

PVC & LSOH BUILDING WIRES / FLEXIBLE CABLES



NUHAS OMAN

CABLES & WIRES

QUALITY & RELIABILITY



NUHAS OMAN - SPECIALITY WIRES & CABLES



شركة نحاس عمان - للأسلاك والكابلات المتخصصة

COMPANY PROFILE

Nuhas Oman LLC, a member of the Al-Bahja Group of Companies, is an ISO 9001:2015 BASEC, UK certified integrated quality producer of LV and MV Cables, Wires & Conductors and Oxygen Free High Conductivity Continuous Cast Copper Rods in the Sultanate of Oman.

Nuhas is also certified to ISO 14001:2015 and ISO 45001:2018 by Bureau Veritas, Oman for HSE management system.

Our current capabilities are:

1. World-class Speciality Insulated Wires and Cables manufactured in state of art facility.
2. Oxygen Free High Conductivity Continuous Copper rod produced by UPCAST® System.
3. Nuhas Oman offers wide range of Cables :
 - Medium Voltage cables (Copper & Aluminium Conductor) up to 33 kV
 - Low Voltage cables
 - Power & Control Cables (Copper & Aluminium Conductor)
 - Instrumentation Cables
 - Flexible cords and Building wires
 - LPCB approved Fire Resistant Cables
 - LPCB approved Fire Alarm Cables
 - Offshore & Shipboard Cables
 - Multi layer sheathed chemical resistant Cables
 - Rubber Flexible Cables
 - Photovoltaic (Solar) Cables

Our product range meet the requirements of a broad spectrum of applications including - Industrial, Power & Control, Petrochemical, Oil & Gas, Ship Building and Offshore Platforms, Building & Construction, Hospitals, Hotels, Entertainment & Security etc. Nuhas Oman Cables are type test approved by BSI,U.K; KEMA,Netherlands; DEKRA,VDE,UL,LPCB & DNV-GL complying with relevant international BS & IEC Specifications. Our Cables are approved by various utilities, large corporates and global consultants such as Distribution Code Review Panel (DCRP),Oman; NAMA Holding (Mazoon,MEDC,Majan,Tanweer,DPC), Ministry of Electricity & Water,JSRS, Petroleum Development Oman (PDO), Oman Oil Refineries Petroleum Industries Company (ORPIC),Duqm Refinery, Daleel Petroleum,Oman Oil Company,Oman LNG, Oman Gas Company, Ministry of Transport, Ministry of Communications, Ministry of Defence, Royal Oman Police (ROP), Royal Court Affairs (RCA), Ministry of Health, Special Economic Zone Authority Duqm (SEZAD), Muscat Municipality, Occidental (Oxy), BP, Shell, Petrofac, Atkins, Parsons, Worley Parsons, SSH, Khatib and Alami, Mott MacDonald, Renardet etc.

Abu Dhabi Water & Electricity Authority (ADWEA), Abu Dhabi National Oil Company (ADNOC), Qatar General Electricity & Water Authority (Kahramaa), Qatar Civil Defense, Kuwait National Petroleum Company (KNPC), Electricity Distribution Directorate, Kingdom of Bahrain, Ministry of Electricity & Water authority,Kuwait; Saudi Electricity Company, KEO International, Arab Engineering Bureau, COWI etc.

New product development is a continuing activity at Nuhas Oman.

Nuhas is the first producer in the Middle East to have been certified by DNV-GL,Norway capable of manufacturing power, control and instrumentation cables for shipboard,high speed/light craft and off-shore applications. Nuhas Oman manufactures FRC 500 Fire Resistant LV cables and FRC 300 Fire Alarm screened cables which are type approved by LPCB, UK. Nuhas Oman also offers Power, Control & Instrumentation Cables with multilayer (AL-HDPE-PA) sheath as an alternative to Lead sheathed cables for better chemical protection mainly used in Petrochemical industry.

Nuhas is committed to deliver quality products that conform to relevant International standards. Our quality cycle commences from the time of sourcing of raw materials and consumables, in-process production controls and certification of finished goods prior to delivery. A well-equipped in-house quality assurance facility ensures that all products delivered meet stringent quality controls and parameters. Our state-of-the-art laboratory is equipped for testing as per required standards as well as individual customer specifications.

Our production and quality management systems are manned by a team of experienced professionals backed with relevant industry experience. Nuhas Oman is committed to excellence in the management of health, safety, environment and labor practices. We are committed to promoting and protecting the welfare of our employees through "Safety First" work practices and providing a healthy workplace. Nuhas Oman also ensures compliance with the laws and regulations of the land. Nuhas Oman endeavors to be a responsible corporate citizen and fulfills its responsibilities through its Corporate Social Responsibility initiatives. Our global client base extending from Far East Asia, Indian sub-continent, the GCC, Africa to Europe is testimony to customer confidence and satisfaction. The company is committed to meet the challenges of the Domestic & Global markets for supply of world class Cables & Wires, while maintaining the sanctity of our pristine environment.

Table 1

SINGLE CORE PVC INSULATED CABLES			
Type	H05V-U, H07V-U, H07V-R	Applications	In dry rooms, in apparatus, switch and distribution boards, for laying in conduit on and under plaster and on insulating supports above plaster
Standards	BS EN 50525-2-31 : 2011		
Construction	1) Oxygen Free Electronic Copper Conductor 2) PVC Insulation	Technical Data	Max. Operating Temperature: 70°C Rated Voltage: 300/500 V (H05V-U) 450/750 V (H07V-U, H07V-R)
Packing	In rolls of 100 yards, spools, drums or as per customer requirements		

NOMINAL CROSS SECTION	CLASS OF COPPER CONDUCTOR	INSULATION THICKNESS	NOM. OVERALL DIAMETER	APPROX. NET WEIGHT	STANDARD LENGTH
(mm²)		(mm Nominal)	(mm)	(kg/km)	
H05V-U 300/500 V					
0.50	1	0.6	2.3	9	Yards 100
0.75	1	0.6	2.5	11	100
1.0	1	0.6	2.7	14	100
H07V-U 450/750 V					
1.5	1	0.7	3.2	21	100
2.5	1	0.8	3.9	32	100
4	1	0.8	4.4	47	100
6	1	0.8	5.0	66	100
H07V-R 450/750 V					
1.5	2	0.7	3.3	21	100
2.5	2	0.8	4.0	32	100
4	2	0.8	4.6	47	100
6	2	0.8	5.2	66	100
Meters					
10	2	1.0	6.7	115	300
16	2	1.0	7.8	175	300
25	2	1.2	9.3	260	1000
35	2	1.2	10.5	350	1000
50	2	1.4	11.9	480	1000
70	2	1.4	13.6	670	1000
95	2	1.6	15.7	925	1000
120	2	1.6	17.2	1150	1000
150	2	1.8	19.0	1415	1000
185	2	2.0	21.1	1775	1000
240	2	2.2	23.8	2320	1000
300	2	2.4	26.5	2895	1000
400	2	2.6	29.6	3695	1000
500	2	2.8	33.0	4720	1000
630	2	2.8	36.7	6030	500



Table 2

SINGLE CORE PVC INSULATED FLEXIBLE CABLES			
Type	H05V-K, H07V-K	Applications	Flexible wire, for protected installation in equipment and lighting fitting conduit or under plaster
Standards	BS EN 50525-2-31 : 2011		
Construction	1) Fine stranded Oxygen Free Electronic copper wire 2) PVC Insulation	Technical Data	Max. Operating Temperature: 70°C Rated Voltage: 300/500 V H05V-K 450/750 V H07V-K
Packing	In rolls of 100 yards, spools, drums or as per customer requirements		

NOMINAL CROSS SECTION	CLASS OF COPPER CONDUCTOR	INSULATION THICKNESS	NOM. OVERALL DIAMETER	APPROX. NET WEIGHT	STANDARD LENGTH
(mm ²)		(mm Nominal)	(mm)	(kg/km)	
H05V-K 300/500 V					
0.5	5	0.6	2.5	9	Yards 100
0.75	5	0.6	2.7	11	100
1.0	5	0.6	2.8	14	100
H07V-K 450/750 V					
1.5	5	0.7	3.4	21	100
2.5	5	0.8	4.1	32	100
4	5	0.8	4.8	47	100
6	5	0.8	5.3	66	100
Meters					
10	5	1.0	6.8	110	300
16	5	1.0	8.1	170	300
25	5	1.2	10.2	266	1000
35	5	1.2	11.7	360	1000
50	5	1.4	13.9	494	1000
70	5	1.4	16.0	696	1000
95	5	1.6	18.2	965	1000
120	5	1.6	20.2	1203	1000
150	5	1.8	22.5	1483	1000
185	5	2.0	24.9	1852	1000
240	5	2.2	28.4	2424	1000

Table 3

HEAT RESISTANT SINGLE CORE PVC INSULATED CABLES			
Type	H07V2-R H07V2-U	Applications	In dry rooms, in apparatus, switch and distribution boards, for laying in conduit on and under plaster and on insulating supports above plaster
Standards	BS EN 50525-2-31 : 2011		
Construction	1) Oxygen Free Electronic Copper Conductor 2) HR PVC Insulation	Technical Data	Max. Operating Temperature: 90°C/105°C Rated Voltage: 450/750 V
Packing	In rolls of 100 yards, spools, drums or as per customer requirements		

NOMINAL CROSS SECTION	CLASS OF COPPER CONDUCTOR	INSULATION THICKNESS	NOM. OVERALL DIAMETER	APPROX. NET WEIGHT	STANDARD LENGTH
(mm ²)		(mm Nominal)	(mm)	(kg/km)	
H07V2-U 450/750 V					Yards
1.5	1	0.7	3.2	21	100
2.5	1	0.8	3.9	32	100
4	1	0.8	4.4	47	100
6	1	0.8	5.0	66	100
H07V2-R 450/750 V					Meters
1.5	2	0.7	3.3	21	100
2.5	2	0.8	4.0	32	100
4	2	0.8	4.6	47	100
6	2	0.8	5.2	66	100
10	2	1.0	6.7	110	300
16	2	1.0	7.8	170	300
25	2	1.2	9.3	255	1000
35	2	1.2	10.5	345	1000
50	2	1.4	11.9	470	1000
70	2	1.4	13.6	665	1000
95	2	1.6	15.7	920	1000
120	2	1.6	17.2	1145	1000
150	2	1.8	19.0	1410	1000
185	2	2.0	21.1	1765	1000
240	2	2.2	23.8	2310	1000
300	2	2.4	26.5	2885	1000
400	2	2.6	29.6	3685	1000
500	2	2.8	33.0	4710	1000
630	2	2.8	36.7	6030	500



Table 4

HEAT RESISTANT SINGLE CORE PVC INSULATED FLEXIBLE CABLES			
Type	H07V2-K	Applications	Flexible wire, for protected installation in equipment and lighting fitting conduit or under plaster
Standards	BS EN 50525-2-31 : 2011		
Construction	1) Fine stranded Oxygen Free Electronic copper wire 2) HR PVC Insulation	Technical Data	Max. Operating Temperature: 90°C / 105°C Rated Voltage: 450/750 V
Packing	In rolls of 100 yards, spools, drums or as per customer requirements		

NOMINAL CROSS SECTION	CLASS OF COPPER CONDUCTOR	INSULATION THICKNESS	NOM. OVERALL DIAMETER	APPROX. NET WEIGHT	STANDARD LENGTH
(mm ²)		(mm Nominal)	(mm)	(kg/km)	
H07V2-K 450/750 V					Yards
1.5	5	0.7	3.4	21	100
2.5	5	0.8	4.1	32	100
4	5	0.8	4.8	47	100
6	5	0.8	5.3	66	100
					Meters
10	5	1.0	6.8	110	300
16	5	1.0	8.1	170	300
25	5	1.2	10.2	266	1000
35	5	1.2	11.7	360	1000
50	5	1.4	13.9	494	1000
70	5	1.4	16.0	696	1000
95	5	1.6	18.2	965	1000
120	5	1.6	20.2	1203	1000
150	5	1.8	22.5	1483	1000
185	5	2.0	24.9	1852	1000
240	5	2.2	28.4	2424	1000


Table 5

FLEXIBLE CIRCULAR 2, 3, 4 & 5 CORE CABLES			
Reference Standards	BS EN 50525-2-11		Applications For household appliances under medium mechanical stresses, also in damp and wet conditions
Construction	1) Oxygen Free Electronic Copper Conductor – Class 5 2) PVC Insulation Type TI 2 3) PVC Sheath – Type TM 2		
Packing	In coils/drums or as per customer requirements		Technical Data Rated Voltage: 300/500 V Temperature: 70°C

No. of Cores	Nominal Cross Section (mm ²)	Nominal Insulation Thickness (mm)	Nominal Sheath Thickness (mm)	Mean Overall Diameter (mm)		Approx. Weight per km (kg.)
				Lower Limit	Upper Limit	
2	0.75	0.6	0.8	5.7	7.2	65
2	1.0	0.6	0.8	5.9	7.5	70
2	1.5	0.7	0.8	6.8	8.6	100
2	2.5	0.8	1.0	8.4	10.6	150
2	4	0.8	1.1	9.7	12.1	195
3	0.75	0.6	0.8	6.0	7.6	75
3	1.0	0.6	0.8	6.3	8.0	90
3	1.5	0.7	0.9	7.4	9.4	120
3	2.5	0.8	1.1	9.2	11.4	185
3	4	0.8	1.2	10.5	13.1	240
4	0.75	0.6	0.8	6.6	8.3	90
4	1.0	0.6	0.9	7.1	9.0	110
4	1.5	0.7	1.0	8.4	10.5	160
4	2.5	0.8	1.1	10.1	12.5	230
4	4	0.8	1.2	11.5	14.3	300
5	0.75	0.6	0.9	7.4	9.3	110
5	1.0	0.6	0.9	7.8	9.8	130
5	1.5	0.7	1.1	9.3	11.6	190
5	2.5	0.8	1.2	11.2	13.9	275
5	4	0.8	1.4	13.0	16.1	370

Table 6

SINGLE CORE FIRE RESISTANT THERMOSETTING LSOH INSULATED WIRING CABLES			
Reference standards	BS 7211: 2012, BS 8592	Applications	These types of Cables are having self-extinguishing behaviour without halogenidric acids emission. Furthermore toxic and corrosive gases and smoke evolution is reduced to very low level. These characteristics make this ideal for usage where safety behaviour is important at public places in case of fire.
Construction	1) Oxygen Free Electronic Copper Conductor 2) Mica Tape 3) LSOH Insulation		
		Technical data	Max. Operating Temperature: 90°C Rated Voltage: 450/750 V
Packing	In rolls of 100 yards, spools, drums or as per customer requirements.	Requirements for LSOH Cables	Oxygen index - Minimum 30 Smoke density - Maximum 60% Acid gas - Maximum 0.5% by weight

Nominal Cross Section	Class of Copper Conductor	Nominal Insulation Thickness	Nom. Overall Diameter	Approx. Net Weight	Standard Length
(mm ²)		(mm)	(mm)	(kg/km)	Yards
1.5	2	0.7	3.6	25	100
2.5	2	0.8	4.2	35	100
4	2	0.8	4.7	50	100
6	2	0.8	5.3	70	100
					Meters
10	2	1.0	6.7	115	300
16	2	1.0	7.5	170	300
25	2	1.2	9.1	265	1000
35	2	1.2	10.1	360	1000
50	2	1.4	11.9	480	1000
70	2	1.4	13.8	670	1000
95	2	1.6	15.9	930	1000
120	2	1.6	17.4	1160	1000
150	2	1.8	19.6	1430	1000
185	2	2.0	21.4	1780	1000
240	2	2.2	24.2	2330	1000
300	2	2.4	27.0	2900	1000
400	2	2.6	30.0	3700	500
500	2	2.8	33.5	4720	500
630	2	2.8	37.2	6040	500



Table 7

SINGLE CORE THERMOSETTING INSULATED LSOH WIRING CABLES			
Type	H05Z-U , H07Z- U, H07Z- R	Applications	These types of Cables are having self-extinguishing behaviour without halogenidric acids emission. Furthermore toxic and corrosive gases and smoke evolution is reduced to very low level. These characteristics make this ideal for usage where safety behaviour is important at public places in case of fire
Reference Standards	BS EN 50525-3-41: 2011		
Construction	1) Oxygen Free Electronic Copper Conductor 2) Thermosetting / LSOH Insulation		
Packing	In rolls of 100 yards, spools, drums or as per customer requirements.	Technical Data	Max. Operating Temperature: 90°C Rated Voltage: 300/500 V H05Z-U 450/750 V H07Z- U, H07Z- R
		Requirements for LSOH Cables	Oxygen index - Minimum 30 Smoke density - Maximum 60% Acid gas - Maximum 0.5% by weight

NOMINAL CROSS SECTION	CLASS OF COPPER CONDUCTOR	INSULATION THICKNESS	NOM. OVERALL DIAMETER	APPROX. NET WEIGHT	STANDARD LENGTH
(mm ²)		(mm)	(mm)	(kg/km)	
H05Z-U 300/500 V					
0.50	1	0.6	2.3	9	Yards 100
0.75	1	0.6	2.5	11	100
1.00	1	0.6	2.7	14	100
H07Z-U 450/750 V					
1.5	1	0.7	3.2	21	100
2.5	1	0.8	3.9	32	100
4.0	1	0.8	4.4	47	100
6.0	1	0.8	5.0	66	100
H07Z-R 450/750 V					
1.5	2	0.7	3.3	21	100
2.5	2	0.8	4.0	32	100
4.0	2	0.8	4.6	47	100
6.0	2	0.8	5.2	66	100
Meters					
10	2	1.0	6.7	110	300
16	2	1.0	7.8	170	300
25	2	1.2	8.2	255	1000
35	2	1.2	9.3	345	1000
50	2	1.4	10.9	470	1000
70	2	1.4	12.6	665	1000
95	2	1.6	14.7	920	1000
120	2	1.6	16.2	1150	1000
150	2	1.8	17.8	1415	1000
185	2	2.0	20.1	1765	1000
240	2	2.2	22.8	2310	1000
300	2	2.4	25.3	2890	1000
400	2	2.6	29.0	3685	1000
500	2	2.8	32.2	4700	1000
630	2	2.8	35.4	6000	500


Table 8

SINGLE CORE THERMOSETTING INSULATED AND SHEATHED LSOH CABLES			
Reference Standards	BS 7211: 2012	Applications	These types of Cables are having self-extinguishing behaviour without halogenidric acids emission. Furthermore toxic and corrosive gases and smoke evolution is reduced to very low level. These characteristics make this ideal for usage where safety behaviour is important at public places in case of fire
Construction	1) Oxygen Free Electronic Copper Conductor 2) Thermosetting / LSOH Insulation 3) LSOH Sheath		
Packing	In rolls of 100 yards, spools, drums or as per customer requirements.	Technical Data	Max. Operating Temperature: 90°C Rated Voltage: 300/500 V
		Requirements for LSOH Cables	Oxygen index - Minimum 30 Smoke density - Maximum 60% Acid gas - Maximum 0.5% by weight

NOMINAL CROSS SECTION	CLASS OF COPPER CONDUCTOR	INSULATION THICKNESS	SHEATH THICKNESS	NOM. OVERALL DIAMETER	APPROX. NET WEIGHT
(mm ²)		(mm)	(mm)	(mm)	(kg/km)
1.0	1	0.7	0.8	4.8	28
1.0	2	0.7	0.8	4.9	28
1.5	1	0.7	0.8	5.0	36
1.5	2	0.7	0.8	5.2	36
2.5	1	0.7	0.8	5.5	50
2.5	2	0.7	0.8	5.6	51
4	1	0.7	0.9	6.3	72
4	2	0.7	0.9	6.4	75
6	1	0.7	0.9	6.8	95
6	2	0.7	0.9	7.1	98
10	2	0.7	0.9	8.1	150
16	2	0.7	0.9	9.2	220
25	2	0.9	1.0	11.4	300
35	2	0.9	1.1	12.8	400

GENERAL CABLE TECHNICAL DATA & RATING FACTORS



Current carrying capacities at ambient temperature 30°C

The tabulated current carrying capacities relate to continuous loading and are also known as the "full thermal ratings" implying that the cables will operate at their maximum conductor continuous temperature of 70°C. The data is extracted from IEE Wiring Regulations 16th Edition.

The tabulated current rating capacities also relate to installations where the overload protection is afforded by a fuse to BS 88 or BS 1361 or a miniature circuit breaker to BS 3871. Where the conductor is protected by a semi-enclosed fuse to BS 3036, the size of the conductor is to be such that its tabulated current carrying capacity is not less than the value of the fuse rating adjusted by multiplier 1.38 in addition to the correction factors for ambient temperature, thermal insulation and grouping. For details refer to clause 6.2 of Appendix 4 - IEE Wiring Regulations 16th Edition.

Voltage Drop Data

For a given cable run, to calculate the voltage drop (in mV), the tabulated value (mV/A/m) has to be multiplied by the cable route length in metres and the design current. For three-phase circuits the tabulated mV/A/m values relate to the line voltage.

For cables of 16mm² or less cross sectional area, the inductance can be ignored and mV/A/m values are based on resistance (r) only. For cables of cross sectional area greater than 16mm², mV/A/m values based on resistance (r) and inductance (x) are significant. However for brevity, Table, for single core cables of sizes 25mm² & 35mm², list (mV/A/m) z values based on total impedance (z) only.

Where the power factor of the A.C. load is widely different from the cable power factor, use of (mV/A/m) z values for calculating the volt drop may give a pessimistically high value. For detailed information, reference should be made to Appendix 4 of the IEE Wiring Regulations 16th Edition.

Table 1
Single-core 70° C thermoplastic (PVC) insulated cables, non-armoured, with or without sheath
(COPPER CONDUCTORS)

Ambient temperature: 30° C
 Conductor operating temperature: 70° C

CURRENT-CARRYING CAPACITY (amperes)

Conductor cross sectional area	Reference method A (enclosed in conduit insulating wall etc.)		Reference Method B (enclosed in conduit on a wall or in trunking etc.)		Reference Method C (clipped direct)		Reference Method F (in free air or on a perforated cable tray horizontal or vertical)				
	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three phase a.c.	2 cables, single-phase a.c. or d.c.	3 or 4 cables, three phase a.c.	2 cables, single-phase flat and touching	3 or 4 cables, three phase a.c. flat and trefoil	2 cables, single phase flat a.c. or d.c.	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	Spaced by one diameter	
1	2	3	4	5	6	7	8	9	10	11	12
(mm ²)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)
1	11	10.5	13.5	12	15.5	14	-	-	-	-	-
1.5	14.5	13.5	17.5	15.5	20	18	-	-	-	-	-
2.5	20	18	24	21	27	25	-	-	-	-	-
4	26	24	32	28	37	33	-	-	-	-	-
6	34	31	41	36	47	43	-	-	-	-	-
10	46	42	57	50	65	59	-	-	-	-	-
16	61	56	76	68	87	79	-	-	-	-	-
25	80	73	101	89	114	104	131	114	110	146	130
35	99	89	125	110	141	129	162	143	137	181	162
50	119	108	151	134	182	167	196	174	167	219	197
70	151	136	192	171	234	214	251	225	216	281	254
95	182	164	232	207	284	261	304	275	264	341	311
120	210	188	269	239	330	303	352	321	308	396	362
150	240	216	300	262	381	349	406	372	356	456	419
185	273	245	341	296	436	400	463	427	409	521	480
240	321	286	400	346	515	472	546	507	485	615	569
300	367	328	458	394	594	545	629	587	561	709	659
400	-	-	546	467	694	634	754	689	656	852	795
500	-	-	626	533	792	723	868	789	749	982	920
630	-	-	720	611	904	826	1005	905	855	1138	1070

Table - 1 A
For Wires / Cables as mentioned in Table 1

Conductor cross sectional area	2 cables d.c.			2 cables, single-phase a.c.				3 or 4 cables, three-phase a.c.				
	(mV/A/m)	Reference Methods A & B (enclosed in conduit or trunking)		Reference Methods C & F (clipped direct, on tray or in free air)		Reference Methods A & B (enclosed in conduit or trunking)	Reference methods C & F (clipped direct, on tray or in free air)					
		2	3	4	3		4	5	6	7	8	
1												
(mm ²)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)
1	44	44	44	44	44	38	38	38	38	38	38	38
1.5	29	29	29	29	29	25	25	25	25	25	25	25
2.5	18	18	18	18	18	15	15	15	15	15	15	15
4	11	11	11	11	11	9.5	9.5	9.5	9.5	9.5	9.5	9.5
6	7.3	7.3	7.3	7.3	7.3	6.4	6.4	6.4	6.4	6.4	6.4	6.4
10	4.4	4.4	4.4	4.4	4.4	3.8	3.8	3.8	3.8	3.8	3.8	3.8
16	2.8	2.8	2.8	2.8	2.8	2.4	2.4	2.4	2.4	2.4	2.4	2.4
25	1.75	1.80	1.80	1.75	1.80	1.55	1.50	1.55	1.55	1.55	1.55	1.55
35	1.25	1.30	1.30	1.25	1.30	1.10	1.10	1.10	1.10	1.10	1.10	1.15
50	0.93	1.00	1.00	0.95	0.97	0.85	0.82	0.84	0.84	0.84	0.86	0.86
70	0.63	0.72	0.72	0.66	0.69	0.61	0.57	0.60	0.60	0.60	0.63	0.63
95	0.46	0.56	0.56	0.50	0.54	0.48	0.43	0.47	0.47	0.47	0.51	0.51
120	0.36	0.47	0.47	0.41	0.45	0.41	0.36	0.40	0.40	0.40	0.44	0.44
150	0.29	0.41	0.41	0.34	0.39	0.36	0.30	0.34	0.34	0.34	0.40	0.40
185	0.23	0.37	0.37	0.29	0.35	0.32	0.26	0.31	0.31	0.31	0.36	0.36
240	0.180	0.33	0.33	0.25	0.31	0.29	0.22	0.27	0.27	0.27	0.34	0.34
300	0.145	0.31	0.31	0.22	0.29	0.27	0.190	0.25	0.25	0.25	0.32	0.32
400	0.105	0.29	0.29	0.20	0.27	0.25	0.175	0.24	0.24	0.24	0.31	0.31
500	0.086	0.28	0.28	0.185	0.26	0.25	0.160	0.23	0.23	0.23	0.30	0.30
630	0.068	0.27	0.27	0.175	0.25	0.24	0.150	0.22	0.22	0.22	0.29	0.29

* Note: Spacing larger than one cable diameter will result in a larger voltage drop

Table 2
Single-core 90° C thermosetting insulated (XLPE or LSOH) cables, non-armoured, with or without sheath
(COPPER CONDUCTORS)

Ambient temperature: 30° C
Conductor operating temperature: 90° C

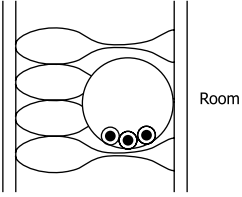
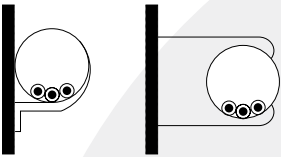
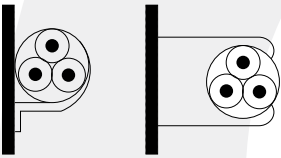
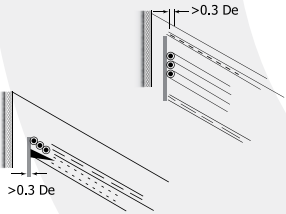
Conductor cross sectional area	CURRENT-CARRYING CAPACITY (amperes)									
	Reference method A (enclosed in conduit in thermally insulating wall etc.)		Reference Method B (enclosed in conduit on a wall or in trunking etc.)		Reference Method C (clipped direct)			Reference Method F (in free air or on a perforated cable tray horizontal or vertical)		
	2 cables, single phase a.c. or d.c.	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c	3 or 4 cables, three-phase a.c.	2 cables, single-phase a.c. or d.c. flat and touching	3 or 4 cables, three-phase a.c. flat and touching or trefoil	2 cables, single-phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	10
1 (mm ²)	2 (A)	3 (A)	4 (A)	5 (A)	6 (A)	7 (A)	8 (A)	9 (A)	10 (A)	
1	14	13	17	15	19	17.5	-	-	-	-
1.5	19	17	23	20	25	23	-	-	-	-
2.5	26	23	31	28	34	31	-	-	-	-
4	35	31	42	37	46	41	-	-	-	-
6	45	40	54	48	59	54	-	-	-	-
10	61	54	75	66	81	74	-	-	-	-
16	81	73	100	88	109	99	-	-	-	-
25	106	95	133	117	143	130	161	141	135	135
35	131	117	164	144	176	161	200	176	169	169
50	158	141	198	175	228	209	242	216	207	207
70	200	179	253	222	293	268	310	279	268	268
95	241	216	306	269	355	326	377	342	328	328
120	278	249	354	312	413	379	437	400	383	383
150	318	285	393	342	476	436	504	464	444	444
185	362	324	449	384	545	500	575	533	510	510
240	424	380	528	450	644	590	679	634	607	607
300	486	435	603	514	743	681	783	736	703	703
400	-	-	683	584	868	793	940	868	823	823
500	-	-	783	666	990	904	1083	998	946	946
630	-	-	900	764	1130	1033	1254	1151	1088	1088

Table - 2 A
For Wires /cables as mentioned in Table 2
Conductor operating temperature: 90° C

VOLTAGE DROP (per ampere per metre)		2 cables, single-phase a.c.			3 or 4 cables, three-phase a.c.			
		2 cables d.c. (mV/ A/m)	Reference Methods A & B (enclosed in conduit or trunking)	Reference Methods C & F (clipped direct, on tray or in free air)	Reference Methods A & B (enclosed in conduit or trunking)	Reference methods C & F (clipped direct, on tray or in free air)		
1	2	3	4	5	6	7	8	9
Conductor cross sectional area (mm ²)	(mV/ A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)	(mV/A/m)
			Cables touching	Cables spaced*		Cables touching, Trefoil	Cables touching, Flat	Cables spaced*, Flat
1	46	46	46	46	40	40	40	40
1.5	31	31	31	31	27	27	27	27
2.5	19	19	19	19	16	16	16	16
4	12	12	12	12	10	10	10	10
6	7.9	7.9	7.9	7.9	6.8	6.8	6.8	6.8
10	4.7	4.7	4.7	4.7	4.0	4.0	4.0	4.0
16	2.9	2.9	2.9	2.9	2.5	2.5	2.5	2.5
25	1.85	1.90	1.85	1.85	1.65	1.60	1.60	1.65
35	1.35	1.35	1.35	1.35	1.15	1.15	1.15	1.20
50	0.99	1.05	1.00	1.00	0.90	0.87	0.87	0.89
70	0.68	0.75	0.71	0.73	0.65	0.61	0.62	0.65
95	0.49	0.58	0.52	0.56	0.50	0.45	0.46	0.49
120	0.39	0.48	0.43	0.47	0.42	0.37	0.38	0.42
150	0.32	0.43	0.36	0.41	0.37	0.31	0.32	0.37
185	0.25	0.37	0.30	0.36	0.32	0.26	0.28	0.33
240	0.190	0.33	0.25	0.31	0.29	0.22	0.24	0.29
300	0.155	0.31	0.22	0.29	0.27	0.195	0.21	0.27
400	0.120	0.29	0.20	0.27	0.25	0.175	0.195	0.26
500	0.093	0.28	0.185	0.26	0.24	0.160	0.180	0.25
630	0.072	0.27	0.175	0.25	0.23	0.150	0.170	0.24

* Note: Spacing larger than one cable diameter will result in a larger voltage drop

Table - 3
Installation Methods for Wires/Cables

Examples	Description	Reference Method to be used to determine current carrying capacity
	Non-sheathed cables in conduit in a thermally insulated wall with an inner skin having a thermal conductance of not less than 10 W/m ² K	A
	Non-sheathed cables in a conduit on a wooden or masonry wall or spaced less than 0.3 x conduit diameter from it ^C	B
	Single-core or multicore cables: - Fixed on (clipped direct), or spaced less than 0.3 x cable diameter from wooden or masonry wall ^C	C
	Single-core or multicore cables: - On perforated tray run horizontally or vertically ^{C,h}	E or F

c Care is needed where the cable runs vertically and ventilation is restricted. The ambient temperature at the top of the vertical section can be much higher.

h De = the external diameter of a multicore cable:
 - 2.2 x the cable diameter when three single core cables are bound in trefoil, or
 - 3 x the cable diameter when three single core cables are laid in flat formation.

Table 4
Rating Factors

The tabulated ratings must be reduced for ambient air temperatures higher than 30°C; appropriate temperature ratings factors are as follows: -

Ambient Temperature	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C
PVC 70°C	1.03	1.00	0.94	0.87	0.79	0.71	0.61	0.5
Thermosetting 90°C (XLPE or LSF)	1.02	1.00	0.96	0.91	0.87	0.82	0.76	0.71

Table 5
Group Rating Factors

Rating factors for one circuit or one multicore cable or for a group of circuits, or a group of multicore cables, to be used with current carrying capacities of Table 6 & 7

Arrangement (cables touching)	Number of circuits or multicore cables												To be used with current carrying capacities, Reference
	1	2	3	4	5	6	7	8	9	12	16	20	
Bunched in air, on a surface, embedded or enclosed	1.00	0.80	0.70	0.65	0.60	0.57	0.54	0.52	0.50	0.45	0.41	0.38	Methods A to F
Single layer on wall or floor	1.00	0.85	0.79	0.75	0.73	0.72	0.72	0.71	0.70	0.70	0.70	0.70	Method C

NOTE 1: These factors are applicable to uniform groups of cables, equally loaded.

NOTE 2: Where horizontal clearances between adjacent cables exceeds twice their overall diameter, no rating factor need be applied.

NOTE 3: If a group consists of n single-core cables it may either be considered as n/2 circuits of two loaded conductors or n/3 circuits of three loaded conductors.



Table 2
DC resistance and Insulation resistance of Single Core Cables

Nominal Cross sectional area (mm ²)	Class of conductor	Maximum DC Resistance of conductor at 20°C, Ω/km	Minimum Insulation resistance at 70° C for PVC, MΩ.km	Minimum Insulation resistance at 90°C for LSOH, MΩ.km
			H05V-U 300/500 V	H05Z-U 300/500 V
0.5	1	36.0	0.014	0.013
0.75	1	24.5	0.013	0.011
1.0	1	18.1	0.011	0.010
			H07V-U 450/750 V	H07Z-U 450/750 V
1.5	1	12.1	0.011	0.011
2.5	1	7.41	0.010	0.010
4	1	4.61	0.009	0.009
6	1	3.08	0.007	0.007
			H07V-R 450/750 V	H07Z-R 450/750 V
1.5	2	12.1	0.010	0.010
2.5	2	7.41	0.010	0.009
4	2	4.61	0.008	0.008
6	2	3.08	0.007	0.007
10	2	1.83	0.007	0.007
16	2	1.15	0.006	0.005
25	2	0.727	0.005	0.005
35	2	0.524	0.005	0.004
50	2	0.387	0.005	0.004
70	2	0.268	0.004	0.004
95	2	0.193	0.004	0.004
120	2	0.153	0.004	0.003
150	2	0.124	0.004	0.003
185	2	0.099	0.004	0.003
240	2	0.075	0.003	0.003
300	2	0.060	0.003	0.003
400	2	0.047	0.003	0.003
500	2	0.037	0.003	0.003
630	2	0.028	0.003	0.003





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