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AERONAUTICAL RECOMMENDED PRACTICE

ARP 506

TERMINALS, LUG AND SPLICE, CRIMP STYLE, INSULATED, COPPER FOR 500°F MAXIMUM

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Revised

This document outlines the minimum requirements for high temperature insulated terminal lugs and splices. It does not imply availability of such items and is not intended as a procurement document.

1. REQUIREMENTS:

1.1 Materials: The terminals should be fabricated of material having such conductivity and strength as to meet the requirements of this ARP. The insulating material should be non-corrosive under normal conditions of use, resistant to abrasion and fungus, and should not support combustion.

1.2 Design and Construction: Terminals should be designed for attachment to appropriate size wire meeting the requirements of Specification MIL-W-7139, MIL-W-8777 and MIL-W-16788, types E, EE, F and FF, by having the wire-receiving barrel reshaped around the conductor by means of a tool as recommended by the terminal manufacturer. Terminals should exibit no evidence of fracturing or spalling as a result of the reshaping operation. Wire insertion shall be facilitated by bell mouth or chamfer.

1.2.1 Insulation Grip: Terminals should be provided with insulation grips for wire sizes 26 through 14.

1.2.2 Insulation: The barrel and insulation grip should be insulated over their outer surfaces. The insulation should remain in its original position on the barrel before and after crimping.

1.2.3 Finish: Terminals should have their conducting parts, unless made of a material exibiting no corrosive effects in salt spray, plated to withstand salt spray corrosion.

1.3 Performance: The terminals should be capable of meeting the following test requirements when crimped to the appropriate wire sizes with the applicable tool.

1.3.1 Voltage Drop: The voltage drops through the terminal, when carrying test current, should not exceed the values shown in Table I.

1.3.2 Current Cycling: Terminals should withstand 50 cycles of current overloading such that the wire temperature stabilizes at 490°F ∓ 10F. within 10 minutes of the onset of current and the no load temperature of the wire not exceed 100°F (each cycle consisting of 30 minutes at overload and 30 minutes at no load) without exceeding the "After Test" voltage drop specified in Table I.

1.3.3 Tensile Strength: The mechanical connection of the wire and the terminal should not break before the minimum tensile strength, as specified in Table I, is reached. These minimum values must be attained initially and after the current cycling, vibration, corrosion, and heat aging conditions have been imposed.

1.3.4 Vibration: After being subjected to vibration in accordance with Method 201 of MIL-STD-202 for 18 hours in each of the perpendiculars to the axis of the wire, the terminals should meet the tensile strength and "After Test" voltage drops specified in Table I.

1.3.5 Dielectric Strength: The insulation over the wire barrels and insulation grips, if any, should have a minimum dielectric strength of 1500 volts rms at 60 cycles for one minute. Terminals shall meet this requirement after being subjected to the current cycling, immersion, heat aging, and low temperature crimping conditions.

1.3.6 Immersion: The insulation should meet the dielectric strength requirement after immersion for 20 hours in any of the following fluids:

Aviation Gasoline per MIL-F-5572
Aviation Oil per MIL-O-7808
Aviation Hydraulic Fluid per MIL-H-5606
Aviation Fuel (JP-4) per MIL-F-5624
Ethylene Glycol per MIL-E-5559
Isopropyl Alcohol per MIL-F-5566
Salt Water,
and for 2 hours in Carbon Tetrachloride per O-C-141
Fluid Temperatures Should Be 25-28°C.

1.3.7 Flammability: The insulation should be self-extinguishing within 30 seconds after removal from a gas flame having a temperature of 870°C ∓ 10°C.

1.3.8 Corrosion Resistance: Terminals should meet the tensile strength and "After Test" voltage drop requirements specified in Table I after being subjected to 100 hours of salt spray corrosion in accordance with Method 101A of MIL-STD-202.

1.3.9 Heat Aging: Terminals should show no sign of rupture or cracking and should meet the requirements for Dielectric and Tensile strength after being subjected to an oven temperature of 500°F. for 120 hours and being allowed to cool to room temperature in one hour.

1.3.10 Low Temperature Crimping: Terminals, after being installed on appropriate size wire, with all components at -15°C, should be further subjected to a temperature of -55°C for one hour and should then withstand the Dielectric and Tensile strength tests.

1.4 Workmanship: Workmanship should be in accordance with high grade electrical manufacturing practice.