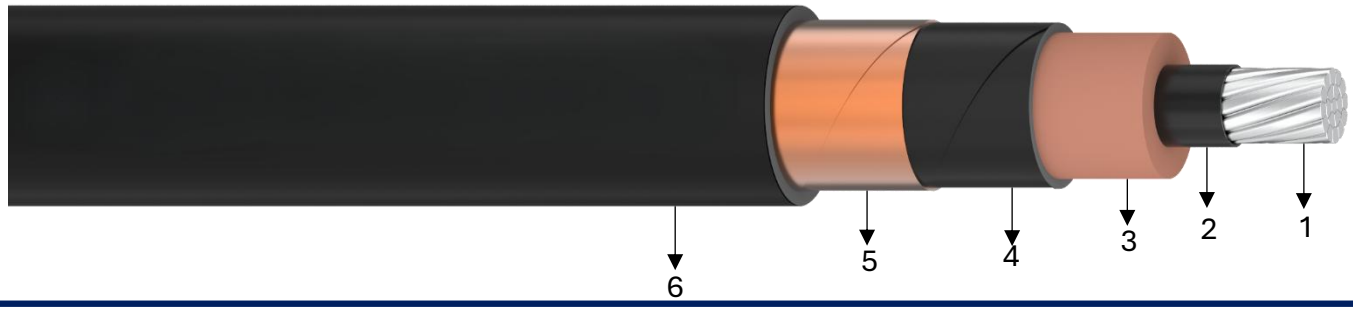
APAR
CABLE SOLUTIONS

UL 1072 MEDIUM VOLTAGE POWER CABLE

MV 105 | 15KV ALUMINUM CONDUCTOR | EPR INSULATED (133% INSULATION LEVEL) | COPPER TAPE SHIELDING | PVC OUTER JACKETED CABLE.



Product Description

Medium Voltage Aluminum Conductor, EPR Insulated, Copper Tape Shielded, Outer Jacketed Cable, built to UL 1072 standards, is designed for primary underground power distribution in utility, industrial, and commercial applications. The aluminum conductor offers a lightweight and cost-effective solution while maintaining excellent electrical performance. EPR insulation provides superior dielectric strength, flexibility, and thermal stability for reliable operation in demanding environments. The copper tape shield ensures effective electromagnetic interference (EMI) protection and enhances fault current containment. A durable outer jacket delivers mechanical protection, moisture resistance, and UV stability, making it suitable for direct burial, conduit installations, and outdoor exposure, ensuring long-term reliability in medium voltage networks.

Construction

1. **Conductor**: Aluminum conductor (Water blocking- Optional)
2. **Conductor Shield**: Extruded semi-conducting compound.
3. **Insulation**: Ethylene Propylene Rubber (EPR) (133% insulation level)
4. **Insulation Shield**: Extruded strippable semi-conducting compound.
5. **Metallic Shield**: Copper tape metallic shield
6. **Outer Jacket**: PVC (105°C) for superior thermal and mechanical protection

Applications

- Primary underground power distribution for utilities and industrial plants requiring cost-effective yet reliable conductors.
- Direct burial or conduit installations in harsh environmental conditions where EMI shielding is essential.
- Commercial and industrial facilities with medium voltage power requirements needing effective fault containment.
- Infrastructure and substation applications, where copper tape shielding provides EMI protection and enhanced system performance.

Compliance & Certifications

- UL 1072: Listed for MV 105 applications
- ASTM B801 & B800: Aluminum conductor specifications
- ICEA S-94-649 & AEIC CS-8: Compliance with electrical power cable standards
- Sunlight Resistant: Suitable for outdoor installations exposed to direct sunlight.
- Cold Bend: Designed to withstand low temperature bending without cracking.
- Direct Burial: Engineered for safe underground installation without additional conduit protection.

MV 105 | 15KV, ALUMINUM CONDUCTOR | EPR INSULATED (133% INSULATION LEVEL) | COPPER TAPE SCREENING | PVC OUTER JACKETED CABLE.

Table 01: Weights and Measurements

Conductor Size	No. of Strands	Approx. Diameter over conductor	Nominal insulation thickness	Approx. Diameter Over Insulation	Approx. Diameter Over Metallic Shield	Minimum Jacket thickness	Approx. OD	Approx. Weight for CPE & PVC	Min. Bending radius	Max. Pulling Tension (*)
AWG/Kcmil.	No.	Inch	Mils.	inch	inch	Mils	Inch.	lb./1000ft	Inch.	lb.
2	7	0.283	220.08	0.909	0.929	70.08	1.110	652	14.4	222
1	19	0.322	220.08	0.949	0.969	70.08	1.150	699	14.9	281
1/0	19	0.362	220.08	0.988	1.008	70.08	1.189	753	15.5	354
2/0	19	0.406	220.08	1.031	1.051	70.08	1.232	813	16.0	446
3/0	19	0.457	220.08	1.083	1.102	70.08	1.283	813	16.7	562
4/0	19	0.512	220.08	1.138	1.157	70.08	1.339	968	17.4	709
250	37	0.559	220.08	1.185	1.205	70.08	1.386	1042	18.0	838
350	37	0.661	220.08	1.287	1.307	70.08	1.488	1216	19.3	1173
500	37	0.787	220.08	1.413	1.433	70.08	1.614	1451	21.0	1676
750	61	0.969	220.08	1.594	1.614	100.00	1.866	1962	24.3	2514
1000	61	1.118	220.08	1.744	1.764	100.00	2.016	2318	26.2	3352

* Pulling tension based on pulling eye directly connected to conductor

Table 02: Electrical and Engineering Data

Conductor Size	DC Resistance @ 20°C	DC Resistance @ 25°C	AC Resistance @ 105°C	Capacitive Reactance @ 60Hz	Inductive Reactance @ 60Hz	Charging Current @ 60Hz	Dielectric Loss @ 60Hz	Zero Sequence Impedance @ 60Hz (*)	Positive Sequence Impedance @ 60Hz (*)	Short Circuit Current @ 60 Cycle @ 90°C	Ampacity				Voltage Drop for 1-Phase
											In Open Air (**)	In Conduit in Air (***)	Underground Duct (****)	In Direct Burial (*****)	
											@ 105°C	@ 105°C	@ 105°C	@ 105°C	
AWG/Kcmil.	Ω/1000ft	Ω/1000ft	Ω/1000ft	MΩ*1000ft	Ω/1000ft	A/1000ft	W/1000ft	Ω/1000ft	Ω/1000ft	Amp	Amp	Amp	Amp	Amp	Volts/Amps/ft
2	0.2665	0.2719	0.3580	0.057	0.055	0.262	157.000	1.668 + j0.026	0.342 +j0.055	3194	170	130	105	175	0.000492
1	0.2113	0.2156	0.2838	0.053	0.052	0.282	169.119	1.625 + j0.024	0.271 +j0.052	4029	195	150	120	200	0.000268
1/0	0.1676	0.1710	0.2251	0.050	0.050	0.302	181.396	1.409 + j0.023	0.215 +j0.050	5082	225	170	140	230	0.000223
2/0	0.1329	0.1356	0.1785	0.046	0.048	0.325	194.809	1.382 + j0.021	0.170 +j0.048	6406	260	200	155	260	0.000187
3/0	0.1054	0.1076	0.1416	0.043	0.046	0.351	210.431	1.361 + j0.020	0.135 +j0.046	8076	300	225	175	295	0.000158
4/0	0.0836	0.0853	0.1123	0.040	0.045	0.379	227.175	1.202 + j0.019	0.107 +j0.045	10184	350	260	200	340	0.000135
250	0.0708	0.0722	0.0951	0.037	0.043	0.402	241.472	1.191 + j0.018	0.091 +j0.043	12034	385	290	220	370	0.000120
350	0.0506	0.0515	0.0679	0.033	0.041	0.454	272.319	1.062 + j0.016	0.065 +j0.041	16848	480	350	260	450	0.000098
500	0.03539	0.03609	0.0475	0.029	0.038	0.517	310.107	0.957 + j0.015	0.045 +j0.038	24068	600	430	315	545	0.000081
750	0.02358	0.02406	0.0317	0.025	0.037	0.607	364.199	0.871 + j0.013	0.030 +j0.037	36102	780	540	385	680	0.000067
1000	0.01769	0.01804	0.0238	0.022	0.035	0.681	408.750	0.801 + j0.012	0.023 +j0.035	48137	940	640	440	795	0.000060

* Calculations are based on three cables triplexed / Conductor temperature of 90°C / Shield temperature of 80°C.

** Ampacities in open air @ ambient temp. 40°C : NEC Table 315.60(C)(4).

*** Ampacities in Conduit in air @ air ambient temp. 40°C : NEC Table 315.60(C)(8).

**** Ampacities in underground duct (Three conductors per electrical duct) @ air ambient temp. 40°C & @ ground ambient temp. 20°C & 100 Percent Load Factor, Thermal Resistance (RHO) of 90 : NEC Table 315.60(C)(12), Three Circuit.

***** Ampacities in direct burial @ air ambient temp. 40°C & @ ground ambient temp. 20°C & 100 Percent Load Factor, Thermal Resistance (RHO) of 90 : NEC Table 315.60(C)(16), One Circuit.