FEDERAL SUPPLY CLASS
6145

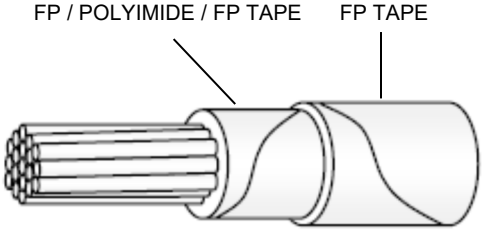
RATIONALE

TABLE 1 OF THE STANDARD NEEDS TO BE UPDATED TO SUPPORT CURRENT QUALIFICATION ACTIVITIES TO REFLECT THE SLIGHT WEIGHT INCREASE OF THE CONDUCTOR AS SPECIFIED IN AS29606 AND THE EFFECT THAT IT HAD ON THE FINISHED WIRE.

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 EXTRA HIGH STRENGTH COPPER ALLOY

FIGURE 1 - AS22759/94 CONFIGURATION

TABLE 1 - CONSTRUCTION DETAILS FOR FINISHED WIRE

		CONDUCTOR 3/				FINISHED WIRE				
		STRANDING (NUMBER OF STRANDS X SIZE GAUGE OF STRANDS)	DIAMETER (INCHES)		RESISTANCE AT 20 °C (68 °F) (OHMS/1000 FEET MAX)	DIAMETER (INCHES)		WEIGHT (LB/1000 FEET) 2/		
PART NO. 1/	WIRE SIZE		MIN	MAX		MIN	MAX	MIN	TARGET	MAX
M22759/94-30-*	30	7 X 38	.0117	.0134	129.6	.022	.026	.61	.73	.80
M22759/94-28-*	28	7 X 36	.0147	.0164	79.0	.025	.029	.86	.98	1.10
M22759/94-26-*	26	19 X 38	.0184	.0204	49.4	.030	.034	1.21	1.44	1.57
M22759/94-24-*	24	19 X 36	.0231	.0254	30.1	.034	.038	1.73	2.06	2.19
M22759/94-22-*	22	19 X 34	.0293	.0314	18.6	.040	.043	2.55	3.02	3.21
M22759/94-20-*	20	19 X 32	.0373	.0404	11.4	.048	.051	4.07	4.60	4.79

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: M22759/94-20-93 IS A 20 AWG WHITE WITH ORANGE STRIPE.

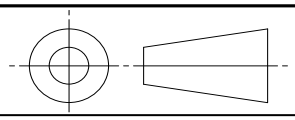
2/ THE ACCEPTABLE VALUE FOR THE CPK FOR THE FINISHED WIRE WEIGHT LISTED SHALL BE 1.3, USING A NORMAL (GAUSSIAN) DISTRIBUTION TO OBTAIN THOSE CPK VALUES.

3/ CONDUCTOR SHALL CONFORM TO AS29606 TYPE NCS SMALL DIAMETER NICKEL COATED EXTRA HIGH STRENGTH COPPER ALLOY CONDUCTOR.

ISSUED 2016-07 REVISED 2021-08

For more information on this standard, visit
https://www.sae.org/standards/content/AS22759/94A

THIRD ANGLE PROJECTION



CUSTODIAN: AE-8/AE-8D

PROCUREMENT SPECIFICATION: AS22759

SAE INTERNATIONAL

AEROSPACE STANDARD

WIRE, ELECTRICAL, POLYTETRAFLUOROETHYLENE/ POLYMIDE INSULATED, LIGHTWEIGHT, NICKEL COATED, EXTRA 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	
30	1	50.5	54.0	2	50.5	54.0	5.8
28	1	50.5	54.0	2	50.5	54.0	5.8
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. THE .00045 FP LAYER SHALL BE 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: REFER TO 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 INCH
ELECTRICAL RESISTANCE (IR)	5000 MEGOHMS (MIN)-1000 FEET
WET DIELECTRIC VOLTAGE	2500 VOLTS (RMS), 60 HERTZ
INSULATION STRIP FORCE	.25-6.0 POUNDS: WIRE SIZES 26-20
	NOT REQUIRED FOR WIRE SIZES 30-28
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/ (POUNDS)	
	COLD BEND	LIFE CYCLE/ BEND TEST	WRAP	COLD BEND	LIFE CYCLE/ BEND TEST
30	1.00	.375	.125	2.00	.25
28	1.00	.375	.125	2.00	.25
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.

FINISH WIRE PERFORMANCE CHARACTERISTICS SHALL BE IN ACCORDANCE WITH TABLE 6.

TABLE 6 - FINISH WIRE PERFORMANCE CHARACTERISTICS

PERFORMANCE CHARACTERISTIC	REQUIREMENT
MANDREL BEND RESISTANCE (TAPES/BRAIDS)	REQUIRED
THERMAL SHOCK MECHANICAL RESISTANCE	TEMPERATURE EXPOSURE 260 °C ± 2 °C (500 °F ± 3.6 °F)
	MAXIMUM CHANGE .091 INCH
THERMAL MECHANICAL RESISTANCE (LIFE CYCLE)	EXPOSURE 500 HOURS, 290 °C ± 2 °C (554 °F ± 3.6 °F)
HUMIDITY RESISTANCE (IR)	5000 MEGOHMS (MIN)-1000 FEET
FLUID RESISTANCE	DIAMETER INCREASE 5% (MAX)
SMOKE RESISTANCE	260 °C ± 5 °C (500 °F ± 9 °F)
FLAME RESISTANCE	SELF-EXTINGUISH TIME: 3 SECONDS
	BURN LENGTH 3 INCHES
WET ARC RESISTANCE	MINIMUM 64 WIRES PASS WET DIELECTRIC TEST
	3 OR LESS WIRES FAIL IN ONE BUNDLE
	DAMAGE LENGTH: 3.0 INCHES OR LESS
DRY ARC RESISTANCE	MINIMUM 64 WIRES PASS WET DIELECTRIC TEST
	3 OR LESS WIRES FAIL IN ONE BUNDLE
	DAMAGE LENGTH: 3.0 INCHES OR LESS
DYNAMIC CUT-THROUGH	WIRE SIZE 26 8 POUNDS AT 23 °C, 6 POUNDS AT 150 °C, 4 POUNDS AT 200 °C, 3 POUNDS AT 260 °C
	WIRE SIZE 20 10 POUNDS AT 23 °C, 8 POUNDS AT 150 °C, 6 POUNDS AT 200 °C, 4 POUNDS AT 260 °C
FORCED HYDROLYSIS INSULATION RESISTANCE	WIRE SIZE 20
	70 °C ± 2 °C (158 °F ± 3.6 °F), 5000 HOURS
LONGEVITY RESISTANCE (THERMAL INDEX)	260 °C ± 2 °C (500 °F ± 3.6 °F), 10000 HOURS