PRODUCT DATA SHEET

34.5 KV CONCENTRIC NEUTRAL CABLE, 345 MILS TRXLPE (100% INSULATION LEVEL) FOR COLLECTION SYSTEMS

03/14/2012 DR

One Bridge Plaza North Suite 260 | Fort Lee, NJ 07024 | Tel 201 242 9906 | Fax 201 242 9926

1. SCOPE

This annotation describes Tree-Retardant Cross-Linked Polyethylene (TR-XLPE) insulated Linear Low Density Polyethylene (LLDPE) jacketed concentric wire neutral power cables to be used in underground collection systems. The cables are designed for use in three phase systems with voltage not exceeding 35000 volts phase to phase and conductor temperatures not exceeding 90°C for normal operation, 130°C for emergency overload conditions, and 250°C for short circuit conditions. The cables are suitable for direct burial and installation in ducts.

2. APPLICABLE STANDARDS:

The cables produced under this specification will comply with all applicable requirements of the following standards, which are the principal standards of this product:

ICEA S-94-649-2004 (Standard for Concentric Neutral Cables Rated 5 through 46 KV)
AEIC CS8-00 (Specification for Extruded Dielectric, Shielded Power Cables Rated 5 through 46 KV)

Cable components, raw materials, and testing procedures shall meet the requirements of publications referenced in relevant parts of the principal standards, including but not limited to **ASTM B 231**, **ASTM B 3**, **ASTM B 5,** and **ICEA T-31-610.**

NOTE: WTEC Medium-Voltage cables for collection systems can be made to **CAN-CSA-C68.3-97** standard by request.

3. CONSTRUCTION:

The cables are designed and manufactured according to a “DISCHARGE-FREE” design concept. Conductor shield, insulation, and insulation shield are extruded simultaneously over the conductor by using triple-extrusion and dry-curing technology. Cable components are:

A) CONDUCTOR

Conductor shall be class B stranded compressed aluminum. The stranded conductor shall be water-blocked. The wires before stranding shall meet requirements of ASTM B 230. Typical conductor sizes are 1/0 AWG, 4/0 AWG, 350 KCMIL, 500 KCMIL, 750 KCMIL, 1000 KCMIL, and 1250 KCMIL, other sizes are available upon request.

B) CONDUCTOR SHIELD

The semi-conducting shield shall be extruded over the stranded conductor.

C) INSULATION

A layer of tree-retardant cross-linked polyethylene (TR-XLPE) shall be extruded over the conductor shield. Nominal thickness of the insulation shall be 345 mils. Minimum thickness shall not be less than 330 mils and maximum thickness not more than 375 mils.

D) INSULATION SHIELD

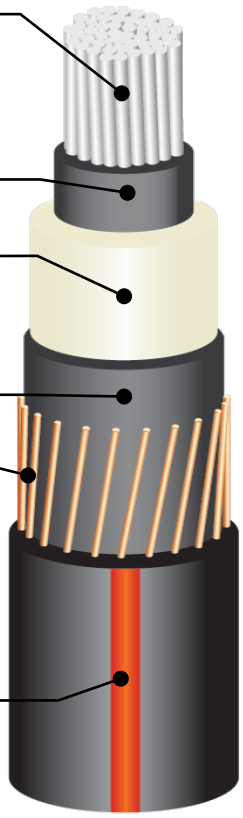
The semi-conducting shielding thermosetting compound shall be extruded over the insulation.

E) CONCENTRIC NEUTRAL

Bare annealed copper wires shall be helically applied over the extruded insulation shield in one layer. They shall be evenly spaced around the cable core. Number and size of the neutral wires shall be specified by the customer; otherwise the ones most commonly used in underground collection systems of the wind farms will be assumed (these values are referenced in Section 5 of this annotation). The wires shall meet the chemical requirements of ASTM B 5 and resistivity, tensile, and elongation requirements of ASTM B 3.

F) NON-CONDUCTING JACKET

Black linear low density polyethylene shall be extruded (Extruded-to-Fill) over the outer surface of the cable. 3 red stripes spaced 120° apart around the cable center shall be extruded longitudinally on the jacket surface.



Revision	Description	WTEC part number	Date	Submitted By
E	2/0-19 added with 10x14 N	Axxx-01UD35GTRxxJ	07/13/2011	SS
F	4/0-19 added with 16#14, 1/2N	Axxx-01UD35GTRxxJ	01/04/2012	SS
G	1000 MCM added with 1/12 N	Axxx-01UD35GTRxxJ	01/27/2012	SS
H	Updated Ampacity Values	Axxx-01UD35GTRxxJ	03/14/2012	CF

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4. TESTING

Cables shall be tested as described in Part 9 of ICEA S-94-649-2004 and part G of AEIC CS8-00. Corresponding production tests shall be done in accordance with ICEA T-27-581, ICEA T-28-562, ICEA T-24-380, and ICEA T-31-610. Factory test reports are available upon request.

TEMPERATURE RATINGS:

Conductor maximum continuous temperature = 90^C
Emergency temperature = 130 OC
Storing & working temperature range = -40 …+90^C
Installation & handling temperature = - 10…+40^C

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5. CABLE DIMENSIONS AND CHARACTERISTICS

Phase Conductor		Copper Neutral			Thickness in Mils			Diameters in Mils			Approx. Weight, lbs/1000 ft	Ampacity*	
Size, AWG or KCMIL	Stranding	Size	No. of Wires	Wire Size, AWG	Insulation, Nom.	Insulation shield (min/max)	Jacket (min/max)	Bare Phase Conductor	Over Insulation, Nom.	Over Jacket, Nom.		Trefoil formation	Flat formation
1/0	19	Full	16	14	345	40/75	45/80	362	1110	1460	957	186	209
1/0	19	2/3	11	14	345	40/75	45/80	362	1110	1460	902	186	209
1/0	19	1/2	8	14	345	40/75	45/80	362	1110	1460	858	186	209
1/0	19	1/3	6	14	345	40/75	45/80	362	1110	1460	840	186	209
2/0	19	Full	13	12	345	40/75	45/80	406	1155	1510	1105	188	211
2/0	19	1/2	7	12	345	40/75	45/80	406	1155	1510	991	189	211
2/0	19	1/2	10	14	345	40/75	45/80	406	1155	1510	960	189	211
2/0	19	1/3	7	14	345	40/75	45/80	406	1155	1510	911	188	211
3/0	19	Full	16	12	345	40/75	45/80	456	1205	1590	1231	191	214
3/0	19	1/2	8	12	345	40/75	45/80	456	1205	1590	1079	191	214
3/0	19	1/3	9	14	345	40/75	45/80	456	1205	1590	1003	190	213
4/0	19	Full	20	12	345	40/75	45/80 or 70/120	512	1260	1660 or 1710	1421	271	306
4/0	19	3/4	15	12	345	40/75	45/80 or 70/120	512	1260	1660 or 1710	TBD	271	306
4/0	19	1/2	10	12	345	40/75	45/80 or 70/120	512	1260	1660 or 1710	1231	272	306
4/0	19	1/2	16	14	345	40/75	45/80	512	1260	1610	1130	272	306
4/0	19	1/3	11	14	345	40/75	45/80 or 70/120	512	1260	1660 or 1710	1120	272	306
250	37	1/3	13	14	345	40/75	70/120	558	1335	1820	1305	296	332
350	37	1/3	11	12	345	40/75	70/120	661	1435	1880	1584	356	400
500	37	1/3	16	12	345	40/75 or 55/90	70/120	789	1565	2020 or 2050	2001	429	486
500	37	1/6	12	14	345	40/75 or 55/90	70/120	789	1565	2020 or 2050	1844	432	486
750	61	1/3	15	10	345	55/90	70/120	968	1755	2240	2623	522	606
750	61	1/6	12	12	345	55/90	70/120	968	1755	2240	2483	532	605
1000	61	1/3	20	10	345	55/90	70/120	1117	1900	2430	3137	591	706
1000	61	1/6	16	12	345	55/90	70/120	1117	1900	2430	2832	610	705
1000	61	1/9	11	12	345	55/90	70/120	1117	1866	2347	2750	617	705
1000	61	1/12	20	16	345	55/90	70/120	1117	1900	2347	2700	622	705
1000	61	1/12	13	14	345	55/90	70/120	1117	1900	2347	2700	622	705
1250	91	1/8	15	12	345	55/105	70/120	1251	2045	2575	TBD	679	789
1250	91	1/6	20	12	345	55/105	70/120	1251	2045	2575	3172	669	789

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*The values were calculated using CYMCP 5.0 Rev. 3 by CYME International T&D with the following assumptions:
90°C conductor temperature, 100% load factor, direct buried, 36" burial depth, 25°C ambient temperature, native soil thermal resistivity is 100 °C•cm/W. Neutrals' ends are bonded. Neutrals cross-bonded in the flat formation for phase conductors 750 KCMIL-1250 KCMIL. Cables are spaced 8" between cable centers in the flat formation. Additional ampacity values can be calculated for other assumptions by request.

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