

Multicon (Oriented Wire) Shielding Gasket (1500 Series)

MAJR's Multicon Material is a combination of silicone and conductive paths to provide a superior environmental seal and EMI/RFI shielding. The two materials are combined to form a single material which provides the best in both weather and EMI/RFI shielding.

Multicon is provided in solid or sponge silicone with either monel or aluminum wires for conductivity. The conductive wires are dispersed throughout the width of the material to provide the best possible protection against EMI/RFI contamination. Constructed in such a way that when pressure is applied to the gasket, hundreds of sharp wire ends become exposed making electrical contact with the surfaces to be shielded.

Multicon is available in solid silicon (30 durometer) from .032 to .312 thick and in widths of .062 to 9" wide. Sponge silicone (closed cell) Multicon is available from .062 to .312 thick and in widths of .093 to 9" wide. Multicon is also available with monel or aluminum conductive paths as standard. Other combinations of materials are available on special order.

Multicon is held in place in a groove in the equipment to be shielded or by using screws and bolts with a compression stop. Ten to 20 percent compression of the gasket is accomplished by the groove method or by providing metal stops in the Multicon gaskets. Uniform pressure throughout the gasket by means of compression stops provides maximum shielding from the gasket and is recommended wherever possible.

Multicon is used in high pressure requirements using solid silicone and low pressure requirements using sponge silicone, both having a temperature range of -65°F to 350°F under continuous use.

Design Data

Multicon EMI Gasket

A matrix of independently suspended conductive paths molded in a silicone elastomeric base defines the construction of MAJR's Multicon EMI shielding material. Integral bonding of the randomly dispersed monel wire into the silicone elastomer ensures uniform surface contact under pressure. This bonding process creates a multi "spring" effect with each contact point, thus contact is maintained under severe environmental conditions of oxidation and vibration.

Installation

EMI gaskets fabricated from Multicon can be secured to the lid of an enclosure by spot bonding with a nonconductive adhesive or coating of the entire interface with conductive adhesive. In either case, a slight pressure (10 PSI - .70gms/cm²) is recommended during adhesive setting period to endure that the gasket lies flat against mating surface.

Multicon EMI gasket material also lends itself to groove installation. Groove walls should have a seven degree (7°) draft to allow for elastomer flow under compression.



Features

- The Best Combined Materials:** MAJR combines two of the finest materials for EMI/RFI shielding to give a single material that both shields products from stray electronic interference and from exposure to weather. The advantage of the combined material also provides a shield and seal in a minimum cross-section.
- High Reliability:** MAJR has combined monel wire and silicone rubber. Through MAJR's proprietary methods, the wires are fused to the silicone providing the highest possible reliability when used to protect electronic circuits.
- Excellent Attenuation Characteristics:** MAJR's Multicon material has a proven history of years of successful shielding applications. The attenuation characteristics of over 100dB in the E-Field to over 50 dB in the H-Field makes Multicon ideal for a wide variety of applications.
- Minimum Cross Section Required to Provide a Weather and RF Seal:** MAJR has taken silicone rubber and combined it with monel wire in such a way that 1/8 inch material thickness is all that is required to give both a weather seal and an RF seal.

EMI Shielding

The data presented in Table 1 represents shielding effectiveness of Multicon gaskets based on laboratory tests of a unit whose finished dimensions are 12.00 x 12.00 inches (304.8 x 304.8 mm).

Shielding Effectiveness vs Frequency — Table 1

Field	Material Code - 03							
	Frequency							
	10 kHz	100 kHz	1 MHz	18 MHz	100 MHz	400 MHz	1 GHz	5 GHz
H	50	65	95	—	—	—	—	—
E	—	—	—	100	—	—	—	—
PW	—	—	—	—	100	100	100	85

Field	Material Code - 04							
	Frequency							
	10 kHz	100 kHz	1 MHz	18 MHz	100 MHz	400 MHz	1 GHz	5 GHz
H	43	52	75	—	—	—	—	—
E	—	—	—	95	—	—	—	—
PW	—	—	—	—	95	95	85	70

Table 2

CRITERIA	STANDARD	
	Solid Silicone	Sponge Silicone
Color	Gray	Gray
Durometer	30	N/A
Wire Distribution (Contacts per inch ²)	700-900	225-300
Wire Void Area	.09 Dia. Max.	.156 Dia. Max.
Total Voids	1 per foot	3 per foot
Uniformity of Contact Surface Flatness in Inches	Within .004	Within .010

Multicon Sheet Part Numbers

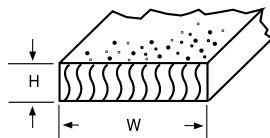


Table 3

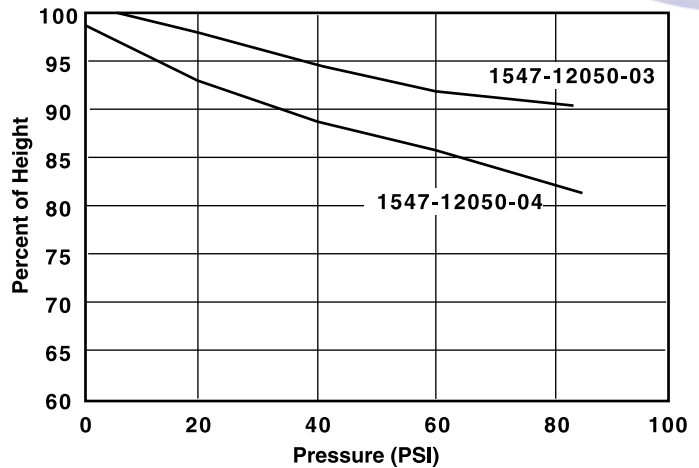
HEIGHT H	WIDTH W	SILICONE & MONEL	SILICONE & ALUMINUM
		Solid	Solid
.032 (0.76)	3.000	1547-03300-03	1547-03300-07
.040 (1.02)	3.000	1547-04300-03	1547-04300-07
.062 (1.57)	3.000	1547-06300-03	1547-06300-07
.125 (3.18)	3.000	1547-12300-03	1547-12300-07
.040 (1.02)	6.000	1547-04600-03	1547-04600-07
.062 (1.57)	6.000	1547-06600-03	1547-06600-07
.125 (3.18)	6.000	1547-12600-03	1547-12600-07
.040 (1.02)	9.000	1547-04900-03	1547-04900-07
.062 (1.57)	9.000	1547-06900-03	1547-06900-07
.125 (3.18)	9.000	1547-12900-03	1547-12900-07

Monel, aluminum strips and sponge sheets available.
Supplied in 36" lengths; other sizes available.

Installation Forces

Knowing the operating environment is very important to determining the pressures required to compress the Multicon gasket to its optimum point. In less severe conditions such as dust and drip-proofing, sponge Multicon can be used, thus reducing the amount of pressure required to deflect gasket 10% by approximately 40 PSI (2.8 gms/cms). Figure 1 shows comparative compression characteristics between sponge and solid Multicon.

Compression vs Pressure — Figure 1



Multicon Strip Part Numbers

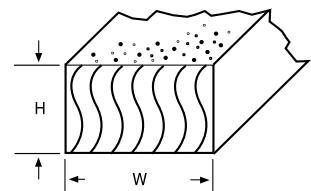


Table 4

HEIGHT H	WIDTH W	SILICONE & MONEL	
		Solid	Sponge
.032 (0.76)	.125 (3.18)	1547-03012-03	—
.032 (0.76)	.250 (6.35)	1547-03025-03	—
.032 (0.76)	.500 (12.70)	1547-03050-03	—
.040 (1.02)	.125 (3.18)	1547-04012-03	—
.040 (1.02)	.250 (6.35)	1547-04025-03	—
.040 (1.02)	.500 (12.70)	1547-04050-03	—
.062 (1.57)	.125 (3.18)	1547-06012-03	1547-06012-04
.062 (1.57)	.188 (4.78)	1547-06019-03	1547-06019-04
.062 (1.57)	.250 (6.35)	1547-06025-03	1547-06025-04
.062 (1.57)	.375 (9.53)	1547-06038-03	1547-06038-04
.093 (2.36)	.125 (3.18)	1547-09012-03	1547-09012-04
.093 (2.36)	.250 (6.35)	1547-09025-03	1547-09025-04
.125 (3.18)	.125 (3.18)	1547-12012-03	1547-12012-04
.125 (3.18)	.250 (6.35)	1547-12025-03	1547-12025-04
.125 (3.18)	.500 (12.70)	1547-12050-03	1547-12050-04
.188 (4.78)	.188 (4.78)	1547-19019-03	1547-19019-04
.250 (6.35)	.125 (3.18)	1547-25012-03	1547-25012-04
.250 (6.35)	.250 (6.35)	1547-25025-03	1547-25025-04
.250 (6.35)	.500 (12.70)	1547-25050-03	1547-25050-04