



SuperFlex High Strength Tracer Wire

Part# (1230*-SF-)**

***= Color- B=Blue, G=Green, Y=Yellow, P=Purple, R=Red,**

B=Black, N=Orange

****=Spool Size- 500', 1000', 2500'**

Tracer wire shall be (#12 AWG) High-Strength copper-clad steel conductor (HS-CCS), insulated with a 30 mil, high-density, high molecular weight polyethylene (HDPE) insulation, and rated for direct burial use at 30 volts. HS-CCS conductor must be a 21% conductivity for locating purposes, Break load 250# minimum. 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 SuperFlex HS-CSS, HDPE 30 mil insulation or Pre-approved equal and made in the USA.

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#12 CCS Superflex Soft Drawn 250#

Part #s: 1230*-SF-500 / 1230*-SF-1000 / 1230*-SF-2500

Part # description: 12 (AWG), 30 (jacket mil), *(indicates jacket color: B=Blue, Y=Yellow, R=Red, K=Black, N=Orange, G=Green, P=Purple) - HS (high strength-soft drawn) - 500 (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, Red, Orange, Purple and Green. White Ink for Black jacket.

COPPERHEAD * 12 AWG-SOLID SUPERFLEX SF-CCS 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
1230*-SF-500 (Production Trace Code)
12 AWG-Solid CCS Tracer Wire
30 Mil HDPE * 30 Volt
Direct Burial Only
www.copperheadwire.com
500 ft.

Recommended Purchasing Description:

Direct Burial #12 AWG Solid (.0808" diameter), 21% conductivity annealed copper-clad carbon steel high strength tracer wire, 250# average tensile break load, 30 mil. high molecular weight-high density polyethylene jacket complying with ASTM-D-1248, 30 volt rating.



Recommended Engineering Specifications:

Conductor Specifications for High Strength Tracer Wire

#12 CCS Soft Drawn 250#

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

1. **Material Description:** Copperweld® Copper-clad steel wire composed of a steel core with a uniform and continuous copper cladding thoroughly bonded to the steel throughout. Wire must conform to ASTM B910 / B910M
 - a. **Cladding:** The steel and copper interface must have a metallurgical bond achieved through a high heat and pressure bonding process. Established process for porosity-free material.
 - b. **Steel:** High Strength with 0.10 carbon or greater. Verified to meet required mechanical properties.
 - c. **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

| #12 CCS 1010 Soft Drawn 21% Conductivity | CCS Conductor |
|---|--------------------------|
| Conductor Size | 12 AWG |
| Conductor Type | Copper Clad Steel (CCS) |
| Temper | Dead Soft Annealed (DSA) |
| Average Break Load | 250 lbs. |
| Minimum Tensile Strength | 48,000 psi |
| Minimum Elongation | 10.0% |
| Copper Thickness (% of Diameter) | 3.0% |
| Minimum Copper Weight | 13% |
| Nominal DC Resistance (ohms/1000 ft.) | 7.5648 |

*Diameter tolerances: $\pm 1\%$



Insulating Jacket Specifications for High Strength Tracer Wire
#12 CCS Soft Drawn 250#

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 |



Copperhead Reinforced Tracer Wire Spool Size and Weights

| Material | Spool Length | Spool Size | Spools / Box | Shipping Weight |
|-------------------------|--------------|--------------|--------------|-----------------|
| 1430*-SF | 500 | 6.5" X 6" PL | 4 | 32 lbs. |
| | 1000 | 6.5" X 9" PL | 4 | 64 lbs. |
| | 2500 | 14" X 10" W | 1 | 41 lbs. |
| 1230*-SF | 500 | 6.5" X 6" PL | 4 | 47 lbs. |
| | 1000 | 8.5" X 7" ML | 2 | 47 lbs. |
| | 2500 | 14" X 10" W | 1 | 59 lbs. |
| 1245*-EHS | 500 | 6.5" X 9" PL | 4 | 53 lbs. |
| | 1000 | 8.5" X 7" ML | 2 | 53 lbs. |
| | 2500 | 14" X 10" W | 1 | 67 lbs. |
| 1030*-SF | 500 | 6.5" X 9" PL | 4 | 69 lbs. |
| | 1000 | 8.5" X 7" ML | 2 | 69 lbs. |
| | 2500 | 14" X 10" W | 1 | 87 lbs. |
| *Indicates Color | | | | |

| Spool Size | Flange | Traverse | Barrel | Arbor Hole | Material | Color |
|------------|--------|----------|----------|------------|---|--------|
| 6.5" X 6" | 6.5" | 6" | 1 15/16" | 13/16" | High Impact Polystyrene 1/8" Wall Thickness | Black |
| 6.5" X 9" | 6.5" | 9" | 1 15/16" | 13/16" | High Impact Polystyrene 1/8" Wall Thickness | Black |
| 8.5" X 7" | 8.5" | 7" | 2" | 3/4" | Stamped Metal | Silver |
| 14" X 10" | 14" | 10" | 5" | 1 9/16" | Plywood | Tan |

