

SPRINGMESH™

Highly Resilient Metal Mesh EMI Gasketing

Customer Value Proposition:

SPRINGMESH gaskets are highly resilient, highly conductive, knitted wire mesh strips used to provide electromagnetic interference (EMI) shielding and electromagnetic pulse (EMP) shielding at the joints and seams of a variety of enclosure applications.

The key factor differentiating SPRINGMESH from traditional knitted wire mesh gaskets is the resilience of the material to compression set. SPRINGMESH has capabilities of being deflected greater than 70%, with remarkable recovery and without the aid of an elastomer core. Compression set reduction results in consistent electrical performance over time, thereby increasing gasket life and reducing rework costs associated with replacement.

SPRINGMESH gaskets are produced utilizing tin-plated steel wire in a variety of standard hollow-O cross sectional geometries to meet a wide array of performance criteria. Custom profile geometries are limited, but can be evaluated to meet unique application requirements.

To ensure quick and easy integration into any manufacturing environment, without the need for additional capital expenditures, material can be provided in spooled, cut-to-length, or spliced gasket forms and affixed utilizing welding, adhesive spot-bonding, soldering or riveting.

Features

- Tin-plated steel wire is the standard metal alloy
- Round cross sectional geometries are standard
- 100% metal content
- Knit construction
- Multiple gasket form-factors and installation options
- Foreign object debris (FOD) free, encapsulated ends available upon request

Contact Information:

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

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

www.chomerics.com
www.parker.com/chomerics



Benefits

- Tin-plated steel wires reduce gasket compression set and the reduction in shielding performance that is typically associated with it, thereby reducing costs associated with seal replacement due to performance deficiencies
- Various standard hollow-O geometric offerings ensure easy gasket integration into existing applications, thereby eliminating the need for redesign.
- 100% metal gaskets are highly durable and silicone-free, making them an excellent choice for applications with either silicone outgassing sensitivity or temperature requirements which exceed that of typical silicone-based EMI / EMP seals
- Knitted wire construction results in a light-weight product offering for applications with weight restriction requirements
- Multiple gasket form factors and attachment methods allow for easy incorporation into existing manufacturing installations without the need for capital expenditures
- Encapsulated ends ensure the elimination of foreign object debris and associated rework costs

SPRINGMESH™ - Product Information

Application Design Information:

Parker Chomerics SPRINGMESH gaskets are used to provide EMI/EMP shielding for a variety of applications. Various design variables should be considered when making a product selection to ensure optimal performance. These variables are expanded upon in the following text to assist in the design process.

Material Type

SPRINGMESH was specifically developed for compression set resistance. As such, the material is limited to only the standard tin-plated steel offering.

For applications with corrosion sensitivity, galvanic compatibility with tin should be targeted in order to utilize SPRINGMESH in the application. For other knit mesh gasket material offerings, please reference the MESH STRIP data sheet.

Mounting

There are two main gasket attachment methods to be considered during the design process. Either open area mounting or incorporating the gasket within a groove are options. Groove incorporation is considered a more conservative selection due to gasket retention and the ability to obtain more exact gasket compression. For open area mounting, it is recommended to RTV spot bond, weld, solder or rivet the material to hold it in place. Pressure sensitive adhesive is not available with knit mesh products.

Round profiles, such as those found within the SPRINGMESH family, are typically recommended for groove applications. Grooves are recommended to be rectangular with the height being the primary concern. It is recommended to target gasket compression of 30 +/- 15% when taking into consideration maximum material condition (MMC) and least material condition (LMC) of both the gasket and the groove.

However, for applications requiring broader compression ranges, the compression set resistive characteristics of SPRINGMESH allow for deflection up to 70%. As a general rule, the nominal width of the groove should have a target value of 1 to 1 with the nominal width of the gasket.

Because only hollow-O profiles are available with SPRINGMESH gasketing, open area mounting is not recommended. Affixing a round profile to an open area is a difficult task. However, in applications where this is necessary, gasket compression should be targeted in a similar manner that of a grooved design.

Geometric Profiles

Because SPRINGMESH is available only in hollow-O profiles, gasket size is the sole variable to evaluate when selecting a profile. Profile selection is a balance between available space in the application, the force available for gasket deflection and the tolerances associated with the application.

The larger the gasket, the less effect tolerance variations have on gasket deflection percentage. This will mitigate gasket under or over-deflection. Under-deflection will result in decreased electrical performance. Over-deflection will result in permanent gasket deformation and compromised gasket performance.

Recognizing that larger gaskets incur higher price points, both for material and the associated machining necessary in the application, smaller profiles are typically more appealing to customers. Due to this, it is recommended to carefully consider tolerance swings and the effects they will have on the overall performance of the assembly.

SPRINGMESH™ - Product Information

Substrate Surface Preparation

Acknowledging that most applications have a substrate surface treatment interfacing with SPRINGMESH gasketing, there are a few variables to keep evaluate.

First, the surface finish must allow for electrical contact between the gasket and the substrate. If electric contact is not ensured, gasket performance will be substantially reduced. Therefore, non-conductive surface treatments are not recommended unless masking of the gasket flange area is possible.

Though non-conductive, chemical conversion coatings are commonly used in conjunction with MESH STRIP gaskets. Whenever possible, MIL-DTL-5541 Class 3 is recommended. This thinner surface treatment ensures gasket "bite-through" to the electrically conductive substrate beneath the finish. Class 1A is thicker and therefore harder to obtain the same level of electrical continuity to that of Class 3.

Any form of electrically conductive plating can be utilized.

Fastener Spacing

Fastener spacing recommendations are a highly variable situation with many things to be taken into consideration. As a general rule, spacing should range between 2.5 and 3.5 inches. In applications where either extreme forces or thin flange thickness may be present, flange deformation can occur. This deformation limits gasket compression at the mid-point between fasteners. As such, fastener spacing should be reduced to 1.5 to 2.5 inches.

Foreign Object Debris (FOD)

Because of the knit wire composition of MESH STRIP gasketing and the cutting operation associated with this material, FOD is a potential concern. To mitigate this risk, Chomerics gives the option of terminated ends. In post-cutting operations, a silicone encapsulant is applied to the gasket ends. This silicone binds any loose debris. Other encapsulant materials are available to meet your specific application needs such as temperature and fluid resistance.

Weather Sealing

SPRINGMESH does not provide a water seal. These gaskets are specifically designed for shielding properties only. For applications requiring wire mesh weather sealing performance, please refer to the Chomerics COMBO GASKET data sheet.

SPRINGMESH™ - Product Information

Table 1 - Material Specifications

| Materials | Tin-Plated Steel |
|-----------------------|---------------------------|
| Specifications | ASTM A 228-02 SAE J178 |
| Typical Wire Diameter | 0.0045 in (0.114mm) |

ORDERING PROCEDURE

Standard SPRINGMESH gasketing is sold in bulk and can also be cut-to-length. Order by part numbers listed in Table 2.

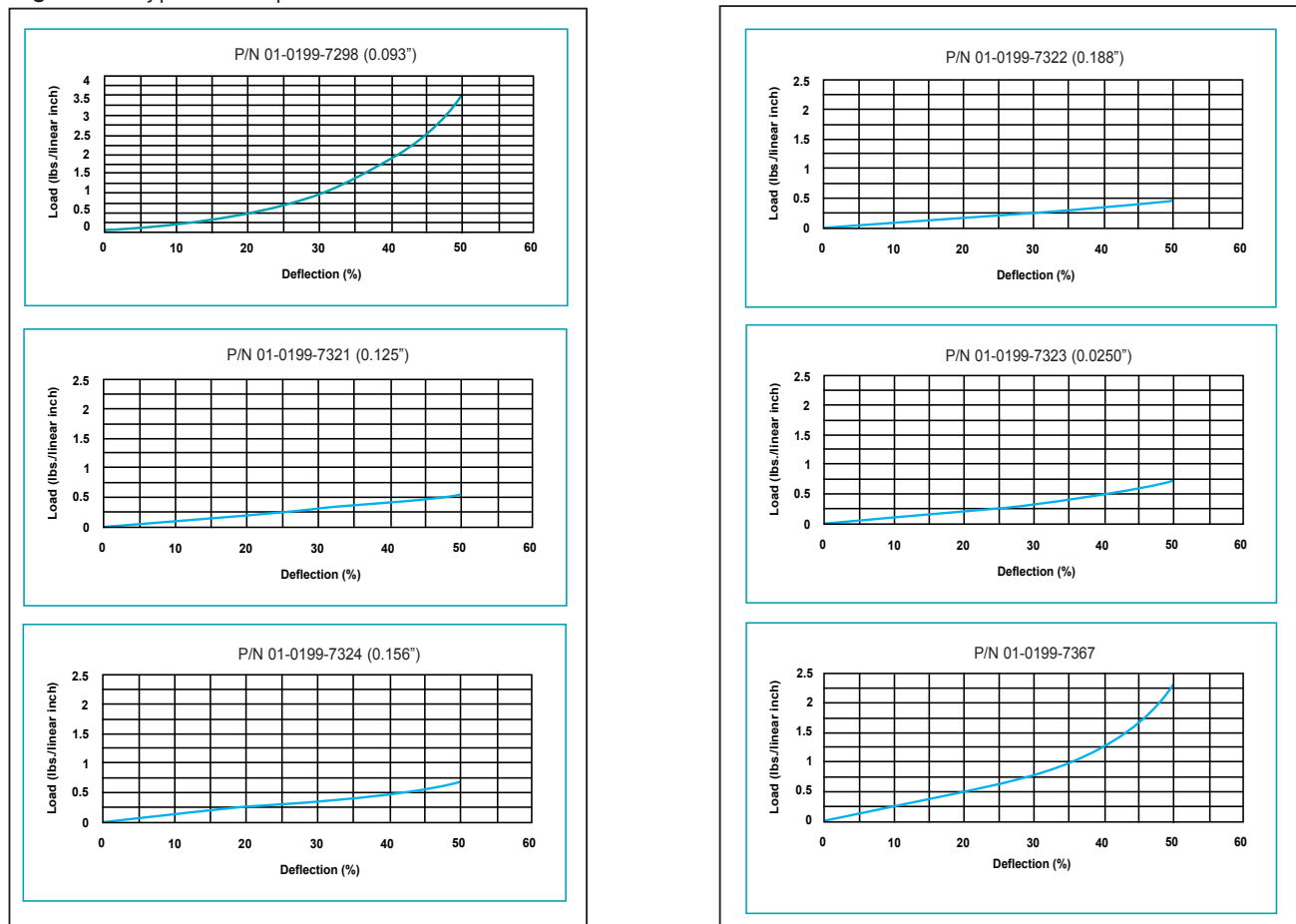
In addition to these standard diameters, SPRINGMESH gaskets can be produced in other diameters from 0.093" to 0.375" (1.57mm to 9.53mm), for which part numbers will be assigned by Parker Chomerics.

Table 2 - Standard Profiles

| PART NUMBER | DIAMETER inches (mm) | TOLERANCE inches (mm) |
|--------------|-------------------------|---|
| 01-0199-7298 | 0.093 (2.36) | 0.093 to 0.188; +0.020, -0.000 (2.36 to 4.78; +0.51, -0.000) |
| 01-0199-7321 | 0.125 (3.18) | |
| 01-0199-7324 | 0.156 (3.96) | |
| 01-0199-7322 | 0.188 (4.78) | 0.250 to 0.375; +0.032, -0.000 (6.35 to 9.53; +0.81, -0.000) |
| 01-0199-7323 | 0.250 (6.35) | |
| 01-0199-7367 | 0.375 (9.53) | |

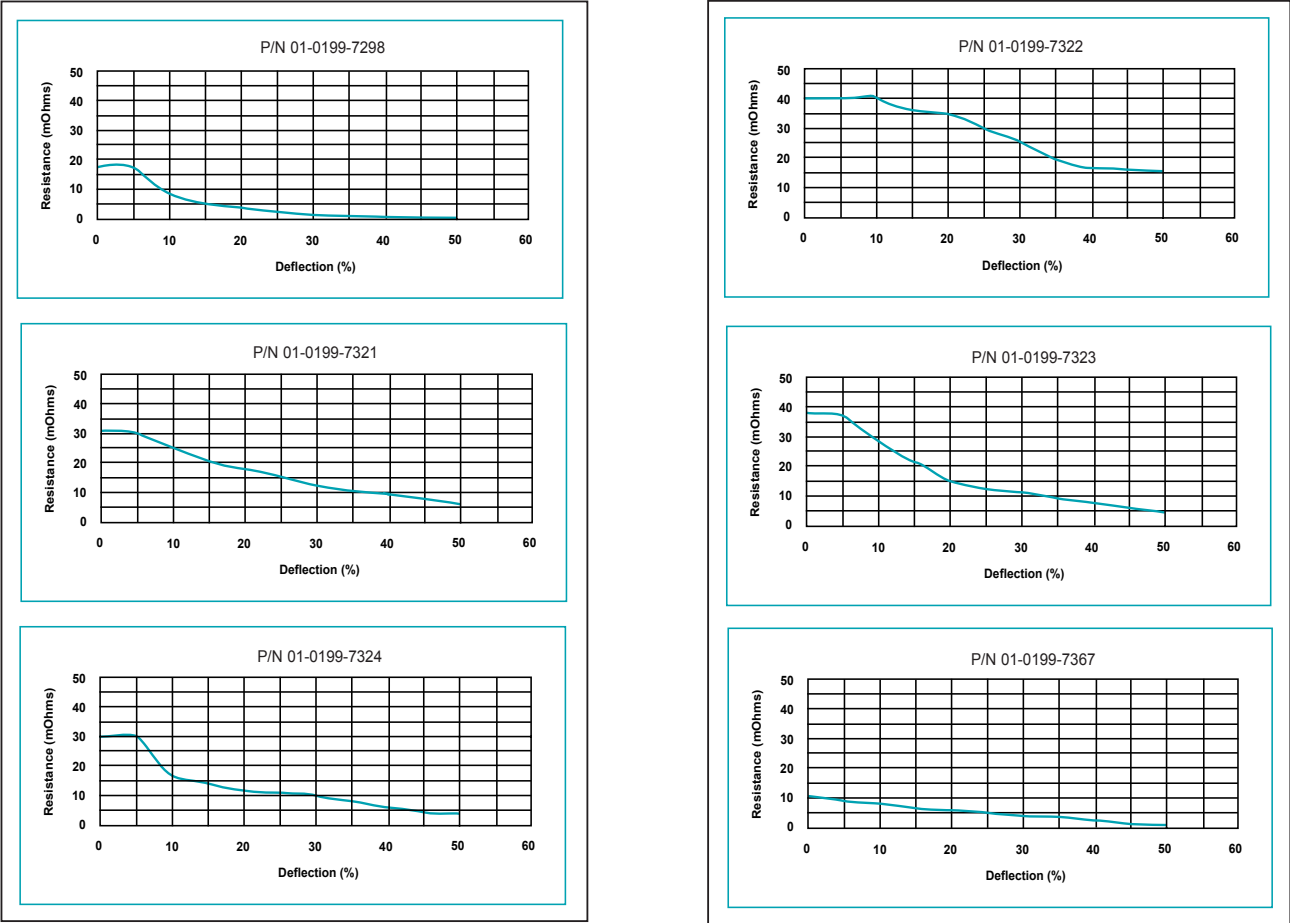
Typical Values

Figure 1 - Typical Compression/Deflection



Typical Values

Figure 2 - Typical Electrical Resistance under Deflection



Note: Please contact the Parker Chomerics Applications Engineering Department at 781-935-4850 with additional design questions.
Please contact the Parker Chomerics Test Services Department at 781-935-4850 in instances where application specific performance data is necessary.

www.chomerics.com
www.parker.com/chomerics

CHOMERICS is a registered trademark of Parker Hannifin Corporation. © 2013 TB 1098 EN March 2013