SuperNine® Hermetic connectors

Screening and outgassing modification codes

MIL-DTL-38999 Series III Type

NASA and Class H Outgassing

The MIL-DTL-38999 specification defines TML and CVCM values for Class H space flight. Glenair modification code 186T provides Class H outgassing equivalency.

Additionally NASA recommends that connectors for space flight be specially screened. NASA EEE-INST-002 instructions for EEE parts selection, screening, qualification, and derating contains three levels of screening for space-grade components. These outgassing and screening modification codes are listed at right. To add a modification code append code to end of part number as shown: *233-265-H2Z117-26PN02-***429C**.

- **"Mission critical" connectors for space flight should undergo rigorous 100% final inspection**
- **Modification codes are available to invoke special screening for both MIL-DTL-38999 and NASA applications**
- **Outgassing properties of materials used in Glenair Series 23 SuperNine® glass-seal hermetic connectors are detailed in the table below**

Outgassing Modification Codes					
Specification IAW ASTM E595		48 Hour Oven Bake +175° C 100%	Thermal Vacuum* Outgassing 24 Hour +125° C 100%	Thermal Vacuum* Outgassing 48 Hour +175° C 100%	Modification Code
ASTM E595			●		186M
Class H**				●	186T
NASA, EEE-INST-002	Level 3		●		429L
	Level 2		●		429A
		●			429K
	Level 1		●		429C
		●			429J

*Thermal vacuum of 10^{-6} Torr. **For Class H additional screening may be requested from NASA EEE-INST-02, Table 2A below. Screening will be added as a separate line item on the customer's purchase order.

Commercial Part Screening Level per NASA EEE-INST-02, TABLE 2A			
Inspection / Test	Level 1	Level 2	Level 3
Visual	100%	100%	100%
Mechanical	2(0)	2(0)	
DWV	2(0)	2(0)	
Insulation Resistance	2(0)	2(0)	
Contact Engagement & Separation Force	2(0)		
Hermeticity (Sealed Receptacles Only)	100%	100%	
Coupling Force	2(0)		
Mod Code 429		✔	
Mod Code 429B	✔		

Note: required inspection quantity and failure acceptance (0) is shown.
Outgassing is required for all NASA screening levels, refer to the outgassing table for modification code.

Outgassing Properties of Materials Used in MIL-DTL-38999 Type SuperNine Hermetic Connectors				
Component	Material	TML %	CVCM %	Test Reference
Front and Rear Insulator	Front: high-grade rigid dielectric Rear: Epiall®	0.84	0.0	NASA Test # GSC15435 (48 hours at 180°C)
Grommet, Peripheral Seal and Interfacial Seal	Blended fluorosilicone/silicone elastomer	0.04	0.0	Glenair test
Insulator-to-Rubber Bonding Material	RTV, per MIL-A-46146	<1.0	<0.1	Glenair Test
White Epoxy Ink for Silk-screening	Markem 7224 White	0.49	0.03	NASA Test #GSC19899

MIL-DTL-38999 Type SuperNine Hermetic Connector Materials Approved for Space Flight		
Component	Material	Notes
Shells, Coupling Nuts, Jam Nuts	Stainless Steel	Approved for Space Flight
Rigid Insulators	Glass reinforced thermoset plastic, Epiall 1908	Approved for Space Flight
Contact Retention Clip	Beryllium copper, heat-treated, unplated	Approved for Space Flight
Grommet, Peripheral Seal, Interfacial Seal, O-ring	Blended fluorosilicone/silicone elastomer	Requires outgassing processing
Pin/Socket Contact	Gold plated beryllium copper alloy	Approved for Space Flight
Socket Contact Hood	Stainless steel	Approved for Space Flight
Potting Compounds and Adhesives	RTV and epoxies	Requires outgassing processing
Hermetic Insert	Vitreous Glass	Approved for Space Flight