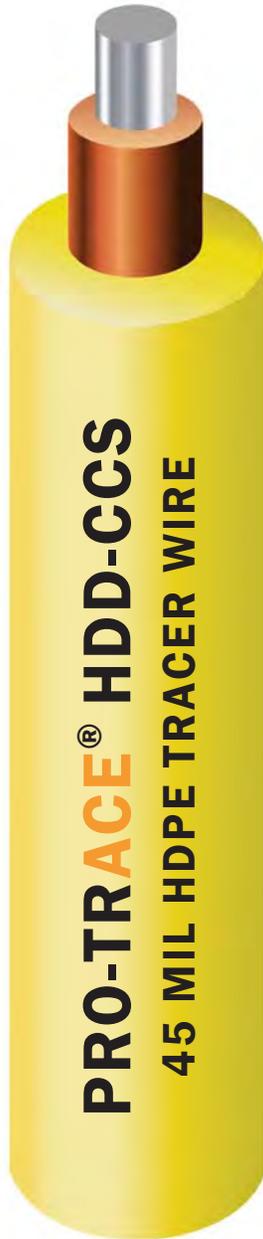


# HDD-CCS PE45

## (DIRECTIONAL DRILLING)

Tracer Wire • Horizontal Directional Drilling Copper Clad Steel (HDD-CCS) • 21% IACS Conductivity • Corrosion Resistant High-Density, High Molecular Weight Polyethylene (HMWPE-HDPE) Insulation • Moisture, Chemical, and Oil Resistant Impact, Crush, and Abrasion Resistant • RoHS Compliant • Direct Burial Rated • 30 Volts • Buy American / AIS Compliant

**“PRO-TRACE® HDD-CCS -- DIRECTIONAL BORING DONE RIGHT THE FIRST TIME -- EVERY TIME!”**



### Applications and Information

- **PRO-TRACE® HDD-CCS PE45** is also referred to as Extra High-Strength (EHS-CCS).
- **PRO-TRACE® HDD-CCS PE45** conductor is equal to copper in signal tracing performance for tracer wire applications not exceeding 30 Volts. Tracer wire is used to conductively locate buried utility lines for the gas, water, sewer, telecommunication, and electrical markets.
- **PRO-TRACE® HDD-CCS PE45** has almost **700%** the break load of copper, which allows 1 wire to be installed in critical installations like directional boring and pipe bursting.
- Has 2-4% elongation, providing the perfect balance between tensile strength, ductility, and decreasing brittleness. Higher elongation causes wire deformation in boring.
- Considerably lower in cost and great price stability compared to copper.
- RoHS Compliant and works with connectors you already use.

### Standards and References

**PRO-TRACE® HDD-CCS PE45** conductors meets or exceeds all applicable ASTM specifications, and requirements of the National Electrical Code. Buy American / AIS Compliant.

- ASTM B869: Specification for 21% Conductivity, Hard Drawn, Copper-Clad Steel Wire
- ASTM B170: Specification for Oxygen-Free Electrolytic Copper
- ASTM D1248: Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable

### Construction

**PRO-TRACE® HDD-CCS PE45** is an extra high-strength, copper clad steel tracer wire. A high carbon steel core, metallurgically bonded with a copper cladding, that is uniform and continuous, creating a bi-metal conductor that acts as one and is corrosion resistant. The high break load allows only 1 conductor to be used in any tracer wire application while providing the perfect balance between break load, ductility, and decreasing brittleness. It is the best performing tracer wire on the market.

**PRO-TRACE® HDD-CCS PE45** is protected with a 45 mil, high-density, high molecular weight polyethylene (HDPE) insulation. HDPE provides an excellent balance of surface smoothness, processing ease and electrical consistency. HDPE insulation provides superior strength against underground elements that help prevent accidental breaks caused by rocks in shifting soil conditions.

### Specification Example

Tracer wire for directional boring installation shall be a 12 AWG solid, PRO-TRACE HDD-CCS PE45. Conductor shall be hard-drawn, 21% IACS, copper-clad steel, utilizing a AISI 1055 high carbon steel core with minimum break load of 1,330 lbs or 260,000 psi (required to meet break load). Conductor shall be extruded with a 45 mil, high density, high molecular weight polyethylene (HMW-HDPE) pursuant to ASTM D1248. Tracer wire shall be rated for direct burial use at 30 volts and RoHS compliant. Tracer wire shall be PRO-TRACE HDD-CCS PE45 as manufactured by **Pro-Line Safety Products**.

Specification Updated: 1.3.2017 15:10:00 CST

PRO-TRACE® is a registered trademark of Pro-Line Safety Products Co.

[www.prolinesafety.com](http://www.prolinesafety.com)

**TABLE 1: CONDUCTOR (Physical, Mechanical and Electrical Properties)**

PROPERTY	14 AWG	12 AWG	10 AWG	8 AWG	6 AWG 7x7
Conductor Type	HDD-CCS	HDD-CCS	HDD-CCS	HDD-CCS	HDD-CCS
Conductor Temper	Hard-Drawn	Hard-Drawn	Hard-Drawn	Hard-Drawn	Hard-Drawn
Steel Grade	AISI 1065	AISI 1055	AISI 1055	AISI 1065	AISI 1065
Copper Grade	UNS C10200				
Rated Break Load (Minimum)	725 lbs	1,330 lbs	1,940 lbs	2,785 lbs	4,705 lbs
Rated Tensile Strength (Minimum)	225,000 psi	260,000 psi	238,000 psi	215,000 psi	252,000 psi
Elongation (ASTM B869)	≥ 1.0%	≥ 1.0%	≥ 1.0%	≥ 1.0%	≥ 1.0%
Nominal Copper Thickness (% of Diameter)	3.0%	3.0%	3.0%	3.0%	3.0%
Nominal Copper Weight (Per 1,000')	13.0%	13.0%	13.0%	13.0%	13%
Nominal DC Resistance	12.024 ohms	7.562 ohms	4.756 ohms	2.991 ohms	2.010 ohms

**TABLE 2: INSULATION & PRINTING (Physical, Mechanical and Electrical Properties)**

TEST DESCRIPTION	ASTM STANDARD	TYPICAL VALUES
Density @ 23°C	ASTM D1505	0.945 g/cm <sup>3</sup>
Melt Flow Rate	ASTM D1238	0.70 g/10 min
Tensile Strength	ASTM D638	3,400 psi
Tensile Strength Retention	ASTM D638	90% after 48 hours @ 100°C
Tensile Elongation	ASTM D638	500%
Tensile Elongation Retention	ASTM D638	90% after 48 hours @ 100°C
Environmental Stress Cracking	ASTM D1693	0 failures @ 48 hours
Thermal Stress Cracking	ASTM D2951	0 failures @ 96 hours
Brittleness Temperature	ASTM D746	-76°C
Melting Temperature	ASTM D3418	260°C
Oxidative Induction Time	ASTM D3895	170 min @ 200°C
Dielectric Constant	ASTM D1531	2.32 @ 1 MHz
Dissipation Factor	ASTM D1531	0.00006 @ 1 MHz
DC Volume Resistivity @ 23°C	ASTM D257	> 1 x 10 <sup>15</sup> ohm-cm

**TABLE 3: ORDERING INFORMATION (Weights, Measurements, and Packaging)**

PRODUCT PART NO.	PRODUCT DESCRIPTION	RATED BREAK LOAD	RATED TENSILE STRENGTH	HDPE INSULATION THICKNESS	NOMINAL O.D.	APPROX. WEIGHT PER 1,000 FT		STANDARD PACKAGES
						CCS WEIGHT	FINISHED WEIGHT	
<b>PRO-TRACE HDD-CCS PE45 TRACER WIRE - DIRECTIONAL DRILLING and PIPE BURSTING</b>								
74642.XXXX	14 AWG HDD-CCS PE45	725 lbs	225,000 psi	0.045"	0.154"	11.1800	19.00	**NEW - CALL US
74642.XXXX	12 AWG HDD-CCS PE45	1,330 lbs	260,000 psi	0.045"	0.171"	17.7644	27.00	500' / 1000' / 2500'
74643.XXXX	10 AWG HDD-CCS PE45	1,940 lbs	238,000 psi	0.045"	0.192"	28.2537	40.00	500' / 1000' / 2500'
74644.XXXX	8 AWG HDD-CCS PE45	2,785 lbs	215,000 psi	0.045"	0.219"	44.9297	58.00	500' / 1000' / 2500'
74666.XXXX	6 STR 7x7 HDD-CCS PE60	4,705 lbs	252,000 psi	0.060"	0.324"	81.80	104.00	**NEW - CALL US

PRO-TRACE® • 12 AWG SOLID HDD-CCS • 45 MIL HDPE • DIRECTIONAL DRILLING TRACER WIRE (1,330 LBS) • 30V • DIRECT BURIAL • CAUTION GAS LINE BELOW

INSULATION COLOR AND REEL SIZE				REEL AND PACKAGING INFORMATION					
COLOR	500' REEL	1000' REEL	2500' REEL	SIZE	LENGTH	MATERIAL	REEL DIMENSION	ARBOR HOLE	PALLET QUANTITY
BLACK	0132	0141	0147	12 AWG	500	PLYWOOD or PLASTIC	8" x 6"	1.5"	108,000 FT
BLUE	0232	0241	0247		1000	PLYWOOD or PLASTIC	12" x 6"	1.5"	112,000 FT
BROWN	0332	0341	0347		2500	PLYWOOD or PLASTIC	12" x 12"	1.5"	120,000 FT
GREEN	0532	0541	0547	10 AWG	500	PLYWOOD or PLASTIC	8" x 9"	1.5"	72,000 FT
ORANGE	0632	0641	0647		1000	PLYWOOD or PLASTIC	12" x 6"	1.5"	64,000 FT
PURPLE	0832	0841	0847		2500	PLYWOOD or PLASTIC	16" x 10"	1.5"	67,500 FT
RED	0932	0941	0947	8 AWG	500	PLYWOOD or PLASTIC	12" x 6"	1.5"	48,000 FT
WHITE	1132	1141	1147		1000	PLYWOOD or PLASTIC	12" x 9"	1.5"	48,000 FT
YELLOW	1232	1241	1247		2500	PLYWOOD or PLASTIC	16" x 12"	1.5"	45,000 FT

\*\*\* Some colors and sizes may be subject to mins \*\*\*

\*\*\* Custom length reels are available upon request, some restrictions may apply \*\*\*  
 \*\*\* Bulk reels up to 60,000' are available, some restrictions may apply \*\*\*