

Type SHD-PCG 3/C 2000 V & 5000 V Power, Control & Ground Mining Cable

Type SHD-PCG (Shielded, Permissible, Control, Ground) 2 kV and 5 kV portable mining cables are designed for underground and surface mobile equipment requiring both three-phase shielded trailing power and two dedicated internal control/interlock conductors within a single round jacket. Conforming to ICEA S-75-381 / NEMA WC 58, Type SHD-PCG powers continuous miners, longwall stage loaders, remote-interlocked conveyor drives, roof bolters, and submersible mine pumps without running separate fragile control cords.

1. CABLE CONSTRUCTION

1. Power Conductors (3×)	Flexible rope-lay stranded annealed tinned copper conductors, 6 AWG (133 strands) through 500 kcmil (1,221 strands), per ASTM B172 and ASTM B33.
2. Power Insulation (90°C EPR)	Ethylene Propylene Rubber (EPR) rated +90°C continuous: 70–95 mil wall for 2,000 V service; 110–120 mil wall with extruded semi-conducting stress shields for 5,000 V service.
3. Individual Phase Shielding	Tinned copper and color-coded nylon tracer braid shield (Black, White, Red) applied over each insulated power core.
4. Control / Pilot Conductors (2×)	Two flexible stranded tinned copper control/pilot conductors (10 AWG or 8 AWG by cable size, EPR/PP insulated, color-coded Black and Yellow) positioned in two outer interstices.
5. Grounding System	Uninsulated flexible rope-lay stranded tinned copper grounding conductor laid in the remaining outer interstice in continuous contact with the three phase braid shields.
6. Integral Fill & CPE Jacket	Non-conducting separator tape and torsion-stabilizing elastomeric fill beneath a reinforced mold-cured extra-heavy-duty black CPE jacket suitable for shallow-water submersion.

Cross-Section Reference



Type SHD-PCG cutaway: 3 braided EPR power phases, 2 insulated control/pilot conductors (Black & Yellow), 1 bare tinned copper ground contacting phase shields, and black CPE jacket.

2. ELECTRICAL & MECHANICAL CHARACTERISTICS

Rated System Voltages	Up to 2,000 V AC (2 kV Series) Up to 5,000 V AC (5 kV Medium-Voltage Series)
Composite Core Layout	3 shielded power cores + 2 insulated control/pilot cores (600 V control circuit rating) + grounding
Maximum Conductor Temperature	+90°C continuous operation +250°C short-circuit limit
Environmental & Submersion Duty	-40°C cold bend; oil, ozone, abrasion, and shallow mine-water submersion resistant
Minimum Bending Radius & Tol.	6 × overall cable diameter (static); OD tolerance ±5% (2 kV) / +8% -5% (5 kV)
Standards & Flame Compliance	ICEA S-75-381 / NEMA WC 58; ASTM B172 & ASTM B33; CSA FT4; MSHA flame-resistant reference

3. DIMENSIONAL, GROUNDING & AMPACITY SPECIFICATIONS

Table 1: Type SHD-PCG 3/C 2000 V (2 kV) — Reinforced Mold-Cured Black CPE (6 AWG to 500 kcmil)								
Power Cores	Area (mm²)	Power Strands	Control Cores (2×)	Ground Core (Strands)	Insul. / Jkt (mil)	Nominal OD (in / mm)	Weight (lb/kft / kg/km)	Ampacity 40°C (A)
3 × 6 AWG	13.30	133	2 × 10 AWG	1 × 8 AWG (133)	70 / 155	1.29 / 32.8	1,160 / 1,726	93
3 × 4 AWG	21.15	259	2 × 10 AWG	1 × 7 AWG (133)	70 / 155	1.40 / 35.6	1,490 / 2,217	122
3 × 2 AWG	33.62	259	2 × 10 AWG	1 × 5 AWG (133)	70 / 170	1.59 / 40.4	2,000 / 2,976	159
3 × 1 AWG	42.41	259	2 × 8 AWG	1 × 4 AWG (259)	80 / 190	1.76 / 44.7	2,450 / 3,646	184
3 × 1/0 AWG	53.49	266	2 × 8 AWG	1 × 3 AWG (259)	80 / 190	1.86 / 47.2	2,840 / 4,226	211
3 × 2/0 AWG	67.43	323	2 × 8 AWG	1 × 2 AWG (259)	80 / 205	2.00 / 50.8	3,400 / 5,060	243
3 × 3/0 AWG	85.01	418	2 × 8 AWG	1 × 1 AWG (259)	80 / 205	2.13 / 54.1	3,680 / 5,476	279
3 × 4/0 AWG	107.2	532	2 × 8 AWG	1 × 1/0 (266)	80 / 220	2.31 / 58.7	4,860 / 7,232	321
3 × 250 kcmil	126.7	627	2 × 8 AWG	1 × 2/0 (323)	95 / 220	2.51 / 63.8	5,950 / 8,855	355
3 × 350 kcmil	177.3	888	2 × 8 AWG	1 × 4/0 (532)	95 / 235	2.81 / 71.4	7,400 / 11,012	435
3 × 500 kcmil	253.4	1221	2 × 8 AWG	1 × 250 kcmil (627)	95 / 265	3.19 / 81.0	10,100 / 15,030	536

Table 2: Type SHD-PCG 3/C 5000 V (5 kV) — Medium-Voltage Reinforced Black CPE (6 AWG to 500 kcmil)								
Power Cores	Area (mm²)	Power Strands	Control Cores (2×)	Ground Core (Strands)	Insul. / Jkt (mil)	Nominal OD (in / mm)	Weight (lb/kft / kg/km)	Ampacity 40°C (A)
3 × 6 AWG	13.30	133	2 × 8 AWG	1 × 8 AWG (133)	110 / 185	1.56 / 39.6	1,560 / 2,322	93
3 × 4 AWG	21.15	259	2 × 8 AWG	1 × 7 AWG (133)	110 / 185	1.68 / 42.7	1,920 / 2,857	122
3 × 2 AWG	33.62	259	2 × 8 AWG	1 × 5 AWG (133)	110 / 205	1.87 / 47.5	2,500 / 3,720	159
3 × 1 AWG	42.41	259	2 × 8 AWG	1 × 4 AWG (259)	110 / 205	1.95 / 49.5	2,860 / 4,256	184
3 × 1/0 AWG	53.49	266	2 × 8 AWG	1 × 3 AWG (259)	110 / 220	2.08 / 52.8	3,390 / 5,045	211
3 × 2/0 AWG	67.43	323	2 × 8 AWG	1 × 2 AWG (259)	110 / 220	2.20 / 55.9	3,830 / 5,700	243
3 × 3/0 AWG	85.01	418	2 × 8 AWG	1 × 1 AWG (259)	110 / 235	2.36 / 59.9	4,418 / 6,575	279
3 × 4/0 AWG	107.2	532	2 × 8 AWG	1 × 1/0 (266)	110 / 235	2.50 / 63.5	5,300 / 7,887	321
3 × 250 kcmil	126.7	627	2 × 8 AWG	1 × 2/0 (323)	120 / 250	2.69 / 68.3	6,450 / 9,599	355
3 × 350 kcmil	177.3	888	2 × 8 AWG	1 × 4/0 (532)	120 / 265	2.95 / 74.9	7,880 / 11,727	435
3 × 500 kcmil	253.4	1221	2 × 8 AWG	1 × 250 kcmil (627)	120 / 280	3.31 / 84.1	10,440 / 15,536	536

Grounding Cross-Section Compliance: In Type SHD-PCG, because two outer interstices house the insulated control/pilot conductors, the single grounding conductor is upsized per ICEA S-75-381 so its total circular-mil cross-section exceeds 50% of one phase conductor (matching the combined area of two split grounds in Type SHD-GC).