

SOFT-SHIELD® 4000

Low Closure Force, Foil/Fabric Cover
Over Foam Core EMI Gaskets



Customer Value

Proposition:

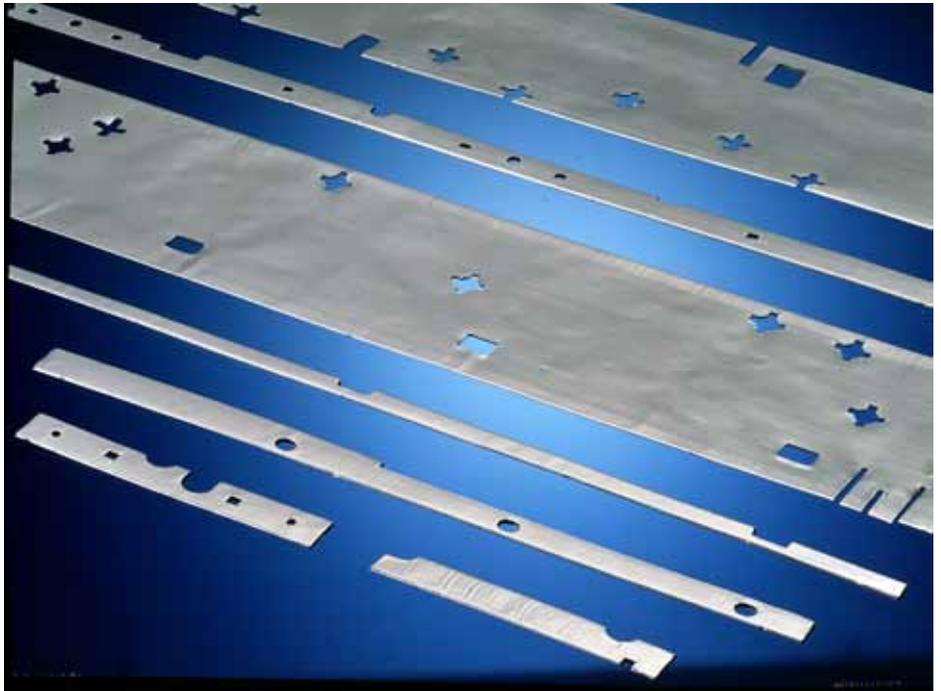
SOFT-SHIELD® 4000 Series gaskets offer a low cost EMI gasketing or grounding solution for commercial electronic systems. By combining the shielding effectiveness of metal foil along with the conformability afforded by a foam core construction, these gasket configurations ensure high shielding, and high reliability for both EMI gaskets and grounding panels such as those used for backplane I/O panel or connector gaskets. "Peel and Stick" grounding pad versions, along with the standard electrically conductive acrylic adhesive, solves common issues with inadvertent radiated electromagnetic radiation from ungrounded metal components on or near printed circuit boards. Further, the choice of foam softness in these gaskets can minimize the number of fasteners needed in an application. The gasket construction ensures system reliability by preventing loose fibers such as those released from some inferior varieties of low cost conductive fabric over foam gaskets. Exposed sharp edges that hinder manufacturing assembly operations such as from beryllium copper or stainless steel fingerstock EMI gaskets, are also eliminated by use of SOFT-SHIELD 4000.

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Product Features:

- 90 dB shielding effectiveness typical from 10 MHz to 1 GHz
- Low closure force for optimum performance
- Low compression set of less than 20%
- Fabric-reinforced aluminum foil over PORON® urethane foam
- Supplied as continuously wrapped solid rectangular strips in standard lengths, cut-to-length parts, or die-cut parts. Gaskets have exposed foam edges wherever they are cut-to-length or die-cut.
- Available as kiss-cut parts supplied on polyester film release sheets for rapid peel and stick grounding applications
- Available in thin rectangular cross sections with thicknesses as small as 0.034" (0.9 mm)
- Supplied in widths from 0.5 inch (12.7 mm) to 6 inches (152 mm) and lengths up to 4 feet (1219 mm)
- Can also be supplied as fabricated D-subminiature (9 – 50 pin) connector gaskets (see page 4)
- Two choices of foam softness available
- Choice of UL 94 HB or UL 94 V-0 flammability ratings
- Supplied with electrically conductive acrylic adhesive
- No degradation of shielding effectiveness after 10,000 deflection cycles
- Low surface resistivity of less than 10 milliohms
- Excellent adhesion to both aluminum and steel



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SOFT-SHIELD® 4000 - Product Information

Table 1: Typical Properties

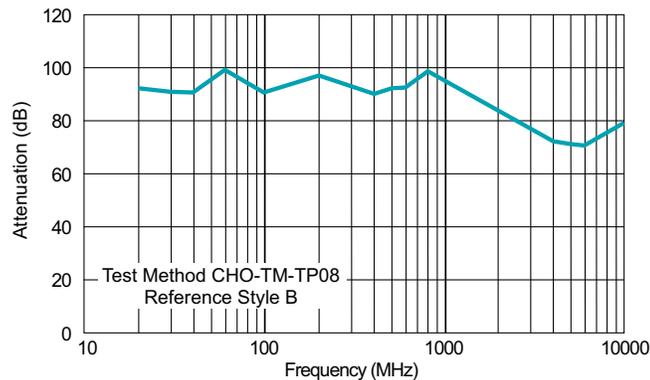
Typical Properties	Test Procedure	4002	4004
Core	-	PORON ¹ Urethane Foam	PORON ¹ Urethane Foam
Jacket	-	Fabric-Reinforced Aluminum Foil	Fabric-Reinforced Aluminum Foil
PSA Type	-	Chomerics Electrically Conductive Acrylic	Chomerics Electrically Conductive Acrylic
Adhesion	ASTM D1000	See Table 2	See Table 2
Compression-Deflection ² , 25% deflection, psi	ASTM D3574 Modified	<1 to <4	<1 to <5
Compression Set, % @ 25% Deflection	ASTM D395 Method B	<20	<20
Compression Cycling, ohms, 10,000 cycles @ 50% Deflection	-	Initial 0.006, Final 0.032	Initial 0.006, Final 0.032
Operating Temperature, max.	-	158° F (70° C)	158° F (70° C)
Initial PSA Adhesion, lb/in	ASTM D1000	>2.5	>2.5
EMI Shielding Effectiveness ,dB (10 MHz to 1 GHz)	CHO-TM-TP08 ³	See Figure 1	See Figure 1
Transfer Impedance	SAE ARP 1705	See Figure 2	See Figure 2
Surface Resistivity after Heat Aging, omhs/sq. in. 168 Hours 185° F (85° C) 250° F (121° C) 95% RH/95° F (35° C) 2190 Hours 158° F (70° C)	CHO-TM-TP57 ³	Initial 0.009, Final 0.014 Initial 0.007, Final 0.017 Initial 0.007, Final 0.010 Initial 0.010, Final 0.010	Initial 0.009, Final 0.014 Initial 0.007, Final 0.017 Initial 0.007, Final 0.010 Initial 0.010, Final 0.010
Abrasion Resistance (Taber Abrader), ohms 500 cycles (500 g on CS wheel)	ASTM D460	Initial 0.007, Final 0.010	Initial 0.007, Final 0.010
UL Flammability	94 V-0	94 V-0	94 HB

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² Varies with thickness. Actual compression-deflection values are provided on specification sheet for each material profile...

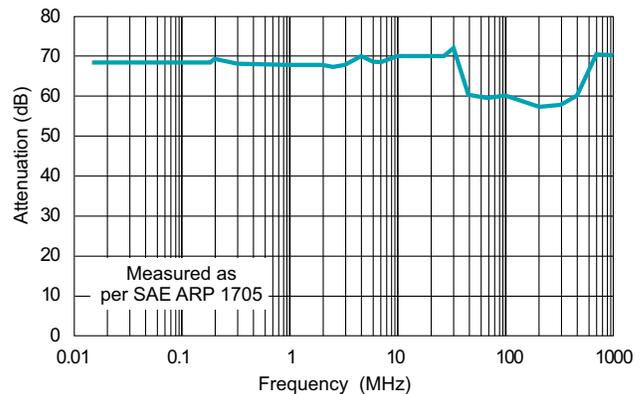
³ Copies of Chomerics Test Methods CHO-TM-TP08 and CHO-TM-TP57 are available on request.

Figure 1 Shielding Effectiveness



Note: To achieve the shielding effectiveness shown, gasket should be deflected a minimum of 10%.

Figure 2 Transfer Impedance



SOFT-SHIELD® 4000 - Available Profiles

Table 2: Adhesion

Adhesion (Peel Strength), Lb/in (N/m) Tested at ambient temperature per ASTM D1000		
Test Environment	To Aluminum	To Steel
Ambient Temperature	2.5 (438.0)	2.5 (438.0)
Baked 1 hr. @ 350° F (177° C)	4.0 (700.0)	3.9 (682.5)
Baked 1 hr. @ 400° F (204° C)	5.1 (892.5)	5.0 (875.0)
Baked 48 hrs. @ 350° F (177° C)	3.1 (542.5)	3.0 (525.0)
Baked 48 hrs. @ 165° F, 95% RH (74° C)	4.1 (717.5)	4.0 (700.0)

Table 3: Tolerances

Dimensional Tolerances inches (mm)	
Width	±0.040 (1.02)
Die-Cut inches (mm)	inches (mm)
up to 10.00 (up to 254)	±0.020 (0.51)
10.01 to 20.00 (254 to 508)	±0.030 (0.76)
20.01 to 20.00 (508 to 762)	±0.040 (1.02)
over 30.00 (over 762)	±0.060 (1.52)
Cut-To-Length Strips	
10.00 to 20.00 (254 to 508)	±0.080 (2.03)
20.00 to 48.00 (508 to 1219)	±0.240 (6.09)
Thickness	±10%

Table 4: Ranges

Gasket Size Ranges inches (mm)	
Machine-Wrapped/Cut-to-Length	Individually 360° Wrapped
Width:	
0.500 to 6.0 (12.7 to 152.0)	24.0 x 24.0 (610.0 x 610.0)
Length:	Maximum Size
up to 48.0 (up to 1219.0)	

ORDERING INFORMATION

Referring to Tables 3-4, use the part numbering scheme shown here to order SOFT-SHIELD 4000 Series gasketing in **standard sizes**:

400X	—	XXX	—	YYYY	—	ZZZZ
Material:		Standard Thickness inches (mm):		Standard Width inches (mm):		Standard length inches (mm):
2		012 0.048 (1.2)	009 0.034 (0.9)	0127 0.500 (12.7)	0762 3.000 (76.2)	2540 10.000 (254)
4		017 0.068 (1.7)	014 0.054 (1.4)	0210 0.825 (21.0)	1016 4.000 (101.6)	2540 10.000 (254)
		023 0.091 (2.3)	020 0.077 (2.0)	0254 1.000 (25.4)	1270 5.000 (127.0)	
		027 0.106 (2.7)	024 0.094 (2.4)	0381 1.500 (38.1)	1524 6.000 (152.4)	
		037 0.147 (3.7)	034 0.133 (3.4)	0508 2.000 (50.8)		
		047 0.187 (4.7)	044 0.173 (4.4)			
		057 0.226 (5.7)	054 0.212 (5.4)			
		067 0.264 (6.7)	064 0.250 (6.4)			

SOFT-SHIELD® 4002 - Available D-CONNECTOR Profiles

D-CONNECTOR GASKETS

Use the following part number system to order D-Connector gaskets in SOFT-SHIELD 4002 material. Dimensions and tolerances are provided in Table 5.

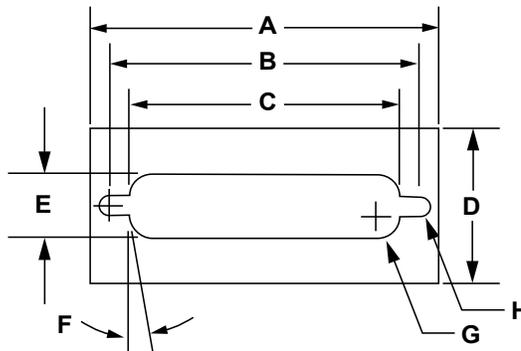


Table 5: D-Connector Tolerances

D-CONNECTOR GASKETS inches (mm)					
Dimension Tolerances inches (mm)	9 PIN	15 PIN	25 PIN	37 PIN	50 PIN
"A" Overall Length ± 0.015 (0.38)	1.213 (30.81)	1.541 (39.14)	2.088 (53.04)	2.720 (69.09)	2.630 (66.80)
"B" Cutout Length at Slot Centerline ± 0.010 (0.25)	0.984 (24.99)	1.312 (33.32)	1.852 (47.04)	2.500 (63.50)	2.406 (61.11)
"C" Cutout Length Excluding	0.746 (18.95)	1.074 (27.28)	1.614 (41.00)	2.266 (57.56)	2.158 (54.81)
"D" Overall Width ± 0.040 (1.00)	0.700 (17.78)	0.700 (17.78)	0.700 (17.78)	0.700 (17.78)	0.825 (20.96)
"E" Cutout Width ± 0.010 (0.25)	0.400 (10.16)	0.400 (10.16)	0.400 (10.16)	0.400 (10.16)	0.500 (12.70)
"F" Angle $\pm 0.5^\circ$	2 x 10°				
"G" Cutout Radius ± 0.010 (0.25)	4 x 0.140 (3.56)				
"H" Slot Radius ± 0.010 (0.25)	2 x 0.062 (1.57)				

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