

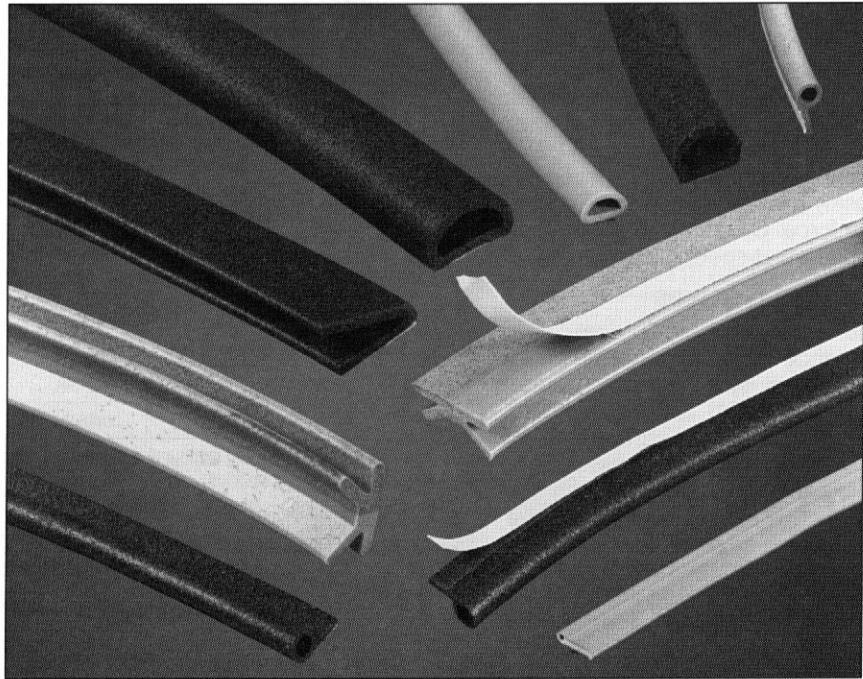


Commercial Grade Conductive Elastomer Extrusions with Pressure-Sensitive Adhesive Attachment System

Chomerics' extrudable CHO-SEAL® and CHO-SIL® materials are electrically conductive elastomers specially formulated to provide shielding against electromagnetic interference (EMI). They offer excellent cost/performance characteristics for commercial EMI gasket applications.

These silicone- and fluorosilicone-based conductive elastomer materials offer excellent resistance to compression set over a wide temperature range, resulting in years of continuous service. Our proprietary filler powder technology, including careful control of composition, size distribution, and morphology, provide excellent conductivity and long-term stability. In addition to EMI shielding, these materials will provide an environmental or pressure seal if required.

CHO-SEAL and CHO-SIL materials are offered with a range of EMI shielding properties, allowing for a cost-performance material choice to provide the



continued

	TEST PROCEDURE	CHO-SIL 1356	CHO-SEAL 1350	CHO-SEAL 1273	CHO-SEAL 6370	CHO-SEAL S6304	CHO-SEAL S6305	CHO-SEAL L6303
Elastomer Binder		Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Fluorosilicone
Conductive Filler		Ag/Glass	Ag/Glass	Ag/Cu	Ni/C	Ni/C	Ni/C	Ni/C
Volume Resistivity (ohm-cm, max.) as supplied (without pressure-sensitive adhesive)	CEPS-0002*	0.05	0.01	0.004	0.1	0.1	0.1	0.1
Hardness (Shore A)	ASTM D2240	55 ±5	65 ±5	65 ±8	60 ±10	55 ±10	65 ±10	65 ±10
Specific Gravity (typ.)	ASTM D792	1.70	1.80	3.70	2.1 ±0.25	1.9	2.0	2.2 ±0.25
Tensile Strength psi, min. (MPa, min.)	ASTM D412	100 (0.69)	150 (1.03)	175 (1.21)	150 (1.03)	150 (1.03)	200 (1.38)	150 (1.03)
Elongation (percent, min.)	ASTM D412	50	75	75	100	100	100	100
Compression Set, 70 hrs. @ 100°C (percent, max.)	ASTM D395**	8.8	7.5	8.0	10.0	6.3	6.3	5.0
Shielding Effectiveness (dB)	Modified MIL-STD-285	65	100	100	100	100	100	100
100 MHz (E-Field)		65	100	100	100	100	100	100
500 MHz (E-Field)		65	100	100	100	100	100	100
2 GHz (Plane Wave)		70	90	100	100	100	100	100
10 GHz (Plane Wave)		65	80	100	95	100	100	100
Volume Resistivity after Heat Aging (ohm-cm, max.)	CEPS-0002*	N/A	0.01	0.01	0.25	0.25	0.25	0.25

* Copies of CEPS-0002 are available from Chomerics.

** Compression set values reported as a percentage of original height. Samples tested under constant deflection.

needed level of attenuation. CHO-SEAL 1273 and CHO-SEAL S6305 materials are also especially suitable for grounding applications in which a flexible electrical contact is needed.

The nickel-graphite-filled materials provide both excellent shielding effectiveness and good corrosion resistance. Additionally, CHO-SEAL 6370 material has a UL V0 rating for flammability (UL File No. 96ME1704).

These materials may be supplied in bulk on rolls, cut to a specified length, kiss-cut and supplied on peel-off release paper or as spliced parts. Numerous standard cross sections are available, ranging in size from a .040 inch (1.2 mm) diameter hollow "O" to a 2.00 inch (50.8 mm) wide ribbon strip. In addition, many unique cross sections exist with specialized features such as cost effective attachment, large gasket deflection range for loosely toleranced parts, or ultra low closure force. Custom shapes can be tailored to meet specific applications.

CO-EXTRUDED STRIPS

Chomerics manufactures a dual-performance extruded gasket in one simple design. By a seam vulcanization process, CHO-SEAL conductive elastomers are extruded in parallel with non-conductive elastomers to provide EMI shielding and corrosion protection from one gasket. The outer, non-conductive gasket acts as an extra environmental seal to keep moisture away from the conductive gasket/flange interface. Each Chomerics co-extruded gasket is engineered in our applications laboratory to match the geometric constraints, closure requirements and shielding performance demanded by the application.

PRESSURE-SENSITIVE ADHESIVE (PSA)

Chomerics' extruded conductive elastomer EMI gaskets are available with tenacious, non-conductive pressure-sensitive adhesive (PSA) for permanent attachment. Typical properties for this adhesive are shown in Table 1. Peel strength data appears in Table 2. These acrylic pressure-sensitive adhesives do not appreciably affect the through flange resistance or shielding effectiveness of the EMI gasket (see Table 3). Rapid thermal cycle testing does not affect peel strength. (See Table 4. **Note:** CHO-SEAL 1285 and 1287 conductive elastomers are military grade materials. Refer to Chomerics' *EMI Shielding For Military/Aerospace Electronics Handbook* for information on these elastomers).

TABLE 1 Pressure-Sensitive Adhesive Typical Properties

PSA Description	Double coated non-conductive acrylic tape
Release Liner	84 lb. siliconized polycoated Kraft® paper
Service Temperature Range	-20 to +150°F (-29 to +60°C); PSA will function for short periods of time ~200 hours @ 200°F (94°C); ultimate high temperature limit 250°F (121°C)
Shelf Life Conditions	One year at 70°C/50% RH
Application Temperature Range	40 to 150°F (4 to 66°C)

TABLE 2 Typical Peel Strength

PROPERTY	ON ALUMINUM	ON STEEL
Initial Peel Strength	6.0 PPI	6.0 PPI
Heat Aged Peel Strength*	5.4 PPI	5.4 PPI
Humidity Peel Strength**	6.0 PPI	6.0 PPI

Peel Strength Test Data Per ASTM D1000.

* Heat aging 168 hrs/70°C.

** Humidity 168 hrs/95% RH/70°C.

TABLE 3 Typical Through Flange Electrical Resistance per CEPS-0002*

CHOMERICS P/N 10-05-3369-S6304 (Ni/C FILLED SILICONE)	@ 10% DEFLECTION		@ 25% DEFLECTION
	"D" Shape Extrusion	w/PSA	.23 ohm/in.
	w/out PSA	.16 ohm/in.	.14 ohm/in.

*CEPS-0002 "Electrically Conductive Elastomers Volume Resistivity Measurement Procedures" available from Chomerics.

TABLE 4 Rapid Thermal Cycling*

CONDUCTIVE ELASTOMER	FLANGE	PEEL STRENGTH
CHO-SEAL 1285 (Silver-Plated-Aluminum-Filled Silicone)	Steel	9.0 lb/in.
	Aluminum	7.0 lb/in.
CHO-SEAL S6304 (Nickel-Plated-Graphite-Filled Silicone)	Steel	6.5 lb/in.
	Aluminum	5.5 lb/in.
CHO-SEAL 1287 (Silver-Plated-Aluminum-Filled Fluorosilicone)	Steel	6.0 lb/in.
	Aluminum	5.3 lb/in.

*Per ASTM D1000; 5 cycles (-40° to 100°C) with dwell time of 15 minutes at each extreme.

Pressure-Sensitive Adhesive Widths Available, inch (mm)

.090 (2.29)	.200 (5.08)
.100 (2.54)	.250 (6.35)
.125 (3.17)	.625 (15.87)
.160 (4.06)	

SURFACE PREPARATION OF METALLIC SUBSTRATES PRIOR TO THE APPLICATION OF PRESSURE-SENSITIVE ADHESIVE

The intent of this section is to give a brief summary of the process involved in cleaning substrates prior to the application

of PSA used with Chomerics gaskets. It is essential to follow these instructions to ensure maximum adhesion of the PSA to the metal substrates. Failure to comply with the cleaning process could result in poor adhesion. Proper safety precautions should be followed to protect the operator.

Materials Required:

3M Scotch Brite Pads or equivalent, Rubber Gloves, Safety Glasses, lint-Free Cotton Wipes, MEK, Acetone or Isopropyl Alcohol (IPA).

SURFACE PREPARATION OF CONVERSION-COATED ALUMINUM AND PHOSPHATE-COATED STEEL

- A.** Using a clean, lint-free applicator, moistened with MEK, acetone solvent or IPA, wash the aluminum surface until all traces of contamination have been removed.
- B.** Clean the surface until the cotton applicator shows no discoloration.
- C.** If discoloration still exists, continue washing, changing the cotton applicator each time, until clean.

Note: With phosphate coatings, it is very hard to remove all discoloration from the surface so it is up to the operator to determine the cleanliness of the surface prior to bonding. Typically, cleaning the surface 3 times is required.

- D.** Allow the substrate to dry completely at room temperature. After the cleaning sequence is complete, do not touch the substrate with bare hands.
- E.** If the cleaned surfaces do not have the PSA applied within an 8-hour period, rewash using the above process.

SURFACE PREPARATION OF STAINLESS STEEL AND MILD STEEL

- A.** Using a Scotch Brite 3M pad or equivalent, lightly abrade the steel surface.
- B.** Blow the dust residue off the steel surface with oil free filtered air.
- C.** Follow Steps **A** through **E** from previous section to complete surface preparation.

GASKET INSTALLATION PROCEDURE

- 1.** Cut gasket material to specific lengths per drawing. If gasket is one piece (e.g., four corner spliced gasket), pre-fit the assembly to ensure fit and location.
- 2.** Remove a portion of the release liner and position the gasket. Press firmly against gasket to tack in place. Continue pressing along entire length of gasket until it is positioned and aligned to the mating surface.
- 3.** Using a rubber roller, apply moderate pressure to the entire gasket to ensure complete contact between the PSA and substrate surface.

Note: It is important during this rolling procedure that the operator not apply excessive pressure to the gasket. Extreme pressure will cause the gasket to elongate and creep as it relaxes, which

may cause an intermittent bond to the substrate surface.

OPTIMUM APPLICATION TEMPERATURES

Temperatures below 50°F (10°C) can cause poor gasket adhesion to the substrate surface. Ideal gasket installation temperature is 72°F (22°C), or room

temperature. All materials should be stored at this temperature when not in use. If hardware and gasket materials are stored below 50°F, parts should be brought to a warmer environment and allowed to come to room temperature before proceeding with the installation of the gasket assembly.

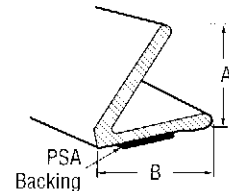
ORDERING INFORMATION

(Many additional profiles are available.)

Contact Chomerics' Applications Department for more information.)

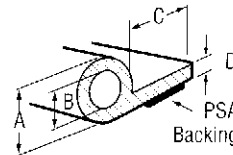
"V" PROFILE

Continuous "V" extrusions in roll form can be ordered using these part numbers. Please consult the factory for part numbers when ordering custom cut lengths or punched strips for fastener installation.



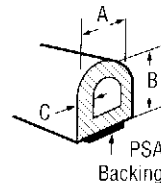
"V" Profile, inch (mm)

PART NUMBER (includes PSA) [†]	A	B
10-09-W864-XXXX	.410 (10.41)	.500 (12.70)
19-09-10606-XXXX	.394 (10.01)	.375 (9.53)



Hollow "P" Profile, inch (mm)

PART NUMBER (includes PSA) [†]	A	B	C	D
19-06-Z883-XXXXX	0.140 (3.56)	0.100 (2.54)	0.135 (3.43)	0.030 (0.76)
10-20-8550-XXXXX	0.200 (5.08)	0.080 (2.03)	0.275 (6.99)	0.062 (1.57)
10-20-4921-XXXXX	0.250 (6.35)	0.150 (3.81)	0.375 (9.53)	0.062 (1.57)
10-20-2750-XXXXX	0.360 (9.14)	0.255 (6.47)	0.420 (10.67)	0.070 (1.78)



Hollow "D" Profile, inch (mm)

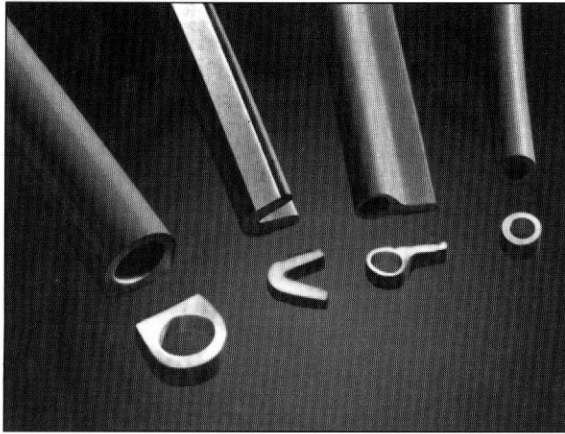
PART NUMBER (includes PSA) [†]	A	B	C
19-05-11441-XXXXX	0.246 (6.25)	0.145 (3.68)	0.030 (0.76)
19-20-10277-XXXXX	0.296 (7.52)	0.187 (4.75)	0.030 (0.76)
10-20-3369-XXXXX*	0.312 (7.92)	0.312 (7.92)	0.062 (1.57)
19-20-12375-XXXXX	0.487 (12.37)	0.324 (8.23)	0.062 (1.57)
19-20-E429-XXXXX	0.500 (12.70)	0.500 (12.70)	0.062 (1.57)

[†]Includes internal radii for low closure properties.

* Replace XXXXX in the above part numbers with the CHO-SEAL or CHO-SIL material of your choice, as follows:
 1356 = CHO-SIL 1356 1273 = CHO-SEAL 1273
 S6304 = CHO-SEAL S6304 L6303 = CHO-SEAL L6303
 1350 = CHO-SEAL 1350 6370 = CHO-SEAL 6370
 S6305 = CHO-SEAL S6305

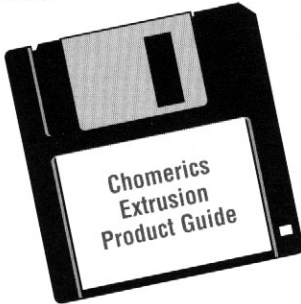
Also available from Chomerics

Selections from Extrusion Product Guide



Chomerics offers a comprehensive guide to its extrusion products on disk (PC format). Drawings, part numbers and dimensions are provided for all standard and custom cross sections including "O", "P", "D", channel, rectangular and square.

Contact Chomerics' Marketing Communications Department for your disk copy of our Extrusion Products Guide.



<p>19-09-A150-XXXX</p>	<p>19-09-A240-XXXX</p>
<p>10-09-A575-XXXX</p>	<p>19-09-A593-XXXX</p>
<p>19-07-A251-XXXX</p>	<p>10-09-A469-XXXX</p>
<p>10-09-A614-XXXX</p>	<p>19-09-A846-XXXX</p>
<p>19-09-LH10-XXXX</p>	<p>19-09-Z721-XXXX</p>

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