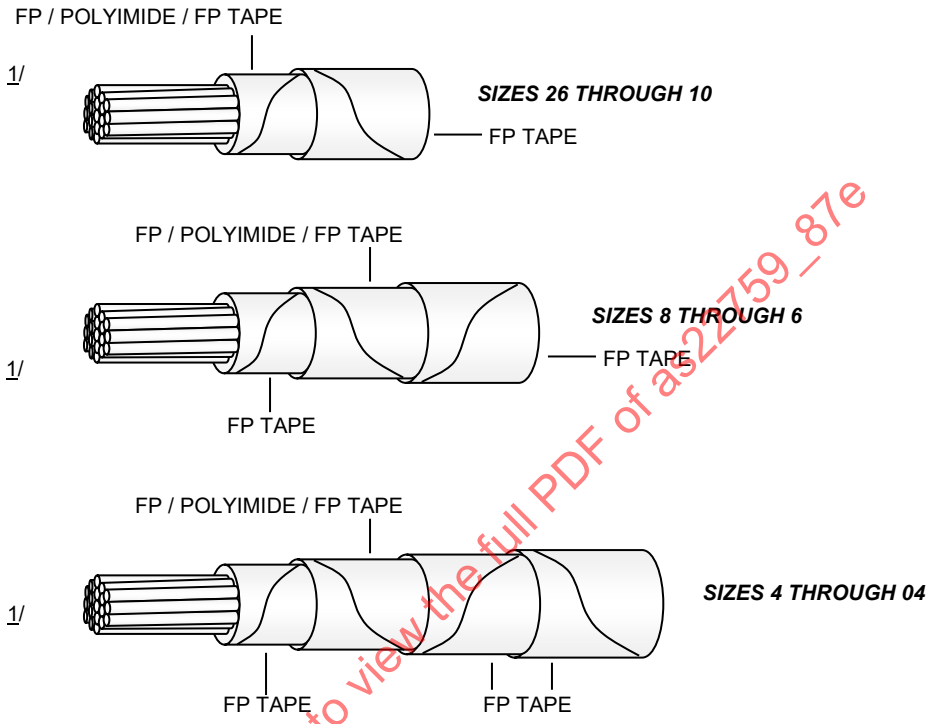
FEDERAL SUPPLY CLASS
6145

RATIONALE

REMOVAL OF THE INTENDED USE LIMITATION FOR NAVAL AIRCRAFT AND NAVAL AIR SYSTEMS APPLICATION IS REQUIRED TO SYNCHRONIZE THIS DOCUMENT WITH THE REQUIREMENT OF AS50881.

NOTICE

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



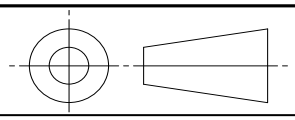
FP - FLUOROCARBON POLYMER, MODIFIED POLYTETRAFLUOROETHYLENE (PTFE)

1/ STRANDED NICKEL COATED COPPER

FIGURE 1 - AS22759/87 CONFIGURATION

For more information on this standard, visit
https://www.sae.org/standards/content/AS22759/87E/

THIRD ANGLE PROJECTION



ISSUED 2000-06 REAFFIRMED 2006-04 REVISED 2022-03

CUSTODIAN: AE-8D

PROCUREMENT SPECIFICATION:

SAE INTERNATIONAL

AEROSPACE STANDARD

WIRE, ELECTRICAL, POLYTETRAFLUOROETHYLENE/ POLYMIDE INSULATED, NORMAL WEIGHT, NICKEL COATED, COPPER CONDUCTOR, 260 °C, 600 VOLT, ROHS

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)** **Tel: +1 724-776-4970 (outside USA)**
Fax: 724-776-0790 **Email: CustomerService@sae.org** **SAE WEB ADDRESS: http://www.sae.org**

TABLE 1 - CONSTRUCTION DETAILS

PART NO. 1/	WIRE SIZE	CONDUCTOR 3/ STRANDING (NUMBER OF STRANDS X SIZE GAUGE OF STRANDS)	CONDUCTOR 3/ DIAMETER (INCHES) MIN	CONDUCTOR 3/ DIAMETER (INCHES) MAX	CONDUCTOR 3/ RESISTANCE AT 20 °C (68 °F) (OHMS/ 1000 FT MAX)	FINISHED WIRE DIAMETER (INCHES) MIN	FINISHED WIRE DIAMETER (INCHES) MAX	FINISHED WIRE WEIGHT (LB/1000 FT) 2/ MIN	FINISHED WIRE WEIGHT (LB/1000 FT) 2/ TARGET	FINISHED WIRE WEIGHT (LB/1000 FT) 2/ MAX
M22759/87-26-*	26	19 X 38	.0175	.0204	42.2	.033	.037	1.29	1.42	1.55
M22759/87-24-*	24	19 X 36	.0225	.0244	25.9	.038	.042	1.87	2.04	2.20
M22759/87-22-*	22	19 X 34	.0285	.0314	16.0	.043	.047	2.70	2.90	3.10
M22759/87-20-*	20	19 X 32	.0365	.0394	9.77	.051	.055	4.25	4.45	4.65
M22759/87-18-*	18	19 X 30	.0455	.0494	6.10	.061	.065	6.35	6.60	6.85
M22759/87-16-*	16	19 X 29	.0515	.0554	4.76	.068	.073	8.10	8.40	8.70
M22759/87-14-*	14	19 X 27	.0645	.0694	3.00	.081	.086	12.3	12.8	13.3
M22759/87-12-*	12	37 X 28	.0835	.0894	1.98	.100	.105	19.0	19.7	20.2
M22759/87-10-*	10	37 X 26	.106	.112	1.24	.122	.127	30.0	30.8	31.6
M22759/87-8-*	8	133 X 29	.158	.169	.694	.180	.188	55.9	57.8	59.7
M22759/87-6-*	6	133 X 27	.198	.212	.436	.219	.229	86.9	89.4	91.9
M22759/87-4-*	4	133 X 25	.250	.268	.275	.276	.288	141	145	149
M22759/87-2-*	2	665 X 30	.320	.340	.177	.344	.364	217	225	233
M22759/87-1-*	1	817 X 30	.360	.380	.144	.388	.408	265	274	283
M22759/87-01-*	0	1045 X 30	.395	.425	.113	.420	.450	335	349	363
M22759/87-02-*	00	1330 X 30	.440	.475	.089	.475	.505	419	438	457
M22759/87-03-*	000	1665 X 30	.500	.540	.071	.530	.560	528	548	568
M22759/87-04-*	0000	2109 X 30	.565	.605	.056	.590	.630	676	698	720

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: M22759/87-20-93 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 NCC SMALL DIAMETER NICKEL COATED COPPER CONDUCTOR FOR WIRE SIZES 26 THROUGH 4 AND GENERAL PURPOSE FOR WIRE SIZES 2 THROUGH 0000.

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	.0020	.0005 (FP)/.0010 (POLYIMIDE)/.0005 (FP)
2	.0010	FP (SKIVED)
3	.0020	FP (SKIVED)
4	.0020	FP (UNSINTERED)
5	.0025	FP (UNSINTERED)
6	.0030	FP (UNSINTERED)

TABLE 3 - TAPE OVERLAP REQUIREMENTS 1/

WIRE SIZE	WRAP 1			WRAP 2			WRAP 3			WRAP 4			NOMINAL WALL THICKNESS (MILS)
	TAPE CODE	PERCENT OVERLAP		TAPE CODE	PERCENT OVERLAP		TAPE CODE	PERCENT OVERLAP		TAPE CODE	PERCENT OVERLAP		
		MIN	MAX		MIN	MAX		MIN	MAX		MIN	MAX	
26	1	50.5	54.0	4	50.5	54.0							7.4
24	1	50.5	54.0	4	50.5	54.0							7.4
22	1	50.5	54.0	4	50.5	54.0							7.4
20	1	50.5	54.0	4	50.5	54.0							7.4
18	1	50.5	54.0	4	50.5	54.0							7.4
16	1	50.5	54.0	5	50.5	54.0							8.3
14	1	50.5	54.0	5	50.5	54.0							8.3
12	1	50.5	54.0	6	50.5	54.0							9.1
10	1	50.5	54.0	6	50.5	54.0							9.1
8	2	20.5	35.0	1	50.5	55.0	6	67.0	71.0				13.2
6	2	20.5	35.0	1	50.5	55.0	6	67.0	71.0				13.2
4	3	20.5	35.0	1	50.5	55.0	6	50.5	54.0	6	50.5	54.0	16.2
2	3	20.5	35.0	1	50.5	55.0	6	50.5	54.0	6	50.5	54.0	16.2
1	3	20.5	35.0	1	50.5	55.0	6	50.5	54.0	6	50.5	54.0	16.2
1/0	3	20.5	35.0	1	50.5	55.0	6	50.5	54.0	6	50.5	54.0	16.2
2/0	3	20.5	35.0	1	50.5	55.0	6	50.5	54.0	6	50.5	54.0	16.2
3/0	3	20.5	35.0	1	50.5	55.0	6	50.5	54.0	6	50.5	54.0	16.2
4/0	3	20.5	35.0	1	50.5	55.0	6	50.5	54.0	6	50.5	54.0	16.2

1/ WRAP 1 IS INNERMOST TAPE WHICH IS IN CONTACT WITH THE CONDUCTOR. WRAPS 2, 3, AND 4 ARE PROGRESSIVELY FURTHER AWAY FROM THE CONDUCTOR CORE.

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 WIRE SIZES 26-10 NOT REQUIRED FOR WIRE SIZES 8 AND LARGER
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 WIRE SIZES 26-10
	MAXIMUM CHANGE .125 INCH WIRE SIZE 8-0000
ELECTRICAL RESISTANCE (IR)	5000 MEGOHMS (MIN)-1000 FEET WIRE SIZES 26-10
	3000 MEGOHMS (MIN)-1000 FEET WIRE SIZES 8-0000
WET DIELECTRIC VOLTAGE	2500 VOLTS (RMS), 60 HERTZ
INSULATION STRIP FORCE	.25-6.0 POUNDS: WIRE SIZES 26-20
	.50-7.0 POUNDS: WIRE SIZES 18-14
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
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
18	1.50	.750	.250	5.00	2.00
16	1.50	1.00	.250	5.00	2.00
14	2.00	1.00	.375	5.00	3.00
12	2.00	1.50	.375	5.00	3.00
10	3.00	2.00	.375	6.00	3.00
8	4.00	3.00	.750	10.00	4.00
6	5.00	4.00	1.00	10.00	4.00
4	6.00	5.00	1.25	15.00	4.50
2	8.00	6.00	2.00	15.00	6.00
1	10.00	8.00	2.50	15.00	6.00
0	10.00	8.00	3.00	15.00	6.00
00	12.00	10.00	4.00	20.00	8.00
000	18.00	10.00	5.00	30.00	10.00
0000	18.00	10.00	6.00	30.00	10.00

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