

INCH-POUND  
MIL-DTL-16878/16D  
w/AMENDMENT 1  
12 January 2016  
SUPERSEDING  
MIL-DTL-16878/16D  
25 April 2011

DETAIL SPECIFICATION SHEET

WIRE, ELECTRICAL, CROSSLINKED, MODIFIED POLYETHYLENE  
(XLPE) INSULATED, 125 DEGREES C, 3000 VOLTS

Inactive for new design after 08 December 2014. For new design, use  
National Electrical Manufacturers Association (NEMA) HP 5.

This specification is approved for use by all Departments and Agencies of  
the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and  
MIL-DTL-16878.

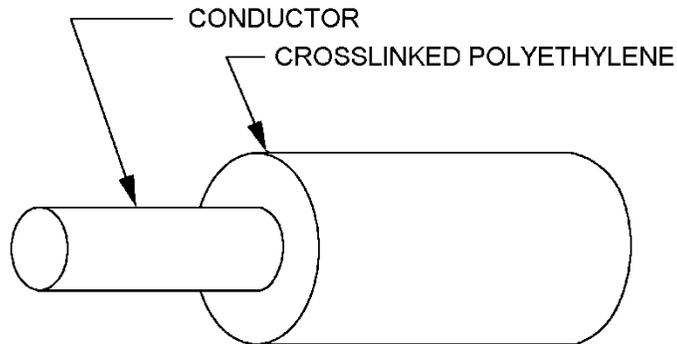


FIGURE 1. Wire configuration.



MIL-DTL-16878/16D  
w/AMENDMENT 1

TABLE I. Wire configuration and dimensions.

| PIN <sup>1/</sup> | Wire size | Stranding | Conductor |         | Conductor diameter (nominal) (inch) | Finished wire diameter (inch) |      |
|-------------------|-----------|-----------|-----------|---------|-------------------------------------|-------------------------------|------|
|                   |           |           | Material  | Coating |                                     | Min                           | Max  |
| M16878/16BDA*     | 26        | 1 X 26    | Copper    | Tin     | .0159                               | .067                          | .082 |
| M16878/16BDB*     | 26        | 7 X 34    | Copper    | Tin     | .0190                               | .070                          | .085 |
| M16878/16BDE*     | 26        | 19 X 38   | Copper    | Tin     | .0200                               | .070                          | .085 |
| M16878/16BEA*     | 24        | 1 X 24    | Copper    | Tin     | .0201                               | .071                          | .086 |
| M16878/16BEB*     | 24        | 7 X 32    | Copper    | Tin     | .0240                               | .075                          | .090 |
| M16878/16BEE*     | 24        | 19 X 36   | Copper    | Tin     | .0250                               | .075                          | .090 |
| M16878/16BFA*     | 22        | 1 X 22    | Copper    | Tin     | .0254                               | .076                          | .091 |
| M16878/16BFB*     | 22        | 7 X 30    | Copper    | Tin     | .0300                               | .081                          | .098 |
| M16878/16BFE*     | 22        | 19 X 34   | Copper    | Tin     | .0320                               | .081                          | .098 |
| M16878/16BGA*     | 20        | 1 X 20    | Copper    | Tin     | .0320                               | .083                          | .098 |
| M16878/16BGB*     | 20        | 7 X 28    | Copper    | Tin     | .0380                               | .089                          | .105 |
| M16878/16BGE*     | 20        | 19 X 32   | Copper    | Tin     | .0400                               | .089                          | .105 |
| M16878/16BHA*     | 18        | 1 X 18    | Copper    | Tin     | .0403                               | .091                          | .106 |
| M16878/16BHB*     | 18        | 7 X 26    | Copper    | Tin     | .0480                               | .099                          | .114 |
| M16878/16BHE*     | 18        | 19 X 30   | Copper    | Tin     | .0470                               | .099                          | .114 |
| M16878/16BJA*     | 16        | 1 X 16    | Copper    | Tin     | .0508                               | .102                          | .117 |
| M16878/16BJE*     | 16        | 19 X 29   | Copper    | Tin     | .0570                               | .108                          | .123 |
| M16878/16BJF*     | 16        | 26 X 30   | Copper    | Tin     | .0600                               | .111                          | .125 |
| M16878/16BKA*     | 14        | 1 X 14    | Copper    | Tin     | .0641                               | .115                          | .130 |
| M16878/16BKE*     | 14        | 19 X 27   | Copper    | Tin     | .0720                               | .123                          | .138 |
| M16878/16BKH*     | 14        | 41 X 30   | Copper    | Tin     | .0760                               | .127                          | .142 |
| M16878/16BLE*     | 12        | 19 X 25   | Copper    | Tin     | .0920                               | .156                          | .171 |
| M16878/16BLG*     | 12        | 37 X 28   | Copper    | Tin     | .0890                               | .153                          | .168 |
| M16878/16BLJ*     | 12        | 65 X 30   | Copper    | Tin     | .0930                               | .157                          | .172 |
| M16878/16BMG      | 10        | 37 X 26   | Copper    | Tin     | .1110                               | .174                          | .189 |
| M16878/16BNL      | 8         | 133 X 29  | Copper    | Tin     | .1670                               | .239                          | .254 |
| M16878/16BNM      | 8         | 168 X 30  | Copper    | Tin     | .1690                               | .239                          | .254 |
| M16878/16BPL      | 6         | 133 X 27  | Copper    | Tin     | .2100                               | .283                          | .298 |
| M16878/16BRL      | 4         | 133 X 25  | Copper    | Tin     | .2680                               | .346                          | .366 |
| M16878/16BSL      | 2         | 133 X 23  | Copper    | Tin     | .3550                               | .415                          | .435 |
| M16878/16BSP      | 2         | 665 X 30  | Copper    | Tin     | .3420                               | .415                          | .435 |
| M16878/16BTN      | 1         | 259 X 25  | Copper    | Tin     | .3780                               | .468                          | .488 |
| M16878/16BTR      | 1         | 817 X 30  | Copper    | Tin     | .3820                               | .468                          | .488 |
| M16878/16BUN      | 0         | 259 X 24  | Copper    | Tin     | .4240                               | .518                          | .538 |
| M16878/16BUS      | 0         | 1045 X 30 | Copper    | Tin     | .4310                               | .518                          | .538 |
| M16878/16BWT      | 00        | 1330 X 30 | Copper    | Tin     | .4750                               | .575                          | .599 |
| M16878/16BYV      | 000       | 1672 X 30 | Copper    | Tin     | .5350                               | .657                          | .681 |
| M16878/16BZW      | 0000      | 2109 X 30 | Copper    | Tin     | .6000                               | .790                          | .733 |

<sup>1/</sup> PIN stands for Part or Identifying Number (see figure 2).

MIL-DTL-16878/16D  
w/AMENDMENT 1

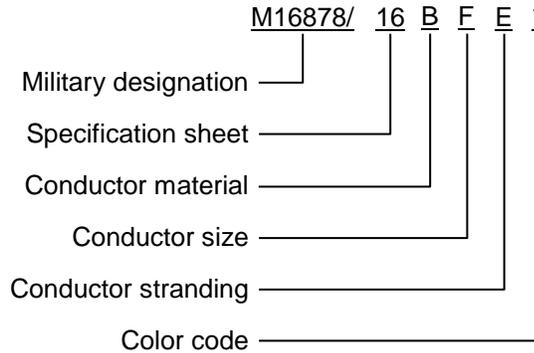


FIGURE 2. Example of PIN (see MIL-DTL-16878).

- Configuration and dimensions: See figure 1 and table I
- Operating voltage: Up to 3000 volts
- Operating temperature: Up to 125 °C
- Insulation: Crosslinked polyethylene
- Spark test voltage: 8.0 kV
- Impulse dielectric test voltage: 12.0 kV, or 8.5 kV using the 3.0 kHz spark test
- Dielectric withstanding voltage: 6.0 kV
- Partial discharge voltage: Required
- Insulation resistance:  $IR = K \log_{10} D/d$   
Where: IR = Minimum insulation resistance in megohms-1000 feet at 20 degrees C  
K = 10,000  
D = Maximum average diameter of finished wire  
d = Conductor diameter
- Cold bend: Condition 4 hours at  $-55 \pm 1$  degrees C (see table II)

TABLE II. Cold bend mandrel sizes.

| Wire size     | Cold bend mandrel diameter (inches, maximum) |
|---------------|--|
| 26 through 22 | 2  |
| 20 through 14 | 3  |
| 12, 10        | 4.5  |
| 8             | 6  |
| 6, 4          | 10   |
| 2, 1, 0       | 18   |
| 00, 000, 0000 | 20   |

- Surface resistance: Not required
- Heat resistance: Condition at 150 degrees C
- Heat aging: 25 percent change (maximum) in 96 hours at 135 degrees C
- Insulation tensile strength: 1800 pounds force per square inch (minimum)
- Insulation elongation: 100 percent (minimum)
- Partial discharge test: Required
- Marking and stripe durability: Not required

MIL-DTL-16878/16D  
w/AMENDMENT 1

Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

Referenced document. This document references MIL-DTL-16878.

CONCLUDING MATERIAL

Custodians:

Navy - SH  
Air Force - 85  
DLA - CC

Preparing activity:

DLA - CC

(Project 6145-2015-042)

Review activity:

Navy – AS, 99

Note: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the Assist Online database at <https://assist.dla.mil>.