Product Data Sheet

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

SCOPE:

This specification describes aluminum, 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, 140°C for emergency overload conditions, and 250°C for short circuit conditions. 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 231** – Standard Specification for Concentric-Lay-Stranded Aluminum 1350 Conductors
- **ASTM B 3** – Standard Specification for Soft or Annealed Copper Wire
- **ASTM B 5** – Standard Specification for High Conductivity Tough-Pitch Copper Refinery Shapes
- **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.

Double-helix compatible water-blocking yarn is used on all conductors. Water-swellable tape is applied over the insulation shield.

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.

REVISION	DATE	DESCRIPTION	SUBMITTED BY
C	05/17/2021		FE

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.

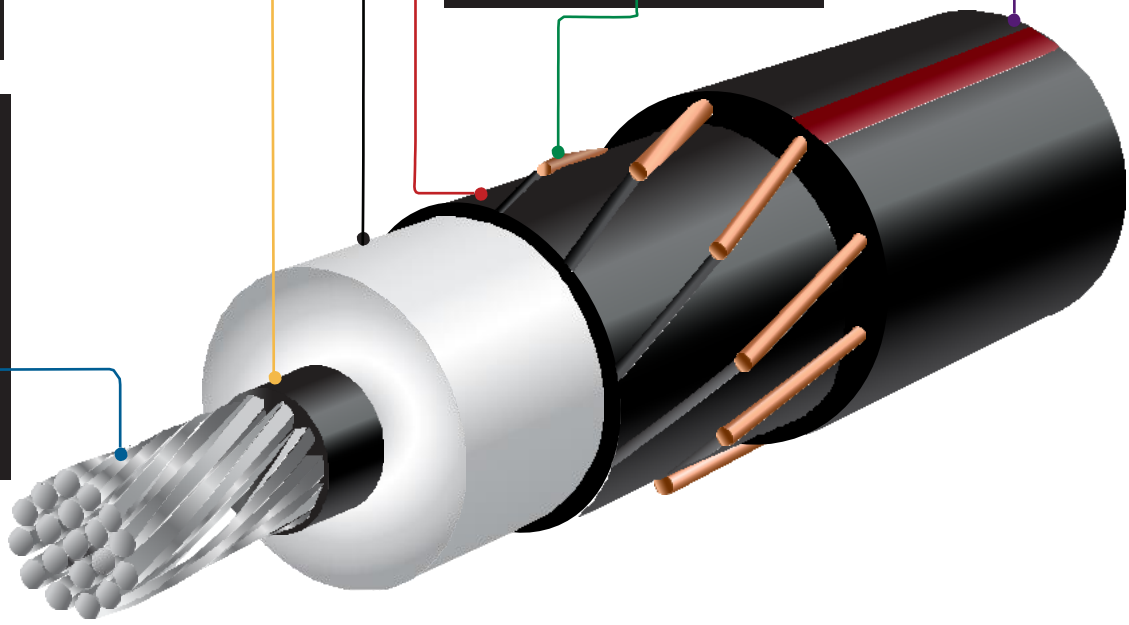
D) INSULATION SHIELD
The semi- conducting shielding thermosetting compound are extruded over the insulation. In accordance with ICEA S-94-649 Part 5.

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. The cable shall contain water-blocking components for the concentric neutral, and the completed cable longitudinal water penetration resistance shall comply with the requirements of ANSI/ICEA S-94-649 Part 6 and ANSI/ICEA T-34-664.

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 aluminum (H-16 to H-19 temper, ¾ to hard drawn). The wires before stranding shall meet requirements of ASTM B 230. Conductor is compact for sizes less than 1250 KCMIL, and compressed for greater. 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

REVISION	DATE	DESCRIPTION	SUBMITTED BY
C	05/17/2021		FE

Huge Selection and Personal Service

Remee WIRE & CABLE

Engineered With You In Mind

PHYSICAL PARAMETERS

Phase Conductor			Copper Neutral			Thickness (Mils)			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_0AL0414CUXLPE	1/0	19	1/3	4	14	345	40/75	45/80	354	1094	1458	814	196	218
MV1_0AL0614CUXLPE	1/0	19	1/2	6	14	345	40/75	45/80	354	1094	1458	837	196	218
MV1_0AL0814CUXLPE	1/0	19	2/3	8	14	345	40/75	45/80	354	1094	1458	860	196	218
MV1_0AL1214CUXLPE	1/0	19	Full	12	14	345	40/75	45/80	354	1094	1458	905	196	218
MV2_0AL0514CUXLPE	2/0	19	1/3	5	14	345	40/75	45/80	410	1150	1514	893	227	253
MV2_0AL0814CUXLPE	2/0	19	1/2	8	14	345	40/75	45/80	410	1150	1514	927	227	253
MV2_0AL1014CUXLPE	2/0	19	2/3	10	14	345	40/75	45/80	410	1150	1514	950	227	253
MV2_0AL1514CUXLPE	2/0	19	Full	15	14	345	40/75	45/80	410	1150	1514	1006	227	253
MV3_0AL0714CUXLPE	3/0	19	1/3	7	14	345	40/75	45/80	457	1197	1561	983	263	294
MV3_0AL1014CUXLPE	3/0	19	1/2	10	14	345	40/75	45/80	457	1197	1561	1017	263	294
MV3_0AL1314CUXLPE	3/0	19	2/3	13	14	345	40/75	45/80	457	1197	1561	1051	263	294
MV3_0AL1914CUXLPE	3/0	19	Full	19	14	345	40/75	45/80	457	1197	1561	1119	263	294
MV4_0AL0814CUXLPE	4/0	19	1/3	8	14	345	40/75	45/80	515	1261	1625	1086	297	332
MV4_0AL1214CUXLPE	4/0	19	1/2	12	14	345	40/75	45/80	515	1261	1625	1131	297	332
MV4_0AL1614CUXLPE	4/0	19	2/3	16	14	345	40/75	45/80	515	1261	1625	1176	297	332
MV4_0AL2314CUXLPE	4/0	19	Full	23	14	345	40/75	45/80	515	1261	1625	1255	297	332
MV500AL0914CUXLPE	500	37	1/6	9	14	345	55/90	70/120	750	1500	1928	1631	477	531
MV500AL1814CUXLPE	500	37	1/3	18	14	345	55/90	70/120	750	1500	1928	1733	477	531
MV500AL2714CUXLPE	500	37	1/2	27	14	345	55/90	70/120	750	1500	1928	1835	477	531
MV750AL1414CUXLPE	750	61	1/6	14	14	345	55/90	70/120	923	1677	2105	2065	587	652
MV750AL2714CUXLPE	750	61	1/3	27	14	345	55/90	70/120	923	1677	2105	2212	587	653
MV750AL2612CUXLPE	750	61	1/2	26	12	345	55/90	70/120	923	1677	2139	2419	588	653
MV1000AL0914CUXLPE	1000	61	1/12	9	14	345	55/90	70/120	1080	1834	2262	2368	693	771
MV1000AL1214CUXLPE	1000	61	1/9	12	14	345	55/90	70/120	1080	1834	2262	2402	693	771
MV1000AL1814CUXLPE	1000	61	1/6	18	14	345	55/90	70/120	1080	1834	2262	2470	693	771
MV1000AL3614CUXLPE	1000	61	1/3	36	14	345	55/90	70/120	1080	1834	2262	2674	693	770
MV1000AL3412CUXLPE	1000	61	1/2	34	12	345	55/90	70/120	1080	1834	2296	2926	694	771
MV1250AL1214CUXLPE	1250	91	1/12	12	14	345	55/90	70/120	1210	1964	2392	2739	786	876
MV1250AL1514CUXLPE	1250	91	1/9	15	14	345	55/90	70/120	1210	1964	2392	2773	786	876
MV1250AL2314CUXLPE	1250	91	1/6	23	14	345	55/90	70/120	1210	1964	2392	2864	786	875
MV1250AL2912CUXLPE	1250	91	1/3	29	12	345	55/90	70/120	1210	1964	2426	3176	787	875
MV1250AL2710CUXLPE	1250	91	1/2	27	10	345	55/90	70/120	1210	1964	2468	3492	789	876
MV1500AL2114CUXLPE	1500	91	1/8	21	14	345	55/105	70/120	1369	2123	2551	3203	865	965
MV1500AL2714CUXLPE	1500	91	1/6	27	14	345	55/105	70/120	1369	2123	2551	3270	865	965
MV1500AL2210CUXLPE	1500	91	1/3	22	10	345	55/105	70/120	1369	2123	2627	3718	869	966

*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.

REVISION	DATE	DESCRIPTION	SUBMITTED BY
C	05/17/2021		FE

Huge Selection and Personal Service

Remee WIRE & CABLE

Engineered With You In Mind

ELECTRICAL PARAMETERS FOR CABLES IN TREFOIL FORMATION

Part #	Size (AWG/KCMIL)	# Wires	Wire Size (AWG)	Positive/Negative Sequence Impedance (μΩ/ft)	Zero Sequence Impedance (μΩ/ft)	Capacitance (μF/1000ft)	Inductance (mH/1000ft)	DC resistance (Ω/1000ft)		AC resistance (Ω/1000ft)	
								20C	105C	20C	105C
MV1_0AL0414CUXLPE	1/0	4	14	250+j54	304+j746	0.03901	0.14379	0.18594	0.24963	0.18601	0.24968
MV1_0AL0614CUXLPE	1/0	6	14	250+j54	304+j746	0.03901	0.14379	0.18594	0.24963	0.18601	0.24968
MV1_0AL0814CUXLPE	1/0	8	14	250+j54	304+j746	0.03901	0.14379	0.18594	0.24963	0.18601	0.24968
MV1_0AL1214CUXLPE	1/0	12	14	250+j54	304+j746	0.03901	0.14379	0.18594	0.24963	0.18601	0.24968
MV2_0AL0514CUXLPE	2/0	5	14	191+j52	245+j741	0.04237	0.13713	0.14216	0.19085	0.14225	0.19092
MV2_0AL0814CUXLPE	2/0	8	14	191+j52	245+j741	0.04237	0.13713	0.14216	0.19085	0.14225	0.19092
MV2_0AL1014CUXLPE	2/0	10	14	191+j52	245+j741	0.04237	0.13713	0.14216	0.19085	0.14225	0.19092
MV2_0AL1514CUXLPE	2/0	15	14	191+j52	245+j741	0.04237	0.13713	0.14216	0.19085	0.14225	0.19092
MV3_0AL0714CUXLPE	3/0	7	14	145+j50	199+j738	0.04542	0.13238	0.10771	0.14461	0.10784	0.14470
MV3_0AL1014CUXLPE	3/0	10	14	145+j50	199+j738	0.04542	0.13238	0.10771	0.14461	0.10784	0.14470
MV3_0AL1314CUXLPE	3/0	13	14	145+j50	199+j738	0.04542	0.13238	0.10771	0.14461	0.10784	0.14470
MV3_0AL1914CUXLPE	3/0	19	14	145+j50	199+j738	0.04542	0.13238	0.10771	0.14461	0.10784	0.14470
MV4_0AL0814CUXLPE	4/0	8	14	117+j48	171+j733	0.04907	0.12755	0.08673	0.11643	0.08689	0.11655
MV4_0AL1214CUXLPE	4/0	12	14	117+j48	171+j733	0.04907	0.12755	0.08673	0.11643	0.08689	0.11655
MV4_0AL1614CUXLPE	4/0	16	14	117+j48	171+j733	0.04907	0.12755	0.08673	0.11643	0.08689	0.11655
MV4_0AL2314CUXLPE	4/0	23	14	117+j48	171+j733	0.04907	0.12755	0.08673	0.11644	0.08690	0.11656
MV500AL0914CUXLPE	500	9	14	49+j43	103+j717	0.06309	0.11505	0.03611	0.04847	0.03654	0.04879
MV500AL1814CUXLPE	500	18	14	49+j43	103+j717	0.06309	0.11505	0.03611	0.04847	0.03654	0.04879
MV500AL2714CUXLPE	500	27	14	49+j43	103+j717	0.06309	0.11505	0.03611	0.04847	0.03654	0.04879
MV750AL1414CUXLPE	750	14	14	34+j41	88+j708	0.07346	0.10776	0.02480	0.03329	0.02546	0.03379
MV750AL2714CUXLPE	750	27	14	34+j41	88+j708	0.07346	0.10776	0.02480	0.03329	0.02546	0.03379
MV750AL2612CUXLPE	750	26	12	34+j41	88+j707	0.07346	0.10871	0.02480	0.03329	0.02546	0.03378
MV1000AL0914CUXLPE	1000	9	14	25+j39	79+j700	0.08260	0.10256	0.01814	0.02435	0.01909	0.02508
MV1000AL1214CUXLPE	1000	12	14	25+j39	79+j700	0.08260	0.10256	0.01814	0.02435	0.01909	0.02508
MV1000AL1814CUXLPE	1000	18	14	25+j39	79+j700	0.08260	0.10256	0.01814	0.02435	0.01909	0.02508
MV1000AL3614CUXLPE	1000	36	14	25+j39	79+j700	0.08260	0.10256	0.01814	0.02435	0.01909	0.02508
MV1000AL3412CUXLPE	1000	34	12	25+j39	79+j700	0.08260	0.10346	0.01814	0.02435	0.01908	0.02507
MV1250AL1214CUXLPE	1250	12	14	20+j37	74+j696	0.08992	0.09904	0.01422	0.01908	0.01545	0.02003
MV1250AL1514CUXLPE	1250	15	14	20+j37	74+j696	0.08992	0.09904	0.01422	0.01908	0.01545	0.02003
MV1250AL2314CUXLPE	1250	23	14	20+j37	74+j696	0.08992	0.09904	0.01422	0.01908	0.01545	0.02003
MV1250AL2912CUXLPE	1250	29	12	20+j38	74+j695	0.08992	0.09989	0.01422	0.01908	0.01543	0.02002
MV1250AL2710CUXLPE	1250	27	10	20+j38	74+j694	0.08992	0.10094	0.01422	0.01908	0.01542	0.02001
MV1500AL2114CUXLPE	1500	21	14	17+j36	71+j690	0.09906	0.09582	0.01180	0.01584	0.01330	0.01702
MV1500AL2714CUXLPE	1500	27	14	17+j36	71+j690	0.09906	0.09544	0.01180	0.01584	0.01330	0.01702
MV1500AL2210CUXLPE	1500	22	10	17+j37	71+j723	0.09906	0.09760	0.01180	0.01584	0.01326	0.01699

REVISION	DATE	DESCRIPTION	SUBMITTED BY
C	05/17/2021		FE