

REV.
A

AS22759™/34

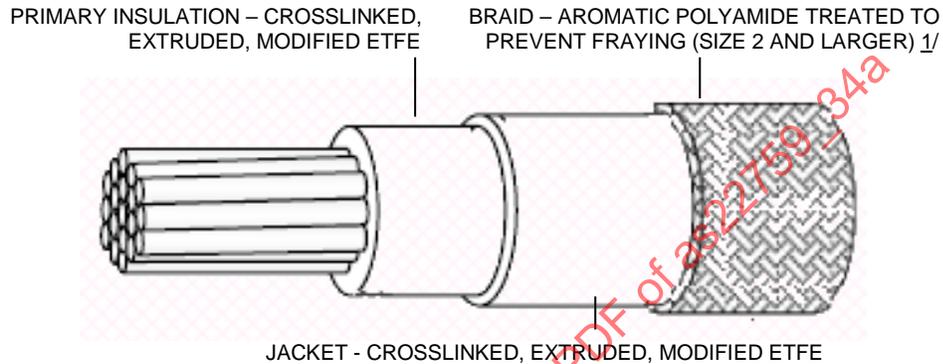
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RATIONALE

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.



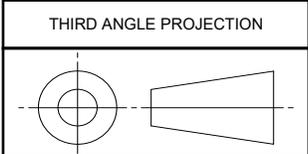
ETFE – ETHYLENE TETRAFLUOROETHYLENE
CONDUCTOR – STRANDED TIN COATED COPPER

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

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



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|-----------------------|--|------------------------------------|------------------------------------|
| CUSTODIAN: AE-8/AE-8D | | PROCUREMENT SPECIFICATION: AS22759 | |
| | AEROSPACE STANDARD | | AS22759™/34 SHEET 1 OF 4 |
| | (R) WIRE, ELECTRICAL, FLUOROPOLYMER-INSULATED, CROSS-LINKED MODIFIED ETFE, NORMAL WEIGHT, TIN-COATED, COPPER, 150 °C, 600 VOLT, ROHS | | |

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ISSUED 2000-04 REVISED 2016-06 REAFFIRMED 2021-06

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 SIZES 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

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.

| | | | | |
|---|--|--|------------------------------------|-------------------------|
|  | AEROSPACE STANDARD | | AS22759™/34 SHEET 2 OF 4 | REV. A |
| | (R) WIRE, ELECTRICAL, FLUOROPOLYMER-INSULATED, CROSS-LINKED MODIFIED ETFE, NORMAL WEIGHT, TIN-COATED, COPPER, 150 °C, 600 VOLT, ROHS | | | |

TABLE 2 – FINISHED WIRE INSULATION PROPERTIES REQUIREMENTS

| INSULATION PROPERTIES | |
|--|--|
| SPARK TEST VOLTAGE (PRIMARY INSULATION) | 1500 VOLT (RMS) AT 60 Hz |
| 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 INCHES |
| LAYER WICKING | 2.25 INCHES (MAX) |
| | PROCEDURE: MULTI-LAYER WIRE |
| ELECTRICAL RESISTANCE (IR) | 5000 MEGOHMS (MIN)-1000 FOOT WIRE SIZES 24 TO 10 |
| | 3000 MEGOHMS (MIN)-1000 FOOT WIRE SIZES 8 TO 02 |
| ELECTRICAL SURFACE RESISTANCE | 500 MEGOHMS - INCHES (MIN) |
| WET DIELECTRIC VOLTAGE | 2500 VOLTS (RMS), 60 Hz |
| 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 |

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.

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|  | AEROSPACE STANDARD | AS22759™/34 SHEET 3 OF 4 | REV. A |
| | (R) WIRE, ELECTRICAL, FLUOROPOLYMER-INSULATED, CROSS-LINKED MODIFIED ETFE, NORMAL WEIGHT, TIN-COATED, COPPER, 150 °C, 600 VOLT, ROHS | | |