FEDERAL SUPPLY CLASS
6145

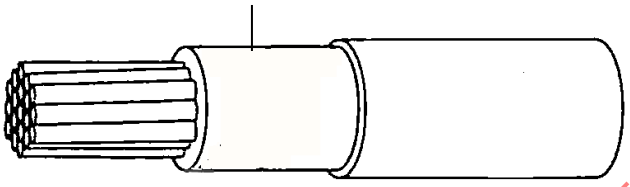
RATIONALE

SPECIFICATION UPDATED TO INCLUDE AS29606 CONDUCTOR REQUIREMENTS, WIRE SIZES 28 AND 30 AWG, ROHS RESTRICTIONS AND AS22759 MODIFICATIONS.

NOTICE

THE COMPLETE REQUIREMENTS FOR PROCURING THE PRODUCT DESCRIBED HEREIN SHALL CONSIST OF THIS DOCUMENT AND THE LATEST ISSUE OF AS22759.

PRIMARY INSULATION - CROSSLINKED, EXTRUDED, MODIFIED ETFE



JACKET - CROSSLINKED, EXTRUDED, MODIFIED ETFE

ETFE – ETHYLENE TETRAFLUOROETHYLENE
CONDUCTOR – STRANDED SILVER COATED HIGH STRENGTH COPPER ALLOY

FIGURE 1 - AS22759/49 CONFIGURATION

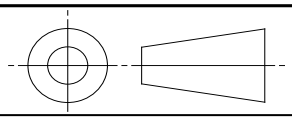
TABLE 1 - CONSTRUCTION DETAILS FOR FINISHED WIRE

PART NO. 1/	WIRE SIZE	STRANDING (NUMBER OF STANDS X SIZE GAUGE OF STRANDS) 2/	DIAMETER OF STRANDED CONDUCTOR (INCHES		FINISHED WIRE		
			(MIN)	(MAX)	RESISTANCE AT 20 °C (68 °F) (OHMS/1,000 FEET) MAX	DIAMETER (INCHES)	WEIGHT (LB/1,000 FEET) (MAX)
M22759/49-30-*	30	7 X 38	.0105	.0124	117.4	.032 ± .002	1.0
M22759/49-28-*	28	7 X 36	.0135	.0154	74.4	.035 ± .002	1.3
M22759/49-26-*	26	19 X 38	.0175	.0204	44.8	.040 ± .002	1.7
M22759/49-24-*	24	19 X 36	.0225	.0244	28.4	.045 ± .002	2.3
M22759/49-22-*	22	19 X 34	.0285	.0314	17.5	.050 ± .002	3.3
M22759/49-20-*	20	19 X 32	.0365	.0395	10.7	.058 ± .002	4.8

1/ PART NUMBER: THE ASTERISKS IN THE PART NUMBER COLUMN, TABLES 1 AND 3, SHALL BE REPLACED BY COLOR CODE DESIGNATORS IN ACCORDANCE WITH MIL-STD-681. EXAMPLES: SIZE 20, WHITE-M22759/49-20-9; WHITE WITH ORANGE STRIPE – M22759/49-20-93. PRINTING OF COLOR CODE DESIGNATOR ON SURFACE OF WIRE INSULATION IS NOT REQUIRED.
2/ CONDUCTOR SHALL CONFORM TO AS29606, TYPE SCA1 SMALL DIAMETER 80 MICROINCH SILVER PLATED HIGH STRENGTH COPPER ALLOY CONDUCTOR.

For more information on this standard, visit
https://www.sae.org/standards/content/AS22759/49A

THIRD ANGLE PROJECTION



ISSUED 2011-07 REVISED 2015-12 REAFFIRMED 2020-09

CUSTODIAN: AE-8/AE-8D

PROCUREMENT SPECIFICATION: AS22759

SAE INTERNATIONAL

AEROSPACE STANDARD

(R) WIRE, ELECTRIC, FLUOROPOLYMER-INSULATED, CROSSLINKED MODIFIED ETFE, LOW FLUORIDE, NORMAL WEIGHT, 80 MICROINCH SILVER-COATED HIGH-STRENGTH COPPER ALLOY, 200 °C, 600 VOLT, ROHS

REQUIREMENT: ALL REQUIREMENTS SHALL CONSIST OF THIS DOCUMENT AND THE LATEST ISSUE OF AS22759.

1. WIRE CONSTRUCTION:

   WIRE CONSTRUCTION SHALL BE IN ACCORDANCE WITH FIGURE 1 AND TABLES 1, 2, 3, AND 4.

2. WIRE PERFORMANCE RATING:

   TEMPERATURE RATING: 200 °C (392 °F) MAXIMUM CONDUCTOR CONTINUOUS TEMPERATURE.

   VOLTAGE RATING: 600 VOLTS (RMS) AT SEA LEVEL. THIS INSULATION SYSTEM HAS BEEN USED IN AEROSPACE APPLICATIONS USING 115 VOLTS (PHASE TO NEUTRAL), 400 HERTZ AC AND 28 VOLTS DC. VERIFICATION OF THE SUITABILITY OF THIS PRODUCT FOR USE IN OTHER ELECTRICAL SYSTEM CONFIGURATIONS IS THE RESPONSIBILITY OF THE USER.

3. MATERIALS AND PHYSICAL PROPERTIES:

   SEE AS22759 FOR MATERIAL REQUIREMENT. MATERIALS USED IN THE MANUFACTURE OF THESE PRODUCTS SHALL COMPLY WITH THE RESTRICTION OF HAZARDOUS SUBSTANCES DIRECTIVE 2002/95/EC.

4. FINISHED WIRE INSULATION PROPERTIES:

   PRIMARY INSULATION SHALL HAVE A CONTRASTING PIGMENTATION TO THAT OF THE JACKET.

   PHYSICAL PROPERTIES OF INSULATION: PRIMARY INSULATION SHALL BE SEPARATED FROM THE OUTER JACKET FOR DETERMINATION OF PRIMARY INSULATION TENSILE STRENGTH AND ELONGATION.

   FINISHED WIRE INSULATION PROPERTIES SHALL BE IN ACCORDANCE WITH TABLE 2.

TABLE 2 - FINISHED WIRE INSULATION PROPERTIES REQUIREMENTS

INSULATION PROPERTIES	
SPARK TEST VOLTAGE	1,500 VOLT (RMS) AT 60 HERTZ OR 3,000 HERTZ ON PRIMARY INSULATION
IMPULSE TEST VOLTAGE	8.0 KILOVOLTS (PEAK)
HIGH FREQUENCY TEST VOLTAGE	5.7 KILOVOLTS (RMS)
FLUORIDE OFF-GASSING	MAXIMUM 20 PPM
CROSSLINK PROOF	300 °C ± 3 °C (572 °F ± 5.4 °F), 7 HOURS
INSULATION BLOCKING	230 °C ± 3 °C (446 °F ± 5.4 °F)
SHRINKAGE	230 °C ± 3 °C (446 °F ± 5.4 °F)
	MAXIMUM CHANGE .125 INCHES
LAYER WICKING	2.25 INCHES (MAX)
	PROCEDURE: MULTI-LAYER WIRE
ELECTRICAL RESISTANCE (IR)	5,000 MEGOHMS (MIN) - 1,000 FEET
ELECTRICAL SURFACE RESISTANCE	500 MEGOHMS - INCHES (MIN)
WET DIELECTRIC VOLTAGE	2,500 VOLTS (RMS), 60 HERTZ
WALL THICKNESS	.003 INCH (MIN) FOR PRIMARY INSULATION
	.004 INCH (MIN) FOR OUTER JACKET
	.008 INCH (MIN) FOR TOTAL INSULATION
INSULATION TENSILE STRENGTH	5,000 LBF/IN^2 (MIN) FOR PRIMARY INSULATION
	5,000 LBF/IN^2 (MIN) FOR TOTAL INSULATION
INSULATION ELONGATION	125% (MIN) FOR PRIMARY INSULATION
	75% (MIN) FOR TOTAL INSULATION
UV LASER MARKING	75% MINIMUM AVERAGE
CONTINUOUS LENGTH SCHEDULE	B

5. FINISHED WIRE IDENTIFICATION:

   WIRE IDENTIFICATION EXCEPTIONS: NONE

   WIRE IDENTIFICATION DURABILITY: 125 CYCLES (250 STROKES) WITH 500 GRAMS WEIGHT

   STRIPE AND BAND DURABILITY: 125 CYCLES (250 STROKES) WITH 500 GRAMS WEIGHT

6. FINISHED WIRE PERFORMANCE:

   FINISHED WIRE FIXTURES APPLICABLE TO EACH WIRE SIZE SHALL BE IN ACCORDANCE WITH TABLE 3.