CHO-FOIL® and CHO-FAB™

EMI Shielding Foil and Fabric Tape with Conductive Adhesive

Customer Value Proposition:

Parker Chomerics CHO-FOIL® metal foil tapes provide an economical solution to applications requiring excellent electrical conductivity across substrates. These foil tapes can provide a low impedance connection between a braided cable shield and the metal connector backshell in molded cables. Due to the highly conductive pressure sensitive acrylic adhesive (PSA), the tape can provide an effective shielded cable assembly without the need for soldering the tape to the braid. The uniform dispersion of unique, oxidation-resistant conductive particles in the acrylic PSA produce a very low resistance through the tape. Thus, wrapping a cable assembly with the foil tape, using a slight overlap, can provide an effective prototype cable shielding system.

Seams of EMI shielded rooms and other shielded test enclosure setups are more easily sealed with CHO-FOIL tape so as to provide electrical continuity and thus higher shielding effectiveness. Double-sided conductive adhesive is available to ensure leak free seams. The use of CHO-FOIL tape can ensure good electrically conductive mating flanges and corrosion resistant grounding areas.

For applications requiring lighter weight and a more flexible electrically conductive tape, the electrically conductive fabric tape, CHO-FAB™, will provide excellent shielding and good corrosion resistant performance. In the case of shielded cables, CHO-FAB is very conformable, strong, lightweight, and doesn't have sharp edges that are present on metal foil tapes.

Contact Information:

Parker Hannifin Corporation
Chomerics Division
77 Dragon Court
Woburn, MA 01801

phone 781 935 4850
fax 781 933 4318
chomailbox@parker.com
parker.com/chomerics

Product Features:

- Available in copper, aluminum, and tin-plated copper foils, or nickel-plated copper taffeta and silver-plated nickel nylon rip-stop fabrics.
- Embossment available on Copper (CCH) and Tinned-Copper (CCK) CHO-FOIL; max roll width of 12", lengths of 18 or 36 yards.
- Foil tapes are available with single or double-sided electrically conductive, pressure sensitive acrylic adhesive (PSA)
- Optionally, CHO-FOIL tapes are available with electrically non-conductive PSA
- Available as rotary kiss cut parts on rolls, die-cut parts, or in slit roll widths from .500". Roll lengths are 18 or 36 yards.

Parker Chomerics

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CHO-FOIL® and CHO-FAB® - Product Information

Table 1

PROPERTIES								
Property	Test Method	Typical Values						
		CHO-FOIL						CHO-FAB
Part Number Prefix	-	CCH	CCE	CCJ	CCK	CCD	CAD	CFT
Foil/Fabric Type	-	1 oz. RA Copper	1 oz. Embossed RA Copper	Aluminum	1 oz. Tin-Plated Copper	1 oz. RA Copper	Aluminum	Nickel-Plated Silver
Foil/Fabric Thickness, mils (mm)	-	1.4 (0.0356)	1.4 (0.0356)	2 (0.0508)	1.6 (0.0406)	1.4 (0.0356)	2 (0.0508)	5 (0.127)
Adhesive Type	-	Electrically Conductive, Pressure-Sensitive Acrylic						
Adhesive Thickness, mils (mm)	-	1.5 (0.0381)				2 sides: 1.5 each (0.0381 each)		1.5 (0.0381)
Total Thickness, mils (mm)	-	2.9 (0.0737)	4* (0.1102)	3.5 (0.0889)	3.1 (0.0787)	4.4 (0.11180)	5 (0.127)	6.5 (0.165)
Temperature Range, ^{0}F (^{0}C)	-	-40 t0 400 (-40 to 205)						-40 to 250 (-40 to 121)
Electrical Resistance, ohms/in^2 (ohms/cm^2)	MIL-STD-202C Method 303	<0.003 (<0.0005)	<0.003 (<0.0005)	<0.010 (<0.0016)	<0.003 (<0.0005)	<0.010 (<0.0016)	<0.010 (<0.0016)	<0.200 (<0.031)
Flame Resistance	UL 510	-	-	-	-	-	-	N/A
	UL 94 V-0	PASS	**MEETS	PASS	PASS	MEETS	MEETS	-
Adhesion to Aluminum oz./in. [ppi] (N/m)	ASTM D1000	>40 [2.5] (438)						
NASA Outgassing	ASTM E595	0.04(0.00)	0.09(0.00)	0.17(0.02)	0.11(0.02)***	Not Tested	Not Tested	1.44(0.02)
Shelf Life from Date Of Shipment when stored at 70°F±20 and 50%±20 relative humidity		2 years	2 years	2 years	2 years	2 years	2 years	2 years

* Embossing adds 1.1 mils
**Parker Chomerics internal test procedure
*** The CCK product is pure tin plated copper foil per ASTM B545, and may be subject to "Tin Whiskering".

Ordering Procedure:

Refer to Tables 2 and 3. All CHO-FOIL and CHO-FAB tapes are available in standard 18 yard (16.5 m) or 36 yard (32.9 m) rolls or die-cut custom configurations. Replace XX with 18 or 36 for length in yards. See table 3 for the code for WWWW. Call Parker Chomerics Applications Engineering Group at 781 935 4850 for assistance with a custom configuration.

Table 2

PART NUMBER	TAPE DESCRIPTION	MAXIMUM ROLL WIDTH IN INCHES
CCH -XX–101–WWWW	Copper foil, conductive adhesive version	24
CCH -XX–301–WWWW	Copper foil, non-conductive adhesive version	24
CCE -XX–101– WWWW	Copper foil, conductive adhesive, embossed	12
CCJ -XX–201–WWWW	Aluminum foil, conductive adhesive	24
CCK -XX–101–WWWW	Tin plated copper foil, conductive adhesive	24
CCD -XX–101–WWWW	Copper foil, conductive adhesive 2 sides	12
CAD -XX–201–WWWW	Aluminum foil, conductive adhesive 2 sides	24
CFT -XX–101–WWWW	Ni/Ag taffeta fabric, conductive adhesive	24
CRS -XX–101–WWWW	Ni/Ag rip-stop fabric, conductive adhesive	17

CHO-FOIL® and CHO-FAB® - Product Information

Table 3

TYPICAL TAPE WIDTHS (WWWW) inch (mm)					
0050	0100	0150	0200	0300	0400
0.5 (12.7)	1.0 (25.4)	1.5 (38.1)	2.0 (50.8)	3.0 (76.2)	4.0 (103)

Custom widths available up to 24 inches (61 cm) except CFT which is up to 17 inches (43.18 cm).

Slit rolls are available through Parker Chomerics and their authorized distributors. Order here.

NOTE: The following table represents actual experimental test data taken according to Parker Chomerics internal test procedures. This data differs from Table 1 due to differences in test methods.

Table 4

TEST DATA										
Test		**Test Method**	**CCH**	**CCE**	**CCJ**	**CCK**	**CCD**	**CAD**	**CFT**	**CRS**
Initial Surface Resistivity (SR) (milliohms)*		CHO-TP-57***	<2	<2	<2	<2	N/A	N/A	<100	<100
Initial Through Resistivity (TR) (milliohms)*		CHO-TP-57***	<3	<3	<35	<2	<15****	<100****	<100	<100
Initial Peel Strength in oz./in [ppi] (N/m)		ASTM-D1000	44.8 [2.8] (490)	44.8 [2.8] (490)	51.2 [3.2] (560)	46.4 [2.9] (508)	48 [3] (525)	70.4 [4.4] (710)	44.8 [2.8] (490)	44.8 [2.8] (490)
Initial Taber Abrasion Surface Resistivity (SR) (milliohms)		CHO-TP-57***	<6	<3	<6	<9	N/A	N/A	<100	<100
Heat Aging 185°F (85°C)/ 168 hrs.	SR (milliohms)* TR (milliohms)* Peel, oz./in. [ppi] (N/m)**	CHO-TP-57*** CHO-TP-57*** ASTM D1000	<10 <16 57.6 [3.6] (630)	<2 <3 62.4 [3.9] (683)	<20 <22 76.8 [8] (840)	<2 <2 67.2 [4.2] (735)	N/A <7**** 73.6 [4.6] (805)	N/A <60**** 78.4 [4.8] (840)	<100 <150 59.2 [3.7] (648)	<100 <150 59.2 [3.7] (648)
Heat Aging 250°F (121°C)/ 168 hrs.	SR (milliohms)* TR (milliohms)* Peel, oz./in. [ppi] (N/m)**	CHO-TP-57*** CHO-TP-57*** ASTM D1000	<10 <70 57.6 [3.6] (630)	<3 <3 59.2 [3.7] (648)	<20 <23 75.2 [4.7] (823)	<2 <2 51.2 [3.2] (560)	N/A <3**** 70.4 [4.4] (770)	N/A <10**** 84.8 [5.3] (928)	<100 <150 43.2 [2.7] (473)	<100 <150 43.2 [2.7] (473)
Heat Aging Humidity 95% RH/ 185°F (85°C)/	SR (milliohms)* TR (milliohms)* Peel, oz./in. [ppi] (N/m)**	CHO-TP-57*** CHO-TP-57*** ASTM D1000	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	<2 <2 78.4 [4.9] (858)	N/A <115**** 78.4 [4.9] (858)	N/A <150**** 84.8 [5.3] (928)	<100 <150 46.4 [2.9] (508)	<100 <150 46.4 [2.9] (508)
Salt fog corrosion/ 168 hrs.	SR (milliohms)* TR (milliohms)* Peel, oz./in. [ppi] (N/m)**	CHO-TP-57*** CHO-TP-57*** ASTM D1000	N/A N/A N/A	N/A N/A N/A	N/A N/A N/A	<2 <2 76.8 [4.8] (840)	N/A <275**** 62.4 [3.9] (683)	N/A <600**** 80 [5] (875)	<100 <1000 33.6 [2.1] (368)	<100 <1000 33.6 [2.1] (368)
Tabor abrasion 500 gramweight, CS-10 wheel, 500 cycles	SR (milliohms)*	CHO-TP-57***	<3	<5	<2	<6	N/A	N/A	<175	<175

N/A = Not Applicable

*All measurements of surface resistivity made at ambient temperature with tapes mounted on tinned copper substrate, except for taber abrasion where a plastic substrate was used.

** 90° peel strength tests were done on an Instron at 2 inches per minute with tapes on a 2024 aluminum substrate.

*** CHO-TP-57 available from Chomerics on request.

**** Through resistivity measurements of double sided adhesive tapes done with tapes flanged between 2024 aluminum substrates.