EmPowr® Fill Underground Distribution Cable 15-35 kV

Al Conductor EPR Insulation Concentric Neutral LLDPE Jacket

Product Construction:

Complete Cable:

Cross-linked semi-conducting conductor shield, insulation and semi-conducting insulation shield are extruded over a solid or stranded aluminum conductor and cured in a single operation. Uncoated copper neutral wires (helically applied) and extruded-to-fill black jacket are applied over the cable core. These products meet the latest requirements of ANSI/ICEA S-94-649, AEIC CS8 and RUS U1 as applicable for Ethylene Propylene Rubber (EPR) insulated concentric neutral cable.

Conductor:
Solid or Class B compressed concentric lay stranded 1350 aluminum.

Conductor Shield:
Extruded semi-conducting thermosetting polymeric stress control layer.

Insulation:
Extruded Ethylene Propylene Rubber (EPR) Class II and III.

Insulation Shield:
Extruded semi-conducting thermosetting layer, clean and free stripping from insulation.

Concentric Neutral:
Helically applied, annealed, solid bare copper wires.

Jacket:
Black, non-conducting, sunlight-resistant, Linear Low-Density Polyethylene (LLDPE) extruded to fill spaces between neutral wires.

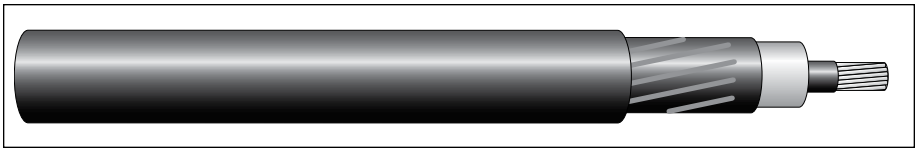
Features and Benefits:

- Triple extruded for clean interfaces
- Class 10,000 environment utilized for cable core material handling
- Flexibility for easy handling
- Excellent moisture resistance
- Deformation-resistant
- High dielectric strength
- Low dielectric loss
- Excellent resistance to water treeing
- Clean-stripping insulation shield without the use of a release agent
- Sunlight-resistant

Temperature Rating:

- Normal ..... 105°C
- Emergency* ..... 140°C
- Short Circuit ..... 250°C

** Operation at the emergency overload temperature shall not exceed 1500 hours cumulative during the lifetime of the cable.*



UNDERGROUND DISTRIBUTION CABLE – 15 kV – TYPE URD – FULL NEUTRAL

COMPRESSED CONDUCTOR		COPPER NEUTRAL		DIAMETER (1) INCHES			NOMINAL JACKET THKN. INCHES (1)	APPROX. WEIGHT (1) LB/1000 FT			AMPACITY (2)	
				INSULATION		ENCAP LLDPE JACKET						
AL AWG OR kcmil	NO. OF WIRES	NO. OF WIRES	WIRE SIZE AWG	MIN.	MAX.			AL COND.	CU NEUT. WIRES	TOTAL	DIRECT BURIED	IN DUCT
175 mils NOMINAL EPR INSULATION – 100% INSULATION LEVEL (3)												
2	1	16	16	0.610	0.695	0.914	0.055	61	134	461	190	130
2	7	16	16	0.635	0.720	0.939	0.055	62	134	479	190	130
1	1	20	16	0.645	0.725	0.945	0.055	77	168	522	215	150
1	19	20	16	0.675	0.760	0.978	0.055	78	168	543	215	150
1/0	1	16	14	0.680	0.760	1.007	0.055	97	213	617	240	170
1/0	19	16	14	0.715	0.800	1.044	0.055	99	213	641	240	170
2/0	19	20	14	0.760	0.845	1.088	0.055	125	266	738	275	195
3/0	19	16	12	0.810	0.895	1.172	0.055	157	338	886	315	220
4/0	19	20	12	0.865	0.950	1.228	0.055	198	423	1034	360	250
220 mils NOMINAL EPR INSULATION – 133% INSULATION LEVEL												
2	1	16	16	0.700	0.790	1.004	0.055	61	134	527	190	130
2	7	16	16	0.725	0.815	1.029	0.055	62	134	547	190	130
1	1	20	16	0.735	0.820	1.035	0.055	77	168	590	215	150
1	19	20	16	0.765	0.855	1.068	0.055	78	168	613	215	150
1/0	1	16	14	0.770	0.855	1.097	0.055	97	213	689	240	170
1/0	19	16	14	0.805	0.895	1.134	0.055	99	213	716	240	170
2/0	19	20	14	0.850	0.935	1.178	0.055	125	267	816	275	195
3/0	19	16	12	0.900	0.985	1.262	0.055	158	338	970	315	220
4/0	19	20	12	0.955	1.045	1.318	0.055	199	423	1121	360	250

(1) Extruded layer thicknesses and insulation and insulation shield diameters are in accordance with ANSI/ICEA S-94-649 for Concentric Neutral Cables Rated 5 through 46 kV and also meet the requirements of the latest revisions of AEIC CS8.

(2) Ampacity based on earth thermal resistivity of 90°C-cm/watt, 90°C conductor temp., 20°C earth ambient temperature, 75% load factor and 36" depth of burial. Values based on single phase operation, with full current return in the neutral wires. For specific ampacities, contact your General Cable sales representative.

(3) RUS Bulletin 1728F (U1) dated 4/2/12 requires, at minimum, 220 mil insulation thickness for 15 kV cable, 260 mil insulation thickness for 25 kV cable, and 345 mil insulation thickness for 35 kV cable.

Dimensions and weights not designated minimum or maximum are nominal values and subject to manufacturing tolerances. In this context, weight means mass.

EmPowr® Fill Underground Distribution Cable 15-35 kV

Al Conductor EPR Insulation Concentric Neutral LLDPE Jacket

UNDERGROUND DISTRIBUTION CABLE – 15 kV – TYPE UD – 1/3 NEUTRAL												
COMPRESSED CONDUCTOR		COPPER NEUTRAL		DIAMETER (1) INCHES			NOMINAL JACKET THKN. INCHES (1)	APPROX. WEIGHT (1) LB/1000 FT			AMPACITY (2)	
AL AWG OR kcmil	NO. OF WIRES	NO. OF WIRES	WIRE SIZE AWG	INSULATION MIN.	INSULATION MAX.	ENCAP LLDPE JACKET		AL COND.	CU NEUT. WIRES	TOTAL	DIRECT BURIED	IN DUCT
175 mils NOMINAL EPR INSULATION - 100% INSULATION LEVEL (3)												
2	1	6	16	0.610	0.695	0.914	0.055	61	50	386	170	130
2	7	6	16	0.635	0.720	0.939	0.055	62	50	404	170	130
1	1	7	16	0.645	0.725	0.945	0.055	77	59	424	195	150
1	19	7	16	0.675	0.760	0.978	0.055	78	59	445	195	150
1/0	1	9	16	0.680	0.760	0.981	0.055	97	76	477	225	170
1/0	19	9	16	0.715	0.800	1.018	0.055	99	76	501	225	170
2/0	19	11	16	0.760	0.845	1.062	0.055	125	92	564	255	200
3/0	19	14	16	0.810	0.895	1.112	0.055	158	118	646	290	225
4/0	19	17	16	0.865	0.950	1.168	0.055	199	143	738	330	255
250	37	20	16	0.920	1.005	1.224	0.055	234	168	826	365	280
350	37	18	14	1.025	1.110	1.373	0.055	329	240	1082	440	340
500	37	25	14	1.150	1.235	1.501	0.055	468	334	1377	530	420
750	61	24	12	1.340	1.425	1.772	0.080	703	508	1966	640	510
1000	61	20	10	1.485	1.575	1.963	0.080	937	673	2491	730	595
220 mils NOMINAL EPR INSULATION – 133% INSULATION LEVEL (3)												
2	1	6	16	0.700	0.790	1.004	0.055	61	51	452	170	130
2	7	6	16	0.725	0.815	1.029	0.055	62	51	472	170	130
1	1	7	16	0.735	0.820	1.035	0.055	77	59	493	195	150
1	19	7	16	0.765	0.855	1.068	0.055	78	59	515	195	150
1/0	1	9	16	0.770	0.855	1.071	0.055	97	76	548	225	170
1/0	19	9	16	0.805	0.895	1.108	0.055	99	76	574	225	170
2/0	19	11	16	0.850	0.935	1.152	0.055	125	92	641	255	200
3/0	19	14	16	0.900	0.985	1.202	0.055	158	118	726	290	225
4/0	19	17	16	0.955	1.045	1.258	0.055	199	143	822	330	255
250	37	20	16	1.010	1.100	1.334	0.055	234	168	935	365	280
350	37	18	14	1.115	1.200	1.463	0.055	329	240	1181	440	340
500	37	25	14	1.240	1.330	1.591	0.055	468	334	1484	530	420
750	61	24	12	1.430	1.520	1.862	0.080	703	508	2092	640	510
1000	61	20	10	1.575	1.670	2.083	0.080	937	673	2678	730	595

(1) Extruded layer thicknesses and insulation and insulation shield diameters are in accordance with ANSI/ICEA S-94-649 for Concentric Neutral Cables Rated 5 through 46 kV and also meet the requirements of the latest revisions of AEIC CS8.

(2) Ampacity based on earth thermal resistivity of 90°C-cm/watt, 90°C conductor temp., 20°C earth ambient temperature, 75% load factor and 36" depth of burial. Values are based on one three-phase circuit, one conductor per phase, in flat adjacent configuration with neutral wires bonded at each end. For specific ampacities, contact your General Cable sales representative.

(3) RUS Bulletin 1728F (U1) dated 4/2/12 requires, at minimum, 220 mil insulation thickness for 15 kV cable, 260 mil insulation thickness for 25 kV cable, and 345 mil insulation thickness for 35 kV cable.

Dimensions and weights not designated minimum or maximum are nominal values and subject to manufacturing tolerances. In this context, weight means mass.

Applications:

EmPowr® Fill cables are intended for use in dry or wet locations for distribution of single or three phase medium-voltage power. Cables with a full neutral are designed for use on single phase underground distribution (UD) applications. Cables with a 1/3 neutral are designed for use in three phase UD applications. The full neutral cable is sometimes referred to as an underground residential distribution (URD) cable. These cables may be installed in ducts or direct buried.

Options:

- Compact conductors
- Copper conductors
- EmPowr® Fill LF Lead-Free EAM
- STRANDFILL® blocked conductor. Tested in accordance with ICEA T-31-610
- BIFILL® blocked conductor and cable core/jacket. Tested in accordance with ICEA T-34-664
- Dry nitrogen cure
- True Triple Extrusion
- Flat strap concentric neutral
- Red stripes on jacket
- Semi-conducting thermoplastic jacket
- Overlaying PVC jacket with separator tape
- Deformation-resistant polypropylene jacket
- CL™ XLPE jacket
- Combined Duct & Cable
- 3 X 1/C triplex or parallel
- Type MV-90 UL 1072
- Type MV-105 UL 1072
- Alternative neutral configurations

EmPowr® Fill Underground Distribution Cable 15-35 kV

Al Conductor EPR Insulation Concentric Neutral LLDPE Jacket

UNDERGROUND DISTRIBUTION CABLE – 25 kV – TYPE URD – FULL NEUTRAL												
COMPRESSED CONDUCTOR		COPPER NEUTRAL		DIAMETER (1) INCHES			NOMINAL JACKET THKN. INCHES (1)	APPROX. WEIGHT (1) LB/1000 FT			AMPACITY (2)	
AL AWG OR kcmil	NO. OF WIRES	NO. OF WIRES	WIRE SIZE AWG	INSULATION MIN.	INSULATION MAX.	ENCAP LLDPE JACKET		AL COND.	CU NEUT. WIRES	TOTAL	DIRECT BURIED	IN DUCT
260 mils NOMINAL EPR INSULATION – 100% INSULATION LEVEL (4)												
1	1	20	16	0.805	0.895	1.115	0.055	77	168	656	215	150
1	19	20	16	0.835	0.925	1.148	0.055	78	168	681	215	150
1/0	1	16	14	0.840	0.930	1.177	0.055	97	213	759	240	170
1/0	19	16	14	0.875	0.965	1.214	0.055	99	214	788	240	170
2/0	19	20	14	0.920	1.010	1.258	0.055	125	267	891	275	195
3/0	19	16	12	0.970	1.060	1.342	0.055	158	339	1050	315	220
4/0	19	20	12	1.025	1.115	1.418	0.055	199	423	1227	360	250

UNDERGROUND DISTRIBUTION CABLE – 25 kV – TYPE UD – 1/3 NEUTRAL												
COMPRESSED CONDUCTOR		COPPER NEUTRAL		DIAMETER (1) INCHES			NOMINAL JACKET THKN. INCHES (1)	APPROX. WEIGHT (1) LB/1000 FT			AMPACITY (3)	
AL AWG OR kcmil	NO. OF WIRES	NO. OF WIRES	WIRE SIZE AWG	INSULATION MIN.	INSULATION MAX.	ENCAP LLDPE JACKET		AL COND.	CU NEUT. WIRES	TOTAL	DIRECT BURIED	IN DUCT
260 mils NOMINAL EPR INSULATION – 100% INSULATION LEVEL (4)												
1	1	7	16	0.805	0.895	1.115	0.055	77	59	559	195	150
1	19	7	16	0.835	0.925	1.148	0.055	78	59	584	195	150
1/0	1	9	16	0.840	0.930	1.151	0.055	97	76	616	220	170
1/0	19	9	16	0.875	0.965	1.188	0.055	99	76	645	220	170
2/0	19	11	16	0.920	1.010	1.232	0.055	125	92	714	250	200
3/0	19	14	16	0.970	1.060	1.282	0.055	158	118	802	290	225
4/0	19	17	16	1.025	1.115	1.358	0.055	199	143	923	330	255
250	37	20	16	1.080	1.175	1.414	0.055	234	168	1020	360	280
350	37	18	14	1.185	1.275	1.543	0.055	329	240	1274	435	340
500	37	25	14	1.310	1.405	1.721	0.080	468	334	1639	525	420
750	61	24	12	1.500	1.595	1.942	0.080	703	508	2210	640	510
1000	61	20	10	1.645	1.740	2.163	0.080	937	673	2809	730	595

(1) Extruded layer thicknesses and insulation and insulation shield diameters are in accordance with ANSI/ICEA S-94-649 for Concentric Neutral Cables Rated 5 through 46 kV and also meet the requirements of the latest revisions of AEIC CS8.
(2) Ampacity based on earth thermal resistivity of 90°C-cm/watt, 90°C conductor temp., 20°C earth ambient temperature, 75% load factor and 36" depth of burial. Values based on single phase operation, with full current return in the neutral wires. For specific ampacities, contact your General Cable sales representative.
(3) Ampacity based on earth thermal resistivity of 90°C-cm/watt, 90°C conductor temp., 20°C earth ambient temperature, 75% load factor and 36" depth of burial. Values based on a three phase circuit, one conductor per phase, in flat adjacent configuration, with neutral wires bonded at each end. For specific ampacities, contact your General Cable sales representative.
(4) RUS Bulletin 1728F (U1) dated 4/2/12 requires, at minimum, 220 mil insulation thickness for 15 kV cable, 260 mil insulation thickness for 25 kV cable, and 345 mil insulation thickness for 35 kV cable.
Dimensions and weights not designated minimum or maximum are nominal values and subject to manufacturing tolerances. In this context, weight means mass.

EmPowr® Fill Underground Distribution Cable 15-35 kV

Al Conductor EPR Insulation Concentric Neutral LLDPE Jacket

UNDERGROUND DISTRIBUTION CABLE – 28 kV – TYPE URD – FULL NEUTRAL												
COMPRESSED CONDUCTOR		COPPER NEUTRAL		DIAMETER (1) INCHES			NOMINAL JACKET THKN. INCHES (1)	APPROX. WEIGHT (1) LB/1000 FT			AMPACITY (2)	
AL AWG OR kcmil	NO. OF WIRES	NO. OF WIRES	WIRE SIZE AWG	INSULATION MIN.	INSULATION MAX.	ENCAP LLDPE JACKET		AL COND.	CU NEUT. WIRES	TOTAL	DIRECT BURIED	IN DUCT
280 mils NOMINAL EPR INSULATION – 100% INSULATION LEVEL												
1	1	20	16	0.845	0.935	1.155	0.055	77	171	694	215	150
1	19	20	16	0.875	0.970	1.188	0.055	78	171	720	215	150
1/0	1	16	14	0.880	0.970	1.217	0.055	97	214	795	240	170
1/0	19	16	14	0.915	1.010	1.254	0.055	99	214	826	240	170
2/0	19	20	14	0.960	1.055	1.298	0.055	125	267	930	275	195
3/0	19	16	12	1.010	1.105	1.402	0.055	158	339	1113	315	220
4/0	19	20	12	1.065	1.160	1.458	0.055	199	423	1271	360	250

UNDERGROUND DISTRIBUTION CABLE – 28 kV – TYPE UD – 1/3 NEUTRAL												
COMPRESSED CONDUCTOR		COPPER NEUTRAL		DIAMETER (1) INCHES			NOMINAL JACKET THKN. INCHES (1)	APPROX. WEIGHT (1) LB/1000 FT			AMPACITY (3)	
AL AWG OR kcmil	NO. OF WIRES	NO. OF WIRES	WIRE SIZE AWG	INSULATION MIN.	INSULATION MAX.	ENCAP LLDPE JACKET		AL COND.	CU NEUT. WIRES	TOTAL	DIRECT BURIED	IN DUCT
280 mils NOMINAL EPR INSULATION – 100% INSULATION LEVEL												
1	1	7	16	0.845	0.935	1.155	0.055	77	60	595	195	150
1	19	7	16	0.875	0.970	1.188	0.055	78	60	621	195	150
1/0	1	9	16	0.880	0.970	1.191	0.055	97	77	654	220	170
1/0	19	9	16	0.915	1.010	1.228	0.055	99	77	684	220	170
2/0	19	11	16	0.960	1.055	1.272	0.055	125	94	755	250	200
3/0	19	14	16	1.010	1.105	1.342	0.055	158	120	865	290	225
4/0	19	17	16	1.065	1.160	1.398	0.055	199	146	968	330	255
250	37	20	16	1.120	1.215	1.454	0.055	234	172	1068	360	280
350	37	18	14	1.225	1.320	1.583	0.055	329	240	1322	435	340
500	37	25	14	1.350	1.445	1.761	0.080	468	341	1699	525	420
750	61	24	12	1.540	1.635	2.012	0.080	703	508	2317	640	510
1000	61	20	10	1.685	1.785	2.203	0.080	937	673	2877	730	595

(1) Extruded layer thicknesses and insulation and insulation shield diameters are in accordance with ANSI/ICEA S-94-649 for Concentric Neutral Cables Rated 5 through 46 kV and also meet the requirements of the latest revisions of AEIC CS8.

(2) Ampacity based on earth thermal resistivity of 90°C-cm/watt, 90°C conductor temp., 20°C earth ambient temperature, 75% load factor and 36" depth of burial. Values based on single phase operation, with full current return in the neutral wires. For specific ampacities, contact your General Cable sales representative.

(3) Ampacity based on earth thermal resistivity of 90°C-cm/watt, 90°C conductor temp., 20°C earth ambient temperature, 75% load factor and 36" depth of burial. Values based on a three phase circuit, one conductor per phase, in flat adjacent configuration, with neutral wires bonded at each end. For specific ampacities, contact your General Cable sales representative.

Dimensions and weights not designated minimum or maximum are nominal values and subject to manufacturing tolerances. In this context, weight means mass.

EmPowr® Fill Underground Distribution Cable 15-35 kV

Al Conductor EPR Insulation Concentric Neutral LLDPE Jacket

UNDERGROUND DISTRIBUTION CABLE – 35 kV – TYPE URD – FULL NEUTRAL												
COMPRESSED CONDUCTOR		COPPER NEUTRAL		DIAMETER (1) INCHES			NOMINAL JACKET THKN. INCHES (1)	APPROX. WEIGHT (1) LB/1000 FT			AMPACITY (2)	
AL AWG OR kcmil	NO. OF WIRES	NO. OF WIRES	WIRE SIZE AWG	INSULATION MIN.	INSULATION MAX.	ENCAP LLDPE JACKET		AL COND.	CU NEUT. WIRES	TOTAL	DIRECT BURIED	IN DUCT
345 mils NOMINAL EPR INSULATION – 100% INSULATION LEVEL (4)												
1/0	1	16	14	1.010	1.105	1.367	0.055	97	214	944	240	170
1/0	19	16	14	1.045	1.145	1.404	0.055	99	214	979	240	170
2/0	19	20	14	1.090	1.190	1.448	0.055	125	267	1089	275	195
3/0	19	16	12	1.140	1.240	1.532	0.055	158	339	1259	315	220
4/0	19	20	12	1.195	1.295	1.588	0.055	199	423	1423	360	250

UNDERGROUND DISTRIBUTION CABLE – 35 kV – TYPE UD – 1/3 NEUTRAL												
COMPRESSED CONDUCTOR		COPPER NEUTRAL		DIAMETER (1) INCHES			NOMINAL JACKET THKN. INCHES (1)	APPROX. WEIGHT (1) LB/1000 FT			AMPACITY (3)	
AL AWG OR kcmil	NO. OF WIRES	NO. OF WIRES	WIRE SIZE AWG	INSULATION MIN.	INSULATION MAX.	ENCAP LLDPE JACKET		AL COND.	CU NEUT. WIRES	TOTAL	DIRECT BURIED	IN DUCT
345 mils NOMINAL EPR INSULATION – 100% INSULATION LEVEL (4)												
1/0	1	9	16	1.010	1.105	1.341	0.055	97	77	800	220	170
1/0	19	9	16	1.045	1.145	1.378	0.055	99	77	835	220	170
2/0	19	11	16	1.090	1.190	1.422	0.055	125	95	911	250	200
3/0	19	14	16	1.140	1.240	1.472	0.055	158	120	1007	290	225
4/0	19	17	16	1.195	1.295	1.528	0.055	199	146	1116	330	255
250	37	20	16	1.250	1.350	1.584	0.055	234	172	1221	360	280
350	37	18	14	1.355	1.445	1.763	0.080	329	240	1543	435	340
500	37	25	14	1.480	1.580	1.891	0.080	468	341	1882	525	420
750	61	24	12	1.670	1.770	2.142	0.080	703	508	2526	640	510
1000	61	20	10	1.815	1.920	2.333	0.080	937	673	3104	730	595

(1) Extruded layer thicknesses and insulation and insulation shield diameters are in accordance with ANSI/ICEA S-94-649 for Concentric Neutral Cables Rated 5 through 46 kV and also meet the requirements of the latest revisions of AEIC CS8.
(2) Ampacity based on earth thermal resistivity of 90°C-cm/watt, 90°C conductor temp., 20°C earth ambient temperature, 75% load factor and 36" depth of burial. Values based on single phase operation, with full current return in the neutral wires. For specific ampacities, contact your General Cable sales representative.
(3) Ampacity based on earth thermal resistivity of 90°C-cm/watt, 90°C conductor temp., 20°C earth ambient temperature, 75% load factor and 36" depth of burial. Values based on a three phase circuit, one conductor per phase, in flat adjacent configuration, with neutral wires bonded at each end. For specific ampacities, contact your General Cable sales representative.
(4) RUS Bulletin 1728F (U1) dated 4/2/12 requires, at minimum, 220 mil insulation thickness for 15 kV cable, 260 mil insulation thickness for 25 kV cable, and 345 mil insulation thickness for 35 kV cable.
Dimensions and weights not designated minimum or maximum are nominal values and subject to manufacturing tolerances. In this context, weight means mass.