OmanCables
الكابلات العمانية

PVC & LSF
Building Wires / Cables

Contents

Company Profile

Oman Cables Industry (SAOG) develops, manufactures and markets a totally integrated variety of electrical products, which include medium voltage power cables, low voltage power and control cables, pilot cables, overhead power transmission line conductors and **building wires**.

OCI offers cables with special features suitable for different types of applications, environmental conditions or as per customer requirement.

- Flame retardant properties
- Low smoke and fume (LSF) properties
- Cables with anti-termite sheaths
- UV resistant outer sheath
- Lead sheath

The manufacturing facilities are situated within the largest industrial complex in Muscat, The Sultanate of Oman, with its offices and factory presently occupying an area of 135000 sqm with future expansion plans in mind. OCI have equivalent facilities in Sohar, Oman at its Aluminum manufacturing facility and together has a capacity of copper and aluminum of more than 120,000 MT annually.

Oman Cables Industry (SAOG) has its offices in Oman, UAE, Qatar, and KSA and has an extensive network of distributors and agents throughout MENA, Asia and Europe.

Notes on the use of PVC Insulated Wires / Cables as per BS 6004/ BS EN 50525-2-31

Polyvinyl Chloride (PVC) Compounds

PVC compounds used in wires and cables as per BS 6004/BS EN 50525-2-31, are described in BS EN 50363-3 / BS 7655-4.2

Several grades of compounds are detailed in these standards for both insulation and sheathing requirements. PVC compounds are thermoplastic by nature and consequently are designed to operate within a prescribed temperature range.

Grades of PVC can therefore be selected to suit particular environment temperatures, with the maximum conductor temperature for heat resisting grade PVC being 90^0 C and the lowest operating temperature grade PVC below minus 30^0 C. Oman Cables also offer LSF and FRLS cables, suitable for use in fire hazards areas or where safety of human life against toxic gases is of prime importance.

The majority of wiring installations, however, use a general purpose grade of PVC which has a maximum conductor operating temperature of 70^0 C; this grade of PVC wires should not be installed or flexed when the air temperature is nearing 0^0 C. A wide range of bright colours can be formulated with PVC compounds.

Sheath colours are normally grey, black or white. Other colours can be provided on special order but experience has shown that for outdoor use, black colour has the highest resistance to direct sunlight, with other colour tending to fade in the time under these conditions.

Notes on the use of LSF Insulated Wires/Cables as per BS 7211/BS EN 50525-3-41

LSF Compound

LSF Compound used in wires as per BS 7211/BS EN 50525-3-41 is Thermosetting Insulation suitable for operating temperature of 90^0 C, Type EI5 to BS EN 50363-5.

PVC when burnt emits large quantities of dense black smoke and acid gas, and in addition to the debilitating effect of smoke and toxic fume inhalation, obscuration of fire safety exits delays or prevents escape. Improved PVC formulations producing less smoke and acid gas have been developed but still do not satisfy required emission levels. The demand therefore has been for materials to replace PVC which do not give off smoke and toxic fumes and do not contain halogens. The materials need to have the following characteristics:-

a) Fire retardant and zero halogen
b) Low emission of smoke, toxic fumes and acid gases during combustion
c) Similar mechanical and electrical properties to PVC
d) Acceptable process-ability
e) Low additional cost

Detailed properties of the above material are

- Halogen Content – Max 0.5%
- pH value –Minimum 4.3
- Conductivity – maximum 10 micro Siemens/mm

Comparison of Chemical Resistance Properties of LSF and PVC

Properties	PVC	LSF
Oxidation Resistance	E	E
Heat Resistance	G-E	G
Oil Resistance	F	P
Low-Temperature Flexibility	P-G	F-G
Weather, Sun Resistance	G-E	P
Ozone Resistance	E	E
Abration Resistance	F-G	F
Electrical Properties	F-G	F
Flame Resistance	G	E
Nuclear Radiation Resistance	F	G
Water Resistance	F-G	F
Acid Resistance	G-E	G
Alkali Resistance	G-E	G
Aliphatic Hydrocarbons Resistance	P	P
Aromatic Hydrocarbons Resistance	P-F	P
Halogenated Hydrocarbons Resistance	P-F	P
Alcohol Resistance	P-F	G
Underground Burial	P-G	F-G

Legend : E = Excellent, G = Good, P = Poor, F = Fair

Materials, construction and identification

CU/PVC or CU/LSF Wire

CU/PVC/PVC or CU/LSF/LSF or CU/XLPE/LSF Cables

Conductor	Insulation	Sheath
Plain Copper (Solid or Stranded)	PVC or LSF or XLPE (Coloured)	PVC or LSF (Coloured)

OCI can provide all colours as mentioned in applicable standards for Insulation & for Sheath.

Note: LSF means Low Smoke & Fumes. It is also known as LSOH or LSZH. Therefore word 'LSF' wherever appeared in this catalogue can be considered as LSOH or LSZH.

Copper Conductor Construction

Table 1

Nominal Conductor Area (mm^2)	Minimum number of wires	Nominal diameter of conductor (mm)	Maximum conductor resistance (d.c.) at 20^0 C per km for Plain Annealed copper conductor (in ohm / km)
1.0	1*	1.13	18.1
1.5	7	1.59	12.1
1.5	1*	1.38	12.1
2.5	1*	1.78	7.41
2.5	7	2.01	7.41
4	7	2.52	4.61
6	7	3.12	3.08
10	7	4.00	1.83
16	6	4.80	1.15
25	6	5.90	0.727
35	6	6.90	0.524
50	6	8.10	0.387
70	12	9.70	0.268
95	15	11.40	0.193
120	18	12.90	0.153
150	18	14.30	0.124
185	30	16.00	0.0991
240	34	18.40	0.0754
300	34	20.60	0.0601
400	53	23.30	0.047
500	53	26.30	0.0366
630	53	30.00	0.0283
800	53	34.14	0.0221
1000	53	38.20	0.0176

* Solid Conductor

Note: Plain annealed copper conductor class 1 solid or class 2 stranded circular compacted or non-compacted as per BS EN 60228.

Single Core Cables (CU/PVC)

Table 2

PVC insulated, non-sheathed general purpose cables 450/750 V single core
(rigid conductor) as per BS EN 50525-2-31
Harmonized standard designation
Solid conductor H07V-U
Stranded conductor H07V-R

Nominal conductor area mm^2	Class of conductor	Nominal Radial Thickness of insulation mm	Maximum Overall diameter mm	Approximate weight kg/km
1.5	1	0.7	3.2	21
1.5	2	0.7	3.3	21
2.5	1	0.8	3.9	32
2.5	2	0.8	4.0	32
4	2	0.8	4.6	47
6	2	0.8	5.2	66
10	2	1.0	6.7	110
16	2	1.0	7.8	170
25	2	1.2	9.7	260
35	2	1.2	10.9	350
50	2	1.4	12.8	480
70	2	1.4	14.6	680
95	2	1.6	17.1	930
120	2	1.6	18.8	1160
150	2	1.8	20.9	1430
185	2	2.0	23.3	1740
240	2	2.2	26.6	2270
300	2	2.4	29.6	2840
400	2	2.6	33.2	3640
500	2	2.8	36.9	4650
630	2	2.8	41.1	5940
800	2	2.8	45.7	7780
1000	2	3.0	51.0	9635

Table 2 - A

PVC Insulated non-sheathed cable for internal wiring 300/500 V single core as per BS EN 50525-2-31.
Harmonized standard designation H05V-U

Nominal conductor area mm^2	Class of conductor	Nominal Radial Thickness of insulation mm	Maximum Overall diameter mm	Approximate weight kg/km
0.5	1	0.6	2.3	9
0.75	1	0.6	2.5	11
1.00	1	0.6	2.7	14

Construction (Table 2 & 2-A) : Plain annealed copper conductor, class 1 solid conductor, or class 2 stranded conductor, as per Table 1, PVC Insulation (Type TI -1 for 70^0 C operating temperature)**

** We can also provide HRPVC, Type TI -3 insulated non-sheathed cables (suitable for 90^0 C operating temperature)

Single Core Cables (CU/LSF)

Table 3

Thermosetting (LSF) insulated, non-sheathed cables 450/750 V Single core
(rigid conductors) as per BS EN 50525-3-41
Harmonized standard designation
Solid conductor H07Z-U
Stranded conductor H07Z-R

Nominal conductor area mm^2	Class of conductor	Nominal Radial Thickness of insulation mm	Maximum Overall diameter mm	Approximate weight kg/km
1.5	1	0.7	3.3	21
1.5	2	0.7	3.4	21
2.5	1	0.8	4.0	32
2.5	2	0.8	4.1	32
4	2	0.8	4.7	47
6	2	0.8	5.4	66
10	2	1.0	7.0	110
16	2	1.0	8.0	170
25	2	1.2	10.1	260
35	2	1.2	11.3	350
50	2	1.4	13.2	480
70	2	1.4	15.1	680
95	2	1.6	17.6	930
120	2	1.6	19.4	1160
150	2	1.8	21.6	1430
185	2	2.0	24.1	1740
240	2	2.2	27.5	2270
300	2	2.4	30.6	2840
400	2	2.6	34.3	3640
500	2	2.8	38.2	4650
630	2	2.8	42.5	5940

Table 3 - A

Thermosetting (LSF) Insulated non-sheathed cable for internal wiring 300/500 Volts single core as per BS EN 50525-3-41. Harmonized standard designation H05Z-U

Nominal conductor area mm^2	Class of conductor	Nominal Radial Thickness of insulation mm	Maximum Overall diameter mm	Approximate weight kg/km
0.50	1	0.6	2.4	9
0.75	1	0.6	2.6	11
1.00	1	0.6	2.8	14

Construction (Table 3 & 3-A) : Plain annealed copper conductor - Class 1 solid conductor or class 2 stranded conductor, as per Table 1, Thermosetting (LSF) insulation (Type EI5 for 90^0C operating temperature)

Single Core Cables (CU/PVC/PVC)

Table 4

Plain annealed copper conductor as per Table 3, PVC insulated, PVC sheathed cable 300/500 V single core as per BS 6004

Nominal conductor area mm^2	Nominal Radial Thickness of insulation mm	Nominal Radial Thickness of sheath mm	Overall diameter Maximum mm	Approximate weight kg/km
1*	0.6	0.8	4.5	28
1.5*	0.7	0.8	5.0	36
2.5*	0.8	0.8	5.7	51
4	0.8	0.9	6.7	75
6	0.8	0.9	7.3	98
10	1.0	0.9	8.8	150
16	1.0	1.0	10.1	220
25	1.2	1.1	12.1	300
35	1.2	1.1	13.5	400

* Solid Conductor

Single Core Cables (CU/XLPE/LSF or CU/LSF/LSF)

Table 5

Plain annealed Copper Conductor as per Table 1, Thermosetting insulated (XLPE or LSF), LSF sheathed cables 450/750 V single core as per BS 7211

Nominal conductor area mm^2	Nominal Radial Thickness of insulation mm	Nominal Radial Thickness of sheath mm	Overall diameter Maximum mm	Approximate weight kg/km
1*	0.7	0.8	4.8	28
1.5	0.7	0.8	5.2	36
2.5	0.7	0.8	5.6	51
4	0.7	0.9	6.4	75
6	0.7	0.9	7.1	98
10	0.7	0.9	8.1	150
16	0.7	0.9	9.2	220
25	0.9	1.0	11.4	300
35	0.9	1.1	12.8	400

* Solid Conductor

Table 6

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

Ambient temperature: 30° C

CURRENT-CARRYING CAPACITY (amperes) Conductor operating temperature: 70° C

Conductor cross sectional area	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	Touching			Spaced by one diameter	
							2 cables, single phase a.c. or d.c. flat	3 cables, three-phase a.c. flat	3 cables, three-phase a.c. trefoil	2 cables, single-phase a.c. or d.c. or 3 cables three-phase a.c. flat	
										Horizontal	Vertical
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 - 6 A

For Wires / Cables as mentioned in Table 6

VOLTAGE DROP (per ampere per metre) — Conductor operating temperature: 70° C

Conductor cross sectional area	2 cables d.c.	2 cables, single-phase a.c.			3 or 4 cables, three-phase a.c.			
		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)		
			Cables touching	Cables spaced*		Cables touching, Trefoil	Cables touching, Flat	Cables spaced*, Flat
1	2	3	4	5	6	7	8	9
(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)
1	44	44	44	44	38	38	38	38
1.5	29	29	29	29	25	25	25	25
2.5	18	18	18	18	15	15	15	15
4	11	11	11	11	9.5	9.5	9.5	9.5
6	7.3	7.3	7.3	7.3	6.4	6.4	6.4	6.4
10	4.4	4.4	4.4	4.4	3.8	3.8	3.8	3.8
16	2.8	2.8	2.8	2.8	2.4	2.4	2.4	2.4
25	1.75	1.80	1.75	1.80	1.55	1.50	1.55	1.55
35	1.25	1.30	1.25	1.30	1.10	1.10	1.10	1.15
50	0.93	1.00	0.95	0.97	0.85	0.82	0.84	0.86
70	0.63	0.72	0.66	0.69	0.61	0.57	0.60	0.63
95	0.46	0.56	0.50	0.54	0.48	0.43	0.47	0.51
120	0.36	0.47	0.41	0.45	0.41	0.36	0.40	0.44
150	0.29	0.41	0.34	0.39	0.36	0.30	0.34	0.40
185	0.23	0.37	0.29	0.35	0.32	0.26	0.31	0.36
240	0.180	0.33	0.25	0.31	0.29	0.22	0.27	0.34
300	0.145	0.31	0.22	0.29	0.27	0.190	0.25	0.32
400	0.105	0.29	0.20	0.27	0.25	0.175	0.24	0.31
500	0.086	0.28	0.185	0.26	0.25	0.160	0.23	0.30
630	0.068	0.27	0.175	0.25	0.24	0.150	0.22	0.29

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

Table 7

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

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

CURRENT-CARRYING CAPACITY (amperes)

Conductor cross-sectional area	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)		
							Touching		
	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
1	2	3	4	5	6	7	8	9	10
(mm^2)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(A)	(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
35	131	117	164	144	176	161	200	176	169
50	158	141	198	175	228	209	242	216	207
70	200	179	253	222	293	268	310	279	268
95	241	216	306	269	355	326	377	342	328
120	278	249	354	312	413	379	437	400	383
150	318	285	393	342	476	436	504	464	444
185	362	324	449	384	545	500	575	533	510
240	424	380	528	450	644	590	679	634	607
300	486	435	603	514	743	681	783	736	703
400	-	-	683	584	868	793	940	868	823
500	-	-	783	666	990	904	1083	998	946
630	-	-	900	764	1130	1033	1254	1151	1088

Table - 7 A

For Wires /cables as mentioned in Table 7

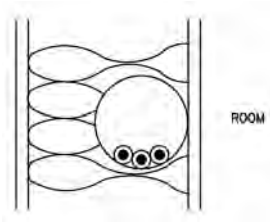
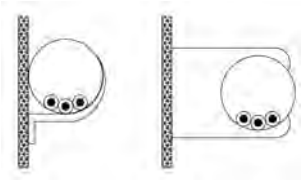
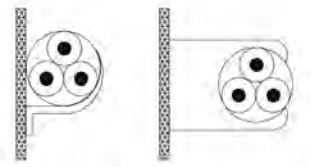
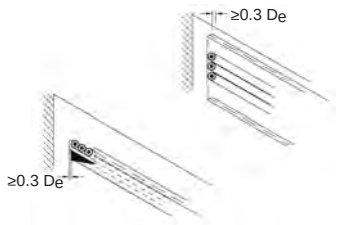
VOLTAGE DROP (per ampere per metre) — Conductor operating temperature: 90° C

Conductor cross-sectional area	2 cables d.c.	2 cables, single-phase a.c.			3 or 4 cables, three-phase a.c.			
		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)		
			Cables touching	Cables spaced*		Cables touching, Trefoil	Cables touching, Flat	Cables spaced*, Flat
1	2	3	4	5	6	7	8	9
(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)
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 - 8

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 D_e = 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 9

Rating Factors

The tabulated ratings must be reduced for ambient air temperatures higher than 30^0 C; appropriate temperature ratings factors are as follows: -

Ambient Temperature	25^0 C	30^0 C	35^0 C	40^0 C	45^0 C	50^0 C	55^0 C	60^0 C
PVC 70^0 C	1.03	1	0.94	0.87	0.79	0.71	0.61	0.5
Thermosetting 90^0 C (XLPE or LSF)	1.02	1	0.96	0.91	0.87	0.82	0.76	0.71

Table 10

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.

General Installation Guidelines

At temperatures of about 0^0 C plastic cables begin to stiffen and should not be bent sharply or struck at these, or lower temperatures. Prior to installation, cables should be stored for at least 24 hours in a warm place. Low temperatures have no harmful effect; cables regain their normal flexibility at higher temperatures.

Cables should be installed in accordance with the appropriate installation authority regulations.

Bending radius (minimum internal radius of bend) six times the diameter.

Special Guidelines for LSF insulated / sheathed cables

LSF (low smoke & fume) insulation / sheath does not have the same mechanical strength as other insulation / sheath material, particularly at higher temperatures. It is therefore recommended that LSF insulated/sheathed cables should be used mainly indoors, and only where cables have been specified to have low smoke and toxic gas emission property.

Installation

We recommend the following special guidelines, in conjunction with the standard installation instructions.

- The cables should be stored in proper packed condition, in shade and direct exposure to sun should be avoided.
- As LSF has lower tear strength property as compared to PVC/PE sheath, special care should be taken during installation to avoid any damage. Even a small cut on the LSF insulation/sheath will result in sheath cracking, as it will run in longitudinal direction due to lower tear strength property of LSF insulation/sheath.
- Use pay in rollers and corner rollers of non-metallic material (Nylon or Teflon) at least every 3 to 4 meters while laying the cable.
- As far as possible installation should be undercover or indoors. For outdoor installation, direct exposure to sunlight should be avoided by using a suitable cable tray.
- The cables should not be in contact with any hot surface.
- The requirement of minimum bending radius should be followed as per data sheet.
- Any clamping device should not be applied directly on the outer sheath. There should be some cushion (for instance a rubber pad of approx. 3 mm thickness) between the cable's outer surface and clamps.
- Maximum distance of unsupported length of cable for horizontal and vertical run should be as below:

Overall diameter of cable (mm)	Max. spacing between the supports for horizontal run (mm)	Max. spacing between the supports for vertical run (mm)
0-14.9	350	450
15-19.9	400	550
20-39.9	450	600
40-59.9	700	900
60 & above	1100	1300

Re-winding

In case re-winding should be necessary, extreme caution should be taken during the process to avoid damage The following should be adhered to:

- The winding should be done equally and uniformly with no over-riding of the coils or pinching on the sides of the drum.
- The pay-off drum should have an adequate braking system to prevent the cable from coming loose on the drum.

Oman Cables Quality Assurance

In order to ensure the best quality assurance system, it is extremely desirable to test and inspect the product at each stage of manufacturing including raw materials and finished product.

Oman Cables have the following Quality Assurance System:-

A. Raw Materials Inspection

B. In-process inspection

C. Finished product inspection

Raw Materials Inspection:

All the raw materials are procured only from internationally approved companies known for their quality products and once the material is received with their product certification, Oman Cables quality team tests and inspects the same again. Only those materials which meet Oman Cables internal standards are released for production.

In-Process Inspection:

A team of well experienced and qualified personnel, dedicated to quality, inspects and test all the In-Process materials at every stage and materials complies to the specified requirements are only released for next process.

Finished Product Inspection:

Oman Cables products before leaving ware house undergo the entire applicable test according to the standard to which it is manufactured.

Routine tests are carried out for conformity to the specifications on 100% cable drums. Sample tests and type tests are carried out at regular intervals as per the applicable standards to conform the product quality.

Testing Laboratory