FEDERAL SUPPLY CLASS
6145

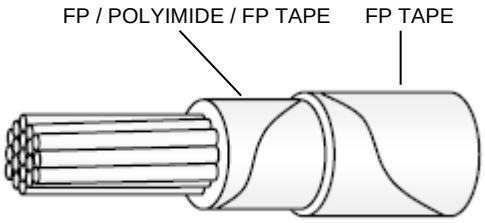
RATIONALE

SPECIFICATION UPDATED TO INCLUDE AS29606 CONDUCTOR REQUIREMENTS, 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.

THIS SPECIFICATION IS NOT INTENDED FOR USE IN NAVAL AIRCRAFT OR NAVAL AIR SYSTEMS APPLICATIONS.



FP - FLUOROCARBON POLYMER MODIFIED POLYTETRAFLUOROETHYLENE (PTFE)
CONDUCTOR - STRANDED NICKEL COATED HIGH STRENGTH OR ULTRA HIGH STRENGTH COPPER ALLOY

FIGURE 1 - AS22759/82 CONFIGURATION

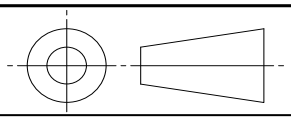
TABLE 1 - CONSTRUCTION DETAILS FOR FINISHED WIRE

PART NO. 1/	WIRE SIZE	CONDUCTOR 3/				FINISHED WIRE				
		STRANDING (NUMBER OF STRANDS X SIZE GAUGE OF STRANDS)	DIAMETER (IN)		RESISTANCE AT 20 °C (68 °F) (OHMS/1000 FEET MAX)	DIAMETER (IN)		WEIGHT (LB/1000 FEET) 2/		
			MIN	MAX		MIN	MAX	MIN	TARGET	MAX
M22759/82-26-*	26	19 X 38	.0175	.0204	58.4	.030	.034	1.20	1.33	1.45
M22759/82-24-*	24	19 X 36	.0225	.0254	30.1	.034	.038	1.70	1.85	2.00
M22759/82-22-*	22	19 X 34	.0285	.0314	18.6	.040	.043	2.55	2.75	2.95
M22759/82-20-*	20	19 X 32	.0365	.0404	11.4	.048	.051	4.05	4.25	4.45

1/ PART NUMBER: THE ASTERISKS IN THE PART NUMBER COLUMN OF TABLE 1 SHALL BE REPLACED BY COLOR CODE DESIGNATORS IN ACCORDANCE WITH MIL-STD-681. EXAMPLES: M22759/82-20-93 IS A 20 AWG WHITE WITH ORANGE STRIPE.
2/ THE ACCEPTABLE VALUE FOR THE CPK FOR THE FINISHED WIRE WEIGHT LISTED SHALL BE 1.3, USING A NORMAL (GAUSSIAN) DISTRIBUTION TO OBTAIN THOSE CPK VALUES.
3/ CONDUCTOR SHALL CONFORM TO AS29606 TYPE NCA SMALL DIAMETER NICKEL COATED HIGH STRENGTH COPPER ALLOY CONDUCTOR FOR WIRE SIZES 24 THROUGH 20 AND TYPE NCU SMALL DIAMETER NICKEL COATED ULTRA HIGH STRENGTH COPPER ALLOY CONDUCTOR FOR WIRE SIZE 26.

ISSUED 2000-06 REAFFIRMED 2006-04 REVISED 2015-04

THIRD ANGLE PROJECTION



CUSTODIAN: AE-8/AE-8D

PROCUREMENT SPECIFICATION:

SAE INTERNATIONAL

AEROSPACE STANDARD

(R) WIRE, ELECTRICAL, POLYTETRAFLUOROETHYLENE/ POLYMIDE INSULATED, LIGHT WEIGHT, NICKEL COATED, HIGH STRENGTH OR ULTRA HIGH STRENGTH COPPER ALLOY, 260 °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.

TABLE 2 - WIRE INSULATION MATERIALS

TAPE CODE	THICKNESS (NOM)	MATERIAL
1	.0012	.00045 (FP)/.00065 (POLYIMIDE)/.0001 (FP)
2	.0020	FP (UNSINTERED)

TABLE 3 - TAPE OVERLAP REQUIREMENTS 1/

WIRE SIZE	WRAP 1			WRAP 2			NOMINAL WALL THICKNESS (MILS)
	TAPE CODE	PERCENT OVERLAP		TAPE CODE	PERCENT OVERLAP		
		MIN	MAX		MIN	MAX	
26	1	50.5	54.0	2	50.5	54.0	5.8
24	1	50.5	54.0	2	50.5	54.0	5.8
22	1	50.5	54.0	2	50.5	54.0	5.8
20	1	50.5	54.0	2	50.5	54.0	5.8

1/ WRAP 1 IS INNERMOST TAPE WHICH IS IN CONTACT WITH THE CONDUCTOR. THAT TAPE SHALL HAVE THE 0.00045 FP LAYER AGAINST THE CONDUCTOR.

2. WIRE PERFORMANCE RATING:

   TEMPERATURE RATING: 260 °C (500 °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. FINISH WIRE INSULATION PROPERTIES:

   FINISH WIRE INSULATION PROPERTIES SHALL BE IN ACCORDANCE WITH TABLE 4.

TABLE 4 - FINISHED WIRE INSULATION PROPERTIES REQUIREMENTS

INSULATION PROPERTIES	
IMPULSE TEST VOLTAGE	8.0 KILOVOLTS (PEAK)
HIGH FREQUENCY TEST VOLTAGE	5.7 KILOVOLTS (RMS)
INSULATION STATE OF SINTER	3.0 JOULES PER GRAM MAXIMUM
TAPE OVERLAP	TABLE 3
LAMINATION SEALING	260 °C ± 2 °C (500 °F ± 3.6 °F), 6 HOURS
INSULATION BLOCKING	260 °C ± 2 °C (500 °F ± 3.6 °F)
SHRINKAGE	290 °C ± 2 °C (554 °F ± 3.6 °F)
	MAXIMUM CHANGE .091 INCHES
ELECTRICAL RESISTANCE (IR)	5000 MEGOHMS (MIN)-1000 FEET
WET DIELECTRIC VOLTAGE	2500 VOLTS (RMS), 60 HERTZ
INSULATION STRIP FORCE	.25 - 6.0 POUNDS
UV LASER MARKING	55% MINIMUM AVERAGE
CONTINUOUS LENGTH SCHEDULE	B

5. FINISH WIRE IDENTIFICATION:

   WIRE IDENTIFICATION EXCEPTIONS: NONE

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

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

6. FINISH WIRE PERFORMANCE:

   FINISH WIRE FIXTURES APPLICABLE TO EACH WIRE SIZE SHALL BE IN ACCORDANCE WITH TABLE 5.

TABLE 5 - TEST MANDREL AND TEST LOAD REQUIREMENTS

WIRE SIZE (AWG)	TEST MANDREL DIAMETER 1/ (INCHES)			TEST LOAD 1/ (LB)	
	COLD BEND	LIFE CYCLE/ BEND TEST	WRAP	COLD BEND	LIFE CYCLE/ BEND TEST
26	1.00	.375	.125	3.00	.50
24	1.00	.500	.125	3.00	.75
22	1.00	.500	.125	4.00	1.00
20	1.00	.500	.125	4.00	1.50

1/ TOLERANCE SHALL BE ±3% OF THE GIVEN VALUES.