Copperhead® Tracerwire Specification for **#14 Solid Copper - Break Load 112 lbs.**

Part #s: CU-1430*-500 / CU-1430*-2500

Part # description: CU (Solid Copper)-14(AWG), 30 (jacket mil), *(indicates jacket color: B=Blue, Y=Yellow, G=Green, P=Purple) – 500 or 2500 (wire length in ft.)

Print Line: Physical, permanent markings: surface legend print on insulating jacket to repeat at minimum interval of every two linear feet. Ink colors will include: Black Ink for the following jacket colors: Yellow, Blue, Purple and Green.

COPPERHEAD * 14 AWG-SOLID COPPER TRACER WIRE * 30 MIL HDPE * 30 VOLT * DIRECT BURIAL ONLY

Spool Label: Wound wire on a compact spool made of metal, plastic, or wood.

COPPERHEAD INDUSTRIES, LLC
CU-1430*-500 (Production Trace Code)
14 AWG-Solid Copper Tracer Wire
30 Mil HDPE * 30 Volt
Direct Burial Only
www.copperheadwire.com

Product Description:
Tracer wire shall be a #14 AWG (0.0641" diameter) Dead Soft Annealed (DSA), solid copper conductor, insulated with a 30 mil, high-density, high molecular weight polyethylene (HDPE) insulation, and rated for direct burial use at 30 volts. Break load of 112 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. Tracer wire shall be Copperhead® Solid Copper, HDPE 30 mil insulation or *district pre-approved* equal.

Recommended Engineering Specifications:

Conductor Specifications for Solid Copper Tracer Wire
#14 Solid Copper – Break Load 112 lbs.

Specification: This specification describes the properties of the conductor to be used in the fabrication of high strength tracer wire.

1. **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. Wire must conform to ASTM B910 / B910M
    a. **Copper:** UNS-C10200; OF Copper according to ASTM B-170 (latest revision). High conductivity, oxygen free copper to achieve optimal signal performance.

2. **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.

3. **Physical, Mechanical, and Electrical Properties**

    The wire shall conform to the properties listed in Table 1.

TABLE 1: Physical, Mechanical, and Electrical Properties

#14 AWG Solid Copper	**Copper Conductor**
Conductor Size	14 AWG
Conductor Type	Solid Copper
Temper	Dead Soft Annealed (DSA)
Average Break Load	112 lbs.
Minimum Tensile Strength	48,000 psi
Nominal DC Resistance (ohms/1000 ft.)	2.525@68°F

Insulating Jacket Specifications for Solid Copper Tracer Wire
#14 Solid Copper – Break Load 112 lbs.

Specification: This specification describes the properties of the insulation material to be used in the jacketing of high strength tracer wire.

1. **Material Description:** insulating jacket 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.

2. **Physical, Mechanical, and Electrical Properties**

   The wire shall conform to the properties listed in Table 1.

TABLE 1: Physical, Mechanical, and Electrical Properties

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)	F_{20} > 48 h
Thermal Stress-Crack (ASTM D2951)	F_0 > 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^{17} ohm-cm
Dielectric Strength (ASTM D 3755)	1000 volts @ 20 mils