

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.

LIBERTY SALES & DISTRIBUTION

2880 Bergey Road, Suite F, Hatfield, PA 19440
19 West Maiden Street, Washington, PA 15301
Phone: (877) 373-0118 Fax: (888) 850-3787

Email: sales@libertysales.net Web: www.libertysales.net

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

PROPERTY	14 AWG	12 AWG	10 AWG	8 AWG	4 AWG 1x19
Conductor Type / Diameter	CCS (.0641")	CCS (.0808")	CCS (.1019")	CCS (.1285")	CCS (.2023")
Conductor Temper	EHS Hard-Drawn	EHS Hard-Drawn	EHS Hard-Drawn	EHS Hard-Drawn	EHS Hard-Drawn
Steel Grade (High-Carbon Series)	AISI 1055 (0.54+)	AISI 1055 (0.54+)	AISI 1055 (0.54+)	AISI 1055 (0.54+)	AISI 1055 (0.54+)
Copper Grade	UNS C10200	UNS C10200	UNS C10200	UNS C10200	UNS C10200
Rated Break Load (Minimum)	725 lbs	1,330 lbs	2,032 lbs	2,785 lbs	4,705 lbs
Rated Tensile Strength (Minimum)	225,000 psi	260,000 psi	238,000 psi	215,000 psi	132,500 psi
Elongation (ASTM B869)	≥ 1.0%	≥ 1.0%	≥ 1.0%	≥ 1.0%	≥ 1.5%
Nom. Copper Thickness (% of Diam.)	3.0%	3.0%	3.0%	3.0%	3.0%
Nom. Copper Weight (Per 1,000')	13.0%	13.0%	13.0%	13.0%	13.0%
Nom. DC Resistance (Per 1,000')	12.024 ohms	7.562 ohms	4.756 ohms	2.991 ohms	1.277 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 ³
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 ¹⁵ 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	
PRO-TRACE HDD-CCS PE45 TRACER WIRE - DIRECTIONAL DRILLING and PIPE BURSTING								
	14 AWG HDD-CCS PE45	725 lbs	225,000 psi	0.045"	0.154"	11.1800	19.00	500' to 30,000'
74642.XXXX	12 AWG HDD-CCS PE45	1,330 lbs	260,000 psi	0.045"	0.171"	17.7644	27.00	500' to 25,000'
74643.XXXX	10 AWG HDD-CCS PE45	2,032 lbs	238,000 psi	0.045"	0.192"	28.2537	40.00	500' to 20,000'
74644.XXXX	8 AWG HDD-CCS PE45	2,785 lbs	215,000 psi	0.045"	0.219"	44.9297	58.00	500' to 15,000'
74646.XXXX	4 AWG STR HDD-CCS PE50	4,703 lbs	132,500 psi	0.050"	0.313"	93.15	110.00	500' to 15,000'

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			
COLOR	500' REEL	1000' REEL	2500' REEL
BLACK	0132	0141	0147
BLUE	0232	0241	0247
BROWN	0332	0341	0347
GREEN	0532	0541	0547
ORANGE	0632	0641	0647
PURPLE	0832	0841	0847
RED	0932	0941	0947
WHITE	1132	1141	1147
YELLOW	1232	1241	1247

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

REEL AND PACKAGING INFORMATION					
SIZE	LENGTH	DEFAULT REEL	REEL DIMENSION	ARBOR HOLE	PALLET QUANTITY
12 AWG	500	PLYWOOD	8" x 6"	1.5"	108,000 FT
	1000	HEAVY DUTY PLASTIC	12" x 6"	1.5"	112,000 FT
	2500	HEAVY DUTY PLASTIC	12" x 12"	1.5"	120,000 FT
10 AWG	500	PLYWOOD	8" x 9"	1.5"	72,000 FT
	1000	HEAVY DUTY PLASTIC	12" x 6"	1.5"	64,000 FT
	2500	HEAVY DUTY PLASTIC	16" x 10"	1.5"	67,500 FT
8 AWG	500	HEAVY DUTY PLASTIC	12" x 6"	1.5"	48,000 FT
	1000	HEAVY DUTY PLASTIC	12" x 9"	1.5"	48,000 FT
	2500	HEAVY DUTY PLASTIC	16" x 12"	1.5"	45,000 FT

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