CHO-SEAL® & CHO-SIL® Conductive Elastomers

Since 1961, Chomerics has invented and extended virtually every aspect of conductive elastomer materials technology — from the earliest silver and silver/copper filled silicones to the latest and more cost-effective silver/aluminum and nickel/graphite composites. Today we offer the most comprehensive selection and highest quality products available anywhere.

Each conductive elastomer consists of a silicone, fluorosilicone, EPDM or fluorocarbon-fluorosilicone binder with a filler of pure silver, silver-plated copper, silver-plated aluminum, silver-plated nickel, silver-plated glass, nickel-plated graphite, or unplated graphite particles.

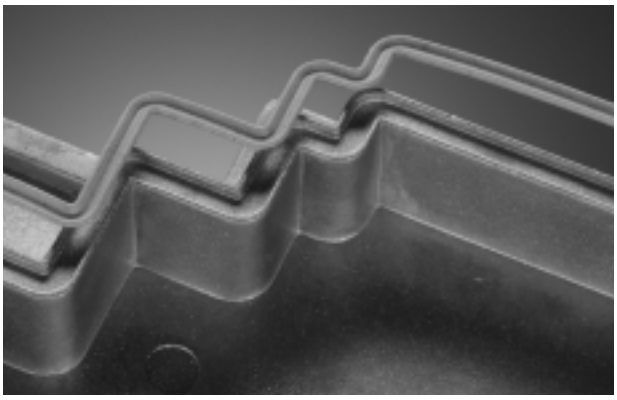
The development of these composites is the result of decades of research and testing, both in the laboratory and in the field. Our proprietary filler powder technology allows us to carefully control the composition, size, and morphology of the conductive particles. Their precise, uniform dispersion within the resinous binders produces materials with stable and consistent electrical and physical properties.

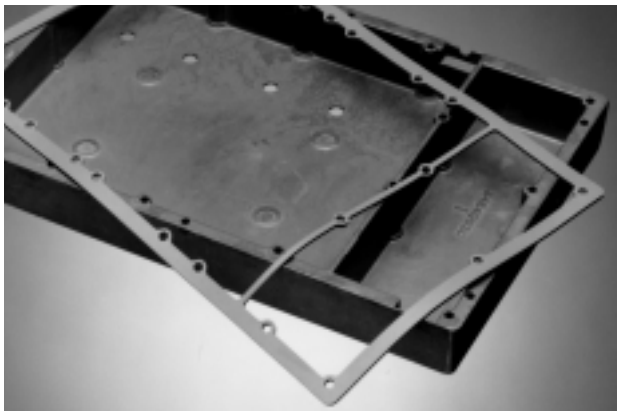
Chomerics' conductive elastomers feature excellent resistance to compression set over a wide temperature range, resulting in years of continuous service. All meet MIL-STD-810 requirements for fungus resistance. In addition to EMI shielding, these materials will provide an environmental or pressure seal if required.

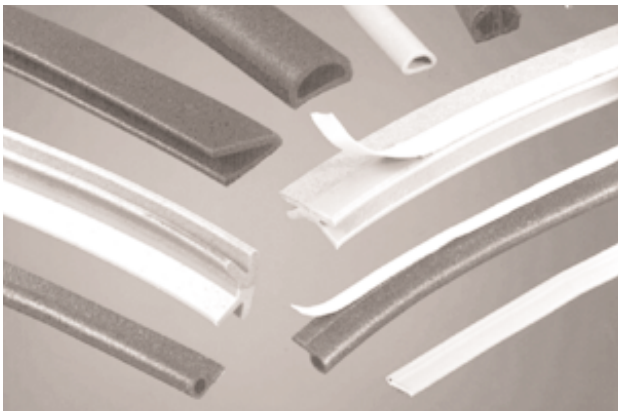
For those materials containing silver, both packaging and storage conditions should be similar to those for other silver-containing components, such as relays or switches. They should be stored in sheet plastic, such as polyester or polyethylene, and kept away from sulfur-containing materials, such as sulfur-cured neoprene, cardboard, etc. To remove dirt, clean the elastomer with water or alcohol containing mild soap (do not use aromatic or chlorinated solvents).

Table 3 on pages 5-7 outlines the properties and specification limits of Chomerics' conductive elastomers. These materials are produced in a virtually unlimited variety of molded, die-cut and extruded shapes and sizes

Our Applications Engineering Department is very accessible, and ready to assist with material selection and gasket design. We welcome your inquiry.







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US Headquarters TEL +(1) 781-935-4850 FAX +(1) 781-933-4318 • www.chomerics.com
Europe TEL +(44) 1628 404000 FAX +(44) 1628 404090
Asia Pacific TEL +(852) 2 428 8008 FAX +(852) 2 423 8253
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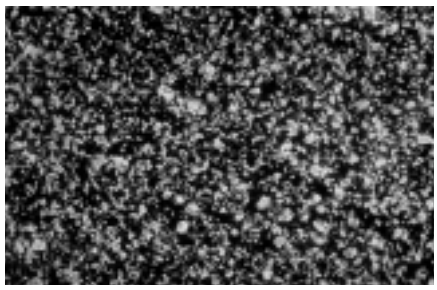
Material Selection

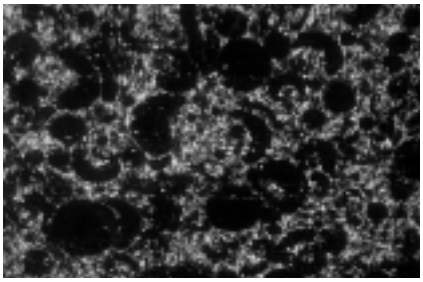
Chomerics' array of conductive elastomers offers true flexibility in selecting the appropriate material for a specific application on the basis of cost and level of attenuation required. Price varies directly with shielding performance.

For most applications, CHO-SEAL materials are preferred over CHO-SIL materials, owing to their superior physical properties and excellent shielding performance. With their reticulate structure, CHO-SIL materials are typically lighter in weight and more compressible.

For military/aerospace applications, we recommend that users of conductive elastomer gaskets specify that materials meet the requirements of MIL-G-83528 and be procured from MIL-G-83528 QPL sources. To avoid the risk of system EMI or environmental seal failure, any change in conductive elastomer seal supplier (including MIL-G-83528 QPL suppliers) should be proceeded by thorough system qualification testing.



Homogeneous Structure: CHO-SEAL materials



Reticulate Structure: CHO-SIL materials

Conductive Elastomer Applications

As a generality, certain types of Chomerics' conductive elastomers are specified more often for military/aerospace applications or for commercial applications. However, there is a considerable overlap, and our Applications Engineering organization will be pleased to assist you with product selection.

Commercial
1291*/1273
S6304, S6305, 6370
1350
1310*/1356**
* molded parts only
** extruded parts only

Military/Aerospace
1224/1221*
1298*
1215/1217*
1285/1287*
1278**
S6304, S6305, 6370, L6303*
* fluorosilicone
** molded parts only

Specialty
1501*/1401
1239*/1212*
E6306*, E6434*/E6434E**
V6433*
1485
S6600/S6602*
* molded parts only
** extruded parts only

Non-Silicone Base Elastomer Fluid Resistance

Certain specialty elastomers (E6306, E6434, E6434E, V6433 and the various fluorosilicone based materials) are offered specifically for their fluid resistance properties. Table 1 shows the qualitative assessment of fluid resistance to various fluids for three non-silicone base elastomers used for Chomerics' conductive elastomers.

Table 1

NON-SILICONE BASE ELASTOMER FLUID RESISTANCE			
	Fluorosilicone	EPDM	Fluorocarbon
Oil	Good	Do Not Use	Excellent
Hydraulic Fluids (Organic)	Good	Do Not Use	Excellent
Hydraulic Fluid (Phosphate Ester)	Fair	Excellent	Good
Hydrocarbon Fuels	Good	Do Not Use	Excellent
DS2 (NBC Decontamination Fluid)	Poor	Good	Fair/Good
STB (NBC Decontamination Fluid)	Good	Good	Good

continued

Conductive Elastomer Selection Guide

The chart on these pages provides selection guidelines for Chomerics' most general-purpose elastomer EMI gasket materials. With the exception of certain limitations noted under "Remarks", all of these materials are electrically stable over time and provide excellent moisture and pressure sealing. They are all medium-durometer materials and differ mainly in shielding performance and corrosion resistance. (Silver-plated-aluminum filled materials are significantly more corrosion-resistant than silver-plated-copper and silver-plated-nickel filled materials. Refer to the discussion of CHO-SEAL 1298 Corrosion-Resistant EMI Shielding Gasket on page 5.)

Note on Gasket Deflection and Closure Force: We do NOT recommend that material selection be based primarily on hardness. Unlike unfilled elastomers, hardness 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 and/or evaluate the use of Chomerics' SOFT-SHIELD® Low Closure Force Gaskets.

Table 2

ELASTOMERS FOR TYPICAL COMMERCIAL APPLICATIONS			
Material	Filler and Binder	Equipment Shielding Requirements (Typ.)	Remarks
CHO-SEAL 1291 (molded) CHO-SEAL 1273	silver-plated copper in silicone	80-105 dB	Material of choice for high-end commercial applications; highest performance material in non-corrosive environments; tear trim compression and injection molding.
CHO-SEAL S6304, S6305, 6370 CHO-SEAL L6303	nickel-coated graphite in silicone fluorosilicone version	100 dB	Good performance in moderately corrosive environments; material of choice for flange finishes needing "bite-through" for good electrical contact; flame retardant 6370 is UL 94V-0 rated.
CHO-SEAL 1350	silver-plated glass in silicone	80-105 dB	Standard material for high volume injection and compression molding and small extrusions; high performance in non-corrosive environments; moderate physical properties.
CHO-SEAL 1310 (molded) CHO-SIL 1356 (extruded)	silver-plated glass in silicone silver-plated glass in reticulate silicone	80-100 dB	Moderate performance in non-corrosive environments; no corrosion or fluid resistance; material of choice for small, delicate injection-molded parts or larger extrusions.
ELASTOMERS FOR TYPICAL MILITARY/AEROSPACE APPLICATIONS			
Material	Filler and Binder	Equipment Shielding Requirements (Typ.)	Remarks
CHO-SEAL 1224 CHO-SEAL 1221	silver in silicone fluorosilicone version	>120 dB	Highest shielding and through conductivity; higher physical properties; excellent processing for molding and extrusion; reinforced form available.
CHO-SEAL 1298	silver-plated aluminum in fluorosilicone	90-110 dB	High performance in harshest corrosive environments; material of choice for aircraft and marine military applications (see feature on page 32); good physical properties; molded, extruded or reinforced. Best corrosion resistance among Chomerics' conductive elastomers.
CHO-SEAL 1215 CHO-SEAL 1217	silver-plated copper in silicone fluorosilicone version	105-120 dB	Resists highest level of EMP induced current; military gasket of choice in non-corrosive environment; excellent processing for molding and extrusion.

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Table 2 continued

ELASTOMERS FOR TYPICAL MILITARY/AEROSPACE APPLICATIONS continued			
Material	Filler and Binder	Equipment Shielding Requirements (Typ.)	Remarks
CHO-SEAL 1285 CHO-SEAL 1287	silver-plated aluminum in silicone fluorosilicone version	90-110 dB	Military gasket of choice for corrosive environments; lightweight, 200°C max. use temperature; good EMP resistance; molded, extruded and reinforced.
CHO-SEAL 1278	silver-plated nickel in silicone	>100 dB	High performance in non-corrosive environments; molded parts only; no fluid resistance.
CHO-SEAL S6304, S6305, 6370 CHO-SEAL L6303	nickel-coated graphite in silicone fluorosilicone version	>100 dB	Good performance in moderately corrosive environments; material of choice for flange finishes needing “bite-through” for good electrical contact; flame retardant 6370 is UL 94V-0 rated.
SPECIALTY ELASTOMERS			
Material	Filler and Binder	Equipment Shielding Requirements (Typ.)	Remarks
CHO-SEAL 1501	silver in silicone foam	80-100 dB	Soft (30 Shore A) for low closure force where gasket shape cannot be exploited; low tear strength; no corrosion resistance or fluid resistance; sheet stock only.
CHO-SIL 1401	silver in reticulate silicone	80-100 dB	High performance for non-corrosive environments; soft (45 Shore A) for low closure force where gasket shape cannot be exploited; low tear strength; no fluid resistance.
CHO-SEAL 1239	silver-plated copper in silicone with expanded copper reinforcement	110 dB	Material for waveguide choke, cover, and flange EMI shielding and pressure sealing; maximum heat transfer and minimum outgassing; hard (80 Shore A), high-strength material; available with raised lip around iris opening for high power/ high pressure applications.
CHO-SEAL 1212	silver-plated copper in silicone	120 dB	High strength, hard (80 Shore A) material for waveguide, choke, cover, and flanges with grooves for EMI and pressure sealing.
CHO-SEAL E6434 (molded) CHO-SEAL E6434E (extruded)	silver-plated nickel in EPDM	95 dB 90 dB	Material of choice for high shielding where NBC fluid resistance is needed; high performance in corrosive environments.
CHO-SEAL E6306	nickel-coated graphite in EPDM	>90 dB	Good performance in moderately corrosive environments; excellent NBC fluid resistance; good physical properties.
CHO-SEAL V6433	silver-plated nickel in fluorocarbon	100 dB	Material of choice for extensive fluid resistance; no corrosion resistance.
CHO-SIL 1485	silver-plated aluminum in reticulate silicone	50-100 dB	Moderate corrosion resistance for military applications.
CHO-SEAL S6600 and S6602	carbon in silicone	30-80 dB	Low-end shielding or ESD protection; high tensile strength; no corrosion or fluid resistance.

Table 3

CONDUCTIVE ELASTOMER SPECIFICATIONS (grouped by filler)

		Test Procedure (Type of Test)	CHO-SEAL 1221	CHO-SEAL 1224	CHO-SIL 1401[d]	CHO-SEAL 1501[n]	CHO-SEAL 1212[n]	CHO-SEAL 1215[d]	CHO-SEAL 1217	CHO-SEAL 1239[n]	CHO-SEAL 1273
Conductive Filler			Ag	Ag	Ag	Ag	Ag/Cu	Ag/Cu	Ag/Cu	Ag/Cu	Ag/Cu
Elastomer Binder			Fluoro-silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Fluoro-silicone	Silicone	Silicone
Type (Ref. MIL-G-83528)			Type F	Type E	—	—	Type K	Type A	Type C	Type G	—
Volume Resistivity, ohm-cm, max., as supplied (without pressure-sensitive adhesive)		CEPS-0002[a]	—	—	—	—	—	—	—	—	0.004
		MIL-G-83528 Para. 4.6.11	0.002	0.002	0.010	0.03	0.005	0.004	0.010	0.007	—
Hardness (Shore A)		ASTM D2240 (Q/C)	75 ±5	65 ±5	45 ±5	35 ±7	80 ±5	65 ±5	75 ±5	80 ±5	65 ±8
Specific Gravity (±0.25)		ASTM D792 (Q/C)	4.0	3.5 ±0.45	1.6	2.7 (typ.)	3.5	3.5 ±0.45	4.1/3.8[e]	4.75 ±0.75	3.7
Tensile Strength, psi (MPa), min.		ASTM D412 (Q/C)	250 (1.72)	300 (2.07)	200 (1.38)	80 (0.55)	400 (2.76)	200 (1.38)	180 (1.24)	600 (4.14)	175 (1.21)
Elongation, % min. or % min./max.		ASTM D412 (Q/C)	100/300	200/500	75	NA	100/300	100/300	100/300	20/NA	75
Tear Strength, lb/in. (kN/m), min.		ASTM D624 (Q)	40 (7.00)	50 (8.75)	20 (3.50)	20 (3.50)	40 (7.00)	40/25[e]	35 (6.13)	70 (12.25)	—
Compression Set, 70 hrs @ 100°C, % max.[b]		ASTM D395 Method B (Q)	60	45	35	80	35	32	35	NA	32
Low Temperature Flex TR10, °C, min		ASTM D1329 (Q)	–65	-65	–55	NA	–45	–65	–55	NA	–65
Maximum Continuous Use Temperature, °C[c]		(Q)	160/200	160/200	160/200	160/200	125	125	125	125	125
Shielding Effectiveness (see Note below)			Method (2)	Method (2)	Method (2)	Method (2)	Method (2)	Method (2)	Method (2)	Method (2)	Method (1)
dB, min.	200 kHz (H Field)	Method (1) CHO-TM-TP08[a]	70	70	60	60	70	70	70	70	—
	100 MHz (E Field)		120	120	100	100	120	120	120	110	100
	500 MHz (E Field)		120	120	100	100	120	120	120	110	100
	2 GHz (Plane Wave)	Method (2) MIL-G-83528 Para 4.6.12 (Q)	120	120	90	90	120	120	115	110	100
	10 GHz (Plane Wave)		120	120	80	80	120	120	110	110	100
Electrical Stability		CEPS-0002[a]	—	—	—	—	—	—	—	—	0.01
ohm-cm, max.	Heat Aging	MIL-G-83528 Para. 4.6.15 (Q/C)	0.010	0.010	0.015	NA	0.010	0.010	0.015	0.010	—
	Vibration Resistance During	MIL-G-83528 (Q) Para. 4.6.13 (Q)	0.010	0.010	0.015	NA	0.010	0.006	0.015	0.010	—
	Vibration Resistance After		0.002	0.002	0.01	0.03	0.005	0.004	0.010	0.007	—
	Post Tensile Set Volume Resistivity	MIL-G-83528 Para. 4.6.9 (Q/C)	0.010	0.010	0.02	NA	0.010	0.008	0.015	NA	—
	EMP Survivability,	MIL-G-83528	>0.9	>0.9	note f	>0.3	>0.9	>0.9	>0.9	>0.9	—

a Copies of CEPS-0002 and CHO-TM-TP08 are available from Chomerics

b Compression set is expressed as a percentage of deflection per ASTM D395 Method B., at 25% deflection. To determine percent recovery, subtract 1/4 of stated compression set value from 100%. For example, in the case of 30% compression set, recovery is 92.5%.

c Where two values are shown: First represents max. operating temp. for conformance to MIL-G-83528 (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.

d Extruded version of 1215 was formerly designated 1250; extruded version of 1401 was formerly designated 1405.

e Second value applies to extruded forms only.

f CHO-SIL 1401 degrades electrically after simulated EMP current levels < 0.9 kA per in.

n Not available in extruded form.

NA Not Applicable

(Q) Qualification

(C) QC Conformance

Note: It may not be inferred that the same level of shielding effectiveness provided by a gasket material tested in the fixture per MIL-G-83528 Para. 4.6.12 would be provided in an actual equipment flange, since many mechanical factors of the flange design (tolerances, stiffness, fastener location, and size, etc.) could lower or enhance shielding effectiveness. This procedure provides data applicable only to the test fixture design of MIL-G-83528, but which is useful for making comparisons between different gasket materials.

CHO-SEAL1298 Corrosion-Resistant EMI Shielding Gasket

CHO-SEAL 1298 elastomer incorporates unique particle plating and elastomer technology for increased corrosion resistance. When used in conjunction with the CHO-SHIELD 2000 series of corrosion-resistant conductive coatings on aluminum flanges, a corrosion-proof EMI flange system is obtained. CHO-SEAL 1298 gasket material is based on a silver-plated-aluminum filler dispersed in a fluorosilicone binder, with corrosion inhibiting additives that contain no chromates. It offers shielding effectiveness of 100 dB at 500 MHz and meets all requirements of MIL-G-83528 Type D (initial and aged). CHO-SEAL 1298 gasket material also has excellent resistance to fluids and fuels commonly used in aviation and industrial applications.

Corrosion Resistance Testing

Chomerics has completed extensive corrosion resistance testing on CHO-SEAL 1298 gasket material using a gravimetric weight loss procedure. A copy of the test method (CHO-TM 100) is available on request from Chomerics. Test fixtures and elastomer samples are also available. Contact Chomerics' Applications Engineering Department for further information.

Lightning Strike Resistance

The survivability of any system to lightning strike is dependent on specific flange design. Lightning strike testing of CHO-SEAL 1298 gasket material has demonstrated

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Table 3 continued

CONDUCTIVE ELASTOMER SPECIFICATIONS (grouped by filler)												
		Test Procedure (Type of Test)	CHO-SEAL 1291[n]	CHO-SEAL 1278[n]	CHO-SEAL V6433[n]	CHO-SEAL E6434[n]	CHO-SEAL E6434E[●]	CHO-SEAL 1285	CHO-SEAL 1287	CHO-SEAL 1298	CHO-SIL 1485	CHO-SEAL 1310[n]
Conductive Filler			Ag/Cu	Ag/Ni	Ag/Ni	Ag/Ni	Ag/Ni	Ag/Al	Ag/Al	Passivated Ag/Al	Ag/Al	Ag/Glass
Elastomer Binder			Silicone	Silicone	Fluorocarbon/ Fluorosilicone	EPDM	EPDM	Silicone	Fluoro-silicone	Fluoro-silicone	Silicone	Silicone
Type (Ref. MIL-G-83528)			—	Type L	—	—	—	Type B	Type D	Type D	—	—
Volume Resistivity, ohm-cm, max., as supplied (without pressure-sensitive adhesive)		CEPS-0002[a]	0.004	—	—	—	—	—	—	—	—	0.01
		MIL-G-83528 Para. 4.6.11	—	0.005	0.006	0.006	0.05	0.008	0.012	0.012	0.02	—
Hardness (Shore A)		ASTM D2240 (Q/C)	70 ±5	75 ±5	85 ±7	75 ±7	80 ±7	65 ±5	70 ±5	70 ±5	60 ±5	70 ±10
Specific Gravity (±0.25)		ASTM D792 (Q/C)	3.45	4.0	4.8	3.9	3.8	1.9	2.0	2.0	1.7	1.8
Tensile Strength, psi (MPa), min.		ASTM D412 (Q/C)	175 (1.21)	200 (1.38)	400 (2.76)	200 (1.38)	200 (1.38)	200 (1.38)	180 (1.24)	180 (1.24)	180 (1.24)	200 (1.38)
Elongation, % min. or % min./max.		ASTM D412 (Q/C)	75	100/300	50	200	100	100/300	60/260	60/260	100	100
Tear Strength, lb/in. (kN/m), min.		ASTM D624 (Q)	—	30 (5.25)	70 (12.25)	75 (13.13)	70 (12.25)	30 (5.25)	35 (6.13)	35 (6.13)	30 (5.25)	
Compression Set, 70 hrs @ 100°C, % max.[b]		ASTM D395 Method B (Q)	32	32	45	40	40	32	30	30	30	35
Low Temperature Flex TR10, °C, min.		ASTM D1329 (Q)	–45	–55	–25	–45	–45	–65	-55	–55	–40	–40
Maximum Continuous Use Temperature, °C[c]		(Q)	125	125	200	100	100	160/200	160/200	160/200	85	160
Shielding Effectiveness (see Note below)			Method (2)	Method (1)	Method (2)	Method (2)	Method (1)	Method (2)	Method (2)	Method (2)	Method (2)	Method (1)
	200 kHz (H Field)	Method (1) CHO-TM-TP08[a]	—	70	—	—	—	60	55	55	50	—
	100 MHz (E Field)		100	120	105	105	90	115	110	110	100	100
	500 MHz (E Field)		100	120	100	100	90	110	100	100	100	100
	2 GHz (Plane Wave)	Method (2) MIL-G-83528 Para 4.6.12 (Q)	100	115	90	85	90	105	95	95	90	90
	10 GHz (Plane Wave)		100	110	90	85	90	100	90	90	80	80
dB, min.												
Electrical Stability		CEPS-0002[a]	0.008	—	—	—	—	—	—	—	—	0.01
	Heat Aging	MIL-G-83528 Para. 4.6.15 (Q/C)	—	0.010	0.008[g]	0.0125[h]	0.05[h]	0.010	0.015	0.015	0.06[g]	—
	Vibration Resistance During	MIL-G-83528 (Q) Para. 4.6.13 (Q)	—	0.010	NA	NA	NA	0.012	0.015	0.015	0.06	—
	Vibration Resistance After		—	0.005	NA	NA	0.05	0.008	0.012	0.012	0.02	—
	Post Tensile Set Volume Resistivity	MIL-G-83528 Para. 4.6.9 (Q/C)	—	0.010	—	—	NA	0.015	0.015	0.015	NA	—
	EMP Survivability, kA per in. perimeter	MIL-G-83528 Para. 4.6.16 (Q)	—	>0.9	NA	NA	—	>0.9	>0.9	>0.9	>0.3	—
ohm-cm, max.												

a Copies of CEPS-0002 and CHO-TM-TP08 are available from Chomerics

b Compression set is expressed as a percentage of deflection per ASTM D395 Method B., at 25% deflection. To determine percent recovery, subtract 1/4 of stated compression set value from 100%. For example, in the case of 30% compression set, recovery is 92.5%.

c Where two values are shown: First represents max. operating temp. for conformance to MIL-G-83528 (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.

g Heat aging condition: 200°C/48 hrs.

h Heat aging condition: 100°C/48 hrs.

n Not available in extruded form.

● Not available in sheet or molded form.

NA Not Applicable

(Q) Qualification

(C) QC Conformance

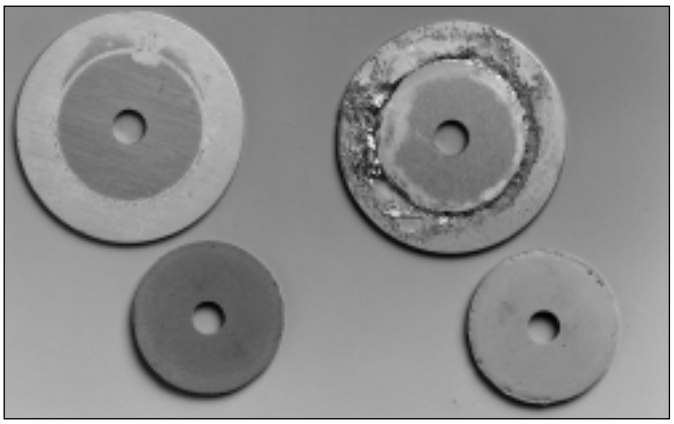
continued

Note: It may not be inferred that the same level of shielding effectiveness provided by a gasket material tested in the fixture per MIL-G-83528 Para. 4.6.12 would be provided in an actual equipment flange, since many mechanical factors of the flange design (tolerances, stiffness, fastener location, and size, etc.) could lower or enhance shielding effectiveness. This procedure provides data applicable only to the test fixture design of MIL-G-83528, but which is useful for making comparisons between different gasket materials.

survivability beyond 5 kA/in. Test data is available on request.

Ordering Information

CHO-SEAL 1298 gaskets are available in all standard forms including molded, die-cut and extruded. The material is also available reinforced with Dupont Dacron® fabric, woven wire mesh and/or 3M Nextel® fabric.



Comparison of corrosion results obtained from CHO-SEAL 1298 conductive elastomer (left) and pure silver-filled elastomer (right) mated with chromated aluminum for 168 hours of salt fog exposure.

Table 3 continued

CONDUCTIVE ELASTOMER SPECIFICATIONS (grouped by filler)										
	Test Procedure (Type of Test)	CHO-SEAL 1350	CHO-SIL 1356●	CHO-SEAL L6303	CHO-SEAL S6304	CHO-SEAL S6305	CHO-SEAL E6306n	CHO-SEAL 6370s	CHO-SEAL S6600	CHO-SEAL S6602n
Conductive Filler		Ag/Glass	Ag/Glass	Ni/C	Ni/C	Ni/C	Ni/C	Ni/C	C	C
Elastomer Binder		Silicone	Silicone	Fluoro-silicone	Silicone	Silicone	EPDM	Silicone	Silicone	Silicone
Type (Ref. MIL-G-83528)		Type M	—	—	—	—	—	—	—	—
Volume Resistivity, ohm-cm, max., as supplied (without pressure-sensitive adhesive)	CEPS-0002[a]	—	0.05	—	—	—	—	0.1	7.0	8.0
	MIL-G-83528 Para. 4.6.11	0.01	—	0.1	0.1	0.1	5	—	—	—
Hardness (Shore A)	ASTM D2240 (Q/C)	65 ±5	55 ±10	65 ±10	55 ±10	65 ±10	75 ±7	60 ±10	75 ±7	65 ±7
Specific Gravity (±0.25)	ASTM D792 (Q/C)	1.8	1.7	2.2	1.9	2.0	1.9	2.1	1.2	1.2
Tensile Strength, psi (MPa), min.	ASTM D412 (Q/C)	150 (1.03)	100 (0.69)	150 (1.03)	150 (1.03)	200 (1.38)	200 (1.38)	150 (1.03)	650 (4.49)	550 (3.80)
Elongation, % min. or % min./max.	ASTM D412 (Q/C)	75	50	60	100	100	75	100	70	100
Tear Strength, lb/in. (kN/m), min.	ASTM D624 (Q)	30/25[j]	20 (3.50)	35 (6.13)	35 (6.13)	50 (8.75)	70 (12.25)	35 (6.13)	—	—
Compression Set, 70 hrs @ 100°C, % max.[b]	ASTM D395 Method B (Q)	30	35	25	30	30	40	40	45	45
Low Temperature Flex TR10, °C, min.	ASTM D1329 (Q)	–55	–40	–45	–45	–45	–45	–45	–45	–45
Maximum Continuous Use Temperature, °C[c]	(Q)	160	160	150	150	150	100	150	200	200
Shielding Effectiveness (see Note below) dB, min.		Method (2)	Method (1)	Method (2)	Method (1)	Method (1)	Method (2)	Method (1)	Method (1)	Method (1)
200 kHz (H Field)	Method (1) CHO-TM-TP08[a]	50	—	NA	NA	NA	—	—	—	—
100 MHz (E Field)		100	65	100	100	100	95	100	80	80
500 MHz (E Field)		100	65	100	100	100	90	100	80	80
2 GHz (Plane Wave)	Method (2) MIL-G-83528 Para 4.6.12 (Q)	90	70	100	100	100	85	95	60	60
10 GHz (Plane Wave)		80	65	100	100	100	85	95	50	50
Electrical Stability ohm-cm, max.	CEPS-0002[a]	—	0.05	0.25[i]	0.25[i]	0.25[i]	—	0.25[i]	7.0	8.0
Heat Aging	MIL-G-83528 Para. 4.6.15 (Q/C)	0.01	—	—	—	—	10[h]	—	—	—
Vibration Resistance During	MIL-G-83528 (Q) Para. 4.6.13 (Q)	NA	—	0.1	NS	0.1	NA	—	—	—
Vibration Resistance After		NA	—	0.1	NS	0.1	NA	—	—	—
Post Tensile Set Volume Resistivity	MIL-G-83528 Para. 4.6.9 (Q/C)	0.01	—	—	—	—	NA	—	—	—
EMP Survivability, kA per in. perimeter	MIL-G-83528 Para. 4.6.16 (Q)	NS	—	0.1	0.1	0.1	NA	—	—	—

a Copies of CEPS-0002 and CHO-TM-TP08 are available from Chomerics

b Compression set is expressed as a percentage of deflection per ASTM D395 Method B., at 25% deflection. To determine percent recovery, subtract 1/4 of stated compression set value from 100%. For example, in the case of 30% compression set, recovery is 92.5%.

c Where two values are shown: First represents max. operating temp. for conformance to MIL-G-83528 (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.

h Heat aging condition: 100°C/48 hrs.

i Heat aging condition: 150°C/48 hrs.

j First value represents conformance to MIL-G-83528.

n Not available in extruded form.

● Not available in sheet or molded form.

NA Not Applicable

NS Not Survivable

(Q) Qualification

(C) QC Conformance

s UL 94V-0 Rated

Note: It may not be inferred that the same level of shielding effectiveness provided by a gasket material tested in the fixture per MIL-G-83528 Para. 4.6.12 would be provided in an actual equipment flange, since many mechanical factors of the flange design (tolerances, stiffness, fastener location, and size, etc.) could lower or enhance shielding effectiveness. This procedure provides data applicable only to the test fixture design of MIL-G-83528, but which is useful for making comparisons between different gasket materials.

CHOMERICS®
US Headquarters **TEL** +(1) 781-935-4850 **FAX** +(1) 781-933-4318 • www.chomerics.com
Europe **TEL** +(44) 1628 404000 **FAX** +(44) 1628 404090
Asia Pacific **TEL** +(852) 2 428 8008 **FAX** +(852) 2 423 8253
South America **TEL** +(55) 11 3917 1099 **FAX** +(55) 11 3917 0817
Parker Seals