

BUILDING WIRES

NUAL Conductors

Among Alcan's most significant contributions to the cable industry is the aluminium conductor known as "NUAL". While EC-grade aluminium has long been the material of choice for electrical transmission lines, NUAL is an advanced Alcan alloy created specifically for use in service cables and building wires. Specified as "ACM" by the Canadian Standards Association, NUAL conductor combines technical performance equal to copper conductor with the attractive cost, weight and flexibility advantages of aluminium. Alcan's NUAL cables feature high conductivity and connectability, superior corrosion resistance and proven fire protection. Compared to copper constructions, NUAL also can offer project designers significant life cycle savings with reduced material costs, easier installation and energy-efficient design alternatives.

Thermoset Insulated Wires and Cables

Types RW90 and RWU90

Cross-linked polyethylene insulation is used for its excellent combination of electrical, physical and environmental properties. Alcan manufactures two standard single-conductor constructions with XLPE insulation – RW90 and RWU90. The two are similar except RWU90 comprises thicker insulation than RW90. XLPE resists cracking under extreme temperatures, from very low temperatures (-40°C) with high resistance to cracking during installation, and withstands conductor temperatures of 90°C for continuous operation, 130°C for sustained overloads, and 250°C for short circuits.

All black coloured XLPE insulations are sunlight resistant and are suitable for outdoor use. Insulation colours other than black are not suitable for outdoor use unless marked 'Outdoor'.

Conductors

Alcan Cable supplies conductors in CSA-certified XLPE insulated wires and cables in NUAL. NUAL is supplied in size 8 AWG to 1500 kcmil in stranded form. All are compact configurations except 1500 kcmil, which is conventional strand.

Non-metallic Sheathed Cable

Type NMD90 XLPE

Alcan Type NMD90 is CSA-certified and is suitable for residential branch circuit wiring in dry locations. The construction features Type R90 XLPE NUAL conductors, a bare bonding conductor and a PVC outer jacket. NMD90 is available in sizes 8 to 2 AWG NUAL.

CEC ampacities

Size	Ampacity	
	Table 3	Table 4
8	45	30
6	80	*55
4	105	65
3	120	75
2	140	*95
1	165	105
1/0	190	120
2/0	220	145
3/0	255	165
4/0	300	**185
250	330	215
300	375	240
350	415	260
400	450	290
500	515	330
600	585	370
750	670	405
1000	800	480
1500	1020	580

* For 3 wire 120/240 and 120/208 V residential services or sub-services the allowable ampacity for size number 6AWG shall be 60 A and size 2AWG shall be 100 A. In this case the 5% adjustment per Rule 8-106(1) cannot be applied.

** Subject to the permission and conditions of the electrical inspection authority having jurisdiction, the conductors shall be allowed for 200 A rated residential services.

Table 3 ampacities are for free air installations.

Table 4 ampacities are for 3 conductors in conduit, not including neutral conductor for above ground installations.



NUAL RW90 XLPE Minus 40°C – 600 V

CSA-certified Type RW90 XLPE is recognized for use in enclosed raceways in wet and dry locations. Most commonly, an approved raceway would consist of rigid metal or plastic conduit, flexible conduit, electrical

metallic tubing or other enclosed raceway. Type RW90 XLPE is certified to be pulled into underground ducts. Standard RW90 XLPE is not approved for direct burial in the earth.

TABLE 1

Conductor Size AWG or kcmil	Conductor Diameter		Insulation Thickness mm	Overall Diameter mm	Approximate Mass	
	NUAL compact mm				Conductor Metal kg/km	Total kg/km
8	3.40		1.14	5.80	23.1	40.1
6	4.29		1.14	6.69	36.8	57.3
4	5.41		1.14	7.81	58.5	83.4
3	6.05		1.14	8.51	73.7	102
2	6.81		1.14	9.23	93.0	124
1	7.59		1.40	10.6	117	158
1/0	8.53		1.40	11.6	148	194
2/0	9.55		1.40	12.6	186	237
3/0	10.7		1.40	13.7	235	289
4/0	12.1		1.40	15.1	296	347
250	13.2		1.65	16.8	350	431
300	14.5		1.65	18.0	420	506
350	15.6		1.65	19.2	490	585
400	16.7		1.65	20.3	559	657
500	18.7		1.65	22.2	701	810
600	20.7		2.03	25.0	841	997
750	23.1		2.03	27.4	1050	1206
1000	26.9		2.03	31.3	1400	1604
*1500	35.9		2.41	41.0	2117.6	2467

Conversion Factors:

kcmil x 0.5067 = mm²
 mm x 0.0394 = inches
 kg/km x 0.6720 = lb/M ft.

*Conventional stranding.
 Size 8 - 1000 are compact.

