

MIL-DTL-38999 Series III Type  
Class G and NASA space-grade guidelines

NASA and Class G Screening



The MIL-DTL-38999 specification defines TML and CVCM values for Class G space flight. Glenair modification code 186T assures parts are outgassed to meet the Class G requirements for outgassing.

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: 253-016-00ME25-35PNMS-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 SuperNine® connectors are detailed in the table below**

| Screening Level and Available Outgassing Modification Codes  |                          |                          |   |                |
|--|--------------------------|--------------------------|---|----------------|
| Screening Level  | Screening Only           | 48 Hour Oven Bake 175° C | Thermal Vacuum Outgassing (10 <sup>-6</sup> Torr) |                |
|  |                          |                          | 24 Hour 125° C                                    | 48 Hour 175° C |
| NASA, Level 1 Highest Reliability                            | 429B                     | 429J                     | 429C  |                |
| NASA, Level 2 High Reliability                               | 429                      | 429K                     | 429A  | 429AA          |
| NASA, Level 3 Standard Reliability                           | Use Standard Part Number |                          | 429L  |                |
| 38999, Class G or H (Group A and B inspection, no screening) |                          |                          |   | 186T           |

| Table II: NASA EEE-INST-02, Table 2A Screening Levels |         |         |         |
|---|---------|---------|---------|
| Inspection  | Level 1 | Level 2 | Level 3 |
| Visual  | 100%    | 100%    | 100%    |
| Mechanical  | 2(0)    | 2(0)    |         |
| Dielectric Withstanding Voltage                       | 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)    |         |         |

Required inspection quantity shown. Number in parenthesis indicates acceptance of failures allowed for all quantities inspected.

| Outgassing Properties of Materials Used in MIL-DTL-38999 Type SuperNine® Connectors |   |       |        |  |
|---|---|-------|--------|--|
| Component   | Material                                  | TML % | CVCM % | Test Reference                           |
| Front and Rear Insulator  | Epiall 1908                               | 0.84  | 0.0    | NASA Test # GSC15435 (48 hours at 180°C) |
| Rear Grommet, Interfacial Seal, Peripheral Seal, and Special Auxiliary Seals        | Blended fluorosilicone/silicone elastomer | 0.04  | 0.0    | Glenair test                             |
| Front-To-Rear Insulator Bonding Material  | Eccobond 104 A/B                          | 0.52  | 0.08   | Emerson & Cuming Data Sheet              |
| 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® Connector Materials Approved for Space Flight |   |                                |
|---|---|--------------------------------|
| Component   | Material  | Notes                          |
| Shells, Coupling Nuts, Jam Nuts   | Aluminum alloy                                  | 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, Special Auxiliary Seals, 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 |