

DCN SHEET NO.

REVISION NO.

FOR REVISION CENTER USE ONLY:

REVISIONS			
LTR	DESCRIPTION	DATE	APVD
A	RP8279 - Add -050/-150, Miscellaneous	02-07-24	JMD
B	RU2599 - Miscellaneous	03-05-09	JMD

Statement A, Unlimited

1.0 Scope: This drawing details the requirements for etched, 34 and 36 AWG, polytetrafluoroethylene (PTFE) insulated electrical hookup wire.

- The part number is the seven (7) digit drawing number plus the applicable dash number as specified in Table I.
- Paragraph(s), table(s) and/or figure(s) followed by " | " indicate a change by the latest revision.
- All sheets are the same revision status.

Authorized Vendors, Vendor Part Numbers, CAL Status, and CAGE or FSCM are as defined in the Rockwell Collins, Inc. database(s).

UM Feet (FT)		VENDOR ITEM DRAWING			
PREP S.K. Danek 98-03-20		Rockwell Collins, Inc. 400 Collins Rd NE Cedar Rapids, IA 52498 Wire, Electrical			
CHK J.M. Dolan 98-03-20					
ENGR B.K. Smith APVD 98-03-20					
DOCUMENT GENERATED USING INTERLEAF DO NOT REVISE MANUALLY		SIZE A	CAGEC 13499	DWG NO 428-0298	REV LTR B
		SCALE NONE		SHEET 1 OF 7	

FRO NFP REL CR **2** MB **1**

DCN SHEET NO.

REVISION NO.

FOR REVISION CENTER USE ONLY:

2.0 Applicable Documents: The following documents of the issue in effect on the date of invitation for bids form a part of this drawing to the extent specified herein.

Federal Specifications

TT-I-735 Isopropyl Alcohol

Military Specification

MIL-W-16878 Wire, Electrical, Insulated, General Specification for

Rockwell Collins Drawings

839-0521 Etched Teflon Wire Adhesion Procedure

3.0 Requirements:

3.1 Working Voltage: 250 volts.

3.2 Mechanical:

3.2.1 Conductor: Silver coated copper (solid).

3.2.1.1 Conductor American Wire Gauge (AWG) Size: See Table I herein.

3.2.1.2 Conductor Stranding: See Table I herein.

3.2.2 Insulation: Polytetrafluoroethylene in accordance with (IAW) MIL-W-16878.

3.2.2.1 Insulation Diameter: See Table I herein.

3.2.2.2 Insulation Color: See Table I herein.

3.2.3 Etching: Medium etch with a sodium etching process.

3.2.3.1 Etched insulation shall have a uniform, dull color. Surfaces of treated parts shall be uniform in texture and appearance. There shall be no bare areas where etching was intended.

3.2.4 Bond Strength: 30 pounds per square inch (psi) minimum when tested IAW 4.4.1 herein or IAW manufacturer's approved procedure. Manufacturer must notify Rockwell Collins on procedure change.

3.2.5 Marking: Each reel or package shall be permanently and legibly marked with the manufacturer's name or trademark or cage code and the manufacturer's part number as a minimum.

3.3 Environmental:

3.3.1 Temperature Range: -65°C to +200°C.

3.4 Shelf Life: Shelf life shall be 3 years after receipt at the procuring activity when stored unopened at +21°C - +27°C, 30% - 70% relative humidity, and in a clean, dark place. Material which exceed manufacturer's shelf life shall not be used unless recertified (See 6.2 herein).

SIZE A	CAGEC 13499	DWG NO 428-0298	REV LTR B
SCALE NONE		SHEET 2	

DO NOT REVISE MANUALLY

DCN SHEET NO.

REVISION NO.

FOR REVISION CENTER USE ONLY:

- 4.0 Quality Assurance Provisions:
- 4.1 Qualification Requirements: Qualification shall consist of the necessary tests and inspections required to verify conformance to section 3.0 herein.
- 4.2 Quality Conformance Inspection: The suppliers shall be responsible for those in-process controls and inspections necessary to supply a product consistently conforming to the requirements of this drawing.
The procuring activity reserves the right to inspect for any of the requirements of this drawing to determine the acceptability of a lot and to reject nonconforming parts or lots containing nonconforming parts, on the basis of the test results so obtained.
- 4.3 Design Change Approval: Any changes in form, fit, function, materials, or performance that affect the part or materials defined by this drawing, must be approved by the cognizant procuring activity prior to the incorporation of the proposed changes.
- 4.4 Adhesion Inspection: In addition to the quality conformance inspection of MIL-W-16878, the following test shall be performed on each lot of wire acquired under this drawing.
 - 4.4.1 Three random samples approximately 6 inches in length, of each lot to be tested shall be used. The ends to be potted shall be cleaned with isopropyl alcohol IAW TT-I-735 or Microcare Proclean (Reference: Rockwell Collins part number 005-2892-010). A potting apparatus consisting of three miniature cups, with a means of vertically supporting the samples into mid-section of the cups, shall be used (See Figure 1 herein).
 - 4.4.2 The potting compound shall be part number 30016-11 of Poly-Freeze Inc., or RTV 630 (Rockwell Collins part number 821-0494-010) or equivalent.
 - 4.4.2.1 Preparation of Poly-Freeze:
 - 4.4.2.1.1 The potting compound shall be poured into the cups to a depth of one quarter inch, and cured first for one hour at +65.6°C and then at +149°C for eight hours.
 - 4.4.2.2 Preparation of RTV 630:
 - 4.4.2.2.1 Coat sample with SS-4120 (Rockwell Collins part number 005-1579-010) and let it dry for 60 to 80 minutes at 25°C ± 5°C.
The potting compound shall be poured into the cups to a depth of one half inch and cured for a minimum of 1 hour at 100°C ± 5°C until a shore A durometer hardness of 50 is measured.

SIZE A	CAGEC 13499	DWG NO 428-0298	REV LTR B
SCALE NONE		SHEET 3	

DO NOT REVISE MANUALLY

DCN SHEET NO.

REVISION NO.

FOR REVISION CENTER USE ONLY.

4.4.3

Measure the adhesive strength of the bond by pulling the sample out of the potting material in a tensile test machine at a cross head speed of 1 inch per minute approximately and record the maximum force indicated at which the insulation breaks loose from the potting compound.

The bond strength in pounds (lbs) psi shall be calculated by the following formula and the results averaged.

$$\text{Bond Strength} = \frac{A}{B \times C \times D}$$

- A = Force at point of failure, pounds
- B = 3.14159 (pi)
- C = Insulation outside diameter, inch
- D = Potting depth of sample, inch

The minimum bond strength shall be 30 psi.

4.4.4

Alternate Adhesion Pull Test: The wire shall meet a 9.5 lbs minimum pull strength when tested IAW Rockwell Collins part number 839-0521-001. If wire breaks before reaching the 9.5 lbs point, this is an indication that the adhesion is sufficiently greater than the strength of the wire, and therefore acceptable.

4.5

Corrosion Inspection: In addition to performing the quality conformance inspections required by MIL-W-16878, if the supplier used a water based coolant process, they shall inspect each new lot for any visual sign of red plague corrosion by stripping insulation from 0.5 inches of wire. The procuring activity may perform a visual inspection for red plague as a part of shelf life extension test. Material which shows any sign of red plague shall be subject to nonconforming material review procedures.

5.0

Preparation For Delivery: The etched surface of treated insulation can be easily damaged. Care shall be taken so as to not rub, scrub, or brush the etched surface either by operator handling or parts in contact with other parts. The parts shall be packaged in a manner that will afford adequate protection against contamination, corrosion, deterioration and physical damage during shipment and storage. Parts shall be packaged so they will be easily accessible without damaging the parts.

5.1

Manufacturer shall package and store the wire in opaque bags as a minimum.

6.0

Notes: The information contained in this section is for reference only.

6.1

Manufacturer's certify shelf life for wire exposed to normal lighting conditions for approximately 30 days. Shelf life for wire store out of UV light is 3 years.

6.2

Shelf Life Extension: Material shall be recertified for shelf life extension by testing to meet the requirements of 4.2 herein and subsequent approval by Rockwell Collins Component Application Engineering.

6.2.1

Equivalent Replacements: Rockwell Collins part number 858-0037-010 through -030 may be used in place of the dash -010 through -030 for planar rework provided it is etched IAW Rockwell Collins part number 580-5029-000.

6.2.2

Wire smaller than 36 AWG may be etched IAW 580-5029-000.

SIZE A	CAGEC 13499	DWG NO 428-0298	REV LTR B
SCALE NONE		SHEET 4	

DO NOT REVISE MANUALLY

DCN SHEET NO.

REVISION NO.

FOR REVISION CENTER USE ONLY.

6.3 Poly-Freeze potting compound can be purchased from:

Poly-Freeze Inc.
16509 Arminta St.
Van Nuys, CA 91406
Cage Code: 56724
Phone 818-781-5600

6.4 For similar component see Rockwell Collins 422-1918, 422-2164, 428-0282,
858-0015, 858-0018, and 858-0021.

SIZE A	CAGEC 13499	DWG NO 428-0298	REV LTR B
SCALE NONE			SHEET 5

DO NOT REVISE MANUALLY

TABLE I

Rockwell Collins Dash Number, Conductor Size, Insulation Color,
Insulation Outside Diameter and Stranding

Dash No	Conductor Size	Insulation Color (1.)	Insulation Outside Diameter (In)		Stranding
			Max	Min	
010	36 AWG	Green	.019	.013	1 X 36
020	36 AWG	Red	.019	.013	1 X 36
030	36 AWG	Yellow	.019	.013	1 X 36
040	36 AWG	Blue	.019	.013	1 X 36
050	36 AWG	Black	.019	.013	1 X 36
060	36 AWG	Brown	.019	.013	1 X 36
070	36 AWG	Orange	.019	.013	1 X 36
080	36 AWG	White	.019	.013	1 X 36
090	34 AWG	Black	.020	.014	1 X 34
100	34 AWG	Brown	.020	.014	1 X 34
110	34 AWG	Red	.020	.014	1 X 34
120	34 AWG	Orange	.020	.014	1 X 34
130	34 AWG	Green	.020	.014	1 X 34
140	34 AWG	Blue	.020	.014	1 X 34
150	34 AWG	White	.020	.014	1 X 34

Notes:

1. Treated wire surface shall have a dull surface appearance with a slight darkening of its original color.

SIZE A	CAGEC 13499	DWG NO 428-0298	REV LTR B
SCALE NONE		SHEET 6	

DO NOT REVISE MANUALLY

DCN SHEET NO:

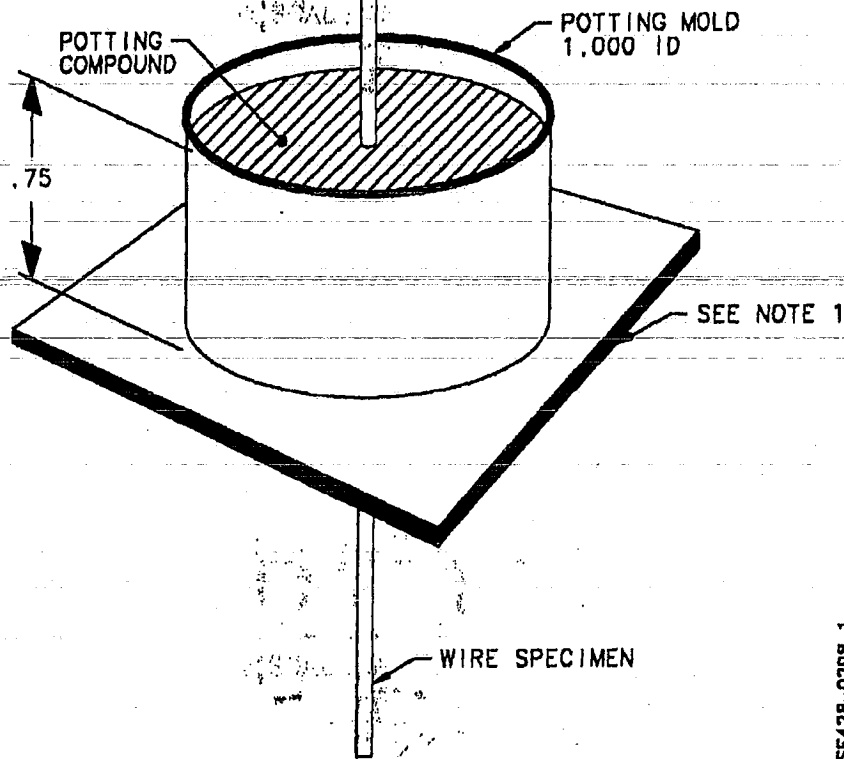
REVISION NO:

FOR REVISION CENTER USE ONLY:

DCN SHEET NO.

REVISION NO.

FOR REVISION CENTER USE ONLY:



SF428-0298_1

Notes:

1. 1.50 X 1.50 X .10 metal plate with hole in center equal to wire O.D. plus .02 approximate.

DIMENSIONS
FIGURE 1

INTERPRET ALL DIMENSIONS AND TOLERANCES
IN ACCORDANCE WITH ASME Y14.5M-1994.
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES.
APPLICABLE TOLERANCES: ANGLES: $\pm 1.0^\circ$
INCH DECIMALS: XX = $\pm .02$, XXX = $\pm .008$

SIZE A	CAGEC 13499	DWG NO 428-0298	REV LTR B
SCALE NONE		SHEET 7	

DO NOT REVISE MANUALLY