

C. Baker 851KC  
G. Grimm 2633SA

**(U) WIRE, ELECTRICAL, SILVER\_COATED, FEP INSULATED, HIGH VOLTAGE**

Reference Drawing Callout: Wire, Electrical per 8220962-(1).

(1) Insert Control Number Suffix.

**CHANGE HISTORY**

<u>CONTROL NUMBER</u>	<u>ISSUE</u>	<u>RELEASE/CHANGE NO.</u>	<u>DATE</u>
8220962-8220964-00	A	IER 20151237KC	09/15
	B	20161643KC	06/17
	C	201803649KC	9/18
	D	201903537KC	8/19

## 1. GENERAL.

1.1. Scope. This specification covers silver-coated soft or annealed stranded copper conductor, fluorinated ethylene propylene (FEP) insulated hookup wire suitable for operation between -65 Deg. and 200 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. 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, per SAE AS22759. Manufacturer shall provide conductor certificate of compliance and conductor test report (data sheet) with coating thickness data.

3.2. Insulation. The insulation shall be per SAE AS22759, extruded fluorinated ethylene propylene (FEP).

3.2.1. Color. See Table below.

Table 1

Number	Size Code	Color
8220962	823	Black
8220963	823	Yellow
8220964	823	Green

- 3.3. Stranding and Dimensions. The stranding and dimensions of the wire shall be in accordance with Table 2. The conductors shall be concentrically stranded and the outermost layers shall have a left hand lay.
- 3.4. 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.
- 3.4.1. Impulse Dielectric Test. Finished wire shall be tested in accordance with MIL-STD-2223 method 3002 at 11.0 kV. Any flaws detected shall be identified by removing at least 6 inches of insulation on each side of the flaw.
- 3.4.2. 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.
- 3.5. Insulation Resistance. The entire length of the specimen with insulation intact shall be immersed in water at room temperature to within six inches from each end of the wire for at least four hours prior to the test. The water shall contain a 0.5% (by volume) solution of a wetting agent.

Apply a DC potential of  $450 \pm 50$  volts between the conductor and ground. After one minute electrification, measure the leakage current and compute the insulation resistance. Insulation resistance 5,000 Mega Ohms per 1000Ft. minimum at 25°C.

- 3.6. High Potential Altitude. The test specimen shall be placed in a vacuum chamber, the chamber evacuated to 1.325 in Hg maximum. The specimen shall be subjected to 12 KVDC minimum for 30 seconds. The maximum leakage current shall be 2 microamps.
- 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.
- Prepare the specimen. Strip  $\frac{1}{2}$ -inch of insulation from a 6-inch specimen of finished wire. Bend the stripped end 90 degrees over a mandrel of its own diameter at a point  $\frac{1}{2}$ -inch from the end of the insulation.
  - Immerse the prepared end of the conductor to within  $\frac{1}{8}$  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  $235 \pm 5$  Deg. C for  $5 \pm 1$  seconds.
  - 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.
- 3.8.

TABLE 2  
Stranding and Dimensions

AWG Size	Bare Conductor		Finished Wire		DC Resistance Max. ohms/1000 ft.@20°C	
	Stranding No.	AWG	Conductor Diameter (inch, max.)	Insulation Thickness (inch, min.)		Overall Diameter (inch)
24	19	36	0.025	0.008	0.050 +/- 0.005	23.6

#### 4. QUALITY ASSURANCE PROVISIONS.

4.1. 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.

4.2. Acceptance Inspection.

The acceptance testing shall cover all requirements in Section 3 except Para 3.4, Para 3.4.1, Para 3.4.2, Para 3.6, and Para 3.8.

4.3. Deleted.

#### 5. PACKAGING, HANDLING AND STORAGE.

The requirements defined in this section apply upon acceptance only at the Production Agency (PA) location. Prior to PA use, site-specific processes to control shelf life, storage condition, labeling, packaging, handling and additional documentation are to be established by the PA site. Individual PA site-specific processes do not have to be identical.

5.1. Production Agency site-specific processes to control shelf life, storage condition, labeling, packaging, handling and additional documentation shall implement the technical requirements and specific controls to maintain design intent as defined in Section 5.2 & 5.3.

5.2. Controls to maintain design intent:

5.2.1. Except as noted in 5.3, shelf life and storage should be based on the manufacturer's recommendations, or previous PA experience with similar materials, storage facilities, and available environments. These recommendations are documented in section 6.

5.2.2. When a PA plans to deviate from the recommendations outlined in section 6, the PA site shall document objective evidence for the deviation in an administrative IER.

5.3. Design Agency technical shelf life, storage condition and labeling, packaging and handling requirements:

- 5.3.1. Shelf Life
  - 5.3.1.1. The shelf life shall be unlimited.
- 5.3.2. Storage Condition
  - 5.3.2.1. Material shall be stored as a noncombustible solid at temperatures ranging from 45 to 100 degrees F.
- 5.3.3. Labeling
  - 5.3.3.1. Not Applicable
- 5.3.4. Packaging
  - 5.3.4.1. Not Applicable
- 5.3.5. Handling
  - 5.3.5.1. Not Applicable
- 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. Packaging, Handling, and Storage Recommendations
  - 6.1.1. Manufacturer did not provide recommendations.
  - 6.1.2. Labeling
    - 6.1.2.1. It is recommended that each spool of material be marked with the following information:  
  
Material Specification Number  
Wire AWG Size and Stranding  
Name of Manufacturer  
Manufacturer's Lot Number  
Date of Manufacture  
Quantity of Wire Contained on Spool  
Storage Condition  
Shelf Life
- 6.2. Deleted.

6.3. Deleted.

6.4. Suggested Source.

Teledyne Reynolds

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END OF TEXT