

RF/Microwave Absorbers

Limitless Shieldings Absorber materials are used for EMI isolation and RF absorption. They are available in different materials to provide absorption from as low as 5MHz up to 40 GHz. Comprising of a loaded silicone, there are many choices available to provide products that can be characterised to provide absorption at single or multiple frequencies.

Applications

- ⚡ Industrial controls and Instruments
- ⚡ Military equipment and Avionics
- ⚡ Medical electronics
- ⚡ Electronic equipment enclosures
- ⚡ Base Stations
- ⚡ Satellite and Space applications

Availability

- ⚡ Limitless Shieldings Absorber materials are available in sheet form and in gasket form, cut according to your requirements.
- ⚡ They are available with and without adhesive.

Tolerances

- ⚡ Sheet Thickness Up to 3.2mm \pm 0.15mm
- ⚡ Die Cut Gaskets Overall Dimensions \pm 0.15mm
- ⚡ Hole Centres \pm 0.4mm

Types of Absorber

Tuned Frequency Absorbers

Tuned Frequency Absorbers are thin magnetically loaded sheet stock. Tuned Frequency Absorbers, also known as resonant frequency absorbers, provide great reflection loss at a discrete frequency, typically offering 20dB of attenuation. Tuned Frequency Absorbers offer a narrowband of absorption, typically \pm 10% of the resonant frequency, so are best used when a single discrete frequency is trying to be absorbed. The material can be tuned to any frequency from 1 to 40 GHz, by simply changing the formulation and thickness.



Reticulated Foam Absorbers

Reticulated Foam Absorbers are lightweight conductive carbon loaded sheet stock providing broadband loss at microwave frequencies. Reticulated Foam Absorbers are designed with a continuous gradient coating to exhibit high reflection loss and are intended to be applied to metal surfaces inside microwave cavities, housings, radomes, network enclosures, or antennae. Reticulated Foam Absorbers attenuate energy at normal and high angles of incidence at frequencies from 1 GHz to 18 GHz.

Lossy Foam Absorbers

Lossy Foam Absorbers are lightweight conductive carbon loaded sheet stock providing broadband insertion loss at microwave frequencies. Lossy Foam Absorbers are designed with a constant coating to exhibit high insertion loss and are intended to be applied to metal surfaces inside microwave cavities, housings, radomes, network enclosures, or antennae. Lossy Foam absorbers are the lowest cost solution for attenuating energy at frequencies from 1GHz to 18 GHz.

Cavity Resonance Absorbers

Cavity Resonance Absorbers are thin magnetically loaded sheet stock having loss at microwave frequencies, while maintaining the desirable characteristics of elastomeric binders. Cavity Resonance Absorbers are designed to exhibit high loss and are intended to be applied to metal surfaces inside microwave cavities to reduce the Q of the cavity. Cavity Resonance Absorbers attenuate energy at normal and high angles of incidence at frequencies from 1 GHz to 20 GHz.

Convolute Foam Absorbers

Convolute Foam Absorbers are lightweight conductive carbon impregnated sheet stock providing broadband reflection loss at microwave frequencies. Due to the shape of the cones on Convolute Foam Absorbers, they exhibit high reflection loss and are intended to be applied to metal surfaces inside test boxes, housings, radomes, network enclosures or antennae. Convolute Foam Absorbers attenuate energy at normal and high angles of incidence at frequencies from 1 GHz to 18 GHz.

Low Frequency Absorbers

Low Frequency EMI Absorbers are magnetically loaded sheet stock having high loss at sub-microwave frequencies. Low Frequency Absorbers are designed with shaped magnetic particles that exhibit high permeability at frequencies from 500 MHz to 4 GHz. The Low Frequency Absorber product line is the thinnest of the microwave absorber series product, with standard thicknesses of 0.2, 0.3, 0.5 and 1.0 mm. Other thicknesses and configurations are also available.



Surface Wave Absorbers

Surface Wave Absorbers are thin very highly loaded sheet stock having high loss at microwave frequencies, while maintaining the desirable characteristics of elastomeric binders. Surface Wave Absorbers are the most heavily magnetically loaded absorber. Surface Wave Absorbers are designed to exhibit the highest loss and are intended to be applied to metal surfaces for traveling or surface wave attenuation. Surface Wave Absorbers attenuate traveling wave energy at frequencies from 1 GHz to 20 GHz. The standard elastomer for this product series is silicone, but other elastomer formulations are available which may be better suited for specific environmental conditions.

Ordering Information

Custom Gasket

<Absorber Code>-<Drawing Number>

(e.g. MA-TFS- for a gasket cut from Silicone Tuned Frequency Absorber to the drawing 123456)

Handling

These materials should not be subjected to stretching in either storage or installation otherwise the conductive particles may disperse in the rubber, resulting in degradation of the shielding performance.

In addition materials should be handled using cotton gloves to prevent surface contamination.



Tuned Frequency

Frequency (GHz)	Thickness (in/mm)	Part Number (Silicone)	Part Number (Nitrile)
2	0.130/3.30	MA-TFS-2	MA-TFN-2
3	0.102/2.60	MA-TFS-3	MA-TFN-3
4	0.078/2.00	MA-TFS-4	MA-TFN-4
5	0.081/2.10	MA-TFS-5	MA-TFN-5
6	0.070/1.80	MA-TFS-6	MA-TFN-6
7	0.062/1.60	MA-TFS-7	MA-TFN-7
8	0.053/1.35	MA-TFS-8	MA-TFN-8
9	0.072/1.83	MA-TFS-9	MA-TFN-9
10	0.065/1.65	MA-TFS-10	MA-TFN-10
11	0.060/1.52	MA-TFS-11	MA-TFN-11
12	0.056/1.42	MA-TFS-12	MA-TFN-12
13	0.051/1.30	MA-TFS-13	MA-TFN-13
14	0.050/1.27	MA-TFS-14	MA-TFN-14
15	0.045/1.14	MA-TFS-15	MA-TFN-15
16	0.043/1.09	MA-TFS-16	MA-TFN-16
17	0.041/1.04	MA-TFS-17	MA-TFN-17
18	0.040/1.02	MA-TFS-18	MA-TFN-18
20.6	0.043/1.09	MA-TFS-20.6	MA-TFN-20.6
24	0.042/1.07	MA-TFS-24	MA-TFN-24
30	0.038/0.97	MA-TFS-30	MA-TFN-30
35	0.035/0.89	MA-TFS-35	MA-TFN-35

Surface Wave

Frequency	Thickness (in/mm)	Part Number
14 to 18 GHz	0.020/0.51	MA-SWA-1
10 to 14 GHz	0.030/0.76	MA-SWA-2
08 to 12 GHz	0.040/1.02	MA-SWA-3
05 to 8 GHz	0.050/1.27	MA-SWA-4
04 to 7 GHz	0.060/1.52	MA-SWA-5
03 to 6 GHz	0.070/1.78	MA-SWA-6
03 to 6 GHz	0.080/2.03	MA-SWA-7
02 to 4 GHz	0.090/2.29	MA-SWA-8
02 to 4 GHz	0.100/2.54	MA-SWA-9
01 to 3 GHz	0.125/3.18	MA-SWA-10



Reticulated Foam

Frequency (GHz)	Thickness (in/mm)	Part Number (Silicone)
12-40	0.375/9.5	MA-RF-1
8-40	0.500/12.8	MA-RF-2
6-40	0.750/19.2	MA-RF-3
4-40	1.000/25.4	MA-RF-4
3-40	1.250/32.0	MA-RF-5

Low Frequency

Permeability (@ 100MHz)	Thickness (in/mm)	Part Number
$\mu' = 32$	0.006/.15	MA-LF-1
$\mu' = 32$	0.020/0.5	MA-LF-2
$\mu' = 32$	0.010/0.25	MA-LF-3
$\mu' = 32$	0.040/1.0	MA-LF-4

Lossy Foam

	Thickness (in/mm)	Part Number
-8	0.125/3.2	MA-LF-1
-21.5	0.250/6.4	MA-LF-2
-35	0.500/12.8	MA-LF-3
-50	1.000/25.6	MA-LF-4

Convuluted Foam

FREQUENCY (GHZ)	THICKNESS (IN/MM)	PART NUMBER
6-40	1.5/38.4	MA-CF-1
4-40	3/76.9	MA-CF-2



Cavity Resonance

Frequency (GHz)	Thickness (in/mm)	Part Number (Silicone)	Part Number (Nitrile)
16-26	0.010/0.25	MA-CRS-12	-
14-18	0.020/0.5	MA-CRS-1	MA-CRN-1
13-17	0.030/0.7	MA-CRS-2	MA-CRN-2
9-12	0.040/1.0	MA-CRS-3	MA-CRN-3
6-11	0.050/1.2	MA-CRS-4	MA-CRN-4
5-9	0.060/1.5	MA-CRS-5	MA-CRN-5
4-7	0.070/1.8	MA-CRS-6	MA-CRN-6
3-7	0.080/2.0	MA-CRS-7	MA-CRN-7
2-5	0.090/2.3	MA-CRS-8	MA-CRN-8
2-5	0.100/2.5	MA-CRS-9	MA-CRN-9
1-3	0.125/3.2	MA-CRS-10	MA-CRN-10

Frequency (GHz)	Thickness (in/mm)	Part Number (Silicone)
0.8-18	0.040/1.0	MA-HLCRS-7
0.5-18	0.080/2.0	MA-HLCRS-8

