

# Product Data Sheet

CU CABLE  
 345 MILS TR-XLPE (35KV 100% INSULATION LEVEL)  
 CONCENTRIC NEUTRAL  
 105°C XLPE JACKET (MV-105)

## SCOPE:

This specification describes copper, concentric-neutral power-cable having Tree-Retardant Cross-Linked Polyethylene (TR-XLPE) insulation and a Cross-Linked Polyethylene (XLPE) jacket. The cable is designed for use in three-phase systems with voltage not exceeding 35000 volts phase to phase and conductor temperatures not exceeding 105°C for normal operation and 140°C for emergency overload conditions. The overall cable is rated for 250°C for short circuit conditions per ICEA S-94-649, while the concentric neutral is rated for 350°C for short circuits per ICEA P-45-482. The cables are suitable for direct burial and installation in ducts.

## APPLICABLE STANDARDS:

The cable 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** – Standard for Concentric Neutral Cables Rated 5 through 46 KV
- **AEIC CS8** – Specification for Extruded Dielectric, Shielded Power Cables Rated 5 through 46 KV
- **UL1072 – MV90 and MV105** (Standard for Medium-Voltage Power Cables)
- **CSA 68.10** – Shielded Power Cable for Commercial and Industrial Applications, 5-46 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 3** – Standard Specification for Soft or Annealed Copper Wire
- **ASTM B 5** – Standard Specification for High Conductivity Tough-Pitch Copper Refinery Shapes
- **ASTM B 8** – Standard Specification Concentric Copper Conductors, Hard, Medium Hard, or Soft
- **ICEA T-31-610** – Test Method for Conducting Longitudinal Water Penetration Resistance Tests

## CONSTRUCTION:

A "DISCHARGE-FREE" design concept underpins the manufacture of this cable. Conductor shield, insulation, and insulation shield are extruded simultaneously over the conductor by using triple-extrusion and dry-curing technology. The insulation shield is designed to be strippable.

## QUALITY CONTROL:

All compounds are handled and loaded in a Class 10000 clean room.

An optical pellet analyzer is used by the supplier to perform 100% pellet inspection.

## SURFACE PRINT (EVERY 24"):

**REEMEE [YEAR] (UL) TYPE MV-105 [SIZE] STRANDFILLED CU 35KV 100% INSUL LEVEL 345 MIL TRXLPE  
 CN [NEUTRAL] XLPE 105C ICEA S-94-649 c(UL) [LIGHTNING SYMBOL] 0000 FT**

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**C) INSULATION**

A layer of Tree-Retardant Cross-Linked Polyethylene (TR-XLPE) is 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. In accordance with ICEA S-94-649 Part 4.

**D) INSULATION SHIELD**

The semi-conducting shielding thermosetting compound are extruded over the insulation. In accordance with ICEA S-94-649 Part 5.

**E) CONCENTRIC NEUTRAL**

The concentric neutral conductor shall consist of bare annealed copper wire per ANSI/ICEA S-94-649 Part 6, applied helically over the outer semi-conducting shield with a lay of not less than six, nor more than ten times the diameter over the concentric neutral conductor. The neutral indents in the insulation shield shall be within the requirements of ANSI/ICEA S-94-649 Part 5.2.

**F) NON-CONDUCTING JACKET**

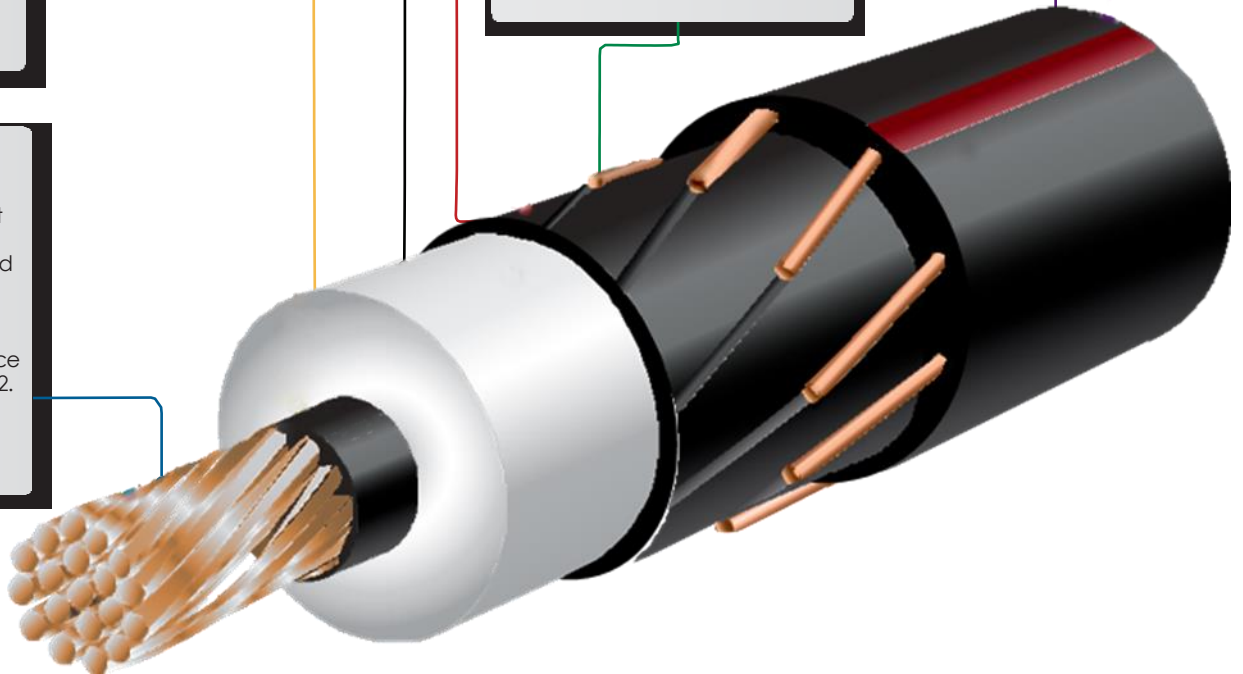
Cross-Linked polyethylene (XLPE) shall be extruded (Extruded-to-Fill) over the neutral. Three red stripes spaced 120° apart around the cable center shall be extruded longitudinally on the jacket surface. In accordance with ICEA S-94-649 Part 7, stripes in accordance with ICEA S-94-649 Part 8.

**B) CONDUCTOR SHIELD**

The semi-conducting shield is extruded over the stranded conductor. In accordance with ICEA S-94-649 Part 3.

**A) CONDUCTOR**

Conductor is class B stranded copper. Conductor is compact for sizes less than 1250 KCMIL and compressed for greater. The wires before stranding shall meet requirements of ASTM B 8. In accordance with ICEA S-94-649 Part 2.



**TESTING:**

Cable shall be tested as described in Parts 9 and 10 of ICEA S-94-649 and part G of AEIC CS8. 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 = 105°C
- Emergency temperature = 140°C
- Storing & working temperature range = -40...+105°C
- Installation & handling temperature = -10...+40°C

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## PHYSICAL PARAMETERS

Phase Conductor			Copper Neutral						Diameter (Mils)			Approximate Weight (lb/kft)	Ampacity	
Part #	Size (AWG/KCMIL)	Stranding	Size	# Wires	Wire Size (AWG)	Insulation (Nom.)	Insulation Shied (Min/Max)	Jacket (Min/Max)	Bare Phase Conductor	Insulation (Nom.)	Jacket (Nom.)		Trefoil	Flat
MV1_0CU0714CUXLPE	1/0	19	1/3	7	14	345	40/75	45/80	354	1094	1458	1065	254	284
MV1_0CU1014CUXLPE	1/0	19	1/2	10	14	345	40/75	45/80	354	1094	1458	1099	254	284
MV1_0CU1314CUXLPE	1/0	19	2/3	13	14	345	40/75	45/80	354	1094	1458	1133	254	284
MV1_0CU1914CUXLPE	1/0	19	Full	19	14	345	40/75	45/80	354	1094	1458	1201	254	284
MV2_0CU0814CUXLPE	2/0	19	1/3	8	14	345	40/75	45/80	410	1150	1514	1202	294	328
MV2_0CU1214CUXLPE	2/0	19	1/2	12	14	345	40/75	45/80	410	1150	1514	1247	294	328
MV2_0CU1614CUXLPE	2/0	19	2/3	16	14	345	40/75	45/80	410	1150	1514	1292	294	328
MV2_0CU2414CUXLPE	2/0	19	Full	24	14	345	40/75	45/80	410	1150	1514	1383	294	328
MV3_0CU1014CUXLPE	3/0	19	1/3	10	14	345	40/75	45/80	457	1197	1561	1366	338	378
MV3_0CU1514CUXLPE	3/0	19	1/2	15	14	345	40/75	45/80	457	1197	1561	1422	338	378
MV3_0CU2014CUXLPE	3/0	19	2/3	20	14	345	40/75	45/80	457	1197	1561	1479	338	378
MV3_0CU3014CUXLPE	3/0	19	Full	30	14	345	40/75	45/80	457	1197	1561	1592	338	378
MV4_0CU1314CUXLPE	4/0	19	1/3	13	14	345	40/75	45/80	515	1261	1625	1584	384	429
MV4_0CU1914CUXLPE	4/0	19	1/2	19	14	345	40/75	45/80	515	1261	1625	1652	384	429
MV4_0CU2514CUXLPE	4/0	19	2/3	25	14	345	40/75	45/80	515	1261	1625	1720	384	429
MV4_0CU2412CUXLPE	4/0	19	Full	24	12	345	40/75	70/120	515	1261	1699	1946	385	428
MV250CU0814CUXLPE	250	37	1/6	8	14	345	40/75	70/120	602	1342	1750	1751	423	472
MV250CU1514CUXLPE	250	37	1/3	15	14	345	40/75	70/120	602	1342	1750	1830	423	472
MV250CU2314CUXLPE	250	37	1/2	23	14	345	40/75	70/120	602	1342	1750	1921	423	472
MV350CU1114CUXLPE	350	37	1/6	11	14	345	40/75	70/120	630	1370	1778	2115	501	559
MV350CU2114CUXLPE	350	37	1/3	21	14	345	40/75	70/120	630	1370	1778	2228	501	559
MV350CU3114CUXLPE	350	37	1/2	31	14	345	40/75	70/120	630	1370	1778	2341	501	559
MV500CU1514CUXLPE	500	37	1/6	15	14	345	55/90	70/120	750	1500	1928	2757	612	683
MV500CU3014CUXLPE	500	37	1/3	30	14	345	55/90	70/120	750	1500	1928	2926	612	683
MV500CU2812CUXLPE	500	37	1/2	28	12	345	55/90	70/120	750	1500	1962	3131	614	684
MV750CU2314CUXLPE	750	61	1/6	23	14	345	55/90	70/120	923	1677	2105	3759	745	834
MV750CU2812CUXLPE	750	61	1/3	28	12	345	55/90	70/120	923	1677	2139	4047	747	834
MV750CU2710CUXLPE	750	61	1/2	27	10	345	55/90	70/120	923	1677	2181	4373	749	835
MV1000CU1514CUXLPE	1000	61	1/12	15	14	345	55/90	70/120	1080	1834	2262	4563	868	978
MV1000CU2014CUXLPE	1000	61	1/9	20	14	345	55/90	70/120	1080	1834	2262	4619	868	978
MV1000CU3014CUXLPE	1000	61	1/6	30	14	345	55/90	70/120	1080	1834	2262	4733	868	977
MV1000CU2410CUXLPE	1000	61	1/3	24	10	345	55/90	70/120	1080	1834	2338	5189	873	978
MV1000CU3510CUXLPE	1000	61	1/2	35	10	345	55/90	70/120	1080	1834	2338	5504	873	978
MV1250CU1914CUXLPE	1250	91	1/12	19	14	345	55/90	70/120	1210	1964	2392	5481	970	1101
MV1250CU2514CUXLPE	1250	91	1/9	25	14	345	55/90	70/120	1210	1964	2392	5549	970	1100
MV1250CU2412CUXLPE	1250	91	1/6	24	12	345	55/90	70/120	1210	1964	2426	5748	973	1101
MV1250CU3010CUXLPE	1250	91	1/3	30	10	345	55/90	70/120	1210	1964	2468	6240	976	1101
MV1250CU2808CUXLPE	1250	91	1/2	28	8	345	55/90	70/120	1210	1964	2521	6739	980	1103

\*Values are calculated using CYMCAP 7.3 Rev. 2 by CYME International T&D with the following assumptions: 105°C conductor temperature, 100% load factor, direct buried, 36" burial depth, 20°C ambient temperature, native soil thermal resistivity is 100 °C•cm/W. Neutral ends are single-point bonded. Neutrals cross-bonded in the flat formation for phase conductors 750 KCMIL and above. 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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Part #	Size (AWG/KCMIL)	# Wires	Wire Size (AWG)	Positive/Negative Sequence Impedance ( $\mu\Omega/\text{ft}$ )	Zero Sequence Impedance ( $\mu\Omega/\text{ft}$ )	Capacitance ( $\mu\text{F}/1000\text{ft}$ )	Inductance (mH/1000ft)	DC resistance ( $\Omega/1000\text{ft}$ )		AC resistance ( $\Omega/1000\text{ft}$ )	
								20C	105C	20C	105C
MV1_0CU0714CUXLPE	1/0	7	14	148+j54	202+j746	0.03901	0.14379	0.11059	0.14752	0.11071	0.14762
MV1_0CU1014CUXLPE	1/0	10	14	148+j54	202+j746	0.03901	0.14379	0.11059	0.14752	0.11071	0.14762
MV1_0CU1314CUXLPE	1/0	13	14	148+j54	202+j746	0.03901	0.14379	0.11059	0.14752	0.11071	0.14762
MV1_0CU1914CUXLPE	1/0	19	14	148+j54	202+j746	0.03901	0.14379	0.11059	0.14752	0.11071	0.14762
MV2_0CU0814CUXLPE	2/0	8	14	114+j52	168+j741	0.04237	0.13713	0.08540	0.11393	0.08557	0.11406
MV2_0CU1214CUXLPE	2/0	12	14	114+j52	168+j741	0.04237	0.13713	0.08540	0.11393	0.08557	0.11406
MV2_0CU1614CUXLPE	2/0	16	14	114+j52	168+j741	0.04237	0.13713	0.08540	0.11393	0.08557	0.11406
MV2_0CU2414CUXLPE	2/0	24	14	114+j52	168+j741	0.04237	0.13713	0.08540	0.11393	0.08557	0.11406
MV3_0CU1014CUXLPE	3/0	10	14	88+j50	142+j738	0.04542	0.13238	0.06573	0.08768	0.06596	0.08786
MV3_0CU1514CUXLPE	3/0	15	14	88+j50	142+j738	0.04542	0.13238	0.06573	0.08768	0.06596	0.08786
MV3_0CU2014CUXLPE	3/0	20	14	88+j50	142+j738	0.04542	0.13238	0.06573	0.08768	0.06596	0.08786
MV3_0CU3014CUXLPE	3/0	30	14	88+j50	142+j738	0.04542	0.13238	0.06573	0.08768	0.06596	0.08786
MV4_0CU1314CUXLPE	4/0	13	14	70+j48	124+j733	0.04907	0.12755	0.05214	0.06955	0.05244	0.06977
MV4_0CU1914CUXLPE	4/0	19	14	70+j48	124+j733	0.04907	0.12755	0.05214	0.06955	0.05244	0.06977
MV4_0CU2514CUXLPE	4/0	25	14	70+j48	124+j733	0.04907	0.12755	0.05214	0.06955	0.05244	0.06977
MV4_0CU2412CUXLPE	4/0	24	12	70+j50	124+j730	0.04907	0.13024	0.05214	0.06955	0.05243	0.06977
MV250CU0814CUXLPE	250	8	14	59+j46	113+j726	0.05395	0.12255	0.04427	0.05906	0.04464	0.05934
MV250CU1514CUXLPE	250	15	14	59+j46	113+j726	0.05395	0.12255	0.04427	0.05906	0.04464	0.05934
MV250CU2314CUXLPE	250	23	14	59+j46	113+j726	0.05395	0.12255	0.04427	0.05906	0.04464	0.05934
MV350CU1114CUXLPE	350	11	14	43+j46	97+j724	0.05547	0.12074	0.03166	0.04224	0.03219	0.04264
MV350CU2114CUXLPE	350	21	14	43+j46	97+j724	0.05547	0.12074	0.03166	0.04224	0.03219	0.04264
MV350CU3114CUXLPE	350	31	14	43+j46	97+j724	0.05547	0.12074	0.03166	0.04224	0.03219	0.04264
MV500CU1514CUXLPE	500	15	14	30+j43	84+j717	0.06309	0.11505	0.02174	0.02900	0.02255	0.02962
MV500CU3014CUXLPE	500	30	14	30+j43	84+j717	0.06309	0.11505	0.02174	0.02900	0.02255	0.02962
MV500CU2812CUXLPE	500	28	12	30+j44	84+j716	0.06309	0.11610	0.02174	0.02900	0.02254	0.02961
MV750CU2314CUXLPE	750	23	14	21+j41	75+j708	0.07346	0.10776	0.01496	0.01996	0.01618	0.02091
MV750CU2812CUXLPE	750	28	12	21+j41	75+j707	0.07346	0.10871	0.01496	0.01996	0.01617	0.02090
MV750CU2710CUXLPE	750	27	10	21+j42	75+j706	0.07346	0.10990	0.01496	0.01996	0.01615	0.02089
MV1000CU1514CUXLPE	1000	15	14	16+j39	70+j700	0.08260	0.10256	0.01097	0.01464	0.01263	0.01598
MV1000CU2014CUXLPE	1000	20	14	16+j39	70+j700	0.08260	0.10256	0.01097	0.01464	0.01263	0.01598
MV1000CU3014CUXLPE	1000	30	14	16+j39	70+j700	0.08260	0.10256	0.01097	0.01464	0.01263	0.01598
MV1000CU2410CUXLPE	1000	24	10	16+j40	70+j699	0.08260	0.10457	0.01097	0.01464	0.01258	0.01594
MV1000CU3510CUXLPE	1000	35	10	16+j40	70+j699	0.08260	0.10457	0.01097	0.01464	0.01258	0.01594
MV1250CU1914CUXLPE	1250	19	14	13+j37	67+j696	0.08992	0.09904	0.00858	0.01144	0.01060	0.01314
MV1250CU2514CUXLPE	1250	25	14	13+j37	67+j696	0.08992	0.09904	0.00858	0.01144	0.01060	0.01314
MV1250CU2412CUXLPE	1250	24	12	13+j38	67+j695	0.08992	0.09989	0.00858	0.01144	0.01058	0.01312
MV1250CU3010CUXLPE	1250	30	10	13+j38	67+j694	0.08992	0.10094	0.00858	0.01144	0.01055	0.01309
MV1250CU2808CUXLPE	1250	28	8	13+j39	67+j693	0.08992	0.10224	0.00858	0.01144	0.01051	0.01306

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C	11/02/2021		FE

