



# SOLID COPPER – 1645 TRACER WIRE

## APPLICATION

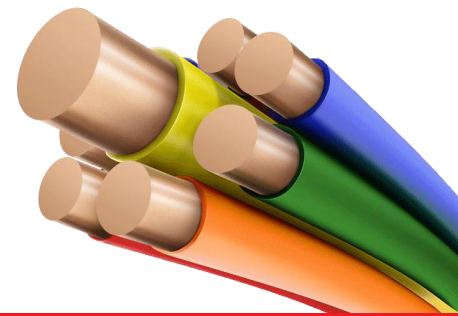
Solid copper tracer wire insulated with an HDPE jacket carries a low-voltage signal to detect non-metallic underground pipes and cables. Suitable for light duty open cut/trenching/plowing applications.



## Product Description

#16 AWG (0.0508" diameter) dead soft annealed (DSA) solid copper conductor insulated with a 45 mil, high-density, high molecular weight polyethylene (HDPE) insulation rated for direct burial use.

**CU-1645\*-500** – 500' spool  
**CU-1645\*-1000** – 1000' spool  
**CU-1645\*-2500** – 2500' spool  
 (\* denotes color, pg. 2)

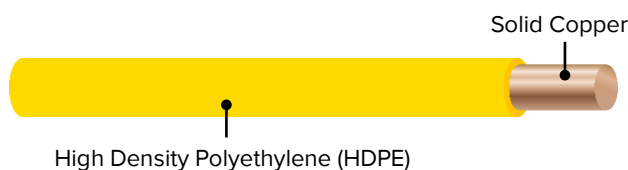


## FEATURES AND BENEFITS

- 45 mil HDPE insulation
- 74 lb break load
- 100% solid copper conductor
- Low recoil
- Corrosion resistant
- Rated for direct bury
- Color-coded to meet American Public Works (APWA) standards for utility identification

### APWA UNIFORM COLOR CODE

<span style="color: red;">■</span>	<b>ELECTRIC</b>
<span style="color: yellow;">■</span>	<b>GAS</b>
<span style="color: orange;">■</span>	<b>COMMUNICATION</b>
<span style="color: blue;">■</span>	<b>POTABLE WATER</b>
<span style="color: green;">■</span>	<b>SEWER</b>
<span style="color: purple;">■</span>	<b>RECLAIMED WATER</b>



## SPECIFICATIONS

### PART #: CU-1645\*-\*\*

16 (AWG), 45 (insulation mil), \* (indicates insulation color: Y=Yellow, B=Blue, G=Green, N=Orange, P=Purple, R=Red, BN=Brown, K=Black, W=White), \*\* (indicates spool size: 500, 1000 or 2500 foot lengths)

### MADE IN USA

Copperhead® solid copper tracer wire is 100% made in the USA.

### PRODUCT DESCRIPTION

Tracer wire shall be a #16 AWG (0.0508" diameter) Dead Soft Annealed (DSA) solid copper conductor, insulated with a 45 mil, high-density, high molecular weight polyethylene (HDPE) insulation rated for direct burial use at 600 volts. Break load of 74 lbs. HDPE insulation shall be RoHS compliant and utilize virgin grade material. Insulation color shall meet the APWA color code standard for identification of buried utilities. Origin of solid copper is required and must be manufactured in the United States. Tracer wire shall be Copperhead® Solid Copper HDPE 45 mil and made in the USA.

### PRINT LINE

Physical, permanent markings: surface legend print on insulation to repeat at minimum interval of every two linear feet. Ink colors will include Black ink for Yellow, Blue, Red, Orange, Purple, Brown, White, and Green insulation, and White ink for Black insulation. **COPPERHEAD \* 16 AWG-SOLID COPPER TRACER WIRE \* 45 MIL HDPE 600 VOLT \* DIRECT BURIAL ONLY**

### SPOOL LABEL

Wound wire on a compact spool made of plastic or wood.

### COPPERHEAD INDUSTRIES

CU-1645\*-\*\*

16 AWG-Solid Copper Tracer Wire

45 Mil HDPE 600 Volt

Direct Burial Only

[copperheadwire.com](http://copperheadwire.com)

### CONDUCTOR

This specification describes the properties of the conductor.

**Material Description:** Copper conductor will be Dead Soft Annealed (DSA) and manufactured to meet ASTM B-3: Standard specification for soft or annealed copper wire. And ASTM B-170: standard specification for oxygen free electrolytic copper.

- **Copper:** UNS-C10200; OF Copper according to ASTM B-170 (latest revision). High conductivity, oxygen free copper to achieve optimal signal performance.

**Surface Condition:** Wire surface shall be free of any defects, including flakes, grooves, pits, and voids. Wire surface shall be smooth, bright and shiny, and free of excessive copper dust and residual drawing lubricants.

**Physical, Mechanical, and Electrical Properties:** The wire shall conform to the properties listed in Table 1.



Bare Copper Single Wire ASTM B3	Conductor
Conductor Size	16 AWG
Conductor Type	Solid Copper
Temper	Dead Soft Annealed (DSA)
Average Break Load	74 lbs.
Minimum Elongation	25%
Nominal Copper Weight	7.853
Nominal DC Resistance (ohms/1000 ft.)	4

Table 1: Physical, Mechanical, and Electrical Properties

*\*Diameter tolerances: ± 1%*

## INSULATION

This specification describes the properties of the material to be used in the insulating of Solid Copper tracer wire.

**Material Description:** Insulation is comprised of a co-polymer high molecular weight natural high density polyethylene (HDPE) designed specifically for high-speed copper wire insulating. It contains the required levels and types of primary antioxidant and metal deactivator additives to satisfy most Wire and Cable industry requirements. HDPE material will be produced with an excellent balance of surface smoothness, processing ease, tensile and elongation properties, abrasion toughness, environmental stress crack, thermal stress crack resistance, and electrical consistency. Insulation must conform to ASTM D1248.

**Physical, Mechanical, and Electrical Properties:** The wire shall conform to the properties listed in Table 2.

High Density Polyethylene Insulator	Value
Density (ASTM D 792)	0.943 g/cc
Bulk Density (ASTM D 1895)	0.58 g/cc
Melt Index (ASTM D 1238/E)	0.70 dg/min
Tensile-Yield (ASTM D 638)	4300 psi
Tensile-Ultimate (ASTM D 638)	2900 psi
Tensile-Elongation (ASTM D 638)	850%
Flexural Modulus (ASTM D 790/1)	120,000 psi
Hardness (ASTM D 2240)	63 Shore D
Environmental Stress-Crack (ASTM D 1693/B)	F20 > 48 h
Thermal Stress-Crack (ASTM D 2951)	F0 > 1000 h
Brittleness Temperature (ASTM D 746)	< -95° F
Melting Point (DSC) (ASTM D 3417)	262° F
Softening Point (Vicat) (ASTM D 1525)	250° F
Oxidative Induction Time (ASTM D 3895)	> 50 min. @ 200° C
Dielectric Constant (ASTM D 1531)	2.34 @ 1MHz
Dissipation Factor (ASTM D 1531)	0.00007 @ 1 MHz
Volume Resistivity (ASTM D 257)	5 x 10 <sup>17</sup> ohm-cm
Dielectric Strength (ASTM D 3755)	1000 volts @ 20 mils

Table 2: Physical, Mechanical, and Electrical Properties

## QUALITY ASSURANCE

- Copperhead products are manufactured under a quality control system that ensures products are free of defects and meet performance requirements.
- Copperhead provides best-in-class customer service. We promise to put forth our best efforts for our customers and to treat everyone we encounter with courtesy and respect.

