

BENEFITS & FEATURES

- ✓ The corrosion resistance and conductivity of solid copper and the strength of fully annealed high-carbon steel
- ✓ Higher breaking strength than copper
- ✓ 11% lighter than solid copper
- ✓ 297 lb. break load
- ✓ 30, 45 or 60 mil HMWPE insulation
- ✓ Bonded metals will not corrode or separate
- ✓ ‘Theft-resistant’ (now aftermarket value) and stable price history compared to solid copper
- ✓ Rated for direct bury
- ✓ Color-coded in accordance with the American Public Works (APWA) standards for utility identification
- ✓ Exclusively manufactured by Kris-Tech Wire

APPLICATION

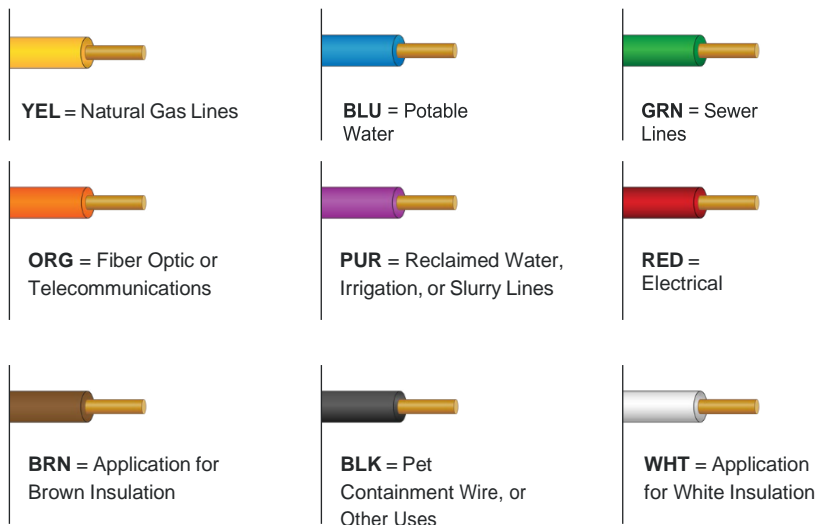
Kris-Tech copper-clad steel (CCS) tracer wire is installed on all non-metallic and metallic underground utilities and wires to enable infrastructure location. CCS tracer wire is ideal for trenching, open cut, and plowing applications when there are no above-ground buildings, roadways, or other obstructions.

PRODUCT DESCRIPTION

#12 AWG (0.0808" diameter), fully annealed low carbon steel with a stress relieved solid copper-clad steel conductor. Insulated with a high molecular weight polyethylene (HMWPE) insulation rated for direct burial use at 30, 60 or 1000 volts.

COLOR OPTIONS

Our tracer wire is manufactured in a range of colors, in conformance with the American Public Works Administration Uniform Color Code. Non-standard colors based on unique customer requirements are also available.



PART# AND TERMS

HMWPE**0012011-SR-*_***

- ✓ 12 AWG-Solid CCS Tracer Wire
- ✓ 30 Mil HMWPE 30 Volt
- ✓ 45 Mil HMWPE 600 Volt
- ✓ 60 Mil HMWPE 1000 Volt
- ✓ Direct Burial

** INSULATION THICKNESS

* INSULATION COLOR

YEL=Yellow, BLU=Blue,
GRN=Green, ORG=Orange,
PUR=Purple, RED=Red,
BRN=Brown, BLK=Black,
WHT=White

*** SPOOL SIZE IN FEET

SPOOL LABEL

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

CONDUCTOR

Kris-Tech Wire copper-clad steel wire is composed of a steel core with a uniform and continuous copper cladding completely bonded to the steel throughout. Wire conforms to ASTM B1010.

SURFACE CONDITION

Wire surface shall be defect-free, including flakes, pits, voids, and grooves. Wire surface shall be smooth, with no excessive copper dust and residual drawing lubricants.

FULL PRODUCT DESCRIPTION

- ✓ Tracer wire shall be a #12 AWG (0.0808" diameter) fully annealed, low carbon steel, stress relieved solid copper-clad steel conductor (SR-CCS) rated at 30, 600 or 1000 volts
- ✓ Insulated with 30, 45 or 60 mil, high molecular weight polyethylene (HMWPE) insulation rated for direct-burial use.
- ✓ SR-CCS conductor must meet or exceed 21% conductivity for locate purposes
- ✓ Break load of 297 lbs.
- ✓ HMWPE insulation is RoHS compliant and utilizes virgin-grade materials
- ✓ Insulation colors meet the APWA color code standard for buried utility identification

PRINT LINE

- ✓ Permanent physical markings: surface print legend on insulation will repeat at a minimum interval of every two linear feet
- ✓ Ink colors include Black ink for Yellow, Blue, Red, Orange, Purple, Brown, White, and Green insulation, and White ink for Black insulation
- ✓ Kris-Tech wire #12 AWG SR-CCS tracer wire — 30, 45 or 60 mil HMWPE voltage direct burial only

CLADDING

The steel and copper interface has a metallurgical bond achieved through a high heat and pressure bonding process — the established process for porosity-free material

- **Steel** is high strength, with 0.54 carbon or greater, and verified to meet all required mechanical properties.
- **Copper** is UNS-C10200, OF Copper as per ASTM B-170 (latest revision). High conductivity, oxygen-free copper is used to provide optimal signal performance

INSULATION

The following is a description of the properties of the materials used in Kris-Tech stress relieved tracer wire insulation

MATERIAL DESCRIPTION

- ✓ Insulation is made up of a copolymer high molecular weight polyethylene (HMWPE) designed explicitly for insulating highspeed copper wire
- ✓ It contains the obligatory levels and types of primary antioxidant and metal deactivator additives to meet most Wire and Cable industry requirements

HMWPE material is produced with an excellent balance of surface smoothness, tensile and elongation properties, processing ease, abrasion toughness, environmental stress crack, thermal stress crack resistance, and electrical consistency

- ✓ Insulation conforms to ASTM D1248

QUALITY ASSURANCE

Every Kris-Tech product is manufactured to exact specifications using our rigorous quality control system that ensures products are defect-free and meet or exceed all performance requirements.

PHYSICAL, MECHANICAL, & ELECTRICAL PROPERTIES

The wire shall conform to the properties listed in Table 1 & Table 2.

Table 1: Physical, Mechanical, and Electrical Properties	
#12 AWG CCS Low Carbon Steel	21% SR CCS Conductor
1. General Specifications	
Wire Hardness	Stress Relieved(SR)
Base Alloy Material	Low carbon steel
2. Dimensions	
Diameter, nominal	2.0523 mm / 0.0808 in
Diameter, minimum	2.0318 mm / 0.0800 in
Cross section Area, nominal	3.3 mm ² / 6,528.6 cmil
Net Weight	26.37 Kg/Km / 17.72 lb/Kft
Copper Thickness, minimum	0.0308 mm / 0.0012 in
Density, typical	7.9800 g/cm ³ / 0.2880 lb/in ³
3. Electrical Specifications	
Electrical Conductivity (IACS), nominal	21%
DC Resistance, maximum	27.98640 Ω/Km, 8.52983 Ω/Kft
4. Mechanical Specifications	
Breaking Load, minimum	1,323 N / 297 lb _f
Tensile Strength, maximum	550 N/mm ² / 79,771 psi
Tensile Strength, minimum	400 N/mm ² / 58,015 psi
Wire Elongation, minimum	1% (actual 5%)

*Diameter tolerances: ±1%

Table 2: Physical, Mechanical, and Electrical Properties	
High Molecular Weight Polyethylene Insulator	Value
1. Physical Specifications	
Density (ASTM D1505)	0.920 g/cm ³
Melt Mass-Flow Rate (ASTM D1238)	0.70 g/10min
Brittleness Temperature (ASTM D746)	< -76.1°C
2. Mechanical Specifications	
Tensile-Yield (ASTM D638)	12.0 Mpa
Tensile-Break (ASTM D638)	15.2 Mpa
Tensile-Elongation (Break) (ASTM D638)	650%
3. Electrical Specifications	
Volume Resistivity (ASTM D257)	>10E+15 Ω*cm
Dielectric Constant (ASTM D150)	2.29
Dissipation Factor (ASTM D150)	6.0E-05