other silver-containing components, such as relays or switches. They should be stored in sheet plastic, such as polyester or polyethylene, and kept away from sulphur-containing materials such as sulphur-cured neoprene, cardboard, etc. To remove dirt, clean with water or alcohol containing mild soap (do not use aromatic or chlorinated solvents).

CHO-SEAL 1285 elastomer is available in sheet, die-cut, molded, solid extrusion or hollow extrusion form. It can also be vulcanized directly onto cover panels. For details on standard sizes and shapes, consult Chomerics' EMI Shielding Engineering Handbook or contact Chomerics' Sales Department.

CHO-SEAL 1285 SPECIFICATIONS

			Test Procedures	
Grade/Type (Ref. MIL-G-83528)				Mil-Aerospace/B
Elastomer Binder				Silicone
Conductive Filler				Ag/Al
Volume Resistivity (ohm-cm, max) as supplied (without pressure-sensitive adhesive)			MIL-G-83528 Para. 4.6.11	0.008
Hardness (Shore A ±5)			ASTM D2240	65
Specific Gravity (±0.25)			ASTM D792	1.9
Tensile Strength (psi, min)			ASTM D412	200
Elongation (percent, min/max)			ASTM D412	100/300
Tear Strength (lb/in, min)			ASTM D624	30
Compression Set, 70 hrs @ 100°C (percent, max)*			ASTM D395 Method B	32
Low Temperature Flex TR10 (°C, min)			ASTM D1329	–65
Maximum Continuous Use Temperature (°C)§				160/200
Shielding Effectiveness §§	200 kHz (H Field) 100 MHz (E Field) 500 MHz (E Field) 2 GHz (Plane Wave) 10 GHz (Plane Wave)	(dB, min)	MIL-G-83528 Para. 4.6.12	60 115 110 105 100
Electrical Stability	Heat Aging	(ohm-cm, max)	MIL-G-83528 Para. 4.6.15	0.010
	Vibration Resistance — During		MIL-G-83528 Para. 4.6.13	0.012
	Vibration Resistance — After			0.008
	Post Tensile Set Volume Resistivity		MIL-G-83528 Para. 4.6.9	0.015
	EMP Survivability (kA per in. perimeter)		MIL-G-83528 Para. 4.6.16	>0.9

* Compression set is expressed as a percentage of deflection (after 25% deflection), *not* as a percentage of initial height. For percent of initial height, divide by four.

§ Where two values are shown, first represents max. operating temp. for conformance to MIL-G83528 (which requires Group A life testing at 1.25 times max. operating temp.). Second value represents practical limit for exposure up to 1000 hours (compressed between flanges 7-10%). Single value conforms to both definitions.

§§ Shielding effectiveness values reflect standard test per MIL-G-83528. Values may be higher or lower in actual applications, depending on gasket and flange configuration and mechanical issues.

continued

CONDUCTIVE ELASTOMER "OCTANE" CHART

The following chart provides material selection guidelines for Chomerics' most general purpose conductive elastomer EMI/EMP gasket materials. With the exception of certain limitations noted under "Remarks" (especially for silver-glass materials), **all** of these materials are electrically and mechanically stable over time and provide excellent moisture and pressure sealing. They are all medium-durometer materials, and differ mainly in shielding performance (see chart), and corrosion resistance (silver-aluminum materials are significantly more corrosion resistant than silver-copper and silver-glass materials). Price varies directly with shielding performance.

Note: We do NOT recommend that material selection be based primarily on durometer. Unlike unfilled elastomers, durometer is not always a good indicator of deflection properties. Gasket shape is generally the most important determinant of deflection under load. For applications requiring large gasket deflection with minimum closure force, select a hollow strip configuration (or contact Chomerics Applications Laboratory).

Material	Filler	For Equipment Shielding Requirements of ...	Remarks
CHO-SEAL® 1215 (extruded version formerly designated 1250) (fluorosilicone version: 1217)	Silver-Copper	>100 dB	Resists highest level of EMP induced current (>3kA/inch); the most cost-effective gasket material prior to development of silver-aluminum fillers; 125°C max use temperature.
CHO-SEAL® 1298	Silver-Aluminum	>90 dB	Most corrosion resistant conductive elastomer; suitable for use against aluminum aircraft structure and in shipboard deck environments.
CHO-SEAL® 1285* (fluorosilicone version: 1287)	Silver-Aluminum	>90 dB	Excellent corrosion resistance; lightweight; 200°C max use temperature; good EMP resistance.
CHO-SIL® 1485	Silver-Aluminum	>70 dB	Replacement for silver-glass gaskets; lightest weight; 85°C max use temperature.
CHO-SEAL® 1350	Silver-Glass	>70 dB	Loses conductivity under certain vibration, EMP and mechanical stress conditions.

*U.S. Patent 4,434,541

CHOMERICS

Parker Seals

Chomerics, Inc.
77 Dragon Court
Woburn, MA 01888-4014
Tel: 617-935-4850
FAX: 617-933-4318

ISO 9002 CERTIFIED

Parker Hannifin PLC
Chomerics Europe
Parkway, Globe Park Estate
Marlow, Bucks., SL7 1YB, England
Tel: (44) 1628 486030 FAX: (44) 1628 890053
France Freephone Tel: (0590) 8170
Germany Freephone Tel: (0130) 818074

ISO 9002 CERTIFIED

1M397SG-338
Rev. 1-1195