REVISIONS			
LTR	**DESCRIPTION**	**DATE**	**APPROVED**
A	Technical revisions to be consistent with SAE-AS22759. Editorial changes throughout.	7/16/07	Abdo Abdouni
B	Added approved supplier. Technical changes throughout. Updated format.	30 March 2009	Abdo Abdouni
C	Added approved supplier.	8 September 2010	Abdo Abdouni
D	Technical modifications to agree with SAE-AS22759. Add SAE-AS22759/180, SAE-AS22759/181, SAE-AS22759/182, SAE-AS22759/191, and SAE-AS22759/192. Increase 2 to 3 J/g. Updated Table I finish wire weight. Amended the government and non-government contact information. Removed ASME Y14.100 and selected item drawing. Vendor name change.	5 May 2016	Abdo Abdouni

CURRENT DESIGN ACTIVITY CAGE CODE 037Z3 HAS CHANGED NAMES TO:
DLA LAND AND MARITIME
COLUMBUS, OHIO 43218-3990

REV																		
PAGE																		
REV STATUS	**REV**		D	C	C	C	C	C	C	C	C	C	C	C	C	D		
OF PAGES	**PAGE**		1	2	3	4	5	6	7	8	9	10	11	12	13	14		

PMIC	**PREPARED BY** William Carpenter	**DEFENSE SUPPLY CENTER, COLUMBUS** **COLUMBUS, OHIO 43218-3990**
Original date of drawing 12 July 2004	**CHECKED BY** Lee Surowiec **APPROVED BY** Richard L. Taylor	**TITLE** **WIRE, ELECTRICAL, COMPOSITE, POLYTETRAFLUOROETHYLENE/POLYIMIDE INSULATED, SMOOTH SURFACE, 30, 28, 26 AWG, 600 VOLT**
	SIZE **A** / **CAGE CODE** **037Z3** / **REV** **D**	**DWG. NO.** **04047** / **PAGE** **1** OF **14**

AMSC N/A

6145-2016-E06

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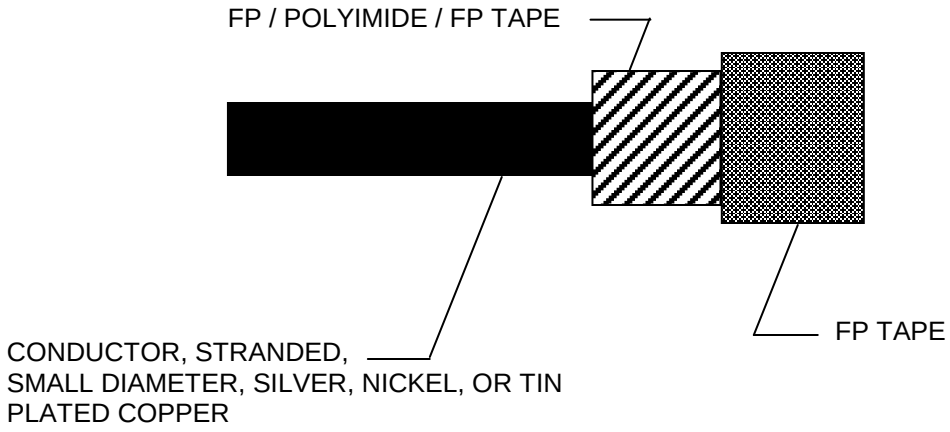


FP – Fluorocarbon Polymer, modified Polytetrafluoroethylene (PTFE)

FIGURE 1. General configuration.

1 SCOPE

1.1 Scope. This drawing covers the performance characteristics for 30, 28, 26 AWG light weight composite wire using a seamless polytetrafluoroethylene/hydrolysis resistant polyimide tape wrap insulation system.

1.2 Part or Identifying Number (PIN). The complete PIN should be as specified on the requirements drawing and constructed using the following format:

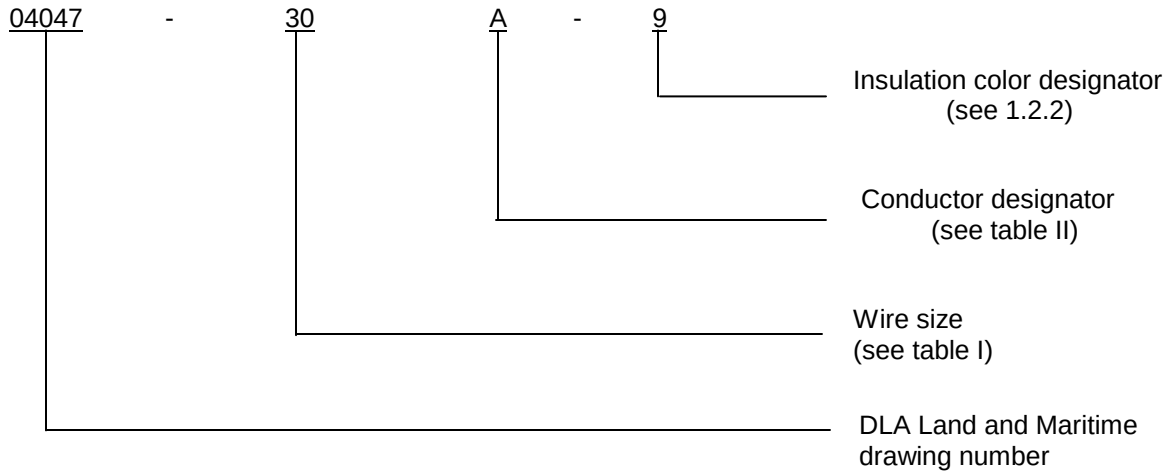


TABLE I. Details of construction.

PIN.	Wire size	Conductor			Finished wire			
		Stranding (number of strands X AWG gauge of strands)	Diameter (in.)		Resistance at 20°C (68°F) ohms/1000ft. (max)	Diameter (in.)		Weight lb/1000ft. (max)
			Min	Max		Min	Max	
04047-30A-*	30	7 X 38	.0110	.0130	117.4	.022	.026	0.75
04047-28A-*	28	7 X 36	.0140	.0160	74.4	.025	.029	1.00
04047-26A-*	26	19 X 38	.0175	.0204	44.8	.030	.034	1.43

* The asterisks in the PIN column of table I should be replaced by color code designators (see 1.2.2). Example: 04047-26-93 is white with an orange stripe.

1.2.2 Color. The color of the finished wire should be as indicated by the insulation color designator (see 1.2) of the wire part number and the color specified in the contract or order. The first digit of the designator should indicate the colors of the stripes, bands, or tracers. The insulation color designator of the wire should be listed in MIL-STD-681, system I (differentiation color coding for chassis wiring). The preferred color and any applicable restrictions on available colors are indicated in the individual specification sheet. The color of the background insulation and the colors of any stripes, bands, or tracers, if used, should be in accordance with MIL-STD-104, class I or table VI for laser marked wires. The color of the background, stripes or bands should be in accordance with MIL-STD-681 and should be capable of withstanding the durability (3.5.9) or color marking test (3.5.12) using the number of strokes and the weight specified herein (see 3.7).

1.2.3 Conductor designators. Conductor designators should be as specified in table II.

TABLE II. Conductor designator/temperature rating. 1/

Designator	Conductor description	Temperature rating
A	Silver plated copper alloy (SPA)	200°C
B	Nickel plated copper alloy (NPA)	260°C
C	Tin plated copper (TPC)	150°C
D	Silver plated copper (SPC)	200°C
E	Nickel plated copper (NPC)	260°C

1/ For a complete description of conductor material see 3.3.1

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-104	-	Limits for Electrical Insulation Color
MIL-STD-202	-	Test Method Standard Electronic and Electrical Component Parts
MIL-STD-2223	-	Test Methods for Insulated Electric Wire

(Copies of these documents are available online at http://quicksearch.dla.mil.)

2.2 Non-government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.
ASTM INTERNATIONAL

ASTM B33	-	Standard Specification for Tin Coated Soft or Annealed Copper Wire for Electrical Purposes
ASTM B298	-	Standard Specification for Silver Coated Soft or Annealed Copper Wire for Electronic Purposes
ASTM B355	-	Standard Specification for Nickel Coated Soft or Annealed Copper Wire
ASTM B624	-	Standard Specification for High Strength, High Conductivity Copper Alloy Wire for Electronic Application
ASTM D3032	-	Standard Test Methods for Hookup Wire Insulation
ASTM D4591	-	Standard Test Method for Determining Temperatures and Heats of Transitions of Fluoropolymers by Differential Scanning Calorimetry

(Copies of these documents are available from http://www.astm.org/.)

NCSL INTERNATIONAL

NCSL-Z540.3	-	General Requirements for Calibration of Measuring and Test Equipment

(Copies of these documents are available from http://www.ncsli.org.)

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

NEMA WC 52	-	High-Temperature and Electronic Insulated Wire - Impulse Dielectric Testing

(Copies of these documents are available from http://www.nema.org/.)

SAE INTERNATIONAL

SAE-AS4373	-	Test Methods for Insulated Electric Wire
SAE-AS22759	-	Wire, Electrical, Fluoropolymer-Insulated, Copper or Copper Alloy
SAE-AS22759/80	-	Wire, Electrical, Polytetrafluoroethylene/polyimide Insulated, Light Weight, Tin Coated, Copper Conductor, 150 deg. C, 600 volts
SAE-AS22759/81	-	Wire, Electrical, Polytetrafluoroethylene/polyimide Insulated, Light Weight, Silver Coated, High Strength or Ultra High Strength Copper Alloy, 200°C, 600 Volts
SAE-AS22759/82	-	Wire, Electrical, Polytetrafluoroethylene/polyimide Insulated, Light Weight, Nickel Coated, High Strength or Ultra High Strength Copper Alloy, 260°C, 600 Volts
SAE-AS22759/91	-	Wire, Electrical, Polytetrafluoroethylene/polyimide Insulated, Light Weight, Silver Coated, Copper Conductor, 200°C, 600 Volts
SAE-AS22759/92	-	Wire, Electrical, Polytetrafluoroethylene/polyimide Insulated, Light Weight, Silver Coated, Copper Conductor, 200°C, 600 Volts
SAE-AS22759/180	-	Wire, Electrical, Polytetrafluoroethylene/ Polyimide Insulated, Smooth Surface, Light Weight, Tin-Coated Copper Conductor, 150 °C, 600 Volts ROHS
SAE-AS22759/181	-	Wire, Electrical, Polytetrafluoroethylene/ Polymide Insulated, Smooth Surface, Light Weight, Silver-Coated High Strength Or Ultra High Strength Copper Alloy, 200 °C, 600 Volts ROHS
SAE-AS22759/182	-	Wire, Electrical, Polytetrafluoroethylene/Polymide Insulated, Smooth Surface, Light Weight, Nickel-Coated High Strength Or Ultra High Strength Copper Alloy, 260 °C, 600 Volts ROHS
SAE-AS22759/191	-	Wire, Electrical, Polytetrafluoroethylene/ Polyimide Insulated, Smooth Surface, Light Weight, Silver-Coated Copper Conductor, 200 ºC, 600 Volts ROHS
SAE-AS22759/192	-	Wire, Electrical, Polytetrafluoroethylene/ Polyimide Insulated, Smooth Surface, Light Weight, Nickel-Coated Copper Conductor, 260 ºC, 600 Volts ROHS

(Copies of these documents are available from http://www.sae.org/).

3. REQUIREMENTS

3.1 DLA Land and Maritime requirements. Items shall meet the requirements specified in SAE-AS22759, SAE-AS22759/80, SAE-AS22759/81, SAE-AS22759/82, SAE-AS22759/91, SAE-AS22759/92, SAE-AS22759/180, SAE-AS22759/181, SAE-AS22759/182, SAE-AS22759/191, and SAE-AS22759/192 except as specified herein. Any requirements included in this drawing shall be in addition to, or supersede those requirements included in SAE-AS22759, SAE-AS22759/80, SAE-AS22759/81, SAE-AS22759/82, SAE-AS22759/91, SAE-AS22759/92, SAE-AS22759/180, SAE-AS22759/181, SAE-AS22759/182, SAE-AS22759/191, and SAE-AS22759/192. In case of conflict between the requirements in this drawing and those in SAE-AS22759 and SAE-AS22759/80, SAE-AS22759/81, SAE-AS22759/82, SAE-AS22759/91, SAE-AS22759/92, SAE-AS22759/180, SAE-AS22759/181, SAE-AS22759/182, SAE-AS22759/191, and SAE-AS22759/192, the requirements of this drawing shall take precedence.

3.2 Design configuration. The design, construction, and physical dimensions shall be as specified in this drawing.

3.2.1 Design documentation. Design documentation shall be retained by the manufacturer and shall be available upon request for review by the contracting activity, DLA Land and Maritime, or contractor.

3.3 Material.

3.3.1 Conductors.

3.3.1.1 Conductor designator A. Conductors shall be made of high strength copper-alloy in accordance with ASTM B624 and table I of this drawing. All strands shall be free from lumps, kinks, splits, scarred or corroded surfaces and skin impurities. Strands shall be silver coated. The silver coating shall not be less than 40 microinches (1.02 µm) when tested in accordance with ASTM B298.

3.3.1.2 Conductor designator B. Conductors shall be made of high strength copper-alloy wire in accordance with ASTM B624 and table I of this drawing. All strands shall be free from lumps, kinks, splits, scarred or corroded surfaces and skin impurities. Strands shall be nickel coated. The nickel coating shall not be less than 50 microinches (1.27 µm) when tested in accordance with ASTM B355.

3.3.1.3 Conductor designator C. Conductors shall be made of soft annealed copper wire in accordance with ASTM B33 and table I of this drawing. All strands shall be soft annealed copper free from lumps, kinks, splits, scarred or corroded surfaces and skin impurities. Strands shall be tin coated in accordance with ASTM B33.

3.3.1.4 Conductor designator D. Conductors shall be made of soft annealed copper wire in accordance with ASTM B298 and table I of this drawing. All strands shall be soft annealed copper free from lumps, kinks, splits, scarred or corroded surfaces and skin impurities. Strands shall be silver coated. The silver coating shall not be less than 40 microinches (1.02 µm) when tested in accordance with ASTM B298.

3.3.1.5 Conductor designator E. Conductors shall be made of soft annealed copper wire in accordance with ASTM B355 and table I of this drawing. All strands shall be soft annealed copper free from lumps, kinks, splits, scarred or corroded surfaces and skin impurities. Strands shall be nickel coated. The nickel coating shall not be less than 50 microinches (1.27 µm) when tested in accordance with ASTM B355.

3.3.2 Insulation. Polytetrafluoroethylene (PTFE) and Polytetrafluoroethylene/Polyimide (FP/Polyimide) tapes specified in accordance with tables III and IV. The polyimide tape shall be hydrolysis resistant.

TABLE III. Wire insulation materials. 1/

Tape code	Thickness nominal (inches)	Material
1	.0012	.00045 FP/.00065 polyimide/.0001 FP
2	.0020	FP (Unsintered)

1/ Physical properties of PTFE unsintered tape shall be in accordance with SAE-AS22759 requirements.

TABLE IV. Physical properties of FP/Polyimide/FP tapes.

Tensile strength	20,000 lb/in^2 (average min)
Tensile modulus	400,000 lb/in^2 (average min)
Elongation	40 percent (average min)
Dielectric strength	4,000 volts/mil (average min)
.00045 FP Layer	Distinguishable color (next to conductor)

3.4 Wire construction and physical dimensions. See figure 1 and tables I and V.

TABLE V. 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

1/ Wrap 1 is innermost tape which is in contact with the conductor.

3.5 Performance testing. Wire supplied to this drawing shall be meet the requirements of SAE-AS22759, SAE-AS22759/80, SAE-AS22759/81, SAE-AS22759/82, SAE-AS22759/91, SAE-AS22759/92, SAE-AS22759/180, SAE-AS22759/181, SAE-AS22759/182, SAE-AS22759/191, and SAE-AS22759/192. The additional performance requirements of this drawing shall apply.

3.5.1 Dielectric tests (continuous performance testing). 100 percent of all wire made to this specification shall withstand either the impulse dielectric test (3.5.1.1) or the high frequency spark test (3.5.1.2).

3.5.1.1 Impulse dielectric test. Test in accordance with NEMA WC 52, test voltage 8.0 kilovolts peak.

3.5.1.2 High frequency spark test. Test in accordance with MIL-STD-2223, method 3008, test voltage 5.7 kilovolts (rms).

3.5.2 Blocking (test required for initial qualification only). Adjacent turns or layers of the wire shall not stick (block) to one another when tested as specified. The following details shall apply:

a. One end or a piece of finished wire, of significant length to perform the test, shall be affixed to a metal spool of the barrel diameter (minimum diameter of barrel equals 50 times minimum diameter of finished wire).
b. The wire shall then be would helically on the spool for at least 3 turns, with the succeeding turns in close contact with one another.
c. Tension shall be 3.00 lbs (1.36 kg).
d. The winding shall be continued until there are at least three closely wound layers of such helical turns on the spool. The free end of the wire shall then be affixed to the spool so as to prevent unwinding or loosening of the turns or layers.
e. The spool and wire shall be placed for 24 hours in an air oven at the temperatures specified below:
   (1) Conductor designations A, C, D: 200°C ±2°C (392°F ± 3.6°F)
   (2) Conductor designations B, E: 260°C ±2°C (500°F ± 3.6°F)
f. At the end of the 24 hour period the spool and wire shall be removed from the oven and allowed to cool to room temperature.
g. After cooling, the wire shall be unwound manually, while examining for evidence of adhesion (blocking) of adjacent turns or layers.

Note: A metal mandrel of diameter equal to the specified spool barrel diameter may be used in lieu of a spool for this test.

3.5.3 Wet arc propagation resistance (test required for initial qualification only). When tested in accordance with MIL-STD-2223, method 3006, the following requirements shall be met:

a. A minimum of 68 wires shall pass the impulse dielectric test of SAE-AS22759.
b. Not more than two wires shall fail the impulse dielectric test in any one bundle.
c. Actual damage to the wire shall be not more than 1.0 inch (25.4 mm) in length in any bundle when measured along the axis.

3.5.4 Solderability (conformance inspection test) (conductor designators A, D - silver plated conductors only). The requirement for acceptable solder coverage of the stranded conductor shall be as specified in MIL-STD-202, method 208. The following details shall apply:

a. Unless otherwise specified, five specimens shall be prepared and tested for solderability using method 208 of MIL-STD-202.
b. The specimens shall be tested without steam aging using a type R flux.

3.5.5 Forced hydrolysis (test required for initial qualification only). When tested in accordance with SAE AS4373, method 602, the minimum average performance shall be 5000 hours at 70°C. The following details shall apply:

a. Number of specimens: 5.
b. Wire size to be tested: 20 AWG.
c. A specimen is considered “failed” when it can no longer pass the dielectric test method of SAE AS4373 method 602.
d. Average the time to failure for all of the specimens evaluated.

3.5.6 Insulation state of sinter (conformance inspection test). FP layers shall be evaluated with a differential scanning calorimeter in accordance with ASTM D4591. The FP layers shall meet the following requirements:

a. Insulation state of sinter: 3 J/g maximum.
b. Bonding between FP layers shall be homogenous. No evidence of tape edges or seams shall be present on the outer FP layer when visually examined with the unaided eye. The outer surface will be smooth and free of tape edges at the overlap.

3.5.7 Lamination sealing (conformance inspection test). When tested in accordance with SAE-AS4373 method 809 at the temperatures specified below, there shall be no evidence of tape separation or lifting. There shall be no visible tape ridges that can cause tearing of the tape.

a. Conductor designations A, C, D: 200°C ±2°C (392°F ± 3.6°F)
b. Conductor designations B, E: 260°C ±2°C (500°F ± 3.6°F)

3.5.8 Strippability (conformance inspection test). There shall be no evidence of separation or elongation of FP layers when stripped with standard hand held tools using proper stripping blades. No evidence of insulation shall be left on the conductor when viewed with the naked eye. The following details shall apply:

a. Test size: 26 AWG to 20 AWG’s in accordance with ASTM D3032 section 27.
b. Length of insulation slugs shall be .25 inches.
c. The strip force shall be as follows:

Wire size	Min force	Max force
30 – 26	0.25 lbs	6.0 lbs

3.5.9 Durability (PTFE outer layer) (Test required for initial qualification only). When tested as specified below, the wire shall withstand an average of 100 cycles without failure due to tear or surface cut through of the outer layer. The following details shall apply:

a. Wire size: 22 AWG.
b. Temperature: 23°C.
c. Weight: 300 grams (10.6 oz).
d. Edged abrading rod diameter: .026 inch (0.66 mm) nominal.
e. Test specimens shall be manufactured to emulate the wire construction specified herein, except the polyimide shall be replaced with an aluminum/Mylar film of similar thickness with the conductive (aluminum) side out. The conductive surface is used in a circuit path to determine when the abrading rod has penetrated the PTFE layer.
f. Test method:

(1) Install a .026 inch (0.66 mm) edged abrading rod with the edged surface facing down (perpendicular with the test specimen).
(2) Remove approximately 1 inch (25.4 mm) of insulation from the end of the specimen and connect the circuit detection clip to the exposed conductor.
(3) Apply the appropriate weights to the fixture.
(4) Place the abrading rod on the specimen, ensuring the rod is level and perpendicular to the specimen surface.
(5) Zero the counter on the abrasion tester.
(6) Turn the tester on. The rod will begin to oscillate over the surface of the specimen with an approximate 1 inch (25.4 mm) stroke.
(7) The test will continue until the tester detects continuity between the abrading rod and the conductor.
(8) Record the number of cycles to failure.
(9) Repeat the procedure a minimum of 10 times (100 times preferred) to generate a statistically significant sample.
(10) Average the results.

3.5.10 UV laser marking (test required for initial qualification only). When marked with an ultraviolet (UV) laser source at 1.5 J/cm^2 white FP tape shall have a contrast level of 65 percent minimum average and colored FP tape shall have a 62 percent minimum average. This requirement applies to the outer most FP insulation layer. Non-white insulation colors shall meet the Munsell color limit requirements shown in table VI. Contrast level is defined as:

$$CL = \frac{\text{(Reflectance of the background insulation - Reflectance of the laser mark)}}{\text{(Reflectance of the background insulation)}}$$

3.5.11 Color (test required for initial qualification only). Colors shall be in accordance with MIL-STD-104, class 1, except for UV laser markable wire as shown in table VI. White is the preferred background insulation color. Color conformity to the limits of MIL-STD-104 shall not be required after oven exposure.

TABLE VI. Munsell color limits for UV laser markable wire.

Color	Hue		Value		Chroma	
	From	To	Min	Max	From	To
Black	2.5RN	2.5RN	7	8.5	N/A	N/A
Blue	5PB	7.5B	7	8	4	6
Green	2.5G	7.5G	7	9	2	6
Red	10RP	5R	7	8	4	6
Yellow	5Y	10Y	8	9	4	6
Brown	2.5YR	7.5R	7	9	2	4
Orange	10R	2.5YR	6	7	8	10
Violet	2.5P	7.5R	7	8	4	8
Gray	Same as black	Same as black	Same as black	Same as black	Same as black	Same as black

3.5.12 Color striping or banding durability (test required for initial qualification only). Colored stripes or bands shall meet the durability of color marking requirements specified in SAE-AS22759. The following shall apply to the durability of color marking test.

a. Weight: 250 grams (8.82 oz).
b. Strokes: 250 strokes (125 cycles).

3.5.13 Low temperature (cold bend) (conformance inspection test).

a. Preparation of specimen: 36 inch specimen.

b. Test procedure.
(1) One end of the specimen shall be secured to a rotatable mandrel diameter specified in table VI in a cold chamber and the other end to the load specified in table VII. Provisions shall be made for rotating the mandrel by means of a handle or control located outside the chamber.

TABLE VII. Test mandrel and test load requirements.

Wire size (AWG)	Test mandrel diameter (inches)			Test load (lbs)	
	Cold bend	Life cycle/ bend test	Wrap	Cold bend	Life cycle/ Bend test
30	1.00	.375	.125	3.00	.50
28	1.00	.375	.125	3.00	.50
26	1.00	.375	.125	3.00	.50

(2) Condition the wire and mandrel for 4 hours at -66°C.
(3) At the end of the 4 hour period and while both mandrel and specimen are still at this low temperature, the specimen shall be wrapped helically for its entire length or for 20 turns, whichever is the lesser number of turns around the mandrel without opening the chamber.
(4) The bending shall be at a constant uniform rate of 2 ±1 rpm.
(5) At the completion of this test the specimen shall be removed from the cold box and from the mandrel without straightening.
(6) The specimen shall be examined without magnification for cracks of the insulation.
(7) Remove 1 inch of insulation from each end of the specimen.
(8) One uninsulated end of the specimen shall be attached to an electric lead.
(9) The bent portion of the specimen shall be immersed in a 5 percent by weight, solution of sodium chloride in water at 20°C to 25°C.
(10) 1 ½ inches of the uninsulated wire at each end shall protrude from the surface of the solution. After immersion for 5 hours, 2,500V rms at 60 Hz shall be applied to the conductor and electrode in contact with the liquid.
(11) The voltage shall be gradually increased at a uniform rate from zero to volts in ½ minute, maintain the voltage for 5 minutes then gradually reduce to zero in 30 seconds.

3.5.14 Wrap (mandrel wrap) (conformance inspection test). When wrapped around a mandrel the insulation shall show no cracking of the insulation or dielectric breakdown. The following details shall apply:
a. Specimen length 12 inches (305 mm) plus the additional length required for winding on the mandrel.
b. The windings shall be in the middle portion of the specimen so that 6 inches (152 mm) of each end shall remain straight.
c. The wire shall be wound tightly for two close turns around the mandrel diameter specified in table VI.
d. The specimen shall then be unwound from the mandrel, examined for cracks visually without aid of magnification.
e. The specimen shall be subjected to the dielectric test of 3.5.1. The following exceptions shall apply:
(1) The specimen shall be firmly clamped in a horizontal position, leaving the wrapped portion of the wire accessible to a contact plate jig equal to that shown in figure 2.

(2) The bottom contact plate shall be placed underneath the wire and shall make contact with the center .500 inch (13 mm) area of the wrapped section of the wire.
(3) The upper contact plate shall be placed on top of the specimen, directly over the bottom plate and a .25 pound weight shall be placed on the upper plate, directly over the specimen, to insure contact with the wrapped area.
(4) The voltage shall be gradually increased, at a uniform rate, until the voltage reaches 2,500 V rms at 60Hz.
(5) The voltage shall be maintained at that voltage for 1 minute and gradually reduced to zero in ½ minute.
(6) There shall be no dielectric failure of the specimen under this test.

3.5.14 Shrinkage (conformance inspection test).

a. Preparation of specimen.
(1) 14 inch specimen.
(2) Strip from each end 1 inch ± .01 inch of insulation. Insulation is defined as all layers of non-conducting material covering the electrical conductor.
(3) Form specimen into a loose coil not less than 1 foot in diameter onto a wire screen, which will be used for the remainder of the test.
b. Test procedure.
(1) Expose the specimen in a preheated circulating oven for 6 hours at the temperature specified:

a. Conductor designator A, C, D: 230°C ±2°C
b. conductor designator B, E: 290°C ±2°C

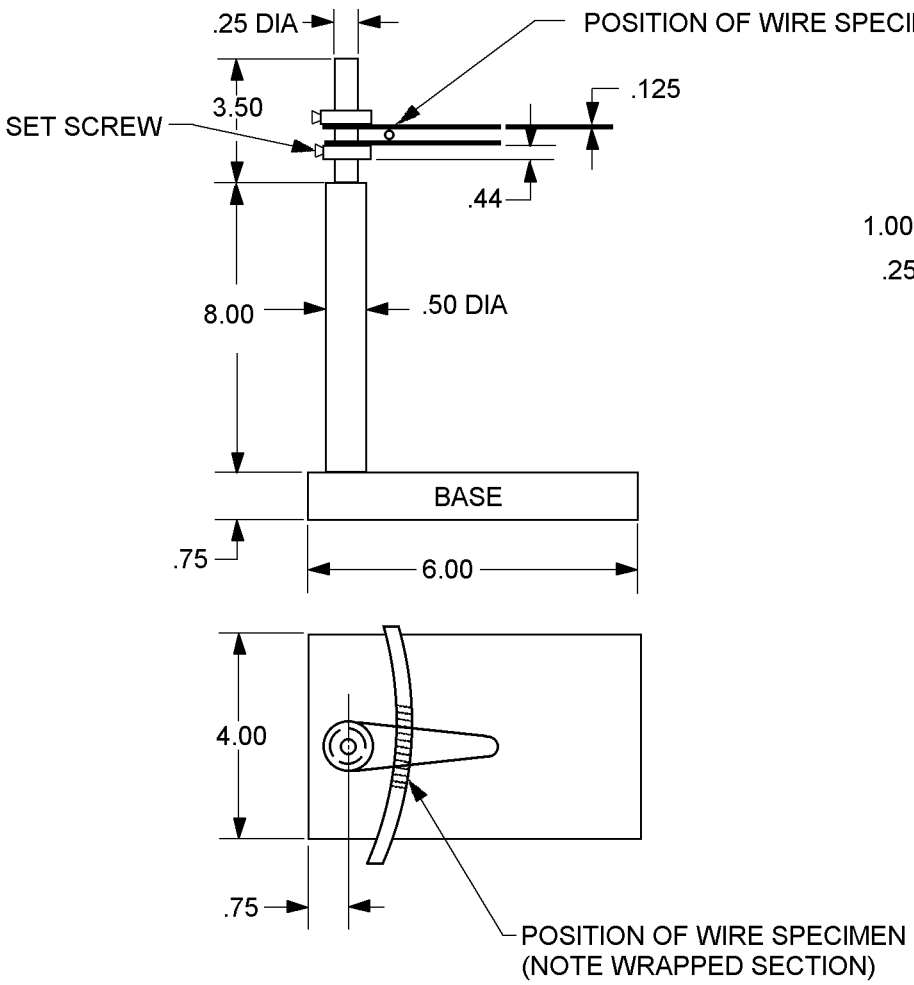
(2) Remove and from chamber and allow a minimum of 30 minutes for the sample to reach room temperature, 20°C to 25 °C.
(3) Measure the insulation at the greatest point of shrinkage, this includes any layer of insulation that has receded from either end of the conductor.
(4) The measurement from the end at which the greater amount of shrinkage occurred shall be considered shrinkage of the specimen.

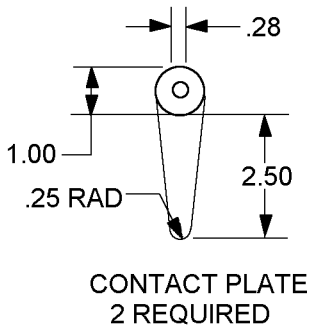
3.5.15 Thermal shock resistance (conformance inspection test).

a. Preparation of specimen.
(1) Test sample length 5 feet.
(2) Carefully remove 1 inch ± .01 inch of insulation from each end of wire. Insulation is defined as all layers of non-conducting material covering the electrical conductor.
(3) Form specimen into a loose coil not less than 1 foot in diameter onto a wire screen, which will be used for the remainder of the test.
b. Test procedure.
(1) Place the specimen in a preheated circulating oven for 30 minutes at the temperature specified:

a. Conductor designator A, C, D, temperature 200°C ±2°C.
b. Conductor designator B, E, temperature 260°C ±2°C.

(2) Remove the specimen from the oven and within two minutes place in a chamber which has been precooled to -55°C ±2°C for 30 minutes.
(3) Remove and from chamber and allow a minimum of 30 minutes for the sample to reach room temperature, 20°C to 25 °C.
(4) Measure the distance from the end of each layer of insulation to the end of the conductor. The maximum change of in measurement shall be .091 inch.
(5) The thermal shock and measurements in steps 1 through 4 shall be repeated.
(6) There shall be no cracking of the insulating or flaring of any layer.





CONTACT PLATE
2 REQUIRED

Inches	mm
.125	3.18
.25	6.35
.28	7.11
.44	11.18
.75	19.05
1.00	25.40
2.50	63.50
3.50	88.90
4.00	101.60
6.00	152.40
8.00	203.20

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information.
3. Materials:
    a. Base: nonconductor
    b. Contact plates: polished brass
    c. Upright support brass

FIGURE 2. Contact plate jig for wrap dielectric test.

3.6 Ratings.

3.6.1 Temperature rating. Maximum continuous conductor temperature.

a. Conductor designators A, D: 200°C (392°F)
b. Conductor designators B, E: 260°C (500°F)
c. Conductor designator: C, 150°C (302°F)

3.6.2 Voltage rating. 600 Vrms at sea level.

3.7 Marking. Due to space constraints marking for 26 or smaller AWG wires is not required.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. Qualification inspection (see 4.2).

b. Conformance inspection (see 4.3).

4.1.1 Equipment calibration. All test equipment and inspection facilities shall be maintained in accordance with NCSL-Z540.3 or equivalent.

4.2 Qualification inspection. Not required.

4.3 Conformance inspection. Conformance inspection shall be in accordance with SAE-AS22759 and 3.5 herein.

4.4 Certification. In order to be certified and listed as an approved source of supply for wire manufactured to this drawing, a manufacturer shall:

a. Agree to make available to DLA Land and Maritime, upon request, all pertinent test data indicating compliance to the tests outlined in SAE-AS22759, SAE-AS22759/80, SAE-AS22759/81, SAE-AS22759/82, SAE-AS22759/91, SAE-AS22759/92, SAE-AS22759/180, SAE-AS22759/181, SAE-AS22759/182, SAE-AS22759/191, SAE-AS22759/192, and this drawing.

b. Provide to DLA Land and Maritime -VAI, or its designated agent, upon request, free of change and without obligation, current production samples of the types and quantities requested.

c. Meet one of the following criteria:

(1) Currently be listed on QPL-22759 for at least one wire series listed inn paragraph 2.2 (not necessarily the one for which this drawing applies).

(2) Be in current production of the subject part.

4.5 Certificate of compliance. A certificate of compliance shall be required from a manufacturer in order to be listed as an approved source of supply (see 6.7).

5 PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6 NOTES

6.1 Intended use. Wires conforming to this drawing are intended for use when military specifications do not exist for wires that will perform the required function. This drawing is intended to prevent the proliferation of unnecessary duplicate specifications, drawings and stock catalog listings. When a military specification exists and the product covered by this drawing has been qualified for listing on QPL-22759, this drawing will be inactivated.

6.2 Acquisition data. The acquisition document should specify the following:

a. Complete PIN (see 1.2).

b. Requirements for delivery of a copy of the conformance inspection inspection data for the lot being supplied, if applicable. This data should be supplied with each shipment.

c. Requirements for certificate of compliance, if applicable.

d. Requirements for packaging and packing.

6.3 Replaceability. Wires covered by this drawing will replace the same generic wires covered by a contractor-prepared specification or drawing.

6.4 Comments. Comments on this drawing should be directed to DLA Land and Maritime -VAI, Post Office Box 3990, Columbus, Ohio 43218-3990 or e-mail WireCable@dla.mil, telephone (614) 692-0530, facsimile (614) 692-6939.

6.5 Certificate of compliance. The certificate of compliance submitted to DLA Land and Maritime -VAI, prior to listing as an approved source of supply, should state that the manufacturer's product meets the requirements of this drawing.

6.6 Generic test data. Generic test data may be used to satisfy the requirements of 4.3. Generic test data should be on date coded wire no more than 1 year old when the wire is made of the same material, of the same design, and is made using the same manufacturing processes. The vendor is required to retain the generic data for a period of not less than 3 years from the date of shipment.

6.7 Approved sources of supply. Approved sources of supply are listed herein. Additional sources will be added as they become available. The vendors listed have agreed to the contents of this drawing and a certificate of compliance has been submitted to DLA Land and Maritime -VAI.

DLA Land and Maritime drawing PIN	Vendor CAGE number	Vendor similar PIN 1/	Vendor CAGE number	Vendor similar PIN 1/	Vendor CAGE number	Vendor similar PIN 1/
04047-30A-*	12814	SMLP30A*	12515	D04047-30A-*	F1868	DS04047-30A-*
04047-28A-*	12814	SMLP28A*	12515	D04047-28A*	F1868	DS04047-28A-*
04047-26A-*	12814	SMLP26A*	12515	D04047-26A*	F1868	DS04047-26A-*

1/ Caution: Parts must be purchased to this DLA Land and Maritime PIN to assure that all performance requirements and tests are met.

* Color code designators in accordance with MIL-STD-681 should replace the asterisks in the PIN column of table. Example: 04047-26-93 is white with an orange stripe.

Vendor CAGE number	Vendor name and address
12814	Thermax/CDT 235 North Freeport Drive Nogales, AZ 85621-2428
12515	Nexans Aerospace USA LLC 600 South Parker Street, P.O. Box 909 Elm City, NC 27822
F1868	Draka Fileca Route Nationale 1 60730 Sainte Genevieve France

6.8 Environmentally preferable material. Environmentally preferable materials should be used to the maximum extent possible to meet the requirements of this specification. As of the dating of this document, the U.S. Environmental Protection Agency (EPA) is focusing efforts on reducing 31 priority chemicals. The list of chemicals and additional information is available on their website http://www.epa.gov/osw/hazard/wastemin/priority.htm. Included in the EPA list of 31 priority chemicals are cadmium, lead, and mercury. Use of these materials should be minimized or eliminated unless needed to meet the requirements specified herein (see Section 3).

6.9 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.