IMT CABLES PRIVATE LIMITED

Quality policy

"**IMT CABLES PVT. LTD.**, manufacturing & marketing various types of Electric Wires, Cables & Hoses is totally committed to comply with relevant requirements and continually improving the effectiveness of the Quality Management System through meeting needs and expectations of the customers, improving equipment availability and productivity, improving supplier quality, and human resource development"

IMT

ABOUT US

The flag bearer Company of RAS GROUP , IMT CABLES PVT. LTD is one the leading manufacturers of all types of house wire, elastomeric (Rubber) Cables, Welding Cables, Trailing & Composite Cables, Rubber Hoses etc.

The Directors of the Company hail from a business family engaged in this business over 5 decades and have thus long experience in cable manufacturing.

The works are situated in prestigious Haryana Govt. approved industrial area of IMT at Manesar. Dist. Gurgaon ideally located on Delhi-Jaipur National high way NH-8

Apart from well defined production line, the plant is equipped with modern machinery with sophisticated control system to ensure high quality and accuracy. It has a state of art fully equipped lab with latest testing instruments, managed by well trained and experienced staff.

Our products bear ISI mark of quality. Additionally we are capable to manufacturer cables as per client specifications & different international standards such as British Standard, ASTM, VDE, IEC DIN etc.

Last but not the least our STAFF is our STRENGTH.

OUR VISION & QUALITY POLICY

"IMT CABLES PVT. LTD., manufacturing & Marketing various types of Electric Wires, Cables & Hoses, is totally committed to comply with relevant requirements and continually improving the effectiveness of the Quality Management System through meeting the needs and expectations of the customers, improving equipment availability, and productivity, improving supplier quality, and human resource development."

RANGE OF PRODUCTS

ELASTOMER/RUBBER SECTION :-

WELDING CABLES	: IS: 9857/90	1. Copper Conductor General Purpose (TRS) / HOFR Rubber compound Cables. 2. Alum. conductor General purpose (TRS) / HOFR Rubber compound Cables.
ELASTOMER INSULATED & SHEATHED FLEXIBLE CABLES.	: IS: 9968/PT-I/88	1. EPR/PCP/CSP/VIR/TRS Elastomer Insulated single & multi core Cables. 2. Silicon Insulated & fibre Glass varnished Cables. 3. Screened Copper Elastomeric Cables. 4. Fan flexible Cables. 5. Workshop Type unkin Cables 6. Circular & Flat Type Elastomeric Cables. 7. Trailing /Composite Cables. 8. Silicon Insulated asbestos covered and double layer fibreglass braided & varnished Cables. 9. Furnace + High temp Cables.
FLEXIBLE ELASTOMERIC INSULATED AND SHEATHED TRAILING CABLES	: IS: 9968/PT-II	1. EPR/PCP/CSP Insulated with Reinforcement/Inner and Outer Elastomer Insulated Cables. 2. Screened /Semi conducting compound Elastomer insulated and H.D. sheathed Cables. 3. Single core / Multi core Elastomer insulated with inner sheathed Trailing Cables. 4. Furnace & High Temp. Cables 5. Composite Elastomer Insulated Cables

ELASTOMER INSULATED FLEXIBLE CABLES USE IN MINES	IS: 14494/98	1. Flexible Trailing Cables Type FT-7 Type. 2. Flexible Drill Trailing Cables Type FTD 3 Flexible Trailing Cables Type PLC-2 to PLC-5 4. Flexible Trailing Cables Type FT-4 (S) 5. Flexible Trailing Cables Type FT-7 (S) 6. Flexible Trailing Cables Type 3 PAI 7. Flexible Trailing Cables Type FT-8
RAILWAY POWER ROLLING STOCK ELASTOMERIC CABLES	: RDSO Specification E-14/01 PT-I/Rev.II & E-14/01 PT-II/Rev. II	1. Flexible Elastomeric Cables single/multi core Cables upto 750 Volts. 2. Flexible Elastomeric Cables single core Cables up to 3000 Volts.
DIESEL ELECT LOCO	: DEL/SPN/129	1. Flexible Single Core Elastomeric Cable for voltage 1000 Volts and 1500 Volts grade.
ELASTOMERIC CABLES CONTROL CABLE FOR DIESEL ELECT. LOCOMOTIVES	: DEL/SPN/130	1. Elastomeric Single Core Cable for Voltage Grade 300 Volts.
AIR CRAFT CABLES	: IS:10241 PT-II/82	1. Unipren Cables. 2. Unipren Met Cables.
MINER'S CAP LAMP CABLES	: IS: 2593/84	1. Copper Conductor Elastomer insulated & Elastomer sheathed Two Core Cables.
SHIP WIRING CABLES	: DGS 211 DGS 212	1. EPR / CSP Copper Cable Single /Multicore. 2. EPR / Screened Cables Silicon / CSP / Fibreglass Cables. 3. Halogen Free Low Smoke Fire Retardant Elastomeric Cables.
EARTHING BRAID	: IS: 3225/92	1. Copper Braid for D.G. sets and other types of Earthing Braid

PVC INSULATED SECTION :-

FLEXIBLE PVC INSULATED AND SHEATHED CABLES	: IS: 694/90	1. Flexible PVC Copper / Aluminium Single and Multicore Cables. 2. House wiring Cables 3. Submersible Flat Cables. 4. PVC Single core sheathed / unsheathed Cables. 5. Industrial /Domestic PVC Cables 6. Heat Resistant & Fire Retardant Cables 7. Fire Retardant Low Smoke Cables 8. Zero Halogen F.R. Cables 9. Weather Proof Cables.
SHOT FIRING CABLES	: IS: 5950/84	1. PVC Insulated Parallel Twin / Single copper Cables.
L.T.POWER & CONTROL CABLES	: IS:1554 PT-I/88	1. Armoured / Unarmoured PVC insulated Single & Multi Cores Cables FRLS/HR/FR. 2. Armoured /Unarmoured PVC insulated Alum./CopperPower Cables FRLS/HR/FR. 3. PVC Insualted Armoured / Unarmoured Control Cables HR/FR.
INSTRUMENTATION CABLES	: BS-5308/86 Part-2 IEC-189 DIV.VDE0815/816	1. Screened / Shielded FRLS PVC insulated Cables, HR/FRLS 2. Armoured / Screened / Shielded FR/ FRLS/FS Cables.
SPECIAL CABLES	: AS PER CUSTOMERS' SPECIFICATION	1. All Types of PVC /Rubber Elastomer Insulated and sheathed Single/ Multi Cores Copper / Alum. Screened / Shielded / Asbestos / Pair / Armoured / Unarmoured/ Special Cables. 2. Thermocouple/compensating Cables.

"CERTIFICATES"

1.	ISO Certificate	(QMS)	MOODY INTERNATIONAL
2.	IS :9857 / 90	(for Welding Cables)	CML NO. CM/:-9371585
3.	IS : 9968 / PT-I / 88	(for Multi Core Cables)	Up to 1.1 KV Cables CML NO. CM/L-9371383
4.	IS : 9968 / PT-II / 88	(for Multi Core Cables)	Up to 3.3 KV Cables CML NO.CM/L-9655603
5.	IS : 14494 / 98	(for Mining Cables)	CML NO. CM/L-9371484
6.	IS:2593 / 1984	(for Miner Cap Lamp Cables)	CML NO. CM/L-9653595
7.	IS:694 / 90	(for PVC Insulated/sheathed Cables)	CML NO. CM/L-9764305

"REGISTRATIONS"

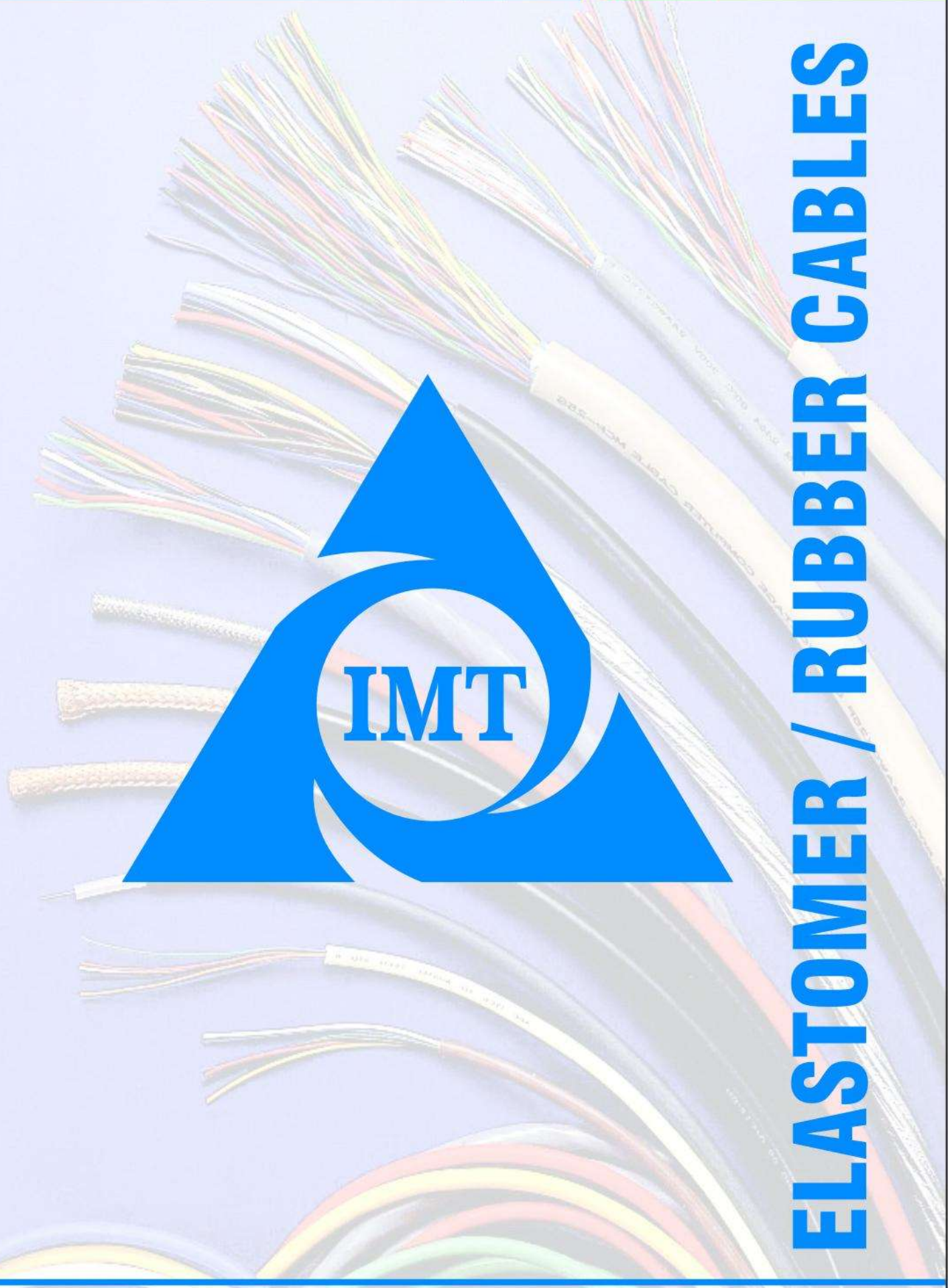
RAILWAYS

1. R.D.S.O. (Railway)
2. R.C.F. (Kapurthala)
3. C.L.W. (Chittaranjan)
4. D.L.W. (Varanasi)
5. D.L.M.W. (Patiala)
6. I.C.F.
7. Northern Railway
8. North Central Railway
9. North Western Railway
10. North Eastern Frontier Railway
11. Eastern Railway
12. South Eastern Railway
13. South East Central Railway
14. South Central Railway
15. South Western Railway
16. Southern Railway
17. Central Railway
18. Western Railway
19. West Central Railway
20. East Coast Railway
21. East Central Railway

"REGISTRATIONS"

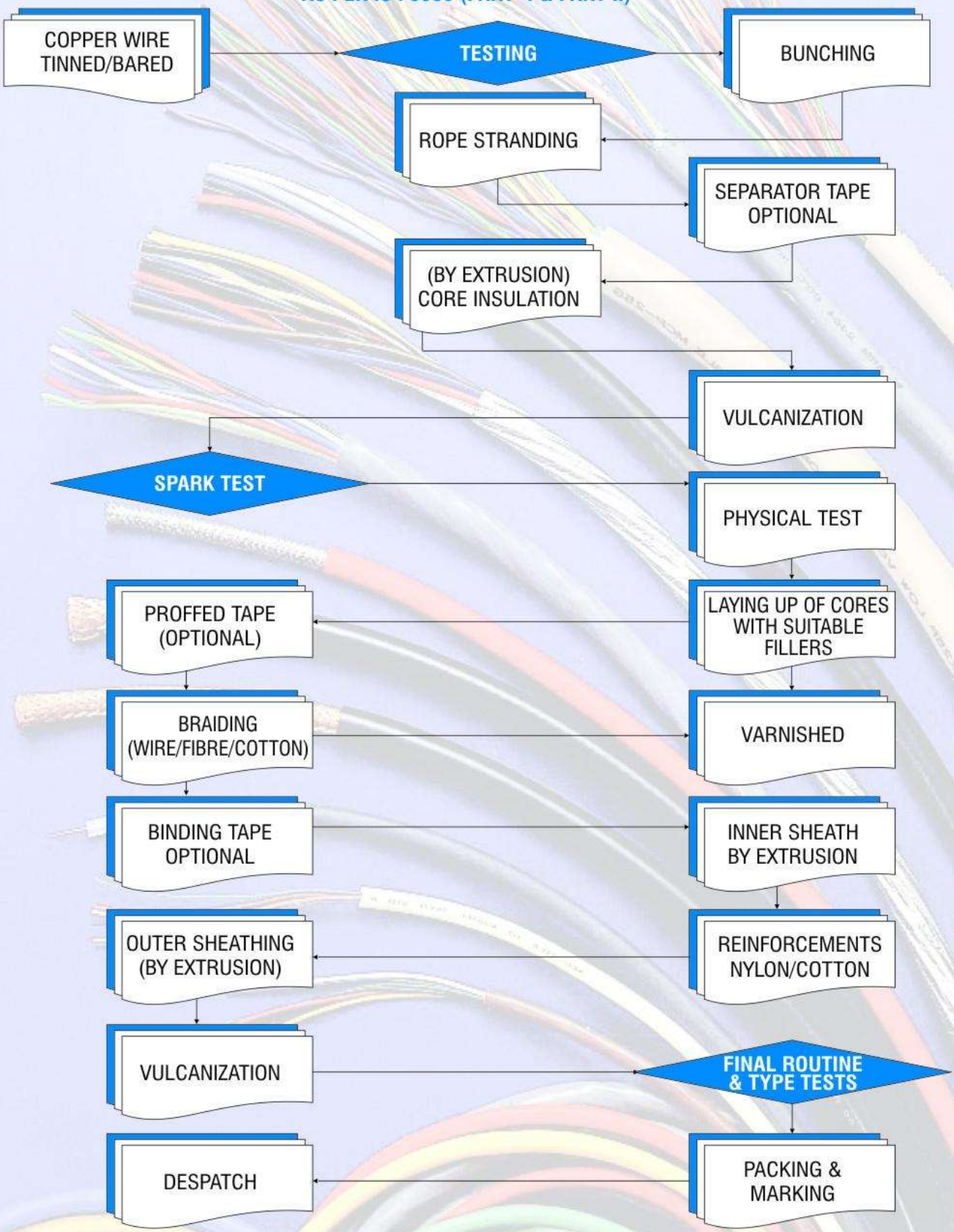
DEFENCE	MINES
1. DGQA (Defence) 2. DGQA (Naval) 3. 3 Base Repair Depot (Air Force Station) BRD AFC Chandigarh 4. Naval Dockyard, Visakhapatnam 5. Base Repair Depot, AFS, Kanpur 6. Garden Reach Ship Builders & Engineers Ltd 7. 509 A Army B.W. Agra Cantt. 8. Material Management, Mumbai	1. DGMS 2. Hindustan Zinc Ltd 3. Northern Coalfields Ltd 4. Central Coalfields Ltd 5. South Eastern Coalfields Ltd 6. Bharat Coking Coal Ltd. 7. Western Coalfields Ltd 8. Eastern Coalfields Ltd
STEEL PLANTS	**SHIPYARD PORT TRUSTS**
1. Bhilai Steel Plant 2. Salem Steel Plant 3. Durgapur Steel Plant 4. Bokaro Steel Plant 5. Rourkela Steel Plant 6. IISCO Steel Plant 7. Visakhapatnam Steel Plant 8. RINL	1. Mazagaon Dock Yard 2. Mormugao Port Trust 3. Jawaharlal Nehru Port Trust 4. Goa Shipyard Ltd 5. Cochin Shipyard Ltd 6. Hindustan Shipyard Ltd. 7. Visakhapatnam Port Trust 8. Mumbai Port Trust

OTHERS	
1. BHEL	5. BSES Rajdhani Power Ltd.
2. Bharat Heavy Plates Ltd.	6. ONGC
3. Bongaigaon Refineries Ltd	7. BEML
4. BSES Yamuna Power Ltd.	8. Neyvelli Lignite Ltd.



ELASTOMER / RUBBER CABLES

PROCESS FLOW CHART
RUBBER / ELASTOMER CABLES & CORDS
AS PER IS : 9968 (PART -I & PART-II)



CONSTRUCTION OF ELASTOMER / RUBBER CABLES AS PER IS: 9968 PT-I/II

1. **CONDUCTOR**
   * The conductor is tinned annealed copper wire complying with IS: 8130/84.
   * The Plain annealed copper is also used for Silicon Rubber insulation.
   * Aluminum conductor is composed of Aluminum wires complying with IS: 8130/84.
2. **SEPARATOR TYPE :**
   * Polyester / Melinex / PETP tape applied over the bunched / stranded conductor.
3. **INSULATION :**
   * Any one of following types of insulated material is normally used as per IS: 6380/84.
   * Elastomer for General Service - IE_1
   * Heat Resisting Elastomer - IE_2
   * Heat Resisting & HOFR Elastomer - IE_3 & IE_4
   * Silicon Rubber Elastomer - IE_5
4. **CORE IDENTIFICATION :**
   * The cores are identified by colours or by number printing on cores.

S.No.	No. of Cores	Colour of Cores	Numbers
1.	Single	Red, Black, White, Yellow & Blue	--
2.	Twin	Red & Black	1,2
3.	Three	Red, Yellow & Blue	1,2,3
4.	Four	Red, Yellow, Blue & Green	1,2,3,4
5.	Five	Red, Yellow, Blue, Black & Green	1,2,3,4,5

5. **FILLERS :**
   * Natural / Fibres / Elastomer suitable for the operating Temp. and compatible with the insulated material.
6. **(OPTIONAL) TAPING :-**
   * The proofed tape / RPCT / Glass tape / PETP tape provided over the insulated cores, a binder tape may also be applied over laidup cores.
7. **SCREENING :-**
   * Non metallic semi conducting type / non magnetic metallic tape / wire is used.
8. **INNER SHEATH :-**
   * Elastomeric compound / PVC compound by extrusion and proofed tape may be also applied.
9. **REINFORCEMENT MATERIAL / BRAIDING :-**
   * RPCT / Cotton Yarn / Synthetic cord or yarn fibre glass yarn / Asbestos Yarn / artificial mercerized silk / Rayon may be used.
10. **VARNISHED/COMPOUNDED :-**
    * The compounding / Varnishing are applied to prevent fraying of glass yarn as per requirement.
11. **ARMOURING (OPTIONAL) :-**
    * Steel round wire/Non magnetic round wire/steel Braid/Non magnetic metallic braid may be applied for single or multi core cables.
12. **OUTER SHEATH :-**
    * General service/Normal duty type SE1/Heavy duty Type SE2/HOFR sheath normal duty type SE_3 and heavy duty type SE4/Silicon rubber sheath type SE5 of IS:6380/84 may be used.
13. **COLOUR OF SHEATH :-**
    * Black/Any other colour as per client's requirement.
14. **FINISH OF SHEATH :-**
    * Smooth / Mat type

TECHNICAL DATA

ELASTOMER INSULATED SINGLE-CORE CIRCULAR TWIN-CORE, THREE-CORE, FOUR CORE ELASTOMER SHEATHED FLEXIBLE CORDS

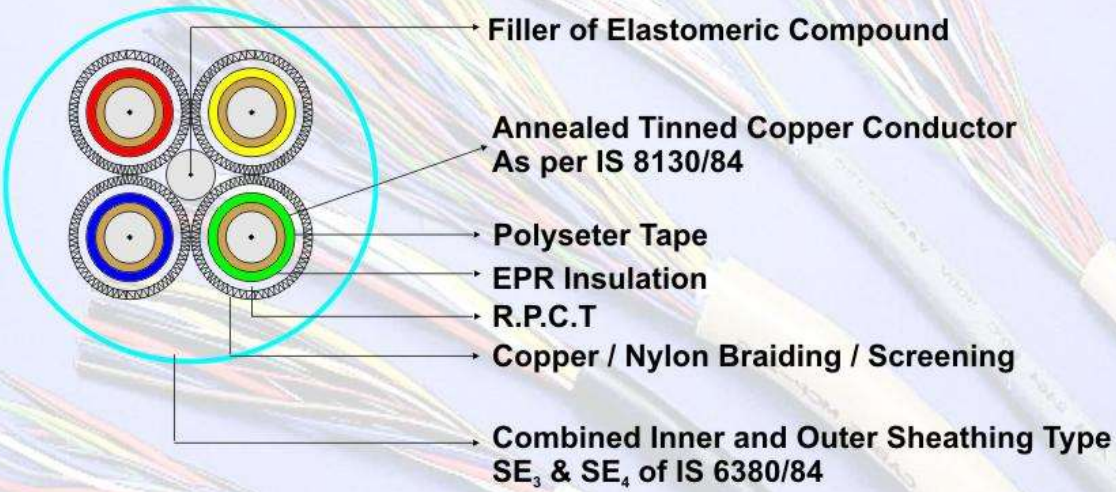
NOMINAL CROSS-SECTIONAL AREA OF CONDUCTOR	NOMINAL THICKNESS OF INSULATION	NOMINAL THICKNESS OF SHEATH				MAXIMUM OVERALL DIAMETER				MAXIMUM RESISTANCE OF CONDUCTOR AT 20°C	
		Single-Core	Twin-Core	Three-Core	Four-Core	Single Core	Twin Core	Three Core	Four Core	Plain Wires ohm/km	Tinned Wires ohm/km
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)		
mm^2	mm	mm	mm	mm	mm	mm	mm	mm	mm		
0.5	1.0	1.0	1.0	1.0	1.0	7.0	11.7	12.5	13.6	39.0	40.1
0.75	1.0	1.0	1.0	1.0	1.0	7.2	12.2	13.0	14.3	26.0	26.7
1	1.0	1.0	1.0	1.0	1.0	7.4	12.6	13.4	14.8	19.5	20.0
1.5	1.0	1.0	1.0	1.1	1.1	7.7	13.2	14.2	15.5	13.3	13.7
2.5	1.0	1.0	1.1	1.1	1.1	8.2	14.2	15.4	16.5	7.98	8.21
4	1.0	1.0	1.2	1.2	1.2	8.8	15.7	16.7	18.3	4.95	5.09

ELASTOMER INSULATED SINGLE-CORE CIRCULAR TWIN-CORE, THREE-CORE, FOUR CORE AND FIVE CORE ELASTOMER SHEATHED FLEXIBLE CABLES

NOMINAL CROSS-SECTIONAL AREA OF CONDUCTOR	NOMINAL THICKNESS OF INSULATION	NOMINAL THICKNESS OF SHEATH					MAXIMUM RESISTANCE OF CONDUCTOR AT 20°C	
		Single-Core	Twin-Core	Three-Core	Four-Core	Five-Core	Plain Wires ohm/km	Tinned Wires ohm/km
mm^2	mm	mm	mm	mm	mm	mm		
6	1.0	1.6	2.0	2.1	2.5	2.5	3.3000	3.3900
10	1.2	1.8	2.4	2.5	2.7	2.9	1.9100	1.9500
16	1.2	1.9	2.5	2.7	2.9	3.2	1.2000	1.2400
25	1.4	2.0	3.2	3.6	3.4	--	0.7800	0.7950
35	1.4	2.2	3.3	3.4	3.5	--	0.5540	0.5650
50	1.6	2.4	3.5	3.6	3.7	--	0.3860	0.3930
70	1.6	2.6	3.6	3.7	3.9	--	0.2720	0.2770
95	1.8	2.8	3.8	4.0	4.1	--	0.2060	0.2100
120	1.8	3.0	4.0	4.1	4.3	--	0.1610	0.1640
150	2.0	3.2	4.2	4.3	4.5	--	0.1290	0.1320
185	2.2	3.4	4.3	4.5	4.8	--	0.1060	0.1080
240	2.4	3.5	4.6	4.8	5.1	--	0.0801	0.0817
300	2.6	3.5	4.9	5.1	5.4	--	0.0641	0.0654
400	2.8	3.8	5.2	5.4	5.8	--	0.0486	0.0495
500	3.0	4.0	--	--	-	--	0.0384	0.0391
630	3.0	4.1	--	--	--	--	0.0287	0.0292

CABLE CROSS SECTIONAL DRAWING

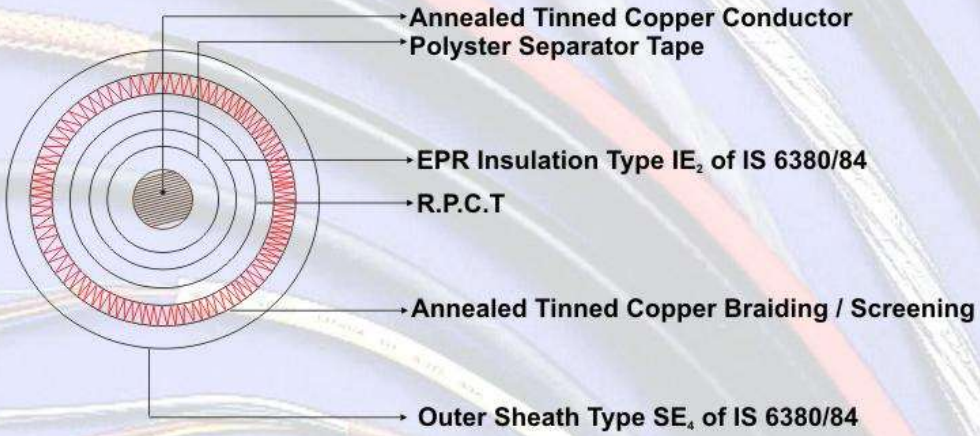
Cable copper conductor Elastomer insulated 4 core screening individually and overall CSP sheathing as per IS 9968 Pt-I/II



CONSTRUCTION:

1. Annealed Tinned Copper Conductor as per IS : 8130/84.
2. Polyster separator tape over the conductor.
3. EPR Insulation Type IE_2 of IS : 6380/84
4. R.P.C.T. over the Core.
5. A.T.C. Conductor Nylon Braided / Screening.
6. Inner & Outer Sheath Type SE_3 and SE_4 Type of IS : 6380/84

Cable Single Core ATC Conductor with Melinex Taped EPR insulated RPCT Taped with ATC Braiding / Screening & overall CSP Sheathed as per IS 9968/Pt-I/II

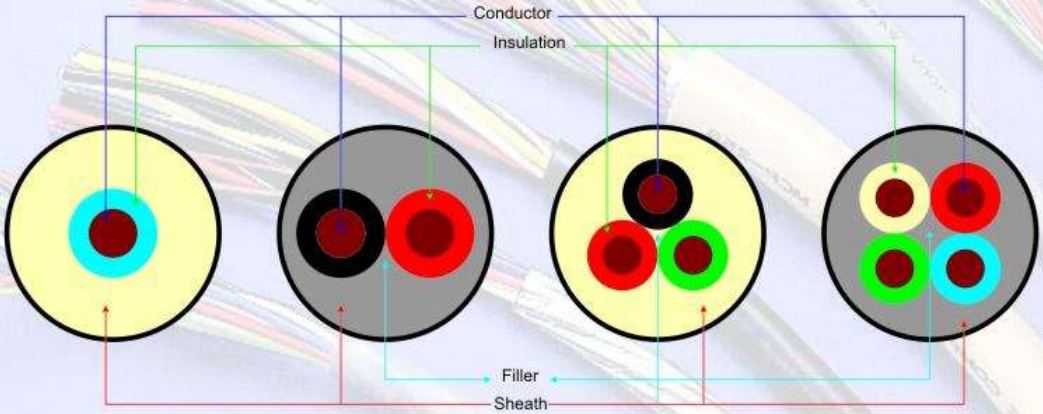


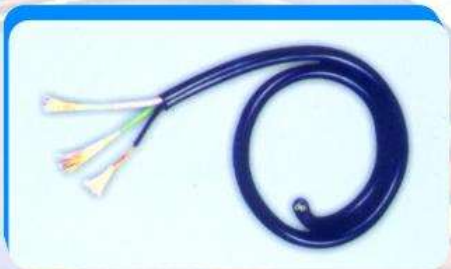
CONSTRUCTION:

1. A.T.C. Conductor as per IS : 8130/84.
2. Polyester separator tape.
3. EPR Insulation Type IE_2 of IS : 6380/84.
4. R.P.C.T. over the Core.
5. Screening with A.T.C. Conductor.
6. Sheathing Type SE_4 of IS 6380/84.

Construction :

Conductor : (a) Tinned annealed copper conductor as per IS:8130
Insulation : (I) General Service Elastomeric - IE_1 Type
(II) Heat Resisting Elastomeric - IE_2 Type
(III) Tape optional
Filler : 2-3 and 4 core laid up
Sheath : General Service Insulation and Heat Resisting Sheath.





CURRENT CARRYING CAPACITY (AMPS) FOR MULTI CORE CABLES

Nominal Cross-Sectional Area of Conductor	Nominal No. and Diameter of wires	Approx. over all Dia of conductor	Max. Allowable Resistance at 20°C for tinned wires		Current rating D.C. in single or Three phase (A)	Approx. voltage Drop per 10 meter run (volts)
			Single Core	Multi Core		
mm^2	mm	mm	ohms/mm	ohms/mm	Amp	Volts
0.5	16/0.20	0.93	38.20	40.10	3	3.30
0.75	24/0.20	1.14	25.40	26.70	6	3.70
1.0	32/0.20	1.32	19.10	20.00	10	4.50
1.5	30/0.25	1.60	13.00	13.70	15	4.00
2.5	50/0.25	2.00	7.82	8.21	20	2.90
4.0	56/0.30	2.60	4.85	5.09	25	2.60

ELASTOMER INSULATED, SINGLE, TWIN-CORE AND THREE-CORE TEXTILE BRAIDED FLEXIBLE CORDS

Nominal Cross-Sectional Area of Conductor	Nominal Thickness of Insulation	Overall Diameter of Braided Core mm	Overall Diameter of Braided Core mm	Overall Diameter of Braided Core mm	Maximum Resistance of Conductor At 20°C	
					Plain Wires ohm/km	Tinned Wires ohm/km
		Single Core	Two Core	Three Core		
mm^2	mm	mm	mm	mm		
0.5	1.0	4.9	8.3	9.0	39.0	40.1
0.75	1.0	5.1	8.7	9.5	26.0	26.7
1	1.0	5.3	9.1	9.9	19.5	20.0
1.5	1.0	5.6	9.7	10.5	13.3	13.7
2.5	1.0	6.0	10.5	11.3	7.98	8.21
4	1.0	-	11.7	12.6	4.95	5.09

SUITABILITY OF INSULATION & SHEATH COMPOUNDS FOR DIFFERENT WORKING TEMPERATURE

Material	Maximum Rated Operating Temperature of Conductor in Deg. C	Minimum ambient Temperature in Deg. C	Max. Conductor Temperature During Short circuit in Deg.C
Natural Rubber	60	-55	200
Ethylene Propylene rubber (EPR)	90	-50	250
Polychloroprene (PCP)	90	-40	250
Nitrile Rubber PVC Blend (NBR-PVC)	90	-30	250
Chlorosulphonated Polyethylene	90	-35	250
Silicon Rubber	150	-55	350

CURRENT CARRYING CAPACITY (AMPS) FOR MULTI CORE CABLES

Nominal Cross sectional area of conductor	Nominal No. and Diameter of wire	Approx over all dia of conductor	Max. Resistance at 20°C	Current Rating GP Elastomer Insulated (VIR)		Current Rating H.R.EPR/- Cables		Voltage Drop Three Phase
			Multi Core / Single Core	DC or Single phase AC	Three Phase	DC or Single phase AC	Three Phase	DC
(mm2)	(No./mm)	(mm)	ohm/km	(A)	(A)	(A)	(A)	(mV)
4	56/0.30	2.60	5.09	33	28	40	31	11
6	84/0.30	3.30	3.39	42	36	51	44	7.3
10	80/0.40	4.20	1.95	57	49	70	60	4.2
16	126/0.40	5.70	1.24	76	66	93	81	2.7
25	196/0.40	7.10	0.795	100	85	120	105	1.7
35	276/0.40	8.50	0.565	120	100	145	125	1.2
50	396/0.40	10.30	0.393	150	130	185	160	0.85
70	360/0.50	12.40	0.277	180	160	225	195	0.80
95	475/0.50	14.50	0.210	220	190	270	235	0.45
120	608/0.50	16.00	0.164	250	220	306	270	0.36
150	756/0.50	18.00	0.132	290	250	355	306	0.29
185	925/0.50	20.00	0.108	330	285	405	350	0.23
240	1221/0.50	23.00	0.0817	390	330	465	405	0.18
300	1525/0.50	26.00	0.0654	435	385	530	470	0.14
400	2013/0.50	30.50	0.0495	520	432	630	538	0.11
500	1769/0.60	33.00	0.0391	590	526	720	642	0.09
630	2230/0.60	37.00	0.0292	600	596	830	728	0.07

FOR AMBIENT AIR TEMPERATURE OTHER THAN 30° C THE FOLLOWING RATING FACTORS SHOULD BE APPLIED

Ambient Air Temp	25°C	30°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C	75°C	80°C
Correction Factor	1.02	1.0	0.95	0.90	0.85	0.80	0.74	0.67	0.43	0.60	0.30

THICKNESS OF SHEATHS FOR FLEXIBLE CABLES

Calculated Diameter of Laid-up Cores 3-core Cables/of Core for Single-Core Cables		Minimum Thickness of Inner Sheath	Thickness of Outer Sheath		
			Unarmoured Cables		Armoured Cables
Above mm	Up to and Including mm	mm	Nominal mm	Minimum mm	Minimum mm
-	10	1.0	1.6	1.08	1.08
10	15	1.2	2.0	1.40	1.40
15	20	1.4	2.2	1.56	1.56
20	25	1.6	2.5	1.80	1.80
25	30	1.8	3.0	2.20	2.20
30	40	2.0	3.5	2.60	2.60
40	50	2.4	4.0	3.00	3.00
50	60	2.8	4.5	3.40	3.40
60	70	3.2	5.0	3.80	3.80
70	80	3.6	5.5	4.20	4.20
80	-	4.0	6.0	4.60	4.60

Dimension of Armour Round Wires and Formed Wires				Dimension of Braiding Wire		
All dimension in millimeters				All dimension in millimeters		
Calculated Diameter under Armour		Nominal Thickness of Steel Formed Wires	Nominal Diameter of Steel Wire	Calculated Diameter under Braiding		Nominal Diameter of Braiding Wire
Above	Up to and Including			Above	Up to and Including	
-	13	0.8	1.40	-	25	0.30
13	25	0.8	1.60	25	-	0.45
25	40	0.8	2.00			
40	55	0.8	2.50			
55	70	0.8	3.15			
70	-	0.8	4.00			

Note - In case higher conductance is required, higher size may be used

SIZE OF EARTHING CONDUCTOR

Conductor	Sizes mm^2											
Power Conductor	16	25	35	50	70	95	120	150	185	240	300	400
Earthing	16	16	16	25	35	50	70	70	95	120	150	185

INSULATION THICKNESS

Conductor Size	Nominal Insulation Thickness				
	1.9/3.3kV	3.8/6.6kV	6.35/11kV	12.7/22kV	19/33kV
mm^2	mm	mm	mm	mm	mm
16	2.2	3.0	4.0	-	-
25	2.2	3.0	4.0	-	-
35	2.2	3.0	4.0	6.0	-
50	2.2	3.0	4.0	6.0	8.8
70	2.2	3.0	4.0	6.0	8.8
95	2.4	3.0	4.0	6.0	8.8
120	2.4	3.0	4.0	6.0	8.8
150	2.4	3.0	4.0	6.0	8.8
185	2.4	3.0	4.0	6.0	8.8
240	2.4	3.0	4.0	6.0	8.8
300	2.4	3.0	4.0	6.0	8.8
400	2.6	3.0	4.0	6.0	8.8
500	2.8	3.2	4.0	6.0	8.8
630	2.8	3.2	4.0	6.0	8.8
800	2.8	3.2	4.0	6.0	8.8
1000	3.0	3.2	4.0	6.0	8.8

THICKNESS OF SHEATHS FOR CABLES FOR FIXED WIRING

Calculated Diameter of Laid-up Cores for 3-Core Cables/of Core for Single-Core Cables		MInimum Thickness of Inner Sheath	Thickness of Outer Sheath		
			Unarmoured Cables		Armoured Cables
			Nominal	Minimum	Minimum
Above	Up to and Including				
mm	mm	mm	mm	mm	mm
-	10	0.8	1.2	0.76	0.76
10	15	1.0	1.5	1.00	1.00
15	20	1.0	1.7	1.16	1.16
20	25	1.2	1.9	1.32	1.32
25	30	1.2	2.1	1.48	1.48
30	40	1.4	2.4	1.72	1.72
40	50	1.6	2.7	1.96	1.96
50	60	1.8	3.1	2.28	2.28
60	70	2.0	3.5	2.60	2.60
70	80	2.2	3.8	2.84	2.84
80	-	2.4	4.0	3.00	3.00

CURRENT CARRYING CAPACITY (AMPS) FOR MULTI CORE CABLES

Nominal Corss Sectional Area	Single Phase AC or DC	Three Phase AC or DC	Single Phase AC or DC
	1 Two Core Cable, with or Without Protective Conductor	1 Three Core, Four Core or Five Core Cable	2 Single Core Cables
mm^2	Amps	Amps	Amps
1.0	10	10	-
1.5	16	16	-
2.5	25	20	-
4.0	30	26	-
6.0	39	34	-
10.0	51	47	-
16.0	73	63	-
25.0	97	83	-
35.0	-	102	140
50.0	-	124	175
70.0	-	158	216
95.0	-	192	258
120.0	-	222	302
150.0	-	255	347
185.0	-	291	394
240.0	-	343	471
300.0	-	394	541
400.0	-	-	644
500.0	-	-	738
630.0	-	-	861

Ambient Temperature : 30°C
Conductor Operating Temperature : 60°C
Note: The Current rating tabulated are for cables in free air but may also be used for cables resting on a surface. The rating do not apply if the cable is protected by a semi-enclosed fuse to BS3036

CURRENT RATINGS (A.C)FOR VARIATION IN THERMAL RESISTIVITY OF SOIL (TWO AND THREE SINGLE CORE CABLES LAID DIRECT IN GROUND)

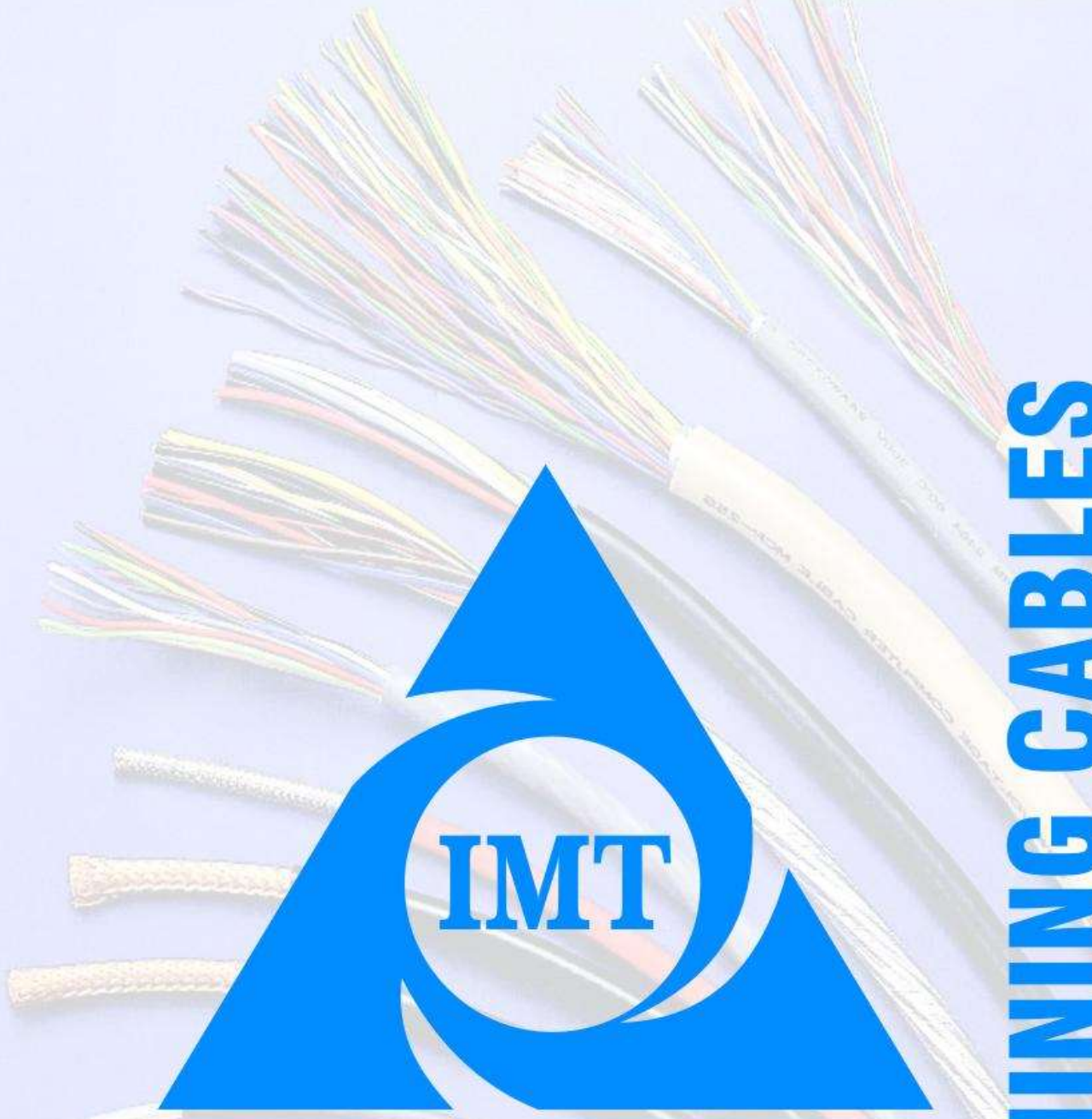
Nominal Area of Conductor (Sq mm)	Rating factors for values of thermal resistivity of Soil in °C Cm/W.											
	Two Cables Touching						Three Cables in trefoil touching					
	100	120	150	200	250	300	100	120	150	200	250	300
400	1.21	1.10	1.0	0.88	0.80	0.74	1.24	1.11	1.0	0.88	0.79	0.72
500	1.21	1.10	1.0	0.88	0.80	0.74	1.24	1.11	1.0	0.88	0.79	0.72
630	1.22	1.10	1.0	0.88	0.80	0.74	1.24	1.11	1.0	0.88	0.79	0.72
800	1.22	1.10	1.0	0.88	0.80	0.74	1.24	1.11	1.0	0.88	0.79	0.72
1000	1.22	1.10	1.0	0.88	0.80	0.74	1.24	1.11	1.0	0.88	0.79	0.72

SHORT CIRCUIT CURRENT RATING OF FLEXIBLE WITH COPPER CONDUCTOR (KILO AMPS)

Nominal Area of Conductor (Sq mm)	Natural Rubber (VIR) insulated Cables	Synthetic Rubber (EPR) insulated Cables	Silicon/CSP Cables	Silicon/ G.F. Braided & lac-quered Cables
1.5	0.212	0.215	0.251	0.220
2.5	0.353	0.359	0.418	0.367
4	0.565	0.574	0.668	0.587
6	0.848	0.861	1.000	0.881
10	1.410	1.440	1.670	1.470
13	2.260	2.300	2.670	2.350
25	3.530	3.590	4.180	3.670
35	4.950	0.020	5.850	5.140
50	7.070	7.180	8.360	7.340
70	9.900	10.050	11.700	10.270
95	13.430	13.630	15.870	13.940
120	16.960	17.220	20.050	17.610
150	21.210	21.530	25.070	22.020
182	26.150	26.550	30.910	27.150
240	33.930	34.440	40.100	35.220
300	42.410	43.060	50.130	44.030
400	56.550	57.410	66.840	58.710
500	70.690	71.760	83.550	73.390
630	89.060	90.420	105.270	92.470

CURRENT RATINGS (A.C) FOR THREE, THREE & HALF & FOUR CORE 650/1100V ARMOURED OR UNARMOURED

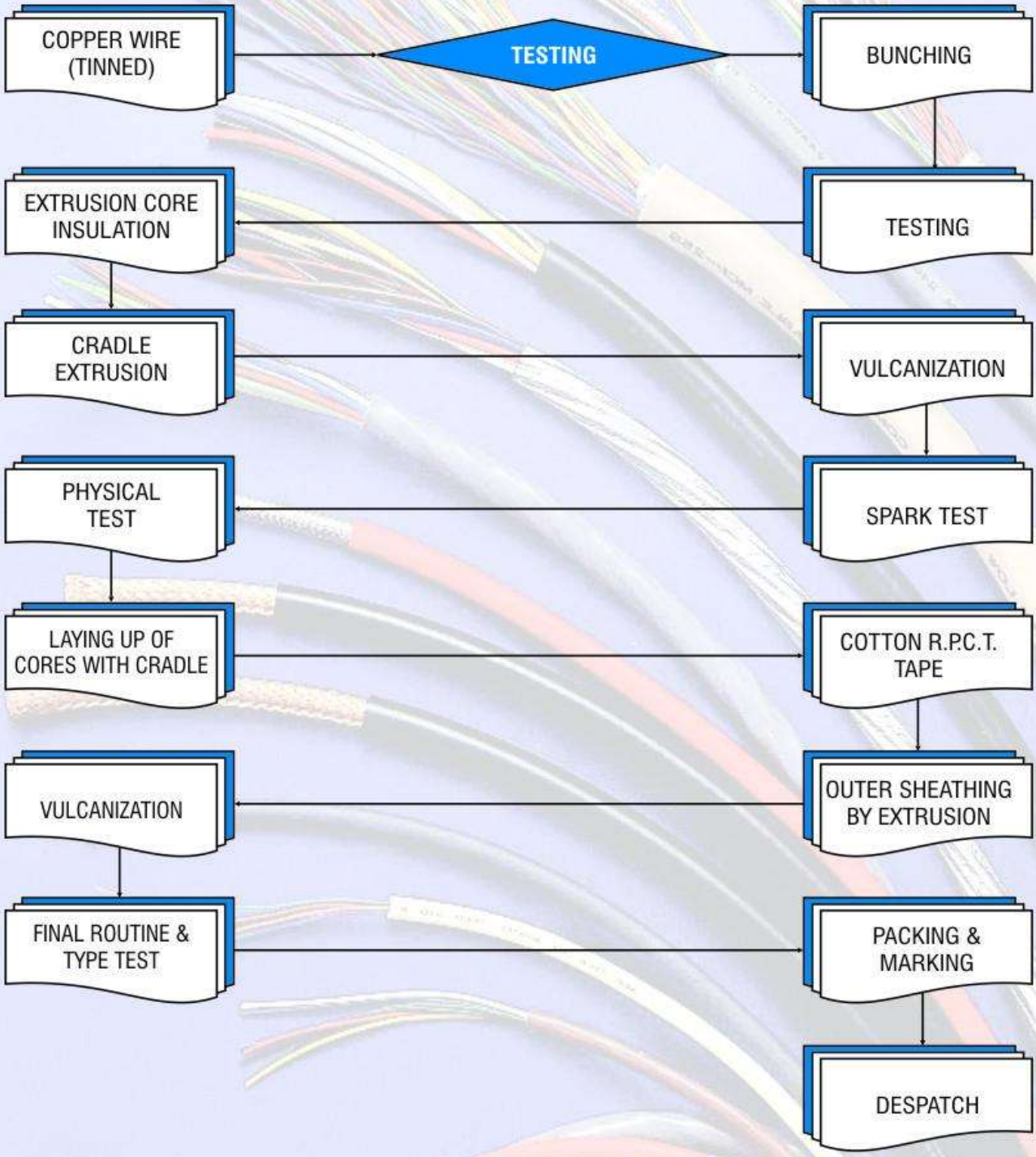
Nominal Area of Conductor (Sq mm)	Laid direct in ground		In air	
	Copper Amps.	Aluminum Amps.	Copper Amps	Aluminum Amps
1.5	23	18	20	16
2.5	32	25	28	21
4	41	32	38	29
6	51	40	47	37
10	68	53	65	50
13	90	70	86	67
25	114	90	113	90
35	137	110	140	109
50	164	128	171	131
70	201	156	213	168
95	243	188	263	204
120	275	216	308	240
150	307	239	349	272
182	349	271	401	318
240	399	312	481	377
300	446	354	544	431
400	505	404	627	500
500	550	450	708	572
630	616	515	808	672



MINING CABLES

PROCESS FLOW CHART

Elastomer Insulated Flexible Cable for use in Mines as per IS: 14494 / 98



Mining Cables

CONSTRUCTION OF MINING CABLES AS PER IS 14494/98

1. CONDUCTOR

1.1 The conductor shall be composed of annealed tinned copper wires complying with IS 8130/84.

2. INSULATION

2.1 Insulation shall be of elastomer compound conforming to type IE_2 of IS 6380 for voltage grade up to and including 11 KV and type IE_3 of IS 6380 for voltage grade 3.3, 6.6 and 11 KV

3. SEMI CONDUCTING COMPOUND

3.1 The semi-conducting compound shall be so formulated as to be suitable for the operating temperature of the cable both during sustained operation and during sustained operation and during short circuit and shall have no deleterious effect on the table insulation.

4. TAPE

4.1 Proofed Tape

The proofed tape shall be closely woven textile without selvedge proofed with rubber.

4.2 Polyethylene Terephalate (PTEP) or Polyethylene Base Tape

4.3 Any other suitable tape based on glass, textile composite or other synthetic Material

5. SCREEN

5.1 The screening shall consist of one or more of the following as specified

a) Non-metalic semi-conducting tape

b) Non-metalic semi-conducting compound, and

c) Annealed tinned copper wires

Note: The semi-conducting tape and semi-conducting compound shall be suitable for the operating temperature of the cable and compatible with the insulating materials

6. CENTRE

6.1 The centre shall consist of elastomeric compound or fibrous material suitable for the operating temperature of the cable and shall have no deleterious effect on the components of the cable.

7. FILLERS

7.1 The fillers shall consist of jute or similar roving, rubber compounds (including regenerated and unvulcanized rubber) or polymeric compounds. The fillers, at the manufacturer's discretion may form an integral part of the rubber sheath.

7.2 The fillers materials shall be suitable for operating temperature of the cable and shall have no deleterious effect on the components of the cable

8. CRADLE SEPARATOR

8.1 The cradle separator shall consist of elastomeric compound suitable for the operating temperature of cable and shall have no deleterious effect on the insulating material

9. ARMOUR

9.1 Armour shall consist of strands of galvanized steel, wires, individual wires conforming to IS: 3975.

10. SHEATH

10.1 **Inner sheath**

The inner sheath shall consist of elastomeric compound complying with the requirements of type SE3 of IS 6380. The semi - conducting inner sheath where permitted shall be as per 6.

10.2 **Outer Sheath**

The outer sheath shall be elastomeric compound conforming to type SE4 of IS 6380.

11. REINFORCEMENT

11.1 Tape

Tapes shall be according IS 14494/98.

11.2 **Cords / Yarns**

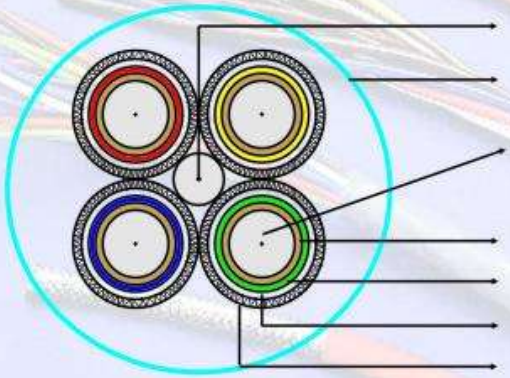
Cords / yarns wherever used for reinforcement shall be of cotton or synthetic materials

CABLE CROSS SECTIONAL DRAWING

Cable Elastomer Insulated 5 Core, 1.1 KV. Grade Flexible Trailing Cable Type FT -7 Confirming to IS : 14494-1998 for use in Coal Mines.

CONSTRUCTION :

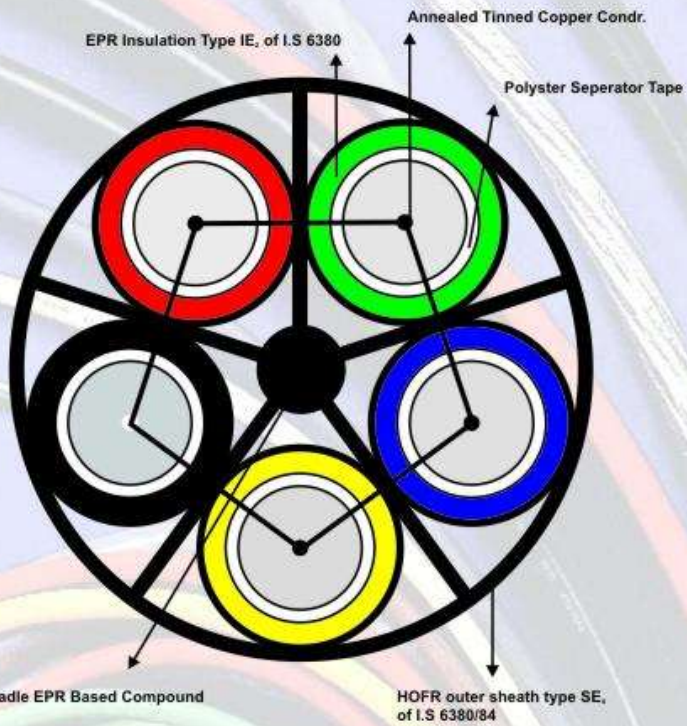
1. Annealed Tinned Copper Conductor as per IS : 8130/84.
   Bare Earth Conductor type A as per IS : 14494/98
2. Polyster separator tape over the conductor as per IS : 14494/98
3. EPR Insulation Type I E_2 of IS : 6380/84
4. R.P.C.T. over the Corse as per IS : 14494/98
5. A.T.C. Conductor Nylon Braided / Screen as per IS : 14494/98
6. Inner & Outer Sheath Type SE_3 and SE_4 Type of IS : 6380/84.



Type & Size : 5C Core x 6 sqmm, 1.1 Kv Grade Flexible drill Trailing Cable Type FTD-3 as per I.S. 14494/98

CONSTRUCTION :

1. Annealed Tinned Copper Conductor As Per IS 8130/84
2. Polyster Seperator type
3. EPR Insulation Type IE_2 of I.S 6380/84
4. Cradle EPR Based Compound
5. HOFR outer sheath type SE_4 of I.S 6380/84



INSULATION THICKNESS

NOMINAL AREA OF CONDUCTOR	NOMINAL THICKNESS OF INSULATION FOR POWER CORES			
	1.1 KV	3.3 KV	3.8/6.6 KV	6.35/11 KV
mm^2	mm	mm	mm	mm
2.5	1.0	-	---	---
4	1.0	-	---	---
6	1.0	-	---	---
10	1.2	-	---	---
16	1.2	2.2	---	---
25	1.4	2.2	3.0	4.0
35	1.4	2.2	3.0	4.0
50	1.6	2.2	3.0	4.0
70	1.6	2.2	3.0	4.0
95	1.8	2.4	3.0	4.0
120	1.8	2.4	3.0	4.0
150	2.0	2.4	3.0	4.0
185	2.2	2.4	3.0	4.0
240	2.4	2.4	3.0	4.0
300	2.6	2.6	3.0	4.0

Notes:

1. The nominal thickness of insulation for pilot core shall be 1.0 mm. However, higher thickness whenever required to build up the diameter is permitted.
2. The thickness of covering on earth conductor shall be suitably selected for covered earth conductor.

Thickness of Inner and Outer Sheath Except Where Otherwise Specified (For Collective Metallic Screened and Pliable Wire Armoured Cables)

CALCULATE DIAMETER UNDER INNER SHEATH		MINIMUM THICKNESS OF INNER SHEATH	NOMINAL THICKNESS OF OUTER SHEATH
Over	Up to and including		
mm	mm	mm	mm
---	10	1.4	2.0
10	15	1.6	2.4
15	20	1.8	2.6
20	25	2.0	2.8
25	30	2.2	3.0
30	40	2.4	3.2
40	50	2.8	3.6
50	60	3.2	4.0
60	70	3.6	4.5
70	80	4.0	5.0
80	---	4.4	5.5

Dimension of Pliable Wire Armour

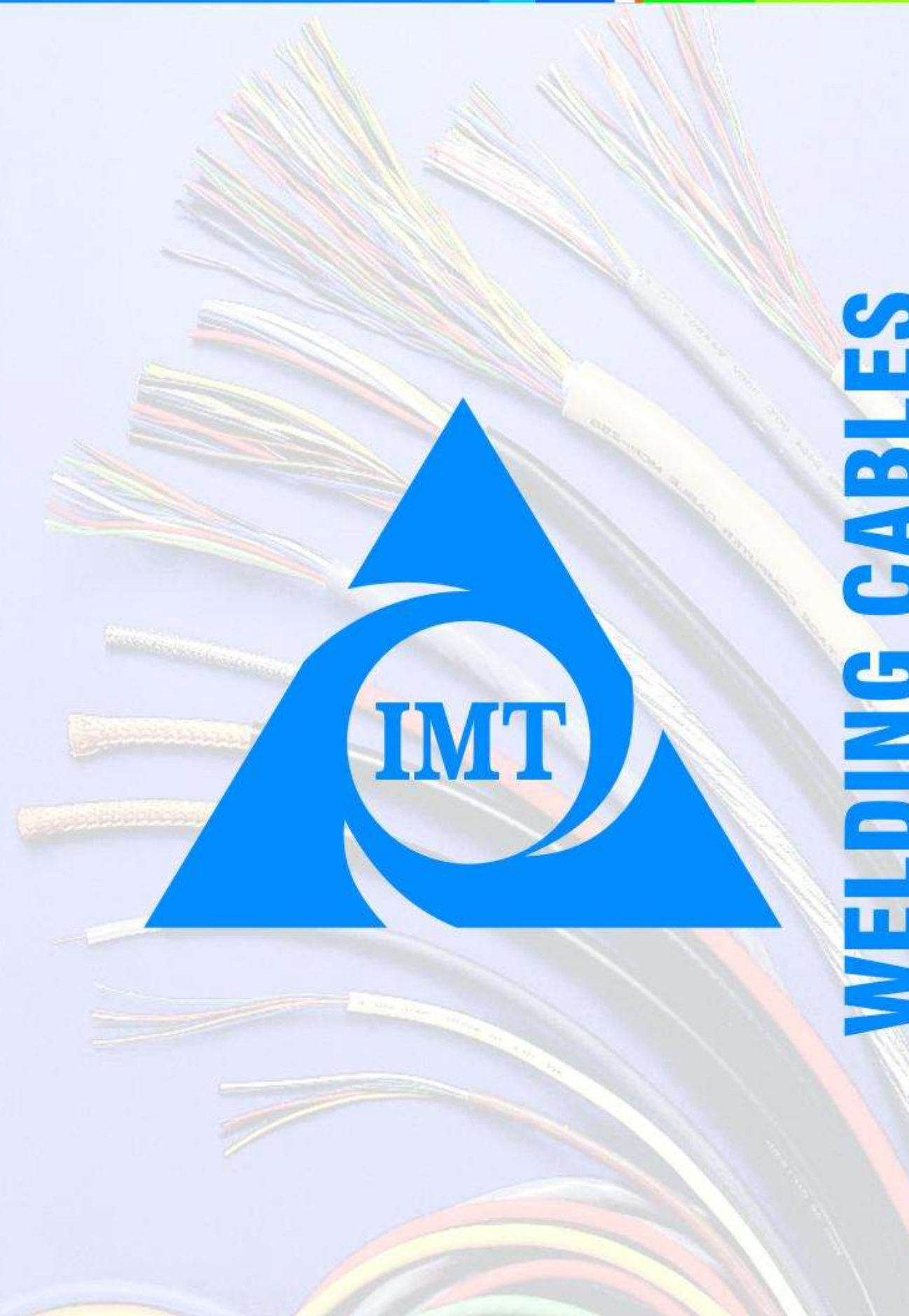
CALCULATED DIAMETER UNDER ARMOUR		SIZE OF ARMOUR STRAND
Above mm	Up to and including mm	Number /mm
---	25	7/0.45
25	40	7/0.70
40	60	7/0.90
60	---	7/1.25

Thickness of Inner and Outer Sheath Except Where Otherwise Specified (Except for Collective Metallic Screened and Pliable Wire Armoured Cables)

CALCULATE DIAMETER UNDER INNER SHEATH AND UNDER OUTER SHEATH		MINIMUM THICKNESS OF INNER SHEATH	NOMINAL THICKNESS OF OUTER SHEATH
Over	Up to and including		
mm	mm	mm	mm
---	10	1.6	2.5
10	15	1.8	2.8
15	20	2.0	3.2
20	25	2.2	3.6
25	30	2.4	4.0
30	40	2.6	4.5
40	50	3.0	5.0
50	60	3.5	5.7
60	70	4.0	6.4
70	80	4.5	7.1
80	90	5.0	7.8
90	100	5.5	8.5
100	---	6.0	9.0

SIZE of Power, Earthing and Pilot conductors Except where Otherwise specified

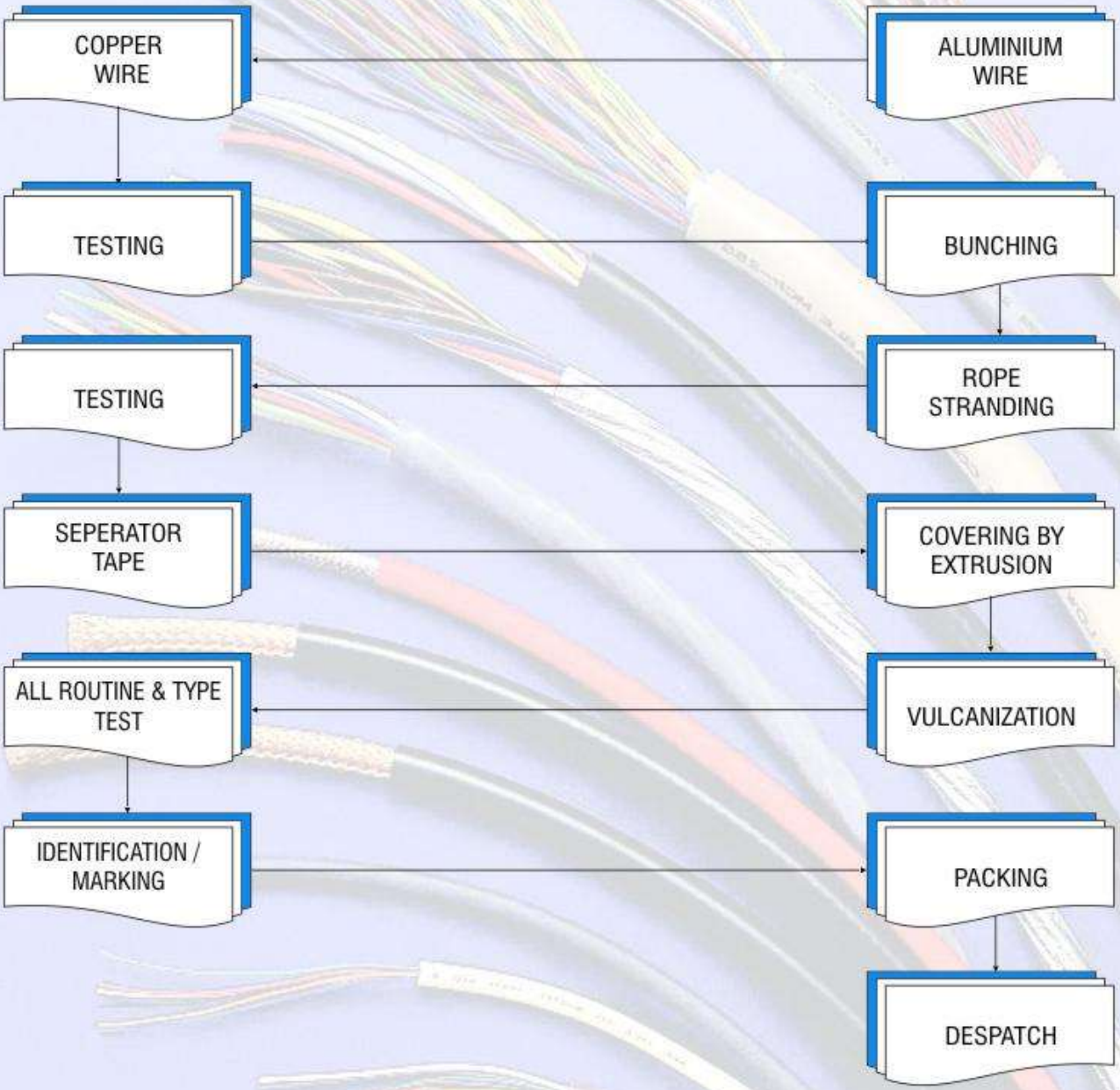
POWER CONDUCTOR	EARTHING CONDUCTOR	EARTHING CONDUCTOR	PILOT CONDUCTOR
	Type-A	Type-B	
mm^2	mm^2	mm^2	mm^2
2.5	2.5	2.5	2.5
4	4	4	4
6	6	6	6
10	10	10	10
16	16	16	16
25	16	25	16
35	16	35	16
50	25	50	25
70	35	70	35
95	50	95	50
120	70	120	70
150	70	150	70
185	95	185	95
240	120	240	120
300	150	300	150



WELDING CABLES

PROCESS FLOW CHART

Welding Cable as per IS: 9857 / 1990



Welding Cables

CONSTRUCTION OF WELDING CABLES AS PER IS 9857/90

These Cables are suitable for use where combination of ambient temp and the temp due to load result in a steady conductor temp not exceeding.

(a) 60^0 C for General Service Normal duty Elastomeric compound type SE_1 of IS 6380/84

(b) 90^0 C for Heat Resisting Oil Resisting flame retardant (HOFR) normal duty elastomeric compound type SE_3 of IS 6380/84

Conductor

The Conductor will be composed of plain or tinned annealed high conductivity copper wire complying with IS 8130/84.

Bunching

Required Number of Spools containing the required diameter wire are loaded into the bunching M/C, which twist the wires to form the bunch.

Stranding

Required no. of spools containing the bunched conductor is again loaded in the stranding M/C with floating carriage arrangement which twist the bunch to form a rope, the layer of bunch are being applied in same direction to ensure that a good Circular strand is produced and maintained the lay direction and lay length during stranding process.

Taping

A Polyester Tape is applied over the stranding conductor as a separator tape. Alternatively Paper tape is also applied over the conductor.

Separator Tape

Dry Paper, Polyester Tape etc.

Covering

By extrusion over the conductor with any one of the following covering.

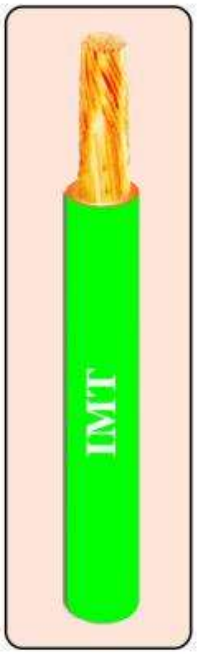
(a) Elastomeric Covering Type SE_1 of IS 6380/84

(b) HOFR Covering Type SE_3 of IS 6380/84

Packing + Marking

The Cables will be supplied either in wooden drums or reels or in coils.

ISI MARKED - WELDING CABLE COPPER CONDUCTOR GENERAL PURPOSE / HOFR RUBBER COMPOUND COVERED

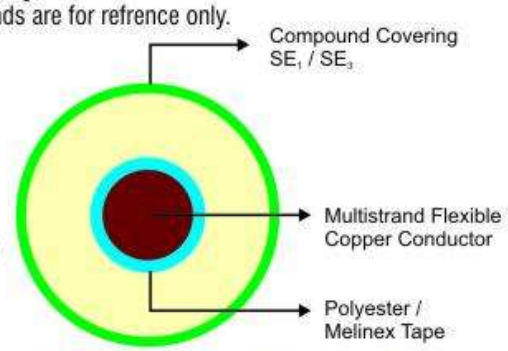


Nominal Cross Sectional area of conductor	Number/ Nom. Dia of wires*	Thickness of Insulation (Nom)	General Purpose Compound CURRENT RATING AT MAX. DUTY CYCLE Amps.			HOFR Compound Amps.		
mm²	mm	mm	100%	60%	30%	100%	60%	30%
16	510/0.2	2.0	94	121	172	135	174	246
25	796/0.2	2.0	125	161	228	177	228	343
35	1114/0.2	2.0	156	201	285	221	285	403
50	707/0.3	2.2	197	254	360	279	360	509
70	990/0.3	2.4	248	320	453	352	454	643
95	1344/0.3	2.6	299	386	546	424	547	774

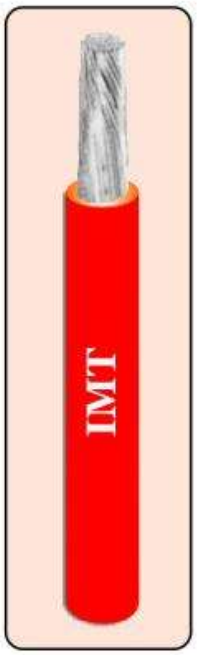
NOTE : Supplied in 100/50 mtrs. length in coil packing.
*The number & diameter of conductor strands are for refrence only.

Construction :

Conductor : Plain Annealed copper conductor, (flexible) as per IS : 8130.
Separator : Polyester tape.
Covering : General purpose compound.
1. SE, type or SE_3
2. Colour : Black
Any other colour on specific request can also be supplied



ISI MARKED - WELDING CABLE ALUMINIUM CONDUCTOR GENERAL PURPOSE / HOFR RUBBER COMPOUND COVERED

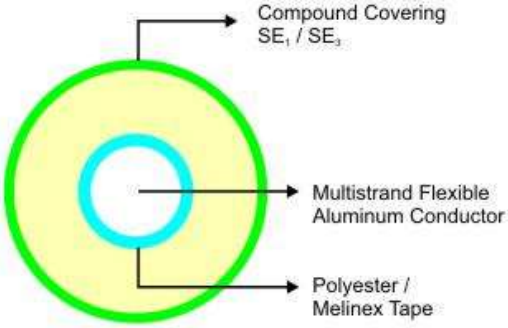


Nominal Cross Sectional area of conductor	Number/ Nom. Dia of wires*	Thickness of Insulation (Nom)	General Purpose Compound CURRENT RATING AT MAX. DUTY CYCLE Amps.			HOFR Compound Amps.		
mm²	mm	mm	100%	60%	30%	100%	60%	30%
25	355/0.3	2.0	100	129	183	144	186	263
35	495/0.3	2.0	123	159	225	176	227	321
50	707/0.3	2.2	155	200	283	222	287	405
70	990/0.3	2.4	196	253	358	280	361	511
95	1344/0.3	2.6	237	306	433	339	438	619
120	1697/0.3	2.8	283	365	517	404	522	738

NOTE : Supplied in 100/50 mtrs. length in coil packing.
*The number & diameter of conductor strands are for refrence only.

Construction :

Conductor : Aluminium conductor, multistrand flexible as per IS : 8130.
Separator : Polyester tape/melinex tape.
Covering : General purpose compound.
1. SE, type or SE_3
2. Colour : Black
Any other colour on specific request can also be supplied



Current Ratings of General Service Normal Duty Elastomeric compound Covered Cable with Copper Conductor

NOMINAL CROSS SECTIONAL OF CONDUCTOR	CURRENT RATING AT A MAXIMUM DUTY CYCLE OF					MAX. CONDUCTOR RESISTANCE AT 20°C	NOM. THICKNESS OF COVERING
	100%	85%	60%	30%	20%	ohm/km	mm
mm2	Amp	Amp	Amp	Amp	Amp		
16	94	102	121	172	210	1.21	2.0
25	125	136	161	228	279	0.780	2.0
35	156	169	201	285	349	0.554	2.0
50	197	214	254	360	440	0.386	2.2
70	248	269	320	453	555	0.272	2.4
95	299	342	386	546	669	0.206	2.6

Ambient air temperature 30°C
Maximum conductor temperature 60°C

Rating Factors for Variation in Ambient Temperature

Ambient Air Temperature (C)	25	30	35	40	45	50
Rating Factors	1.08	1.0	0.91	0.82	0.71	0.58

Current Ratings of HOFR Normal Duty Elastomeric Compound Covered Cable with Copper Conductor

NOMINAL CROSS SECTIONAL OF CONDUCTOR	CURRENT RATING AT A MAXIMUM DUTY CYCLE OF					MAX. CONDUCTOR RESISTANCE AT 20°C	NOM. THICKNESS OF COVERING
	100%	85%	60%	30%	20%	ohm/km	mm
mm2	Amp	Amp	Amp	Amp	Amp		
16	94	135	146	174	246	1.21	2.0
25	125	177	192	228	343	0.780	2.0
35	156	221	240	285	403	0.554	2.0
50	197	279	303	360	509	0.386	2.2
70	248	352	382	454	643	0.272	2.4
95	299	424	460	547	774	0.206	2.6

Ambient air temperature 30°C
Maximum conductor temperature 90°C

Rating Factors for Variation in Ambient Temperature

Ambient Air Temperature (°C)	25	30	35	40	45	50
Rating Factors	1.04	1.0	0.96	0.91	0.87	0.82

Current Ratings of General Service Normal Duty Elastomeric Compound Covered Cable with Aluminum Conductor

NOMINAL CROSS SECTIONAL OF CONDUCTOR	CURRENT RATING AT A MAXIMUM DUTY CYCLE OF					MAX. CONDUCTOR RESISTANCE AT 20°C	NOM. THICKNESS OF COVERING
	100%	85%	60%	30%	20%	ohm/km	mm
mm^2	Amp	Amp	Amp	Amp	Amp	Amp	
25	100	108	129	183	224	1.23	2.0
35	123	133	159	225	275	0.901	2.0
50	155	168	200	283	347	0.634	2.2
70	196	213	253	358	438	0.445	2.4
95	237	257	306	433	530	0.334	2.6
120	307	307	365	517	635	0.256	2.8

Ambient air temperature 30°C Maximum conductor temperature 90°C

Rating Factors for Variation in Ambient Temperature

Ambient Air Temperature (°C)	25	30	35	40	45	50
Rating Factors	1.08	1.0	0.91	0.82	0.71	0.58

Current Ratings of HOFR Normal Duty Elastomeric Compound Covered Cable with Aluminium Conductor

NOMINAL CROSS SECTIONAL OF CONDUCTOR	CURRENT RATING AT A MAXIMUM DUTY CYCLE OF				MAX. CONDUCTOR RESISTANCE AT 20°C	NOM. THICKNESS OF COVERING
	100%	85%	60%	30%	ohm/km	mm
mm^2	Amp	Amp	Amp	Amp	Amp	
25	144	156	186	263	1.23	2.0
35	173	191	227	321	0.901	2.0
50	222	241	287	405	0.634	2.2
70	280	304	361	511	0.445	2.4
95	339	368	438	617	0.334	2.6
120	404	438	522	738	0.256	2.8

Ambient air temperature 30°C Maximum conductor temperature 90°C

Rating Factors for Variation in Ambient Temperature

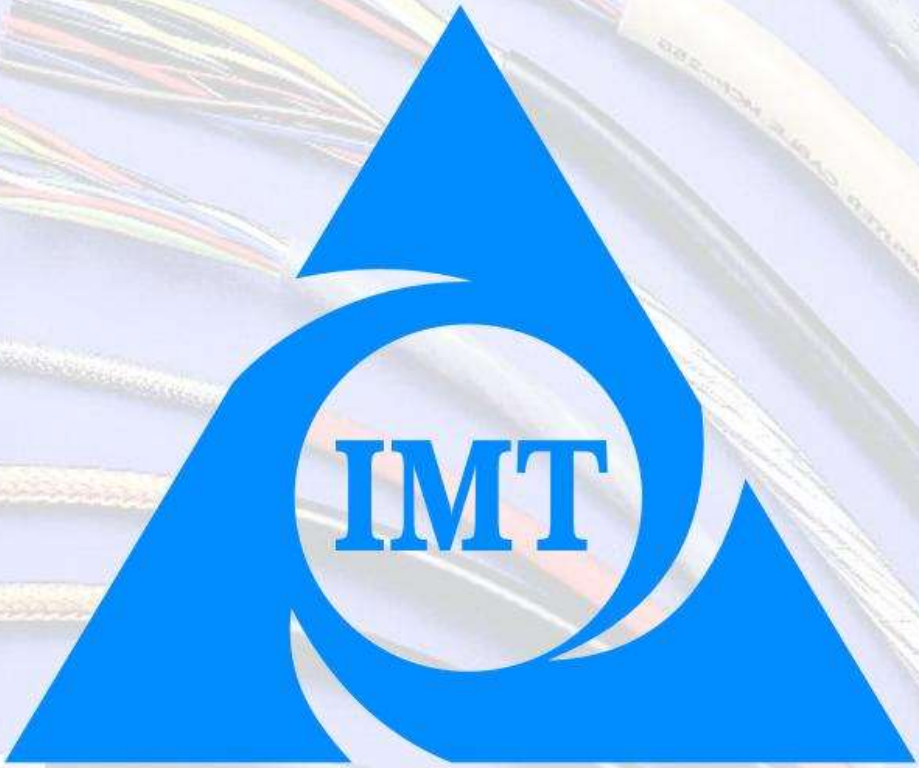
Ambient Air Temperature (°C)	25	30	35	40	45	50
Rating Factors	1.04	1.0	0.96	0.91	0.87	0.82

VOLTAGE DROP IN COPPER CONDUCTORS AT NORMAL OPERATING TEMPERATURE

NOMINAL CROSS SECTIONAL OF CONDUCTOR	DC VOLTAGE DROP /100A/ 10 M OF CABLE AT	
	60°C	90°C
mm^2	Volt	Volt
16	1.438	1.587
25	0.922	1.018
38	0.655	0.723
50	0.456	0.503
70	0.321	0.355
95	0.244	0.269

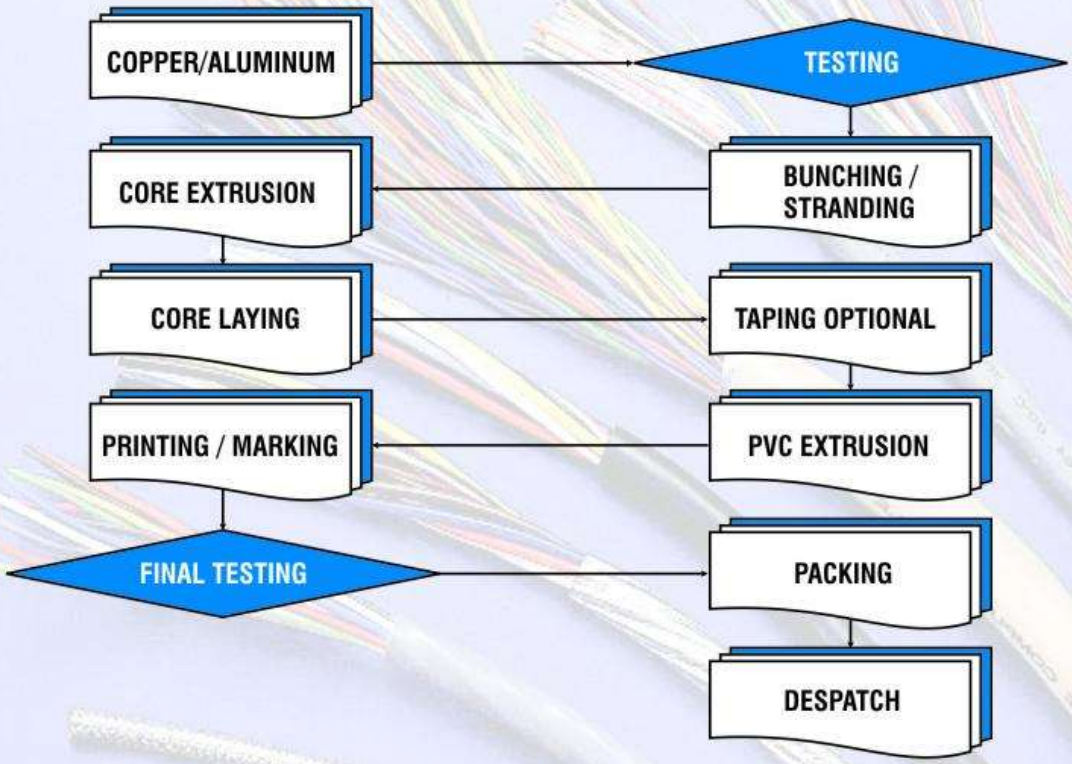
VOLTAGE DROP IN ALUMINIUM CONDUCTOR AT NORMAL AND ELEVATED TEMPERATURE

NOMINAL CROSS SECTIONAL OF CONDUCTOR	DC VOLTAGE DROP /100A/ 10 M OF CABLE AT		
	20%	60%	90%
mm^2	Volt	Volt	Volt
25	1.23	1.427	1.574
35	0.901	1.045	1.153
50	0.634	0.735	0.811
70	0.445	0.516	0.570
95	0.334	0.382	0.426
120	0.256	0.297	0.328

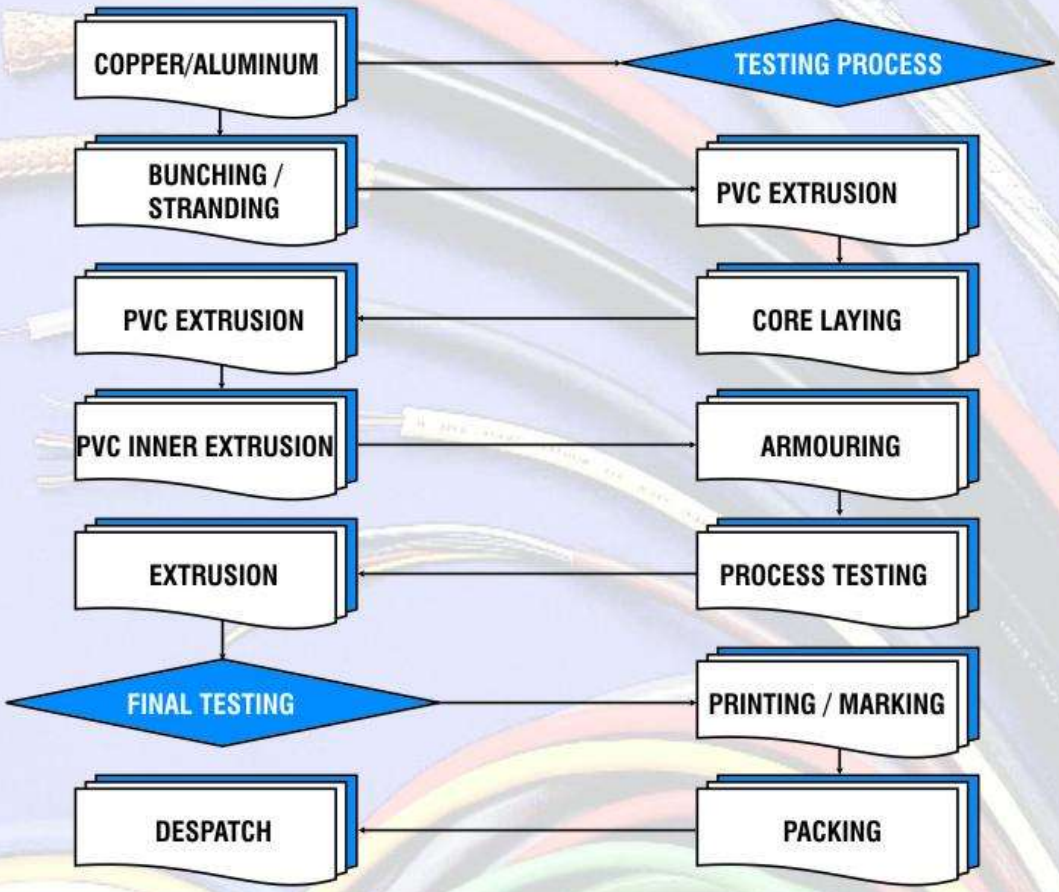


PVC CABLES

PROCESS FLOW CHART
PVC INSULATED CABLES HOUSE WIRING & FLEXIBLE CABLE AS PER 694/90



UNARMOURED/ARMOURED PVC INSULATED LT CABLES AS PER IS : 1554 PT-1/88



CONSTRUCTION OF PVC UNARMOURED/ARMOURED CABLES AS PER IS 694/90 AND IS 1554 PART-1

PVC INSULATED AND SHEATHED ARMOURED / UNARMOURED CABLES

PVC is a non hygroscopic Insulation, complete protection against mostly electrolytic and chemical corrosion, non migration of compound, non effected by moisture, Heat Resisting, Fire Resisting, good going characteristics and free from vibration.

Conductor :	1. Electrolytic grade copper Bare / tinned solid / Stranded / Bunched flexible conductor. 2. Aluminum conductor EC grade confirming to IS:8130/84.
Voltage Grade :	1.1 KV
Insulation :	High grade PVC / HR PVC / FRLS PVC PTEP / Fibre Glass
Inner :	PVC / HR PVC / FRLS / PTEP / Fibre Glass
Armouring :	GI Pliable wire / Flat Strip
Outer Sheath :	General purpoe PVC / HR PVC / FRLS PVC / PTEP / Fibre Glass
I.S. Standard Applicable :	I.S.694/90 and I.S.1554PT-I or as per customized requirement

Core Color Identification

Single Core :	Red, Black, Yellow, Blue, White & Gray
Two Core :	Red & Black
Three Cores :	Red, Yellow & Blue
Four Cores :	Red, yellow & Blue
Five Cores :	Red, Yellow, Blue Black & Grey
For ECC Core :	Green

For cable having more than 5 cores, the core identification will be done by number only

Cable Code :	
Aluminum Conductor :	'A'
Copper conductor :	No code letter
PVC Insulation :	'Y'
PVC Sheath :	Y
Earth continuity conductor :	ECC
Steel Round wire Armour :	W
Steel strip Armour :	F
Suitable for outdoor :	OV
Suitable for low temp. :	SZ

Unarmoured PVC Insulated & Sheathed Single Core / Multi Core Cable

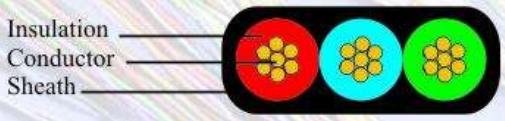
Conductor :	1. Plain Annealed Copper conductor as per IS:8130/84 2. Aluminum conductor E.C. grade as per IS:8130/84
Insulation :	PVC Insulation Type A / Type C
Filler :	Vulcanized rubber/thermoplastic material (Not harder than PVC Insulation)/Textile material
Outer Sheath	PVC sheath type ST_1 of IS:5831

Armoured PVC Insulated & Sheathed Single and Multi Core Cable

Conductor :	1. Plain Annealed Copper conductor as per IS:8130/84 2. Aluminum conductor E.C. grade as per IS:8130/84
Insulation :	PVC Insulation Type A / Type C
Filler & inner sheath :	Vulcanized rubber/thermoplastic material (Not harder than PVC Insulation)/Textile material (harder than PVC Insulation) proofed type (for inner sheath only)
Armouring :	Galvanized round steel wire / Galvanized steel strip/Metallic Non Magnetic wire.
Outer Sheath	PVC compound type ST-1/ST-2

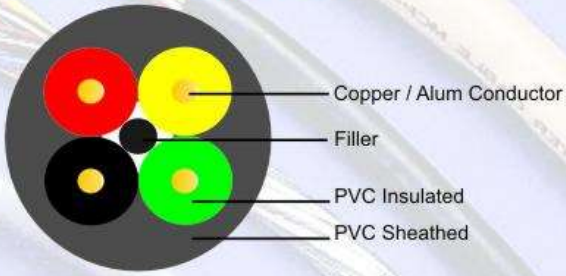
CABLE CROSS SECTIONAL DRAWING

1 1.1 KV Stranded, Plain Copper PVC Insulated and PVC Sheathed Flat Type Submesssible case after :- as per I.S 694/90



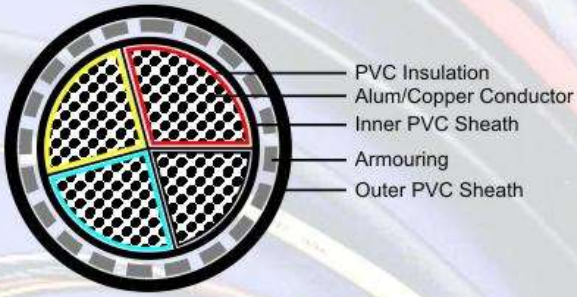
1.	Conductor-	1	Plain upper Conductor as per I.S 8130/84
2.	Insulation-	2	PVC / HR PVC as per I.S 5831/84
3.	Sheath -	3	PVC / HR PVC as per I.S 5831/84

2 1.1 KV Flexible Annealed Copper/Conductor PVC Insulated and Sheathed Multi Core Cables



1.	Conductor-	1	Copper Conductor Plain / Timed as per I.S 8130/84
2.	Insulation-	2	PVC / HR PVC / FR / FRLS PVC as per. I.S 5831 / 84
3.	Filler -	3	Textile material / FRLS vulcanised Rubber / PVC
4.	Sheath -	4	PVC / HR PVC / FR / WP PVC as per I.S 5831 / 84

3 1.1 KV Alum / Copper Conductor PVC Insulated Inner Sheathed, Armoured and overall PVC Sheathed as per I.S 1554 Pt I



1.	Conductor	Alum / Copper / Stranded / Solid / Circular shaped / as per I.S 8130/84
2.	Insulation	PVC / HR PVC / FR / FRLS PVC as per I.S 5831/84
3.	Inner Sheath	PVC / HR PVC/FR/FRLS PVC
4.	Unarmoured/ Armoured	Armouring N/A armoured G.S Round wire flat strip as per I.S 3975
5.	Outer Sheath	PVC / HR PVC / FR / FRLS PVC as per I.S 5831/84

FLEXIBLE PVC INSULATED CORDS COPPER CONDUCTOR SHEATHED OR UNSHEATHED 1100 VOLTS GRADE AS PER IS 694/90

Cross Sectional area Sq.mm	No. & Diameter of wires No./mm	THICKNESS PVC Insulation mm	THICKNESS PVC Outer Sheath mm	Approx outer Diameter mm	Approx weight of Cable mm	Current Rating Amps.	Standard Length of Coil meters
SINGLE CORE UNSHEATHED							
0.5	16/0.20	0.6	-	2.10	8.700	3	100
0.75	24/0.20	0.6	-	2.25	11.400	6	100
1.00	32/0.20	0.6	-	2.45	14.30	10	100
1.50	48/0.20	0.6	-	2.80	20.200	15	100
2.50	80/0.20	0.7	-	3.35	31.700	20	100
4.00	128/0.20	0.8	-	4.00	48.500	25	100
6.00	85/0.30	0.8	-	4.55	69.000.	32	100
10.00	141/0.30	1.0	-	6.00	117.000	43	100
16.00	126/0.40	1.0	-	7.00	177.000	58	100
25.00	196/0.40	1.2	-	8.50	270.000	789	100
35.00	276/0.40	1.2	-	9.60	370.000	95	100
50.00	396/0.40	1.4	-	11.60	540.000	120	100
TWO CORE TWISTED							
0.5	16/0.20	0.6	-	-	17.700	3	100
0.75	24/0.20	0.6	-	-	23.200	6	100
1.00	32/0.20	0.6	-	-	29.000	10	100
1.50	48/0.20	0.6	-	-	41.000	15	100
2.50	80/0.20	0.7	-	-	64.000	20	100
4.00	128/0.20	0.8	-	-	98.000	25	100
TWO CORE ROUND							
0.5	16/0.20	0.6	0.9	6.1	49.000	3	100
0.75	24/0.20	0.6	0.9	6.4	59.200	6	100
1.00	32/0.20	0.6	0.9	6.8	66.700	10	100
1.50	48/0.20	0.6	0.9	7.5	85.600	15	100
2.50	80/0.20	0.7	1.0	8.8	125.000	20	100
4.00	128/0.20	0.8	1.0	10.1	175.000	25	100
THREE CORE ROUND							
0.5	16/0.20	0.6	0.9	6.50	58.000	3	100
0.75	24/0.20	0.6	0.9	6.80	68.000	6	100
1.00	32/0.20	0.6	0.9	7.20	80.000	10	100
1.50	48/0.20	0.6	0.9	8.00	106.000	15	100
2.50	80/0.20	0.7	1.0	9.40	155.000	20	100
4.00	128/0.20	0.8	1.0	10.70	220.000	25	100
6.00	85/0.30	0.8	1.1	12.10	300.000	32	100
10.00	141/0.30	1.0	1.2	15.14	495.000	43	100
16.00	126/0.40	1.0	1.3	17.80	725.000	58	100
25.00	196/0.40	1.2	1.5	21.50	1090.000	78	100
35.00	276/0.40	1.2	1.6	24.00	1453.000	95	100
50.00	396/0.40	1.4	1.7	28.50	2070.000	120	100
FOUR CORE ROUND							
0.5	16/0.20	0.6	0.9	7.10	70.000	3	100
0.75	24/0.20	0.6	0.9	7.50	85.000	6	100
1.00	32/0.20	0.6	0.9	8.00	102.000	10	100
1.50	48/0.20	0.6	1.0	9.00	136.000	15	100
2.50	80/0.20	0.7	1.0	10.30	195.000	20	100
4.00	128/0.20	0.8	1.0	11.90	280.000	25	100
6.00	85/0.30	0.8	1.2	13.70	393.000	32	100
10.00	141/0.30	1.0	1.3	17.40	647.000	43	100
16.00	126/0.40	1.0	1.4	20.20	946.000	58	100
25.00	196/0.40	1.2	1.6	24.20	1420.000	78	100
35.00	276/0.40	1.2	1.7	27.15	1900.000	95	100
50.00	396/0.40	1.4	1.8	32.20	2710.000	120	100

SUBMERSIBLE CABLES TYPE YY 650/1100 VOLTS GRADE WITH COPPER CONDUCTORS

Nominal Cross Sectional area Sq.mm,	No. & Diameter of wire No./mm.	Radial thickness of insulation mm.	Radial thickness of sheath mm.	Approx. overall diameter mm.	Approx. wt. of cable Kg / Km	Standard length of coil metres
1.5	21/0.30	0.6	0.9	4.7x10.30	105	100
2.5	35/0.30	1.7	1.0	5.5x12.30	155	100
4.0	56/0.30	0.8	1.1	6.5x14.90	230	100
6.0	85/0.30	0.8	1.1	7x16.40	300	100
10.0	140/0.30	1.0	1.2	8.5x20.50	475	100
16.0	126/0.40	1.0	1.3	9.8x23.80	695	100
25.0	196/0.40	1.2	1.5	11.9x29.30	1060	100
35.0	276/0.40	1.2	1.6	13.2x32.80	1415	100
50.0	396/0.40	1.4	1.7	15.4x39.00	1990	100

CABLES HOUSE WIRING & INDUSTRIAL WIRES COPPER CONDUCTOR CABLES (CONVENTIONAL SIZES) COMPLYING WITH BS 2004/1961

Nos. & Dia of Wire No./Inch	No. & Diameter of wires No./SWG	No. & Dia of wires No./mm.	THICKNESS		Approx overall Diameter mm	Approx weight of Cable Kg/Km	Current Rating Amps.	Standard Length of Coil meters
			PVC Insulation mm	PVC Outer Sheath mm				
SINGLE CORE UNSHEATHED								
1/0.044	1/18	1/1.12	1.00	-	3.20	18.100	19	91.44
3/0.029	3/22	3/0.73	1.00	-	3.70	23.500	22	91.44
3/0.036	3/20	3/0.91	1.00	-	4.10	31.200	28	91.44
7/0.029	7/22	7/0.73	1.10	-	4.50	41.500	38	91.44.
7/0.036	7/20	7/0.91	1.20	-	5.20	60.000	46	91.44
7/0.044	7/18	7/1.12	1.20	-	5.80	81.500	57	91.44
7/0.052	-	7/1.32	1.20	-	6.40	108.000	70	91.44
7/0.064	7/16	7/1.62	1.30	-	7.50	156.000	88	91.44
19/0.044	19/18	19/1.12	1.30	-	8.30	197.000	110	91.44
19/0.052	-	19/1.42	1.30	-	9.30	365.000	127	91.44
19/0.064	19/16	19/1.62	1.40	-	11.00	390.000	160	91.44
19/0.083	19/14	19/2.11	1.40	-	13.40	640.000	220	91.44
37/0.064	37/16	37/1.64	1.50	-	14.50	725.000	245	91.44
37/0.083	37/14	37/2.11	1.50	-	17.90	1210.000	320	91.44
SINGLE CORE SHEATHED								
1/0.044	1/18	1/1.12	1.00	0.70	4.70	30.000	19	91.44
3/0.029	3/22	3/0.73	1.00	0.70	5.20	37.000	22	91.44
3/0.036	3/20	3/0.91	1.00	0.70	5.60	45.500	28	91.44
7/0.029	7/22	7/0.73	1.10.	0.70	6.00	58.000	38	91.44
7/0.036	7/20	7/0.91	1.20	0.70	6.60	74.000	46	91.44
7/0.044	7/18	7/1.12	1.20	0.70	7.20	100.500	57	91.44
TWIN CORE FLAT								
1/0.044	1/18	1/1.12	1.00	0.90	5.10x8.40	71.00	14	91.44
3/0.029	3/22	3/0.73	1.00	0.90	5.60x9.40	87.000	18	91.44
3/0.036	3/20	3/0.91	1.00	1.00	6.20x10.40	113.000.	24	91.44
7/0.029	7/22	7/0.73	1.10.	1.00	6.60x11.20	140.000	31	91.44
7/0.036	7/20	7/0.91	1.20	1.00	7.20x12.40	182.000	37	91.44
7/0.044	7/18	7/1.12	1.20	1.10	8.00x13.80	239.500	46	91.44

WEATHER PROOF CABLE
1100 VOLTS GRADE WITH COPPER CONDUCTORS AS PER IS 694/90

Cross Sectional area Sq. mm	Thickness of PVC insulation mm	Thickness of PVC Sheath mm	Approx Outer Diameter mm	Approx net Wt. of the Cable Kg/Km	Current Rating Amps.	Standard Coil Length Meters
SINGLE CORE CABLES						
1.5	0.6	0.8	4.35	23	24	100
2.5	0.7	0.8	4.95	46	32	100
4.0	0.8	0.9	5.80	67	43	100
6.0	0.8	0.9	6.35	88	54	100
10.0	1.0	0.9	7.55	138	72	100
16.0	1.0	1.0	9.30	214	92	100
25.0	1.2	1.1	11.20	325	125	100
35.0	1.2	1.1	12.15	425	155	100
50.0	1.4	1.2	14.45	595	190	100
TWIN CORE FLAT CABLES						
1.5	0.6	0.9	7.20x4.55	70	20	100
2.5	0.7	1.0	8.60x5.35	100	27	100
4.0	0.8	1.0	9.90x6.00	140	35	100
6.0	0.8	1.1	11.20x6.70	195	45	100
10.0	1.0	1.2	13.70x8.10	300	60	100
16.0	1.0	1.3	17.10x9.90	475	78	100
25.0	1.2	1.4	20.70x11.80	715	105	100
35.0	1.2	1.6	23.15x13.15	940	125	100
50.0	1.4	1.6	27.20x15.30	1275	155	100
THREE CORE CABLES						
1.5	0.6	0.9	7.60	100	17	100
2.5	0.7	1.0	9.10	150	24	100
4.0	0.8	1.1	10.70	220	30	100
6.0	0.8	1.1	11.90	290	39	100
10.0	1.0	1.2	14.60	465	52	100
16.0	1.0	1.3	18.20	720	66	100
25.0	1.2	1.4	22.30	1100	90	100
35.0	1.2	1.6	25.00	1450	110	100
50.0	1.4	1.7	29.10	2055	135	100
FOUR CORE CABLES						
1.5	0.6	0.9	8.50	125	17	100
2.5	0.7	1.0	10.10	190	24	100
4.0	0.8	1.1	11.90	280	30	100
6.0	0.8	1.2	13.50	380	39	100
10.0	1.0	1.3	16.50	605	52	100
16.0	1.0	1.4	20.50	940	66	100
25.0	1.2	1.6	25.00	1440	90	100
35.0	1.2	1.7	28.20	1910	110	100
50.0	1.4	1.8	33.00	2700	135	100

CONDUCTOR RESISTANCE OF PLAIN COPPER CONDUCTOR USED FOR HEAVY DUTY CABLES

Size in Sq. mm	Conductor Construction mm	Max. Cond. Resistance in ohm/km at 20°C	Size in Sq. mm	Conductor Construction mm	Max. Cond. Resistance in ohm/km at 20°C
		Single Core/Multi Core			Single Core/Multi Core
1.5*	1/1.38	12.1			
2.5*	1/1.78	7.41	120	37/2.03	0.153
4.0*	1/2.24	4.61	150	37/2.24	0.124
6.0*	1/2.76*	3.08	185	37/2.5	0.0991
10	7/1.35	1.83	240	61/2.24	0.0754
16	7/1.7	1.15	300	61/2.5	0.0601
25	7/2.14	0.727	400	61/2.85	0.0470
35	7/2.5	0.524	500	61/3.25	0.0366
50	7/3.00	0.268	800	127/2.83	0.0221
95	19/2.5	0.193	1000	127/3.16	0.0176

TECHNICAL DATA HEAVY DUTY FLEXIBLE CABLES

CONDUCTOR					INSULATION	
AREA	NO. & SIZE OF WIRE	DIAMETER OF WIRE	MAX. RESIS TANCE AT 20° C	DC OR SINGLE PHASE AC SEPARATE IN AIR	NOMINAL THICKNESS	NOMINAL OVERALL DIAMETER
SQ. MM	MM	MM	OHM/KM	AMPS	MM	MM
0.5	16/.20	.95	39.000	4	0.6	2.30
0.75	24/.20	1.24	26.000	6	0.6	2.55
1.00	32/.20	1.31	19.500	10	0.6	2.70
1.50	48/.20	1.64	13.300	15	0.6	2.95
2.50	80/.20	2.08	7.980	20	0.7	3.65
4.00	128/.20	2.64	4.950	25	0.8	4.35
6.00	85/.30	3.2	3.300	46	0.8	5.65
10.0	140/.30	4.6	1.910	64	1.0	7.15
16.0	101/.45	5.9	1.210	85	1.4	8.95
25.0	168/.45	7.6	0.780	112	1.4	10.65
35.0	220/.45	8.7	0.554	138	1.4	11.75
50.0	325/.45	10.6	0.386	172	1.6	14.05
70.0	440/.45	12.3	0.272	214	1.8	16.15
95.0	485/.50	14.7	0.206	254	1.9	18.75
120.0	614/.50	16.7	0.161	300	2.1	21.25
150.0	943/.45	18.3	0.129	340	2.2	22.50
185.0	925/.50	20.3	0.106	390	2.5	25.50
240.0	1221/.50	23.0	0.0801	460	2.5	28.50

CABLE UNSHEATHED SINGLE CORE POWER CABLES TYPE AY
650/1100 VOLTS GRADE WITH ALUMINIUM CONDUCTORS AS PER IS 694/90

Cross Sectional area	Thickness of PVC Insulation	Approx. Outer Diameter	Approx. net Wt. of the Cable	Current Rating	Standard Coil Length
Sq. mm	mm	mm	Kg/Km	Amps.	Meters
1.5	0.7	2.90	11.500	18	100
2.5	0.8	3.50	16.500	25	100
4.0	0.8	3.90	22.000	32	100
6.0	0.8	4.45	30.000	41	100
10.0	1.0	5.65	48.00	56	100
16.0	1.0	7.20	72.000	72	100
25.0	1.2	8.95	113.000	95	100
35.0	1.2	10.10	145.000	120	100
50.0	1.4	11.95	206.000	150	100
70.0	1.4	13.60	271.000	180	100
95.0	1.6	15.90	371.000	215	100
120.0	1.6	17.55	456.000	240	100
150.0	1.8	19.75	577.000	270	100
185.0	2.0	21.75	700.000	305	100
240.0	2.2	24.45	887.000	340	100
300.0	2.4	27.30	1112.000	395	100
400.0	2.6	31.00	1445.000	435	100
500.0	2.8	34.50	1790.000	490	100

CABLE 1.1 KV ANNEALED HIGH CONDUCTIVITY SOLID COPPER CONDUCTOR, 1.5 Sq. mm PVC INSULATED INNER SHEATHED, ARMOURED/UNARMOURED & PVC SHEATHED CONTROL CABLES COMPLYING WITH IS : 1554 (PART-I) AMENDED UPTO DATE

Number of cores	Nominal Thickness of insulation	Minimum Thickness of inner sheath	ARMOUR		Thickness of outer sheath		Approx. overall diameter		Approx. weight of cable		Max. DC conductor resistance at 20° C	CURRENT RATINGS		
			Steel wire diameter	Steel strip diameter	Un-armoured nominal	Armoured minimum	Un-armoured	Armoured	Un-armoured	Armoured		Direct in Ground	In Ducts	In Air
	mm	mm	mm	mm	mm	mm	mm	mm	Kg. / Km.	Kg. / Km.	Ohm/Km.	Amps	Amps	Amps
2	0.8	0.3	1.4	-	1.8	1.24	10.4	13.8	167	398	12.1	23	20	20
3	0.8	0.3	1.4	-	1.8	1.24	10.9	14.3	200	448	12.1	21	17	17
4	0.8	0.3	1.4	-	1.8	1.24	11.7	14.9	230	486	12.1	21	17	17
5	0.8	0.3	1.4	-	1.8	1.24	12.6	15.5	250	510	12.1	21	17	17
6	0.8	0.3	1.4	-	1.8	1.24	13.4	16.2	300	600	12.1	15	13	13
7	0.8	0.3	1.4	-	1.8	1.24	14.4	16.8	320	630	12.1	14	13	13
10	0.8	0.3	-	4x0.8	1.8	1.40	16.5	19.9	430	748	12.1	13	11	11
12	0.8	0.3	-	4x0.8	1.8	1.40	17.0	20.4	450	831	12.1	12	10	10
14	0.8	0.3	-	4x0.8	1.8	1.40	17.7	21.0	510	883	12.1	11	10	10
16	0.8	0.3	-	4x0.8	2.0	1.40	19.0	21.9	620	938	12.1	11	9	9
19	0.8	0.3	-	4x0.8	2.0	1.40	19.9	23.2	660	1041	12.1	10	9	9
24	0.8	0.3	-	4x0.8	2.0	1.40	23.0	26.4	820	1270	12.1	9	8	8
30	0.8	0.3	-	4x0.8	2.0	1.40	24.2	28.0	980	1447	12.1	9	7	7
37	0.8	0.3	-	4x0.8	2.0	1.56	26.0	29.8	1200	1718	12.1	8	7	7
61	0.8	0.4	-	4x0.8	2.2	1.56	32.7	36.2	1850	2508	12.1	7	6	6

CABLE 1.1 KV ANNEALED HIGH CONDUCTIVITY SOLID COPPER CONDUCTOR, 2.5 Sq. mm PVC INSULATED INNER SHEATHED, ARMOURED/UNARMOURED & PVC SHEATHED CONTROL CABLES COMPLYING WITH IS : 1554 (PART-I) AMENDED UPTO DATE

Number of cores	Nominal Thickness of insulation	Minimum Thickness of inner sheath	ARMOUR		Thickness of outer sheath		Approx. overall diameter		Approx. weight of cable		Max. DC conductor resistance at 20° C	CURRENT RATINGS		
			Steel wire diameter	Steel strip diameter	Un-armoured nominal	Armoured minimum	Un-armoured	Armoured	Un-armoured	Armoured		Direct in Ground	In Ducts	In Air
	mm	mm	mm	mm	mm	mm	mm	mm	Kg. / Km.	Kg. / Km.	Ohm/Km.	Amps	Amps	Amps
2	0.9	0.3	1.4	-	1.8	1.24	11.6	14.8	215	470	7.41	32	27	27
3	0.9	0.3	1.4	-	1.8	1.24	12.2	15.2	247	503	7.41	27	24	24
4	0.9	0.3	1.4	-	1.8	1.24	13.1	16.1	285	577	7.41	27	24	24
5	0.9	0.3	1.4	-	1.8	1.24	14.2	16.8	370	645	7.41	27	24	24
6	0.9	0.3	1.4	-	1.8	1.24	15.2	17.8	400	723	7.41	20	18	18
7	0.9	0.3	1.4	-	1.8	1.40	16.2	18.9	450	791	7.41	20	17	17
10	0.9	0.3	-	4.0x0.8	2.0	1.40	18.3	21.8	580	900	7.41	18	15	15
12	0.9	0.3	-	4.0x0.8	2.0	1.40	19.8	23.0	650	1034	7.41	17	14	14
14	0.9	0.3	-	4.0x0.8	2.0	1.40	20.8	23.7	740	1125	7.41	16	13	13
16	0.9	0.3	-	4.0x0.8	2.0	1.40	21.9	24.7	840	1291	7.41	15	13	13
19	0.9	0.3	-	4.0x0.8	2.0	1.40	22.9	26.4	950	1411	7.41	14	12	12
24	0.9	0.3	-	4.0x0.8	2.0	1.56	26.6	29.9	1200	1682	7.41	13	11	11
27	0.9	0.3	-	4.0x0.8	2.0	1.56	28.1	32.0	1450	2012	7.41	12	10	10
30	0.9	0.4	-	4.0x0.8	2.2	1.56	30.8	34.0	1800	2306	7.41	11	10	10
61	0.9	0.4	-	4.0x0.8	2.2	1.72	38.1	41.7	2700	3450	7.41	9	8	8

1.1 KV SINGLE CORE, ALUMINIUM CONDUCTOR PVC INSULATED ARMOURED & PVC SHEATHED CABLES COMPLYING WITH IS : 1554 (PART-1) AMENDED UPTO DATE

Nominal cross sectional area	Nominal Thickness of Insulation	Armour wire Diameter	Thickness of outer sheath minimum	Approx overall diameter	Total weight approx	Max. DC Conductor resistance at 20°C	CURRENT RATINGS					
							Direct In Ground		In Ducts		In Air	
mm²	mm	mm	mm	mm	mm	Ohm/Km	2 Cables Amp.	3 Cables Amp.	2 Cables Amp.	3 Cables Amp.	2 Cables Amp.	3 Cables Amp.
1.5*	1.1	1.4	1.24	9.6	109	18.1	21	17	19	17	18	15
2.5+	1.2	1.4	1.24	10.2	124	12.1	28	24	25	24	25	21
4+	1.3	1.4	1.24	10.8	142	7.41	36	31	33	30	32	27
6+	1.3	1.4	1.24	11.3	156	4.61	44	39	42	37	41	35
10+	1.3	1.4	1.24	12.1	185	3.08	54	51	56	51	56	47
16	1.3	1.4	1.24	13.7	242	1.91	75	66	71	65	72	64
25	1.5	1.4	1.24	15.4	310	1.20	97	86	93	84	99	84
35	1.5	1.4	1.24	16.6	358	0.868	120	100	110	100	120	105
50	1.7	1.4	1.24	18.7	456	0.641	145	120	130	115	150	130
70	1.7	1.6	1.40	21.0	590	0.443	170	140	155	135	185	155
95	1.9	1.6	1.40	23.2	730	0.320	205	175	180	155	215	190
120	1.9	1.6	1.40	24.9	848	0.253	230	195	200	170	240	220
150	2.1	1.6	1.40	26.7	988	0.206	265	220	220	190	270	250
185	2.3	1.6	1.56	29.7	1203	0.164	300	240	240	210	305	290
240	2.5	1.6	1.56	32.1	1500	0.125	335	270	270	225	350	335
300	2.8	2.0	1.56	36.3	1832	0.1000	370	295	295	245	395	380
400	3.0	2.0	1.72	40.1	2242	0.0778	410	325	335	275	455	435
500	3.4	2.0	1.72	44.0	2786	0.0605	435	355	355	295	490	480
630	3.9	2.5	2.04	50.6	3620	0.0469	485	395	395	320	560	550

1.1 KV SINGLE CORE, ALUMINIUM CONDUCTOR PVC INSULATED UNARMOURED & PVC SHEATHED CABLES COMPLYING WITH IS : 1554 (PART-1) AMENDED UPTO DATE

Nominal cross sectional area	Nominal Thickness of Insulation	Nominal thickness of outer sheath	Approx overall diameter	Total weight approx	Max. DC Conductor resistance at 20°C	CURRENT RATINGS					
						Direct In Ground		In Ducts		In Air	
mm²	mm	mm	mm	Kg/Km	Ohm/Km	2 Cables Amp.	3 Cables Amp.	2 Cables Amp.	3 Cables Amp.	2 Cables Amp.	3 Cables Amp.
1.5*	0.8	1.8	7.0	57	18.1	21	17	19	17	18	15
2.5*	0.9	1.8	7.6	67	12.1	28	24	25	24	25	21
4+	1.0	1.8	8.2	80	7.41	36	31	33	30	32	27
6*	1.0	1.8	8.7	91	4.61	44	39	42	37	41	35
10+	1.0	1.8	9.6	115	3.08	54	51	56	51	56	47
16	1.0	1.8	11.1	152	1.91	75	66	71	65	72	64
25	1.2	1.8	12.8	208	1.20	97	86	93	84	99	84
35	1.2	1.8	14.0	248	0.868	120	100	110	100	120	105
50	1.4	1.8	15.7	315	0.641	145	120	130	115	150	130
70	1.4	1.8	17.5	395	0.443	170	140	155	135	185	155
95	1.6	2.0	20.2	532	0.320	205	175	180	155	115	190
120	1.6	2.0	21.8	625	0.253	230	195	200	170	240	220
150	1.8	2.0	23.7	750	0.206	265	220	220	190	270	250
185	2.0	2.0	26.0	910	0.164	300	240	240	210	305	290
240	2.2	2.0	28.8	1123	0.125	335	270	270	225	350	335
300	2.4	2.2	32.3	1410	0.1000	370	295	295	245	395	380
400	2.6	2.2	35.7	1747	0.0778	410	325	335	275	455	435
500	3.0	2.2	40.0	2230	0.0605	435	345	355	295	490	480
630	3.4	2.4	44.8	2810	0.0469	485	390	395	320	560	550

Nominal values unless otherwise specified. *Only solid conductor is permissible under ISI mark. + Stranded conductor is also permissible in these sizes.

1.1 KV TWIN CORE, ALUMINIUM CONDUCTOR PVC INSULATED, INNER SHEATHED, ARMOURED & PVC SHEATHED CABLES COMPLYING WITH IS : 1554 (PART-1) AMENDED UPTO DATE.

Nominal cross sectional area	Nominal Thickness of Insulation	Thickness inner sheath (minimum)	ARMOUR		Thickness of outer sheath (minimum)	Approx overall diameter	Total weight	Max. DC Conductor resistance at 20°C	CURRENT RATINGS		
			Steel wire diameter	Steel Steip diamension					Direct in Ground	In Ducts	In Air
mm^2	mm	mm	mm	mm	mm	mm	Kg/Km	Ohm/Km	Amp.	Amps.	Amps.
1.5*	0.8	0.3	1.4	-	1.24	13.8	400	18.1	18	16	16
2.5+	0.9	0.3	1.4	-	1.24	14.8	439	12.1	25	21	21
4+	1.0	0.3	1.4	-	1.24	15.8	492	7.41	32	27	27
6+	1.0	0.3	1.4	-	1.24	17.8	573	4.61	40	34	35
10+	1.0	0.3	1.4	-	1.40	18.8	700	3.08	55	45	47
16	1.0	0.3	-	4.0x0.8	1.40	18.8	643	1.91	70	58	59
25	1.2	0.3	-	4.0x0.8	1.40	21.4	806	1.20	90	76	78
35	1.2	0.3	-	4.0x0.8	1.40	23.0	926	0.868	110	92	99
50	1.4	0.3	-	4.0x0.8	1.40	25.8	1119.0	0.641	135	115	125
70	1.4	0.3	-	4.0x0.8	1.40	28.2	1330	0.443	160	140	150
95	1.6	0.3	-	4.0x0.8	1.56	31.9	1680	0.320	190	170	185
120	1.6	0.4	-	4.0x0.8	1.56	34.1	1903	0.253	210	190	210
150	1.8	0.4	-	4.0x0.8	1.56	37.3	2238	0.206	240	210	240
185	2.0	0.4	-	4.0x0.8	1.72	41.0	2646	0.164	275	240	275
240	2.2	0.5	-	4.0x0.8	1.88	45.4	3264	0.125	320	275	325
300	2.4	0.5	-	4.0x0.8	2.04	50.5	3848	0.1000	355	305	365
400	2.6	0.6	-	4.0x0.8	2.20	55.8	4710	0.0778	385	345	420

1.1 KV TWIN CORE, ALUMINIUM CONDUCTOR PVC INSULATED, INNER SHEATHED,UNARMOURED & PVC SHEATHED CABLES COMPLYING WITH IS : 1554 (PART-1) AMENDED UPTO DATE.

Nominal cross sectional area	Nominal Thickness of Insulation	Minimum Thickness of inner sheath	Minimum Thickness of outer sheath	Approx overall diameter	Approx weight of cable	Max. DC conductor resistance at 20°C	CURRENT RATINGS		
							Direct in Ground	in Ducts	In Air
mm^2	mm	mm	mm	mm	Kg/Km	Ohm/Km	Amps.	Amps.	Amps.
1.5*	0.8	0.3	1.8	11.8	158	18.1	18	16	16
2.5+	0.9	0.3	1.8	12.8	189	12.1	25	21	21
4+	1.0	0.3	1.8	13.9	224	7.41	32	27	27
6+	1.0	0.3	1.8	15	268	4.61	40	34	35
10+	1.0	0.3	1.8	16.6	330	3.08	55	45	47
16	1.0	0.3	1.8	16.8	352	1.91	70	58	59
25	1.2	0.3	2.0	20.2	500	1.20	90	76	78
35	1.2	0.3	2.0	21.8	596	0.868	110	92	99
50	1.4	0.3	2.0	24.6	742	0.641	135	115	125
70	1.4	0.3	2.0	27.0	914	0.443	160	140	150
95	1.6	0.3	2.2	30.8	1210	0.320	190	170	185
120	1.6	0.4	2.2	33.1	1400	0.253	210	190	210
150	1.8	0.4	2.2	36.2	1673	0.206	240	210	240
185	2.0	0.4	2.2	40.0	2022	0.164	275	240	275
240	2.2	0.5	2.4	44.0	2520	0.125	320	275	325
300	2.4	0.5	2.6	49.2	3078	0.1000	355	305	365
400	2.6	0.6	2.8	54.6	3840	0.0778	385	345	420

Nominal values unless otherwise specified. *Only solid conductor is permissible under ISI mark. + Stranded conductor is also permissible in these sizes.

1.1 KV THREE CORE, ALUMINIUM CONDUCTOR PVC INSULATED INNER SHEATHED, ARMOURED & PVC SHEATHED CABLES COMPLYING WITH IS : 1554 (PART-1) AMENDED UPTO DATE

Nominal cross sectional area	Nominal Thickness of Insulation	Thickness inner sheath (minimum)	ARMOUR		Thickness of outer sheath (minimum)	Approx overall diameter	Total weight	Max. DC conductor resistance at 20°C	CURRENT RATINGS		
			Steel wire diameter	Steel Strip dimension					Direct in Ground	in Ducts	In Air
mm^2	mm	mm	mm	mm	mm	mm	Kg/Km	Ohm/Km	Amps.	Amps.	Amps.
1.5*	0.8	0.3	1.4	-	1.24	14.0	418	18.1	16	14	13
2.5+	0.9	0.3	1.4	-	1.24	15.4	476	12.1	21	18	18
4+	1.0	0.3	1.4	-	1.40	18.4	530	7.41	28	23	23
6+	1.0	0.3	1.4	-	1.40	18.4	600	4.61	35	30	30
10+	1.0	0.3	-	4.0x0.8	1.40	19.4	670	3.08	46	39	40
16	1.0	0.3	-	4.0x0.8	1.40	20.6	770	1.91	60	50	51
25	1.2	0.3	-	4.0x0.8	1.40	23.6	944	1.20	76	63	70
35	1.2	0.3	-	4.0x0.8	1.40	25.4	1106	0.868	92	77	86
50	1.4	0.3	-	4.0x0.8	1.56	29.1	1378	0.641	110	95	105
70	1.4	0.3	-	4.0x0.8	1.56	31.9	1718	0.443	135	115	130
95	1.6	0.4	-	4.0x0.8	1.56	36.1	2130	0.320	165	140	155
120	1.6	1.4	-	4.0x0.8	1.56	38.6	2478	0.253	185	155	180
150	1.8	0.4	-	4.0x0.8	1.72	42.4	2878	0.206	210	175	205
185	2.0	0.5	-	4.0x0.8	1.88	46.8	3499	0.164	235	200	240
240	2.2	0.5	-	4.0x0.8	2.04	51.9	2496	0.125	275	235	280
300	2.4	0.6	-	4.0x0.8	2.20	57.1	5164	1.1000	305	260	135
400	2.6	0.6	-	4.0x0.8	2.36	63.6	6337	0.0778	335	290	375
500	3.0	0.7	-	4.0x0.8	2.68	72.0	8055	0.0605	350	310	410
630	3.4	0.7	-	4.0x0.8	3.00	82.0	10130	0.0469	365	325	455

1.1 KV THREE CORE, ALUMINIUM CONDUCTOR, PVC INSULATED, INNER SHEATHED, UNARMOURED & PVC SHEATHED CABLES COMPLYING WITH IS : 1554 (PART-1) AMENDED UPTO DATE

Nominal cross sectional area	Nominal Thickness of Insulation	Minimum Thickness of inner sheath	Minimum Thickness of outer sheath	Approx overall diameter	Approx weight of cable	Max. DC conductor resistance at 20°C	CURRENT RATINGS		
							Direct in Ground	in Ducts	In Air
mm^2	mm	mm	mm	mm	Kg/Km	Ohm/Km	Amps.	Amps.	Amps.
1.5*	0.8	0.3	1.8	12.0	167	18.1	16	14	13
2.5+	0.9	0.3	1.8	13.4	212	12.1	21	18	18
4+	1.0	0.3	1.8	14.6	248	7.41	28	23	23
6+	1.0	0.3	1.8	15.8	304	4.61	35	30	30
10+	1.0	0.3	1.8	17.4	384	3.08	46	39	40
16	1.0	0.3	2.0	19.9	526	1.91	60	50	51
25	1.2	0.3	2.0	22.4	618	1.20	76	63	70
35	1.2	0.3	2.0	24.2	747	0.868	92	77	86
50	1.4	0.3	2.0	27.7	948	0.641	110	95	105
70	1.4	0.3	2.2	30.9	1222	0.443	135	115	130
95	1.6	0.4	2.2	35.1	1590	0.320	165	140	155
120	1.6	0.4	2.2	37.6	1806	0.253	185	155	180
150	1.8	0.4	2.4	41.4	2244	0.206	210	175	205
185	2.0	0.5	2.6	45.8	2778	0.164	235	200	240
240	2.2	0.5	2.8	51.1	3500	0.125	275	235	280
300	2.4	0.6	3.0	56.1	4298	0.1000	305	260	315
400	2.6	0.6	3.2	63.0	5412	0.0778	335	290	375
500	3.0	0.7	3.4	70.6	6865	0.0605	350	310	410
630	3.4	0.7	3.8	81.0	8831	0.0469	365	325	455

Nominal values unless otherwise specified. *Only solid conductor is permissible under ISI mark. + Stranded conductor is also permissible in these sizes.

POWER & CONTROL CABLES

1.1KV 3.5 CORE, ALUMINIUM CONDUCTOR, PVC INSULATED, INNER SHEATHED, ARMOURED & PVC SHEATHED CABLES AS PER IS 1554 PART I / 88

Nominal cross sectional area		Nominal Thickness of Insulation of		Minimum Thickness inner sheath	ARMOUR Gal. Flat steel strip Nominal thickness	Nominal thickness of Outer Sheath	Approx overall diameter	Approx weight of cable	Max. DC conductor resistance at 20°C		CURRENT RATINGS		
											Direct in Ground	In Duct	In Air
Main	Neutral	Main	Neutral						Main	Natural			
Sq.mm	mm	mm	mm	mm	mm	mm	mm	mm	Ohm/km.	Ohm/km.	Amps.	Amps.	Amps.
25	16	1.2	1.0	0.3	0.8	2.0	25.8	1048	1.200	1.910	76	63	70
35	16	1.2	1.0	0.3	0.8	2.0	28.1	1221	0.868	1.910	92	77	86
50	25	1.4	1.2	0.3	0.8	2.2	31.4	1529	0.641	1.200	100	95	105
70	35	1.4	1.2	0.4	0.8	2.2	35.2	1892	0.443	0.868	135	115	130
95	50	1.6	1.4	0.4	0.8	2.2	38.9	2349	0.320	0.641	165	140	155
120	70	1.6	1.4	0.4	0.8	2.4	42.7	2802	0.253	0.433	185	155	180
150	70	1.8	1.4	0.5	0.8	2.6	46.1	3276	0.206	0.433	210	175	205
185	95	2.0	1.6	0.5	0.8	2.6	49.6	3916	0.164	0.320	235	200	240
240	120	2.2	1.6	0.6	0.8	3.0	58.3	5045	0.125	0.253	275	235	280
300	150	2.4	1.8	0.6	0.8	3.2	64.2	6055	0.100	0.206	305	260	315
400	185	2.6	2.0	0.7	0.8	3.4	71.6	6574	0.0778	0.164	335	290	375
500	240	3.0	2.2	0.7	0.8	3.8	79.4	9380	0.0605	0.125	350	310	410
630	300	3.4	2.4	0.7	0.8	4.0	91.9	11747	0.0469	0.100	365	325	455

1.1 KV 3½ CORE, ALUMINIUM CONDUCTOR, PVC INSULATED, INNER SHEATHED, UNARMOURED & PVC SHEATHED CABLE COMPLYING WITH IS : 1554 (PART-1) AMENDED UPTO DATE

Nominal cross Sectional area		Nominal thickness of Insulation		Minimum thickness of inner sheath	Minimum thickness of outer sheath	Approx overall diameter	Approx weight of cable	Max. DC conductor resistance at 20°C ohm/km		CURRENT RATING		
										Direct in Ground	In Ducts	In Air
Main Sq. mm	Neutral Sq. mm	Main mm	Neutral mm	mm	mm	mm	Kg/km	Main	Neutral	Amps.	Amps.	Amps.
25	16	1.2	1.0	0.3	2.0	23.8	702	1.20	1.91	76	63	70
35	16	1.2	1.0	0.3	2.0	25.9	800	0.868	1.91	92	77	86
50	25	1.4	1.2	0.3	2.2	30.0	1027	0.641	1.20	100	95	105
70	35	1.4	1.2	0.4	2.2	32.9	1418	0.443	0.868	135	115	130
95	50	1.6	1.4	0.4	2.2	37.6	1840	0.320	0.641	165	140	155
120	70	1.6	1.4	0.4	2.4	40.9	2225	0.253	0.443	185	155	180
150	70	1.8	1.4	0.5	2.4	44.9	2588	0.206	0.443	210	175	205
185	95	2.0	1.6	0.5	2.6	49.5	3209	0.164	0.320	235	200	240
240	120	2.2	1.6	0.6	2.8	55.3	4075	0.125	0.253	275	235	280
300	150	2.4	1.8	0.6	3.0	61.4	4980	0.100	0.206	305	260	315
400	185	2.6	2.0	0.7	3.4	69.2	6415	0.0778	0.164	335	290	375
500	240	3.0	2.2	0.7	3.6	77.4	7994	0.0605	0.125	350	310	410
630	300	3.4	2.4	0.7	4.0	87.0	9845	0.0469	0.100	365	325	455

Nominal values unless otherwise specified. *Only solid conductor is permissible under ISI mark. + Stranded conductor is also permissible in these sizes.

POWER & CONTROL CABLES

1.1KV FOUR CORE, ALUMINIUM CONDUCTOR, PVC INSULATED, INNER SHEATHED, ARMOURED & PVC SHEATHED CABLES AS PER IS 1554 PART I / 88

Nominal cross sectional area	Nominal Thickness of Insulation	Minimum Thickness of inner sheath	ARMOUR		Nominal thickness of Outer Sheath	Approx overall diameter	Approx weight of cable	Max. DC conductor resistance at 20°C	CURRENT RATINGS		
			Galv.Round Steel Wire Nominal diameter	Galv. Flat Steel Strip Nominal thickness					Direct in Ground	In Duct	In Air
Sq.mm	mm	mm	mm	mm	mm	mm	kg/km	Ohm/km	Amps.	Amps.	Amps.
1.5	0.8	0.3	1.4	-	1.8	14.1	440	18.1	16	14	13
1.5	0.8	0.3	1.4	-	1.8	14.9	478	18.1	16	14	13
2.5*	0.9	0.3	1.4	-	1.8	16.3	568	12.1	21	18	18
4*	1.0	0.3	1.4	-	1.8	18.0	684	7.41	28	23	23
6*	1.0	0.3	-	0.8	1.8	18.5	730	4.61	35	30	30
10*	1.0	0.3	-	0.8	2.0	20.8	750	3.08	46	39	40
16	1.0	0.3	-	0.8	2.0	22.2	880	1.91	60	50	51
25	1.2	0.3	-	0.8	2.0	25.8	1130	1.20	76	63	70
35	1.2	0.3	-	0.8	2.0	27.9	1280	0.868	92	77	86
50	1.4	0.4	-	0.8	2.2	32.2	1635	0.641	110	95	105
70	1.4	0.4	-	0.8	2.2	35.6	2028	0.443	135	115	130
95	1.6	0.4	-	0.8	2.4	40.7	2700	0.320	165	140	155
120	1.6	0.5	-	0.8	2.4	44.4	3070	0.253	185	155	180
150	1.8	0.5	-	0.8	2.6	48.9	3653	0.206	210	175	205
185	2.0	0.6	-	0.8	2.8	53.9	4410	0.164	235	200	240
240	2.2	0.6	-	0.8	3.0	60.6	5484	0.125	275	235	280
300	2.4	0.7	-	0.8	3.4	67.6	6780	0.100	305	260	315
400	2.6	0.7	-	0.8	3.6	74.7	8338	0.0778	335	290	375
500	3.0	0.7	-	0.8	4.0	83.8	10415	0.0605	350	310	410
630	3.4	0.7	-	0.8	4.0	93.6	12712	0.0469	365	325	455

1.1KV FOUR CORE, ALUMINIUM CONDUCTOR, PVC INSULATED, INNER SHEATHED, UNARMOURED & PVC SHEATHED CABLES AS PER IS 1554 PART I / 88

Nominal cross sectional area	Nominal Thickness of Insulation	Minimum Thickness of inner sheath	Nominal thickness of Outer Sheath	Approx overall diameter	Approx weight of cable	Max. DC conductor resistance at 20°C	CURRENT RATINGS		
							Direct in Ground	In Duct	In Air
Sq.mm	mm	mm	mm	mm	kg/km	Ohm/km	Amps.	Amps.	Amps.
1.5	0.8	0.3	1.8	11.7	180	18.1000	16	14	13
2.5*	0.9	0.3	1.8	13.1	225	12.1000	21	18	18
4*	1.0	0.3	1.8	14.8	269	7.4100	28	23	23
6*	1.0	0.3	1.8	16.0	316	4.6100	35	30	30
10*	1.0	0.3	1.8	7.9	411	3.0800	46	39	40
16	1.0	0.3	2.0	20.3	532	1.9100	60	50	51
25	1.2	0.3	2.0	23.9	719	1.2000	76	63	70
35	1.2	0.3	2.0	26.0	897	0.8680	92	77	86
50	1.4	0.3	2.2	30.1	1189	0.6410	110	95	105
70	1.4	0.3	2.2	33.9	1548	0.4430	135	1151	30
95	1.6	0.4	2.2	38.6	1999	0.3200	165	140	155
120	1.6	0.5	2.4	42.5	2436	0.2530	185	15	180
150	1.8	0.5	2.6	47.0	2951	0.2060	210	175	205
185	2.0	0.6	2.8	52.2	3675	0.1640	235	200	240
240	2.2	0.6	3.0	58.9	4649	0.1250	275	235	280
300	2.4	0.7	3.2	65.3	5774	0.1000	305	260	315
400	2.6	0.7	3.6	72.2	730.9	0.0778	335	390	375
500	3.0	0.7	3.8	81.5	9182	0.0605	350	310	410
630	3.4	0.7	0.4	91.7	11421	0.0469	365	325	455

BASIC ASSUMPTIONS FOR CURRENT RATINGS

The current ratings given in the tables are based on the following assumption:-

(i) Maximum conductor temperature .....70°C
(ii) Thermal resistivity of soil.....150°C cm/w
(iii) Thermal resistivity of PVC.....650°C cm/w
(iv) Ground temperature .....30°C
(v) Ambient air temperature.....40°C
(vi) Depth of laying (to the highest point of cable laid direct in the ground or to the top surface of ducts) 1.1 KV.....75cm
(vii) Type of installation Multicore cables.....insatalled single
Singlecore cables.....Three single core trefoil & touching formation.

RATING FACTORS :

1. Rating factors for Depth of laying-

Depth of laying cm	Up to 25 mm^2	Above 25 mm^2 Upto 300 mm^2	Above 300 mm^2
75	1.00	1.00	1.00
90	0.99	0.98	0.97
105	0.98	0.97	0.96
120	0.97	0.96	0.95
150	0.96	0.94	0.92
180 or more	0.95	0.93	0.91

2. Rating factors for Depth of laying (twin and multi core cables in single way ducts)-

Depth of laying cm	Rating factor
75	1.00
90	0.99
105	0.98
120	0.97
150	0.96
180	0.95
270	0.92
360	0.91
450	0.90
540 or more	0.89

3. Rating factors for the single core cables (AC) in flat formation in air (to applied for the corresponding for trefoilgroups in air)-

Nominal area of conductor mm^2 Upto & including	Rating factor
185	1.10
240	1.07
300	1.06
400	1.04
500	1.00
630	1.00

4. Rating factors for variation in Ground Temperature for cables laid direct in the Ground:

Ground Temperature °C	15	20	25	30	35	40	45
Rating factors	1.17	1.12	1.06	1.00	0.94	0.87	0.79

5. Rating factors for variation in Ground Temperature for cables in ducts :

Ground Temperature °C	15	20	25	30	35	40	45
Rating factors	1.17	1.12	1.06	1.00	0.94	0.87	0.79

6. Rating factors for variation in Ground Temperature for cables in ducts :

Ground Temperature °C	20	25	30	35	40	45	50
Rating factors	1.33	1.25	1.16	1.09	1.00	0.90	0.83

COMPARATIVE CHARACTERISTICS OF TYPICAL ELASTOMERIC AND THERMOPLASTIC INSULATING AND SHEATHING MATERIALS (I)

MATERIAL	NATURAL RUBBER BLENDED WITH SBR	EPR	CSP	PCP	NBR/PVC	SILICON	CROSS LINKED PE.	POLYTTHYLENE
USED AS INSULATION	GENERAL PURPOSE	GENERAL PURPOSE HEAT RESISTING	HEAT OIL & FLAME RESISTANT	SPECIAL CASES	NOT APPLICABLE	HEAT RESISTING	LOW VOLTAGE UPTO 1.1 KV	GENERAL PURPOSE
USED AS SHEATH	GENERAL PURPOSE AND HEAVY DUTY	APPLICABLE AS INNER SHEATH	GENERAL PURPOSE & HEAVY DUTY HEAT OIL & FLAME RESISTANT	GENERAL PURPOSE & HEAVY DUTY HEAT OIL & FLAME RESISTANT	GENERAL PURPOSE & HEAVY DUTY HEAT OIL & FLAME RESISTANT	SPECIAL CASES	NOT APPLICABLE	NOT APPLICABLE
CONDUCTOR TEMPERATURE (°C) MAX. CONTINUOUS OPERATION	60	90	90	90	90	150	90	70
CONDUCTOR TEMPERATURE (°C) MAX. SHORT CIRCUIT	200	250	250	250	250	350	250	160
CONDUCTOR TEMPERATURE (°C) MIN. FLEXING DUTY	-55	-40	-30	-30	-20	-50	-30	-60
MATERIAL LIMITING TEMPERATURE (°C) MIN.FOR INSTALLATION	-55	-50	-30	-45	-30	-55	-40	-60
RESISTANT TO : WEATHER								
: WATER								
: OIL								
: CHEMICAL								
: SOLVENT								
: CORONA								
: OZONE								
: ABRASION								
: FLAME								
ELECTRICAL INSULATION RESISTANCE								
BREAKDOWN VOLTAGE								
A.C.LOSSES								
INDIAN STANDARD	IS-6380	IS-6380	IS-6380	IS-6380	IS-6380	IS-6380	IS-7098 (I)	IS-6474
BRISTISH STANDARD	BS-6899	BS-6899	BS-6899	BS-6899	BS-6899	BS-6899	NONE	NONE

VERY GOOD GOOD FAIR POOR NOT APPLICABLE

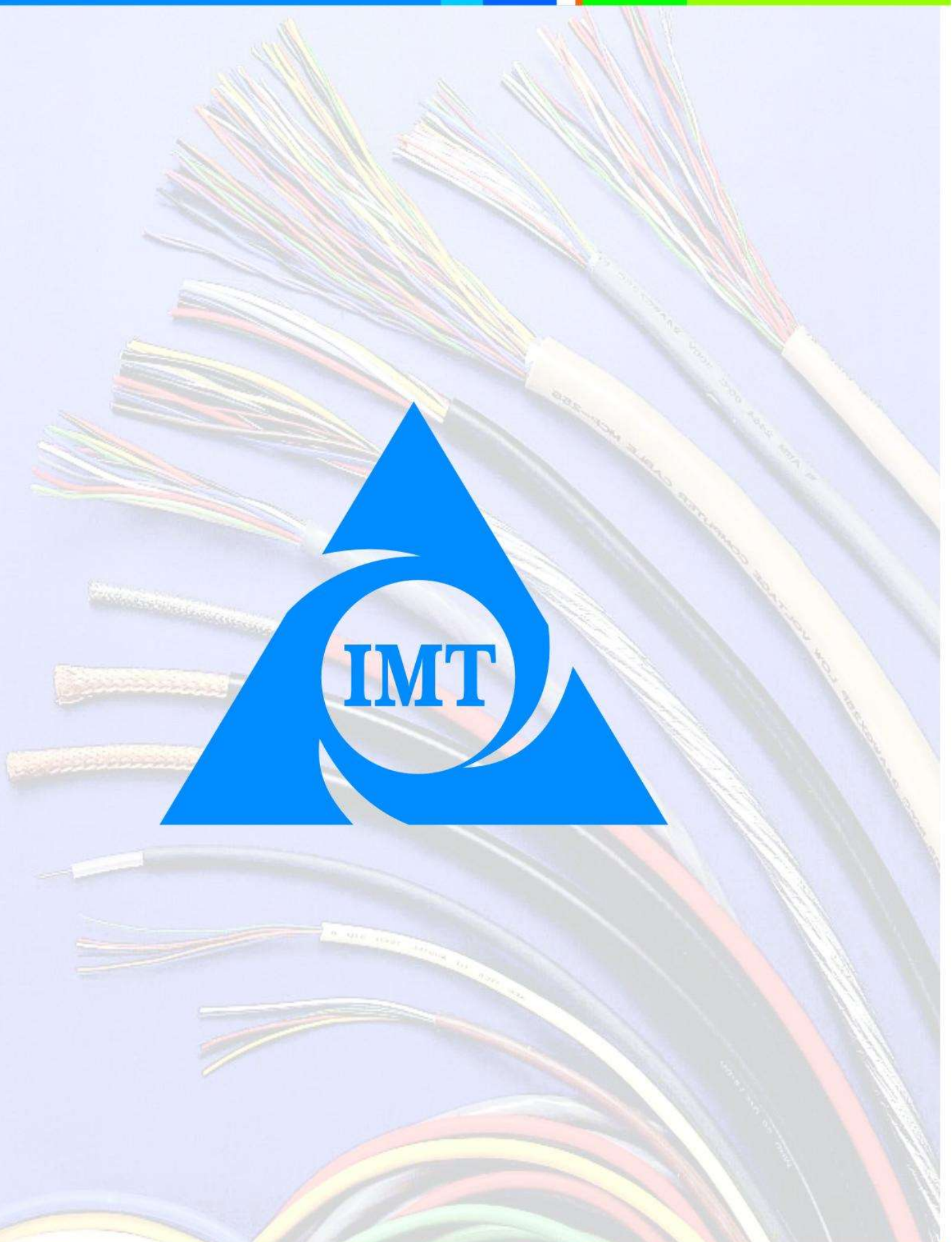
COMPARATIVE CHARACTERISTICS OF TYPICAL POLY VINYL CHLORIDE INSULATING AND SHEATHING MATERIALS (I)

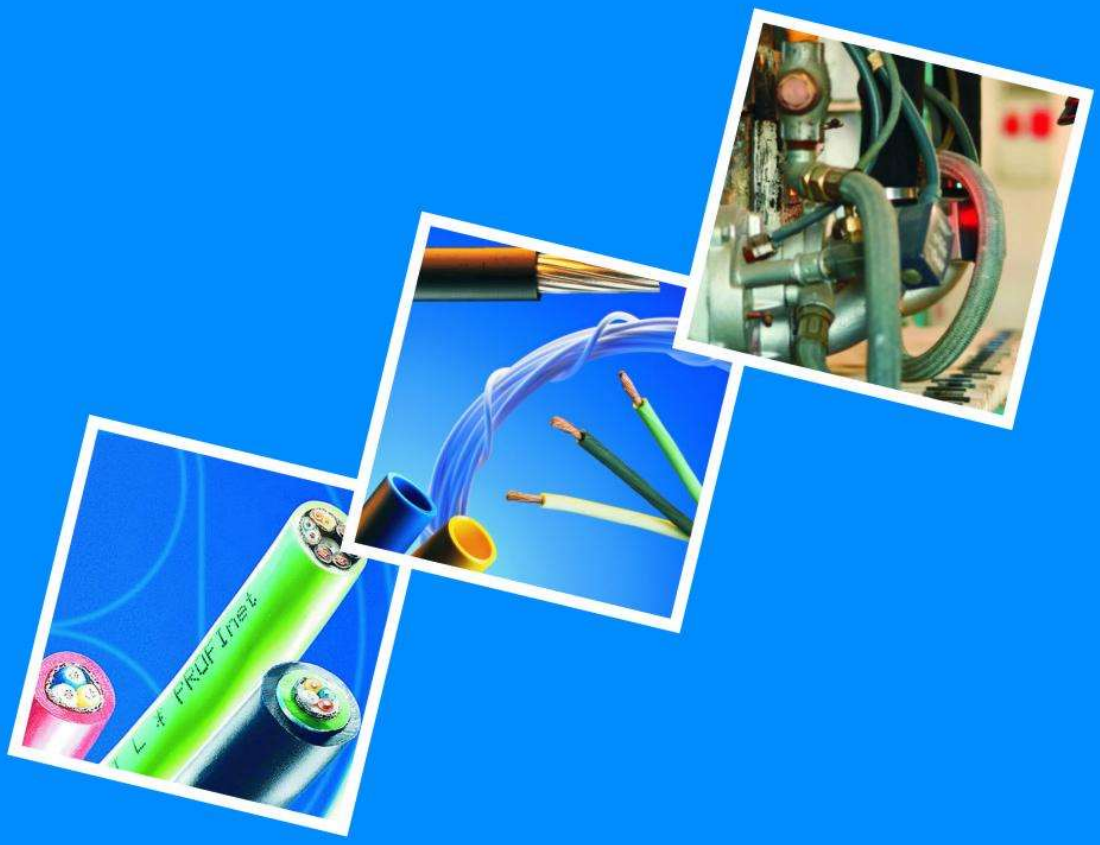
MATERIAL	PVC TYPE 'A'	PVC TYPE 'B'	PVC TYPE 'C'	PVC TYPE 'D'	PVC TYPE 'ST1'	PVC TYPE 'ST2'	PVC TYPE 'ST3'	PVC TYPE 'ST2-FRLS' (2)	PVC TYPE 'ST2-FR' (2)	PVC TYPE 'LOW' PERMITI-VITY	PVC TYPE 'LOW TEMP'
USED AS INSULATION	GENERAL PURPOSE	GENERAL PURPOSE (HIGH VOLTAGE >3.3 KV)	HEAT RESIST-ING	GENERAL PURPOSE FLEXIBLE						INSULATION FOR INSTRU-MENTATION CABLE	INSULATION FOR VERY LOW TEMP. APPLICATION
USED AS SHEATH					GENERAL PURPOSE	HEAT RESISTING	FLEXIBLE GENERAL PURPOSE	HEAT RESIST-ING LOW SMOKE, LOW HOLOGEN FIRE RESISTING	HEAT RESISTANT, HIGHLY FIRE RESISTANT		SHEATHING FOR VERY LOW TEMP APPLICATION
CONDUCTOR TEMPERATURE (°C) MAX. CONTINUOUS OPERATION	70	70	85	70	70	85/90	70	85/90	85/90	85	70
CONDUCTOR TEMPERATURE (°C) MAX. SHORT CIRCUIT	160	160	160	160	160	160	160	160	160	160	120
MATERIAL LIMITING TEMPERATURE (°C) MIN. FLEXING DUTY	-20	+15	-15	-25	-30	-15	-20	-15	-15	-15	-40
MATERIAL LIMITING TEMPERATURE (°C) MIN. FOR INSTALLATION	0	+10	0	-10	-10	0	-10	+10	+10	0	-30
RESISTANT TO : WEATHER											
: WATER											
: OIL											
: CHEMICAL											
: SOLVENT											
: CORONA											
: OZONE											
: ABRASION											
: FLAME											
ELECTRICAL INSULATION RESISTANCE											
BREAKDOWN VOLTAGE											
A. C. LOSSES											
INDIAN STANDARD	IS-5831	IS-5831	IS-5831	IS-5831	IS-5831	IS-5831	IS-5831	IS-5831 (3)	IS-5831 (3)	NONE	NONE
BRITISH STANDARD	BS-6746	BS-6746	BS-6746	NONE	BS-6746	BS-6746	NONE	NONE	NONE	NONE	NONE

VERY GOOD GOOD FAIR

POOR NOT APPLICABLE

NOTE :
(1) GENERAL GUIDANCE ONLY, IN SPECIFIC CASES CONSULT THE MANUFACTURER.
(2) ALSO SUITABLE FOR ST1 - FRLS & ST1-FR.
(3) FRLS & FR PROPERTIES AS PER IS-1554 (PT 1&2) 1988.





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