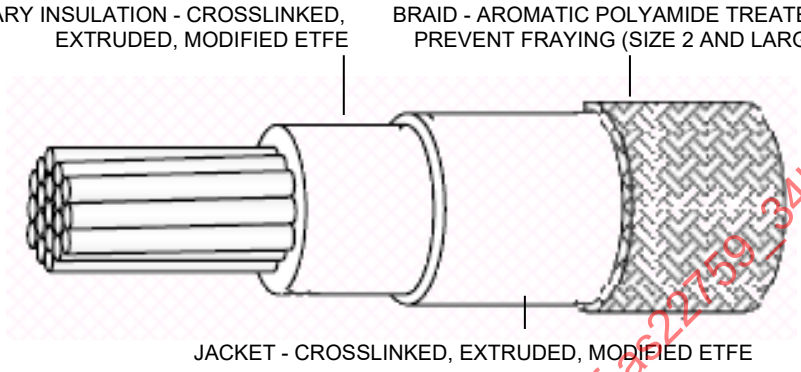
FEDERAL SUPPLY CLASS
6145

RATIONALE

SPECIFICATION UPDATED TO INCLUDE AS29606 CONDUCTOR REQUIREMENTS, ROHS RESTRICTIONS AND AS22759 MODIFICATIONS. THIS CHANGE ALSO INCREASES THE MAXIMUM WEIGHT REQUIREMENTS FOR WIRE SIZES 8 THROUGH 02 TO ACCOUNT FOR INCREASED CIRCULAR MIL AREA (CMA) ADOPTED IN AS29606. REMOVED REQUIREMENT FOR PROPELLANT RESISTANCE.

NOTICE

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



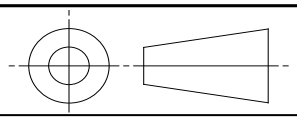
ETFE - ETHYLENE TETRAFLUOROETHYLENE
CONDUCTOR - STRANDED TIN COATED COPPER

1/ BRAID: BRIGHT AROMATIC POLYAMIDE YARN, 200 DENIER, 100 FILAMENTS, TIGHTLY FORMED, UNIFORM IN APPEARANCE, TREATED WITH A CLEAR FINISHER COATING. THE FINISHER COATING SHALL BE COMPATIBLE WITH THE TEMPERATURE RATING AND PERFORMANCE REQUIREMENTS OF THE INSULATED WIRE.

FIGURE 1 - AS22759/34 CONFIGURATION

ISSUED 2000-04 REAFFIRMED 2021-06 REVISED 2023-07

THIRD ANGLE PROJECTION



For more information on this standard, visit
https://www.sae.org/standards/content/AS22759/34B

CUSTODIAN: AE-8D

PROCUREMENT SPECIFICATION: AS22759

SAE INTERNATIONAL

AEROSPACE STANDARD

WIRE, ELECTRICAL, FLUOROPOLYMER-INSULATED, CROSSLINKED MODIFIED ETFE, NORMAL WEIGHT, TIN-COATED, COPPER, 150 °C, 600 VOLT, ROHS

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)** **Tel: +1 724-776-4970 (outside USA)**
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TABLE 1 - CONSTRUCTION DETAILS FOR FINISHED WIRE

PART NO. 1/	WIRE SIZE	STRANDING (NUMBER OF STRANDS X SIZE GAUGE OF STRANDS) 3/	DIAMETER OF STRANDED CONDUCTOR (INCHES) 3/		FINISHED WIRE		
			(MIN)	(MAX)	RESISTANCE AT 20 °C (68 °F) (OHMS/1000 FT) (MAX)	DIAMETER (INCHES)	WEIGHT (LB/1000 FT) (MAX)
M22759/34-24-*	24	19 X 36	.0225	.0244	26.2	.045 ± .002	2.30
M22759/34-22-*	22	19 X 34	.0285	.0314	16.2	.050 ± .002	3.30
M22759/34-20-*	20	19 X 32	.0365	.0394	9.88	.058 ± .002	4.70
M22759/34-18-*	18	19 X 30	.0455	.0494	6.23	.070 ± .003	7.20
M22759/34-16-*	16	19 X 29	.0515	.0554	4.81	.077 ± .003	9.00
M22759/34-14-*	14	19 X 27	.0645	.0694	3.06	.094 ± .003	13.8
M22759/34-12-*	12	37 X 28	.0835	.0894	2.02	.111 ± .003	20.5
M22759/34-10-*	10	37 X 26	.106	.114	1.26	.134 ± .004	32.4
M22759/34-8-*	8	133 X 29	.158	.173	.701	.195 ± .008	63.3
M22759/34-6-*	6	133 X 27	.198	.217	.445	.241 ± .010	99.2
M22759/34-4-*	4	133 X 25	.250	.274	.280	.310 ± .010	158.
M22759/34-2-*	2	665 X 30	.320	.340	.183	.405 ± .016	251.
M22759/34-1-*	1	817 X 30	.360	.380	.149	.445 ± .016	305.
M22759/34-01-*	0 2/	1045 X 30	.395	.425	.116	.485 ± .016	396.
M22759/34-02-*	00 2/	1330 X 30	.440	.475	.091	.545 ± .016	511.

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, EXCEPT THAT FOR SIZE 2 AND LARGER THE BRAID PREFERRED COLOR IS DARK GREEN WITH THE COLOR DESIGNATOR 5D. EXAMPLE: SIZE 2 DARK GREEN - AS22759/34-2-5D. WHITE IS AN ACCEPTABLE ALTERNATE WITH A COLOR DESIGNATOR 9. SIZE 20, WHITE WITH ORANGE STRIPE - M22759/34-20-93. PRINTING OF COLOR CODE DESIGNATOR ON SURFACE OF WIRE INSULATION IS NOT REQUIRED.

2/ WIRE SIZE 0 AND 00 HAVE BEEN SUPERSEDED BY -01 AND -02, RESPECTIVELY.

3/ CONDUCTOR SHALL CONFORM TO AS29606 TYPE TCC SMALL DIAMETER TIN PLATED COPPER CONDUCTOR FOR SIZES 24 THROUGH 12. SIZE 10 THROUGH 02 SHALL CONFORM TO GENERAL PURPOSE TIN PLATED COPPER CONDUCTOR.

REQUIREMENTS: 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, TABLES 1, 2, 3, AND 4.

2. WIRE PERFORMANCE RATING:

   TEMPERATURE RATING: 150 °C (302 °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. 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 (PRIMARY INSULATION	1500 VOLT (RMS) AT 60 HERTZ
IMPULSE TEST VOLTAGE (PRIMARY INSULATION)	6.0 KILOVOLTS (PEAK)
HIGH FREQUENCY TEST VOLTAGE (PRIMARY INSULATION)	4.2 KILOVOLTS (RMS)
IMPULSE TEST VOLTAGE	8.0 KILOVOLTS (PEAK)
HIGH FREQUENCY TEST VOLTAGE	5.7 KILOVOLTS (RMS)
CROSSLINK PROOF	300 °C ± 3 °C (572 °F ± 5.4 °F), 7 HOURS
INSULATION BLOCKING	200 °C ± 3 °C (392 °F ± 5.4 °F)
SHRINKAGE	200 °C ± 3 °C (392 °F ± 5.4 °F)
	MAXIMUM CHANGE .125 INCH
LAYER WICKING	2.25 INCHES (MAX)
	PROCEDURE: MULTI-LAYER WIRE
ELECTRICAL RESISTANCE (IR)	5000 MEGOHMS (MIN) - 1000 FEET WIRE SIZES 24 TO 10
	3000 MEGOHMS (MIN) - 1000 FEET WIRE SIZES 8 TO 02
ELECTRICAL SURFACE RESISTANCE 1/	500 MEGOHMS - INCHES (MIN)
WET DIELECTRIC VOLTAGE	2500 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	5000 LBF/IN^2 (MIN) FOR PRIMARY INSULATION
	5000 LBF/IN^2 (MIN) FOR TOTAL INSULATION
INSULATION ELONGATION	125% (MIN) FOR PRIMARY INSULATION WIRE SIZES 24 TO 10 ONLY
	75% (MIN) FOR TOTAL INSULATION
CONTINUOUS LENGTH SCHEDULE	B

1/ ELECTRICAL SURFACE RESISTANCE TEST SHALL BE PERFORMED PRIOR TO APPLICATION OF BRAID FOR WIRE SIZE 2 AND LARGER.

5. FINISHED WIRE IDENTIFICATION:

WIRE IDENTIFICATION EXCEPTIONS: NONE.

WIRE IDENTIFICATION DURABILITY: 125 CYCLES (250 STROKES) WITH 500 GRAMS WEIGHT (NOT REQUIRED FOR WIRE SIZES 2 THROUGH 02).

STRIPE AND BAND DURABILITY: 125 CYCLES (250 STROKES) WITH 500 GRAMS WEIGHT (NOT REQUIRED FOR WIRE SIZES 2 THROUGH 02).

6. FINISHED WIRE PERFORMANCE:

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

TABLE 3 - PERFORMANCE DETAILS

PART NO.	BEND TESTING			
	MANDREL DIAMETER (INCHES) 1/		TEST LOAD (POUNDS) 1/	
	CROSSLINKING PROOF, IMMERSION AND LIFE CYCLE TESTS	COLD BEND TEST	CROSSLINKING PROOF, IMMERSION AND LIFE CYCLE TESTS	COLD BEND TEST
M22759/34-24-*	.500	1.00	.750	3.00
M22759/34-22-*	.500	1.00	1.00	3.00
M22759/34-20-*	.500	1.00	1.50	4.00
M22759/34-18-*	.750	1.50	2.00	4.00
M22759/34-16-*	1.00	1.50	2.00	5.00
M22759/34-14-*	1.00	2.00	3.00	5.00
M22759/34-12-*	1.50	2.00	3.00	5.00
M22759/34-10-*	2.00	3.00	3.00	5.00
M22759/34-8-*	3.00	4.00	4.00	6.00
M22759/34-6-*	4.00	5.00	4.00	10.0
M22759/34-4-*	5.00	6.00	4.00	10.0
M22759/34-2-*	6.00	8.00	6.00	15.0
M22759/34-1-*	8.00	10.0	6.00	15.0
M22759/34-01-*	8.00	10.0	6.00	15.0
M22759/34-02-*	10.0	12.0	8.00	20.0

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

FINISHED WIRE PERFORMANCE CHARACTERISTICS SHALL BE IN ACCORDANCE WITH TABLE 4.

TABLE 4 - FINISHED WIRE PERFORMANCE CHARACTERISTICS

PERFORMANCE CHARACTERISTIC	REQUIREMENT
WRAP BACK BEND RESISTANCE	TEMPERATURE EXPOSURE 200 °C ± 3 °C (392 °F ± 5.4 °F)
	MANDREL DIAMETER 3X OUTSIDE WIRE DIAMETER FOR WIRE SIZES 8 TO 02
THERMAL SHOCK MECHANICAL RESISTANCE	TEMPERATURE EXPOSURE 150 °C ± 3 °C (302 °F ± 5.4 °F)
	WIRE SIZES 24 TO 12: MAXIMUM CHANGE .060 INCH
	WIRE SIZES 10 TO 8: MAXIMUM CHANGE .100 INCH
	WIRE SIZES 6 TO 02: MAXIMUM CHANGE .125 INCH
THERMAL MECHANICAL RESISTANCE (LIFE CYCLE)	EXPOSURE 500 HOURS, 200 °C ± 3 °C (392 °F ± 5.4 °F) COLOR RETENTION NOT REQUIRED
HUMIDITY RESISTANCE (IR)	5000 MEGOHMS (MIN) - 1000 FEET WIRE SIZES 24 TO 10
	3000 MEGOHMS (MIN) - 1000 FEET WIRE SIZES 8 TO 02
FLUID RESISTANCE	DIAMETER INCREASE 5% (MAX)
SMOKE RESISTANCE	200 °C ± 5 °C (392 °F ± 9 °F)
FLAME RESISTANCE	SELF-EXTINGUISH TIME 3 SECONDS
	BURN LENGTH 3 INCHES

7. REQUIREMENT EXCEPTION TO THE AS22759:

NONE.