Military Gaskets for EMI Shielding: What are MIL-DTL-83528 and QPL 83528?

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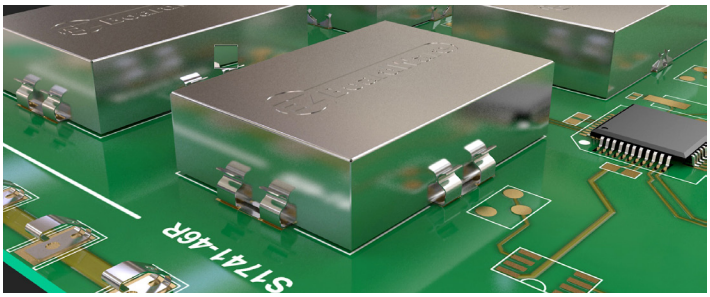
Designers of military gaskets face application-specific challenges. For example, not all EMI shielding elastomers that meet MIL-DTL-83528 requirements are QPL listed. For gasket fabricators who support military applications, it's important to know what MIL-DTL-83528 is and how it's related to the QPL. It's also worth learning about some other conductive shielding elastomers that are used in military projects.

What is MIL-DTL-83528?
MIL-DTL-83528 is a detail specification from the U.S. Department of Defense that establishes the general requirements for electrically-conductive elastomeric shielding gaskets. In additional to environmental resistance, these military gaskets provide shielding against electromagnetic interference (EMI) and radio frequency interference (RFI), disturbances that can affect electrical and electronic devices and equipment.

Within the MIL-DTL-83528 specification, lettered sections describe the requirements for specific material types. These requirements include the base elastomer and durometer, the fill material, the plane wave shielding effectiveness, and the continuous use temperature range. The base elastomer is silicone or fluorosilicone, and the filler material is either pure silver or a silver-coated material.

What is QPL 83528?
The Defense Logistics Agency (DLA) maintains a list of products, Qualified Products List (QPL) 83528, that meet MIL-DTL-83528 requirements. This list corresponds to MIL-DTL-83528's lettered sections and includes suppliers, such as SSP, whose materials are approved for use. A supplier may describe its products as meeting MIL-DTL-83528 requirements, but that doesn't necessarily mean they are part of QPL 83528.

It's also important to remember that MIL-DTL-83528 includes only silicones and fluorosilcones that are filled with pure silver or silver-plated materials. Consequently, conductive elastomers that are filled with nickel-aluminum or nickel-graphite aren't covered by MIL-DTL-83528 and, therefore, can't be part of QPL 83528.



Depending on your requirements, however, you may be able to use other materials.

Examples: QPL 83528 Conductive Shielding Elastomers
Specialty Silicone Products (SSP) of Ballston Spa, New York (USA) makes five QPL 83528 conductive shielding elastomers. The SSP website lets you download Notification of Qualification letters from the DLA, and the table below provides some basic information about these materials.

Examples: Conductive Elastomers with Non-Silver Coated Fills
SSP also makes conductive shielding elastomers with non-silver coated fills that are used in some military projects. For example, SSP2529 and SSP2551 are filled with nickel-aluminum and used when excellent corrosion resistance is required, such as in naval and aviation applications where there is exposure to salt spray and fog. SSP2529 uses silicone as the base elastomer and SS2551 uses fluorosilicone.

SSP's 502 series of conductive shielding elastomers also provide gasket designer and fabricators with advantages. Because these silicones and flurosilicones are filled with nickel-coated graphite, they aren't subject to price fluctuations in the previous metals market. These products are available in a range of durometers and also come in fabric-reinforced and flame-retardant formulations.

For more information about the materials in this article, contact SSP online or email Dominic Testo, SSP's Business Development Manager (DTesto@sspinc.com).

Letter Section	Durometer	Fill Material	Base Elastomer	SSP Product
A	65	Silver-Coated Copper	Silicone	SSP2569
B	65	Silver-Coated Aluminum	Silicone	SSP2368
C	75	Silver-Coated Copper	Fluorosilicone	SSP2573
D	70	Silver-Coated Aluminum	Fluorosilicone	SSP2486
K	85	Silver-Coated Aluminum	Silicone	SSP2571