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**WIRE, ELECTRICAL, SILVER COATED, ETCHED FEP INSULATED, HIGH VOLTAGE (U)**

Drawing Callout:            **Wire, Electrical** per **8220960**-(1), -(2),

- (1)            Insert Control Number Suffix.
- (2)            Insert Applicable Size Code from 5.2.

**CHANGE HISTORY**

<u>CONTROL NUMBER</u>	<u>ISSUE</u>	<u>RELEASE/CHANGE NO.</u>	<u>DATE</u>
<b>8220960-00</b>	C	903862BX	8/90
	D	20001694KC	12/00
	E	20010178KC	01/01
	F	20010596KC	03/01
	G	20011428KC	09/01
	H	20100029KC FCO	01/10
	J	20151138KC	08/15
	K	20161619KC	01/17

## 1. GENERAL.

- 1.1. Scope. This specification covers silver-coated soft or annealed stranded copper conductor etched, fluorinated ethylene propylene (FEP) insulated hookup wire suitable for operation between -55 Deg. and 125 Deg. C at a maximum voltage of 12 KVDC @ E-6 atmosphere for 30 seconds. The requirements of this standard are manufactured to those of SAE-AS27559.
- 1.2. Deleted.

## 2. DOCUMENTS.

- 2.1. Required. The following document forms a part of this specification to the extent stated herein.

SAE-AS22759      Wire, Electric, Fluoropolymer-Insulation  
Copper or Copper Alloy

MIL-STD-2223      Test Methods for Insulated Electric Wire

## 3. REQUIREMENTS.

The material shall meet all of the applicable requirements, of this standard, including any inspection and testing, of SAE-AS22759 modified as follows:

**NOTE:**            Specimen preparation for testing shall be 75 +/- 10 Deg. F (24 +/- 6 Deg. C) with a humidity range of 10 to 65 percent unless otherwise specified.

- 3.1. Approved Product. The material shall be one of the following:

Product Designation	Manufacturer
8220960	Teledyne Reynolds Industries, Inc.

- 3.2. Conductor Coating. The conductor strands shall be silver-coated soft or drawn-and-annealed copper wire. The coating shall be continuous, adherent, and a minimum of 40 microinches thick. Manufacturer shall provide conductor certificate of compliance and conductor test report (data sheet) with coating thickness data.
- 3.3. Insulation. The insulation shall be extruded fluorinated ethylene propylene (FEP), etched (surface treated for bondability).
- 3.3.1. Color. The color of the insulation shall be clear (natural).
- 3.4. Stranding and Dimensions. The stranding and dimensions of the wire shall be in accordance with Table 1. The conductors shall be concentrically stranded and the outermost layers shall have a left hand lay.
- 3.5. Finished Wire Insulation Flaws. One of the following methods shall be used. One hundred percent of the finished wire shall be tested, and any portion showing insulation breakdown shall be cut out of the wire including at least 3 inches of wire on each side of the failure.
- 3.5.1. Impulse Dielectric Test. Finished wire shall be tested in accordance with MIL-STD-2223 method 3002 at 8 kV.
- 3.5.2. High Frequency Spark Test. As an alternative to the impulse dielectric test, the 3 KHz high frequency spark test in accordance with MIL-STD-2223 method 3008 is permitted for the detection of flaws in finished wire. Perform the high frequency spark test at 5.7 kV (rms) minimum for finished wire.
- 3.6. High Potential Altitude. The test specimen shall be placed in a vacuum chamber, the chamber evacuated to 70,000 feet (E-6 atmospheres). The specimen shall be subjected to 12 KVDC minimum for 30 seconds with a maximum leakage current of 2 microamperes.

- 3.7. Solder Wetability. When tested as specified below, the wire shall retain a smooth, bright, uniform solder coating over at least 90 percent of the conductor.
- a. Prepare the specimen as specified in the soldering test.
  - b. Immerse the prepared end of the conductor to within 1/8 inch of the insulation into an activated rosin base liquid flux and then into a pot of molten Sn60 (60-40 tin-lead) solder maintained at 235 +/- 5 Deg. C for 5 +/- 1 seconds.
  - c. Inspect the conductor under 3.5-7X magnification for completeness of coverage. The 10 percent non-wetted surface allowed may be in one area or distributed over the entire immersed surface of the conductor.

#### 4. **QUALITY ASSURANCE PROVISIONS.**

Manufacturer/Supplier Lot Inspection and Testing. The material producer or supplier shall be responsible for the performance of all test and inspections applicable to the material and shall furnish documentation in the form of a certificate of conformance.

##### 4.1. Acceptance Inspection.

The acceptance testing shall cover all requirements in Section 3 except Para 3.5, Para 3.5.1, Para 3.5.2 and Para 3.6.

## 5. PACKAGING, HANDLING AND STORAGE.

- 5.1. It is the responsibility of the Production Agency to establish site-specific processes to control shelf life, storage condition, documentation, and labeling.

Packaging, handling, storage conditions, and shelf life information shall follow the requirements listed in Section 5.2.

Site-specific processes that conform to the baseline conditions of Section 5.2 may be specified in an Information Engineering Release (IER).

If there are no requirements defined in Section 5.2, shelf life and storage conditions are specified in an Information Engineering Release (IER) and are based on the manufacturer's recommendations, previous experience with similar materials, storage facilities, and available environments.

Shelf life and storage conditions at Subcontractor locations are based on the Manufacturer's recommendations.

Packaging, handling, documentation, storage, and shelf life information for the National Security Campus (NSC) is located in IER 20091910KC.

The packaging, handling, storage, and shelf life conditions described herein are not required to be performed or met by the material producer or supplier, except when the NSC is the manufacturer.

- 5.2. The following information, established by Design Agencies and Production Agencies, is required.

- 5.2.1. Storage Condition. Store as a noncombustible solid in a general plant environment at temperatures ranging from 45 to 100 degrees F.

- 5.2.2. Shelf Life. The shelf life of this material is unlimited.

- 5.3. Deleted.

- 5.4. Deleted.

**6. NOTES.**

This section is supplied for the convenience of the users of this specification and contains no mandatory provisions.

6.1. Labeling. As a minimum the following information shall be on each individual container of material:

Material Specification Number  
Wire AWG Size and Stranding  
Name of Manufacturer  
Manufacturer's Lot Number  
Date of Manufacture  
Quantity of Wire Contained on a Spool  
Storage Condition  
Shelf Life

6.2. Size Codes.

<u>Size Code</u>	<u>AWG Size</u>	<u>Stranding</u>	<u>Manufacturer P/N</u>
-821	20	19/32	1788780NATURAL
-823	22	19/34	1789557NATURAL
-825	24	19/36	1788111
-827	26	19/38	1789556

6.3.

TABLE 1  
Stranding and Dimensions

AWG Size	Bare Conductor		Finished Wire			DC Resistance Max. ohms/1000 ft.@20°C
	Stranding No.	Conductor Diameter (inch, max.)	Insulation Thickness (inch, min.)	Overall Diameter (inch, max.)		
20	19	32	0.039	0.008	0.100 +/- 0.005	10.5
26	19	38	0.020	0.008	0.050 +/- 0.005	41.0
24	19	36	0.025	0.008	0.050 +/- 0.005	26.0
22	19	34	0.032	0.008	0.055 +/- 0.005	17.0

6.4. Suggested Source.

Teledyne Reynolds  
A. E. Petsche

**END OF TEXT**