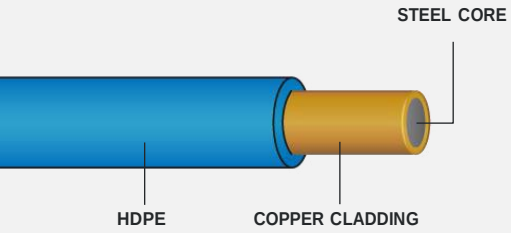
KRIS-TECH PRODUCT SPECIFICATIONS

# 8 STRESS RELIEVED- CCS TRACER WIRE




## 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
- √ 950 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

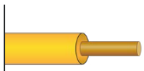
Kris-Tech copper-clad steel (CCS) tracer wire is installed on all non-metallic and metallic underground utilities and wires to enable infrastructure location. CCS tracer wire is ideal for trenching, open cut, and plowing applications when there are no above-ground buildings, roadways, or other obstructions.

## PRODUCT DESCRIPTION

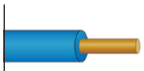
#8 AWG (0.1285" diameter), fully annealed low carbon steel with a stress relieved solid copper-clad steel conductor. Insulated with a high molecular weight polyethylene (HMWPE) insulation rated for direct burial use at 30, 60 or 1000 volts

## COLOR OPTIONS

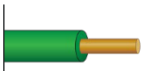
Our tracer wire is manufactured in a range of colors, in conformance with the American Public Works Administration Uniform Color Code. Non-standard colors based on unique customer requirements are also available.



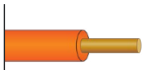
**YEL** = Natural Gas Lines



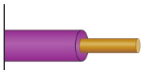
**BLU** = Potable Water



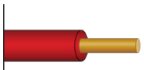
**GRN** = Sewer Lines



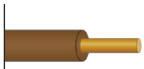
**ORG** = Fiber Optic or Telecommunications



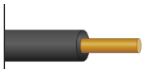
**PUR** = Reclaimed Water, Irrigation, or Slurry Lines



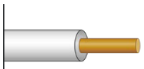
**RED** = Electrical



**BRN** = Application for Brown Insulation



**BLK** = Pet Containment Wire, or Other Uses



**WHT** = Application for White Insulation

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## PART# AND TERMS

**HDPE750008011-26-* ****

- √ 8 AWG-Solid CCS Tracer Wire
- √ 30 Mil HMWPE 30 Volt
- √ 45 Mil HMWPE 600 Volt
- √ 60 Mil HMWPE 1000 Volt
- √ Direct Burial

*** 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.

# SPECIFICATIONS

## FULL PRODUCT DESCRIPTION

- √ Tracer wire shall be a #8 AWG (0.1285” 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 950 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 #8 AWG SR-CCS tracer wire —

## 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

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## 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.

# SPECIFICATIONS

## PHYSICAL, MECHANICAL, & ELECTRICAL PROPERTIES

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

**Table 1: Physical, Mechanical, and Electrical Properties**

| #8 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 | 3.26 mm / 0.1283 in |
| Diameter, minimum | 3.21 mm / 0.1264 in |
| Cross section Area, nominal | 8.3mm$^2$ / 16.38 kcmil |
| Net Weight | 66.72 Kg/Km / 44.83 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), nomonal | 21% |
| DC Resistance, maximum | 9.658 Ω/Km, 3,043 Ω/Kft |
| **4. Mechanical Specifications** | |
| Breaking Load, minmium | 4,225 N / 950 lb$_f$ |
| Tensile Strength, maximum | 550 N/mm2 / 79,771 psi |
| Tensile Strength, minimum | 400 N/mm2 / 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/cm³ |
| 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 |