

HD-CCS PE45

PRO-TRACE™

Directional Boring Tracer Wire • Hard-Drawn Copper Clad Steel Conductor • 21% IACS Conductivity • Corrosion Resistant High-Density, High Molecular Weight Polyethylene (HDPE) Insulation • Moisture, Chemical, and Oil Resistant Impact, Crush, and Abrasion Resistant • RoHS Compliant • Direct Burial Rated • 30 Volts • Made in the USA

“PRO-TRACE™ HD-CCS -- DIRECTIONAL BORING DONE RIGHT THE FIRST TIME -- EVERY TIME!”

Applications and Information

- PRO-TRACE™ HD-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™ HD-CCS PE45 has almost **6X** the breakload of copper, which allows 1 wire to be installed in directional boring, plow-in, or open trench applications.
- PRO-TRACE™ HD-CCS PE45 has 3-5% elongation, providing the perfect balance between tensile strength, ductility, and decreasing brittleness.
- PRO-TRACE™ HD-CCS PE45 is considerably lower in cost with great price stability.
- PRO-TRACE™ HD-CCS PE45 is RoHS Compliant, made in the USA

Standards and References

PRO-TRACE™ HD-CCS PE45 conductor meets or exceeds all applicable ASTM specifications, requirements of the National Electrical Code.

- ASTM B869: Specification for 21% Conductivity, Hard Drawn, Copper-Clad Steel Wire
- ASTM B170: Specification for Oxygen-Free Electrolytic Copper
- ASTM D1238: Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer

Construction

PRO-TRACE™ HD-CCS PE45 is a hard-drawn, copper-clad steel conductor. A 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 breakload of HD-CCS allows only 1 conductor to be used in any tracer wire application while providing the perfect balance between breakload, ductility, and decreasing brittleness. It is the best performing tracer wire on the market.

PRO-TRACE™ HD-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 provides superior strength against underground elements that help prevent accidental breaks caused by rocks in shifting soil conditions.

**PRO-TRACE™ HD-CCS
45 MIL HDPE TRACER WIRE**



MP

M

Tracer wire for directional boring installation shall be a 12 AWG solid, PRO-TRACE HD-CCS PE45. Tracer wire shall consist of a hard-drawn, 21% IACS conductivity, copper clad steel conductor with a minimum break load of 1,030 lbs (or 201,000 psi) to ensure strength. Conductor shall be extruded with a 45 mil, high-density polyethylene, and blue in color to meet the APWA color code of the buried utility line. Tracer wire shall be rated for direct burial use at 30 volts, and RoHS compliant. Tracer wire shall be PRO-TRACE™ HD-CCS PE45 as manufactured by **Pro-Line Safety Products** and made in the USA.

Specification Updated: 6.7.2010 18:15:00 CST

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

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

PROPERTY	12 AWG	10 AWG	8 AWG
Conductor Type	HD-CCS	HD-CCS	HD-CCS
Conductor Temper	Hard-Drawn	Hard-Drawn	Hard-Drawn
Rated Break Load	1,030 lbs	1,500 lbs	2,150 lbs
Rated Tensile Strength	201,000 psi	184,000 psi	165,800 psi
Elongation	3.0%	5.0%	8.0%
Copper Thickness (% of Diameter)	3.0%	3.0%	3.0%
Minimum Copper Weight (Per 1,000')	13.0%	13.0%	13.0%
Nominal DC Resistance	7.565 ohms	4.757 ohms	2.991 ohms

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

TEST DESCRIPTION	ASTM STANDARD	TYPICAL VALUES
Density @ 23°C	ASTM D1505	0.945 g/cm ³
Melt Flow Rate	ASTM D1238	0.70 dg/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 Test @ 23°C	ASTM D257	> 1 x 10 ¹⁵ ohm-cm

PRODUCT PART NO.	CONDUCTOR		RATED BREAK LOAD	RATED TENSILE STRENGTH	HDPE INSULATION THICKNESS	NOMINAL O.D.	APPROX. WEIGHT PER 1,000 FT		STANDARD PACKAGES
	AWG SIZE	STANDARD					COPPER WEIGHT	FINISHED WEIGHT	
WEIGHTS, MEASUREMENTS AND PACKAGING									
74642XXXX	12 AWG SOLID	21% IACS	1,030 lbs	201,000 psi	0.045"	0.171"	2.3007	28.00	500/1000/2500
74643XXXX	10 AWG SOLID	21% IACS	1,500 lbs	184,000 psi	0.045"	0.192"	3.6592	41.00	500/1000/2500
74644XXXX	8 AWG SOLID	21% IACS	2,150 lbs	165,800 psi	0.045"	0.219"	5.8189	59.00	500/1000

INSULATION COLOR & REEL SIZE				REEL & PACKAGING INFORMATION						
COLOR	500' REEL	1000' REEL	2500' REEL	SIZE	LENGTH	FLANGE	TRAVERSE	MATERIAL	CARTON QTY	PALLET QTY
BLACK	0132	0141	0147	12 AWG	500	8.0"	9.0"	PLYWOOD	BULK	90,000 FT
BLUE	0232	0241	0247		1000	10.0"	7.0"	PLYWOOD	BULK	89,000 FT
GREEN	0532	0541	0547		2500	12.0"	12.0"	PLYWOOD	BULK	90,000 FT
ORANGE	0632	0641	0647	10 AWG	500	8.0"	9.0"	PLYWOOD	BULK	60,000 FT
PURPLE	0832	0841	0847		1000	12.0"	6.0"	PLYWOOD	BULK	60,000 FT
RED	0932	0941	0947		2500	14.0"	10.0"	PLYWOOD	BULK	55,000 FT
WHITE	1132	1141	1147	8 AWG	500	10.0"	7.0"	PLYWOOD	BULK	40,000 FT
YELLOW	1232	1241	1247		1000	12.0"	9.0"	PLYWOOD	BULK	40,000 FT
					2500	16.0"	10.0"	PLYWOOD	BULK	45,000 FT

SOME COLORS AND SIZES MAY BE SUBJECT TO MINS



Specification Updated: 6.7.2010 18:15:00 CST

PRO-LINE SAFETY PRODUCTS COMPANY
 1099 ATLANTIC DRIVE, UNIT 1 • WEST CHICAGO, IL 60185
 TOLL FREE: 800.554.3424

