COPPERHEAD INDUSTRIES, LLC
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#14 CCS Superflex Soft Drawn 170#

Part #s: 1430*-SF-500 / 1430*-SF-1000 / 1430*-SF-2500

Part # description: 14 (AWG), 30 (jacket mil), * (indicates jacket color: Y=Yellow, B=Blue, R=Red, K=Black, N=Orange, G=Green, P=Purple) - HS (high strength-soft drawn) – 500, 100 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, Red, Orange, Purple and Green. White Ink for Black jacket.

COPPERHEAD * 14 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
1430*-SF-500 (Production Trace Code)
14 AWG-Solid CCS Tracer Wire
30 Mil HDPE * 30 Volt
Direct Burial Only
www.copperheadwire.com

Recommended Purchasing Description:
Direct Burial #14 AWG Solid (.0641” diameter), 21% conductivity copper-clad annealed carbon steel high strength tracer wire, 170# 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
#14 CCS Soft Drawn 170#

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

#14 gauge CCS 1010 Soft Drawn 21% Conductivity	**CCS Conductor**
Conductor Size	14 AWG
Conductor Type	Copper Clad Steel (CCS)
Temper	Dead Soft Annealed (DSA)
Average Break Load	170 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.)	12.0201

* *Diameter tolerances: ± 1%*

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Insulating Jacket Specifications for High Strength Tracer Wire
#14 CCS Soft Drawn 170#

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

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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