1001 – ACME – MAS – ACE – STR – 0005

LODHA BUILDING A BETTER LIFE	Lodha Sales Gallery, ACME Manpada, Thane	ACE GLOBAL AIRCON SERVICES LTD.	Work Order No.:
			Material Approval Submittal
			MAS No:

Contractor:ACE GLOBAL AIRCON SRVICES LTD

To LODHA Group: **Lodha Sales Gallery, Manpada, Thane** | Date: 02-03-2022.

Discipline ☐ Architectural ☐ Structural ■ HVAC ☐ Electrical ☐ Plumbing ☐ Facade ☐ Others (.....)

MATERIAL DETAILS (One Item Only Per Form)

Item description : Power & Control Cable

Name of material : Power & Control Cable

Remarks ☐ As per specifications ☐ Alternate submission

- Attach all relevant technical literature marked to identify relevant descriptions, current test certificate, samples etc.
- Highlight any element of contractual non-compliance in this submittal

Drawing Ref: -	**Planned Date for applicable submittal for: -**	**Date:**
Specification Ref: -	1. O & M Manual	
BOQ Ref: -	2. Training Manual	
Indian/International Standards Ref: -	3. Specified /recommended spare parts	
	4. Warranties and Guarantees	

Manufacturer / Supplier

Company Name: - POLYCAB WIRES PVT LTD	Locally Manufactured
Address: Polycab house,771, Mogul Lane,	Production Period
Mahim(w)-Mumbai-400 016	Delivery Ex-works
	Total Delivery Time
Local Agent:	Total Delivery Time

Programme: -

Date required on Site: -

Expected date of arrival on Site: -

Contractor's Authorized Signature

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LODHA Engineer's Comments ☐ Design ☐ Con. Mgmt (Civil). ☐ Con. Mgmt (MEP) ☐ Con. Mgmt (Facade) ☐ QA/QC

1. Compliance on Lodha standard specification to be provided.
2. BOQ to be attached with highlighted selected line item for which MAS is sent.
3. For each lot of cable supplied, provide a certificate of origin issued by the manufacturer stating origin, date of manufacture, composition, standards to which it complies and test certificates. All test certificates are to be numbered and comply with the test requirements of the relevant standard to which the cable is manufactured (i.e. type).
4. Cable Should be terminated with proper connector i.e lugs, glands etc.

Signed (LODHA Engineer)

Consultant's Comments. ☐ Hafeez contractor ☐ Sterling ☐ ESKEYEM ☐ Others (.....)

Signed (Consultant's Engineer)

Status	Code 1	Code 2	Code 3	Code 4
	Work may proceed	Conditionally approved. Work may proceed and resubmit incorporating comments indicated	Revise & Resubmit. Work may not proceed	For information and records only. Work may proceed.

Project Director | **Date: -** Sanket Bhasme

Digitally signed by: Sanket Bhasme
DN: CN = Sanket Bhasme C = IN O = Lodha Group
Date: 2022.03.05 16:07:10 +05'30'

CC: VP (QA/QC), VP (Purchase)

Code 1 – Work may proceed
Code 2 – Conditionally approved. Work may proceed and resubmit incorporating comments.
Code 3 – Revise & Resubmit. Work may not proceed
Code 4 – For information and records only. Work may proceed
Important: Permission to proceed does not relieve contractor from full compliance with contractual obligations

LODHA BUILDING A BETTER LIFE	LODHA UPPER THANE	ACE GLOBAL AIRCON SERVICES LTD.	**Contract Ref:** **Material Approval Submitt** **MAS No: UT-MAS-CEP - ACE-HVAC-**

Contract: ACE GLOBAL AIRCON SERVICES LTD.

To LODHA Group: LODHA UPPER THANE SALES GALLERY **Date:** 07/09/2021

Discipline ☐ Architectural ☐ Structural ■ HVAC ☐ Electrical ☐ Plumbing ☐ Facade Others(.....)

MATERIAL DETAILS (One Item Only Per Form)

Item description : ELECTRICAL CABLE

Name of material : ELECTRICAL CABLE

Remarks		As perspecifications		Alternate submission

Attach all relevant technical literature marked to identify relevant descriptions, current test certificate, samples etc.
Highlight any element of contractual non-compliance in this submittal

Drawing Ref: -	**Planned Date for applicable submittal for: -**	**Date:**
Specification Ref: -	1. O & M Manual	
BOQ Ref: - 1.6	2. Training Manual	
Indian/International Standards Ref: -	3. Specified /recommended spare parts	
	4. Warranties and Guarantees	

Manufacturer / Supplier

Company Name: **POLYCAB WIRES PVT.LTD.**
Address: Plot No.38/1-6, 41/4-9,
Daman Industrial Estate, Kadaiya, Da,an – 396 210.

Local Agent:

LocallyManufactured :
ProductionPeriod :
DeliveryEx-works :
TotalDeliveryTime :
TotalDeliveryTime :

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Programme: -
Date required on Site: -
Expected date of arrival on Site: -

Contractor's Authorized Signature

LODHA Engineer'sComments	Design	Con. Mgmt(Civil)	Con. Mgmt(MEP)	Con. Mgmt (Facade)	QA/QC

Name/ Signature/ Date	Name/ Signature/ Date	Name/ Signature/Date	Name/ Signature/ Date	Name/ Signature/ Date
QE	CM 20/09/21	Commercial/Contracts	Store	Co-Ordination 22/09/21

Paresh

Consultant's Comments.

Name/ Signature/ Date	Name/ Signature/ Date
Architect	RCC Consultant

LODHA UPPER THANE 7 SEP 2021 RECEIVED BY

Status	Code 1	Code 2	Code 3	Code 4
1	Work may proceed	Conditionally approved. Work may proceed and resubmit incorporating comments indicated	Revise & Resubmit Work may not proceed	For information and records only. Work may proceed

Project Director **Date: -**

CC: VP (QA/QC), VP (Purchase)

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Sl. No.	Description of Materials / Equipment	Approved Manufacturer's/ Makes		
2.	**ELECTRICAL CABLES & WIRES**			
i.	PVC, FR/FRLS/ LSZH/, insulated, multi-stranded, flexible copper wire, up to 1.1 kV grade	AVOCAB Polycab KEI Finolex Bonton Batra Henley	AVOCAB Polycab KEI Finolex Bonton Batra Henley	AVOCAB Polycab KEI Finolex Bonton Batra Henley
ii.	Heavy duty PVC, XLPE/ FR LV Cables up to & including 1.1kV grade	AVOCAB Polycab KEI Finolex Batra Henley	AVOCAB Polycab KEI Finolex Batra Henley	AVOCAB Polycab KEI Finolex Batra Henley
iii.	Heavy duty PVC, XLPE insulated MV Cables for 11/22kV grade	As per MSEDCL approved	As per MSEDCL Approved	As per MSEDCL Approved
iv.	Mica glass/LSZH fire resistant cross linked compound insulated Fire survival cable (PH120) for up to 1.1kV grade	AVOCAB INDIA IMPEX Polycab Bonton Batra Henley	AVOCAB INDIA IMPEX Polycab Bonton Batra Henley	AVOCAB INDIA IMPEX Polycab Bonton Batra Henley
v	Fire Spray On Cable – Endothermic	KBS Passive Fire HILTI SGS 3M	KBS Passive Fire HILTI SGS 3M	KBS Passive Fire HILTI SGS 3M
3.	**Gland & Termination**			
i.	HT Termination Kits/ Straight through joints	Raychem (Tyco Electronics) 3M India REPL	Raychem (Tyco Electronics) 3M India REPL	Raychem (Tyco Electronics) 3M India REPL

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1.

Name of Manufacturers & Address

POLYCAB WIRES PVT.LTD.

Plot No. 38/1-6, 41/4-9,

Daman Industrial Estate,

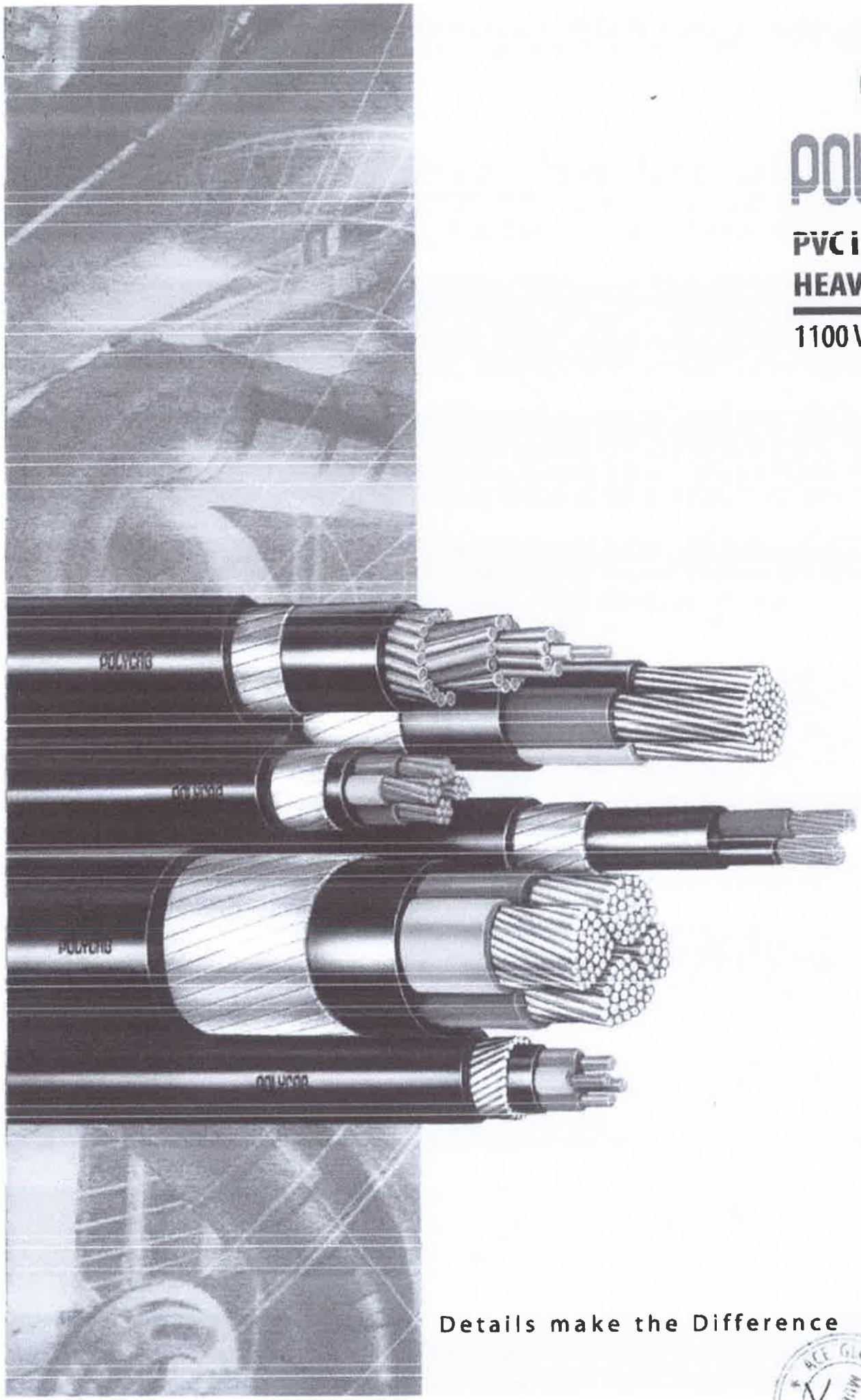
Kadaiya, Daman -396 210.



2.
Technical Specification & Catalogue

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POLYCAB

PVC INSULATED HEAVY DUTY CABLE

1100 V.

ISO 9001:2008

ISO 14001:2004

OHSAS 18001:2007

IS 1554 (Part I)

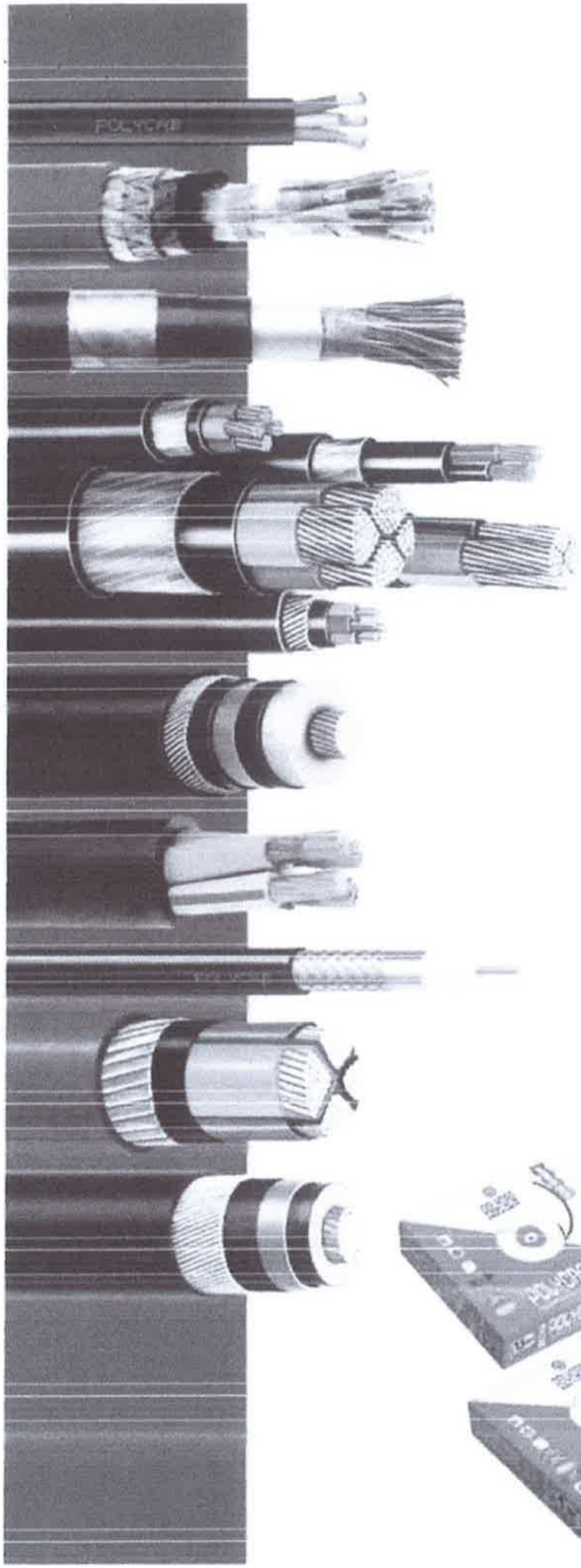
Details make the Difference

ACE GLOBAL AIRCON SERVICES LTD MUMBAI

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PRODUCT RANGE

- L.V. PVC & XLPE POWER CABLES WITH COPPER AND ALUMINIUM CONDUCTOR
- L.V. PVC & XLPE CONTROL CABLES WITH COPPER CONDUC
- M.V. POWER CABLES UPTO 33 kV
- EHV CABLES FROM 66kV TO 220kV
- M.V. / L.V. AERIAL BUNCHED CABLES (ABC)
- ZERO HALOGEN CABLES
- FIRE SURVIVAL CABLES (FS)
- INSTRUMENTATION CABLES SCREENED / UNSCREENED
- INDUSTRIAL BRAIDED CABLES
- THERMO COUPLE / COMPENSATING CABLES
- LEAD SHEATHED CABLES
- RUBBER CABLES
- RAILWAY SIGNALLING CABLES
- TELEPHONE CABLES – DRY & JELLY FILLED
- BUILDING WIRES – FR / FRLS / FRZH / FRLF / FRFS
- SINGLE CORE INDUSTRIAL FLEXIBLES – PVC / FR / FI FRZH / HRFR / HR / HR-FRLS / FRLF / FRFS
- MULTI CORE INDUSTRIAL FLEXIBLE CABLES
- SUBMERSIBLE FLAT AND ROUND CABLES
- SUBMERSIBLE WRAPPED WINDING WIRES
- COAXIAL CABLES
- LAN CAT-5E / CAT 6 CABLES
- WELDING CABLES
- SOLAR AC / DC CABLES
- STEEL BRAIDED CABLES
- SPECIALITY CABLES – SUITED FOR MARINE / OIL & G EXTREME FIRE CONDITIONS / HIGHLY CORROSIVE ENVIRONMENT / TRAFFIC / AIRCRAFT / SPACE STATI AUTOMOBILES



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THE COMPANY

POLYCAB, an ISO 9001:2008, ISO 14001:2004, OHSAS 18001:2007 company is the largest Wire & Cable manufacturer in India with a proven track record of over three decades. The fastest growing company in the Indian Cable Industry with consistent growth. Polycab group has crossed Rs. 3600 crore turnover in the year 2010-11 and is set to achieve Rs. 4000 crore turnover in the year 2011-12.

From a modest beginning with Wires and Cables, over three decades ago Polycab set up State of Art manufacturing facilities at Daman in 1996.The last 3 decades have seen the core business develop along different product lines: - Low Voltage Cables, Medium Voltage Cables, Extra High Voltage Cables, Fire Survival & Fire Resistant Cables, Telecommunication Cables, Instrumentation Cables and Aerial Bunched Cables. In the manufacture of cables, a competitive edge lies not so much in product innovation as in providing consistent quality, guaranteeing reliability and ready availability. Polycab's Daman factory was created to address these key market determinants. The manufacturing set up is sourced out from the world renowned Machinery and Technology suppliers with constant upgradation and expansions.

CUSTOMER SATISFACTION

In an on going process to improve Customer Satisfaction Polycab offers a variety of services:

- Commercially competitive prices.
- Reliable & consistent quality.
- Reliable & just in time delivery.
- Product development for a changing market.
- A targeted stocking policy.
- Technical Support for Applications/ Projects

CUSTOMER FOCUSED

POLYCAB derives its strength from its customers. The growth of the latter is a prerequisite to the growth of the company and hence customers' satisfaction is its prime objective. Over the years sincere service and dedication to its Customers has earned the Company distinguished Customers which includes demanding leaders in Sectors like Utilities, Power Generation, Transmission & Distribution, Petroleum & Oil Refineries, Oem's, EPC contractors, Steel & Metal, Cement, Chemical, Atomic Energy, Nuclear Power, Consultants & Specifiers etc.

POLYCAB has highly experienced qualified and dedicated professionals with strong adherence to the quality management system. Polycab has offices all over the country and also has a wide network of authorized distributors and dealers to cater to all the customer segments in India and abroad.

POLYCAB has earned the trust and reputation in India and abroad by winning the customers' confidence. Several thousands kilometers of LT PVC Cables in the voltage range of 1.1KV have been manufactured and are in operation in India and abroad.

Polycab LT PVC Cables are preferred choice in Power Plants, Distribution Systems, Heavy Industries, Various Utilities, The Titans of Indian Industry & Consultants / Specifiers.

DETAILS MAKE THE DIFFERENCE

More than 3 decades of experience have enabled POLYCAB to develop a specific know how for each individual productline. Attention to details allows the company to apply optimum technical solutions and material selections to each and every different project or application.

Other available Catalogues:

Flexible Cables
LT XLPE Power & Control.
HT Cables upto 45KV
EHV Cables upto 132KV
Fire Survival Cables.

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Polycab Wires Pvt. Ltd. takes every precaution to ensure the information given in this publication is correct E & O.E. all information is subject to change without notice.

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The cables are suitable for use on AC single phase or three phase (earthed or unearthed) systems for rated voltage up to and including 1100 volts. These cables can be used on DC systems for rated voltage up to and including 1500 volts to earth.

CONDUCTOR

The most acceptable metals for conductors are copper and aluminium due to their higher conductivity and ductility.

As copper has got higher affinity for sulphur, it corrodes in the atmosphere where sulphur fumes are present. In these conditions tinned copper should be used. Aluminium oxide film which is always present on Aluminium conductor surface acts as barrier and it protects the Aluminium conductor from corrosion in fumes laden atmosphere.

CONDUCTOR CONSTRUCTION

The most economical construction for conductor is solid conductor i.e. conductor is made of one single wire. As the area of conductor increase, solid conductor becomes more stiff and hence difficult to handle. In this case stranded construction is adopted. Here the conductor is made of number of strands. The strands are arranged in spiral layers in 1+6+12+18+..... formations. This construction provides more flexibility. Where crimping of lugs are required, the conductor has to be of stranded construction only.

To economise in insulating material, weight and overall diameter, shaped conductors are employed in bigger sized cables. Here the stranded conductor is shaped in to a segment of a circle so that when all the cores are laid, they form a complete circle. These segments are identified as 2 Core – 180 degree, 3 Core – 120 degree, 4 Core – 90 degree and 3.5 Core – 100/60 degree.

I.S. 1554 permits solid conductor construction upto 10 sq.mm in Aluminium and upto 6 sq.mm in copper. It permits the use of shaped conductors for sizes from 16 sq.mm onwards.

INSULATION

The PVC covering over conductor is called insulation and is provided by extrusion process only. The insulated conductor is called core.

I.S. 1554 permits two types of PVC insulation as follows :

1) Insulation with TYPE A PVC compound as per I.S. 5831 which is suitable for 70 deg.C continuous operation.
2) Insulation with TYPE C PVC compound as per I.S. 5831 which is suitable for 85 deg.C continuous operation.

The following colour code is used for identification :

Single Core	: Red, Black, Yellow or Blue.
Two Cores	: Red and Black
Three Cores	: Red, Yellow and Blue.
Three & Half	: Red, Yellow, Blue and Reduced neutral Black.
Four Core	: Red, Yellow, Blue and Black.
Five Core	: Red, Yellow, Blue, Black, & Grey
Six Cores	: Two adjacent cores. Blue and Yellow (Counting and direction core) And remaining Grey in each layer. OR By printing numbers on each core.

LAYING UP

The cores are laid up with suitable lay. The final layer always has a right hand lay i.e if you look along the cable, the cores move to your right hand.

INNERSHEATH

Innersheath is provided over the laid up cores. It is provided to give circular shape to the cable and it provides bedding fo the armouring.

I.S. 1554 permits following two methods of applying the innersheath of any thermoplastic material i.e. PVC Polyethylene, etc.

a) EXTRUDED INNERSHEATH: Here the innersheath is provided by extrusion of Thermoplastic over the laid up cores This type of the innersheath is generally provided in cables having round cores i.e in control cables and in power cables upto 1 sq.mm size. This type of the innersheath also acts as a water barrier between core

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and outersheath. In case of a puncture in the outersheath the water can not reach to the cores and hence we recommend that cables for outdoor underground uses should have extruded innersheath.

b) **TAPPED INNERSHEATH:** Here the innersheath is provided by wrapping a thermoplastic tape over the laid up cores. It is generally employed in cables having sector shaped cored i.e. multicore cables of 16 sq.mm and above.

This method saves a process and hence manufacturers always provide this type of innersheath unless the purchase specifications ask for extruded innersheath.

ARMOURING

In case of armoured cables, generally galvanized steel wire / strip armouring is provided over the innersheath in multi-core cables and Aluminium Round Wire or Aluminium Strip over the insulation in single core cables. It provides mechanical protection to inside cores and it carries earth return current in case of a short circuit of a core with armour.

As per I.S. 1554 (Part I) 1988, round wire armouring is provided in cable, where calculated diameter under armour is upto 13 mm. Above this the armouring is either with round wire or strip of size 4 mm x 0.80 mm. As strip construction is economical, the manufacturers always provide steel strip armouring unless wire armouring is specially specified.

In long run of cables and in case of mines, round wire armouring is must, as strip construction provides higher resistance to earth fault current and sometimes this current may not be sufficient to operate the circuit breaker in case of earth fault.

In mines, the resistance of the armour in no case should exceed the resistance of the main core by more than 33% for safety reasons. To achieve this, sometimes tinned hard drawn copper wires are required to be used along with galvanized steel wires. Sometimes two layers of Round Steel Wire or Steel Strip are applied in opposite direction with barrier tape in between are provided to give extra protection.

In case of single core armoured cables for use in AC circuits, the material for armouring has to be non magnetic, as in this case the return current is not passing through the same cable and hence it will not cancel the magnetic lines produced by the current. These magnetic lines which are oscillating in case of AC current will give rise to eddy current in magnetic armouring and hence armouring will become hot, and this may lead to the failure of the cable. Generally hard drawn aluminium wires / strip are used for armouring in this case.

OUTERSHEATH

The PVC covering over the armouring in case of armoured cables and over the innersheath in case of unarmoured cables is called outersheath.

I.S. 1554 specifies nominal and minimum thicknesses of outer sheath for unarmoured cables and only minimum thickess of outer sheath for armoured cables.

It permits the following types of outer sheath PVC compounds.

1) Outer sheath with type ST1 PVC compound as per IS-5831, which is suitable for 70°C continuous operation.
2) Outer sheath with Type ST2 PVC compound as per IS-5831, which is suitable for 85°C continuous operation.

PVC has got fire retardant properties due to its halogen content. The fire in the cable gets extinguished immediately on removal of the fire source.

In the modern Power, Chemical, Fertilizer and Cement Plants many PVC cables are bunched in the cable shaft or on cable trays. In case of fire in these cables, the fire becomes self sustaining. Moreover due to the burning of PVC a dense corrosive

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smoke is emitted which makes fire fighting very difficult, due to poor visibility and toxic nature of the smoke. HCL content of the smoke, not only damages other costly equipment lying nearby, but also penetrates the RCC and corrodes the steel reinforcement. Due to this there is an extensive damage to the property.

To overcome these deficiencies FRLS i.e. Fire Retardant Low Smoke PVC was developed.

If required, we can provide Fire Retardant Low Smoke (FRLS) PVC Inner sheath and / or outer sheath. This PVC compound, apart from meeting the requirements of Type ST2 as per IS-5831, has got better fire retardant properties and it emits lower smoke and acid fumes when it catches fire. (For more information please refer our catalogue on FRLS cables).

CABLE CODE

The following codes are used for designating the cables as per IS-1554.

CONSTITUENT	CODE LETTER
COPPER CONDUCTOR	—
ALUMINIUM CONDUCTOR	A
PVC INSULATION	Y
STEEL ROUND WIRE ARMOUR	W
STEEL STRIP ARMOUR	F
STEEL DOUBLE ROUND WIRE ARMOUR	WW
STEEL DOUBLE STRIP ARMOUR	FF
PVC OUTER SHEATH	Y

YWY means Copper conductor, PVC insulated, round wire armoured and PVC sheathed cable.
AYFY means Aluminium conductor, PVC insulated, steel strip armoured and PVC sheathed cable.

EXAMPLES

3 Core x 2.50 sq.mm YWY : Plain Copper conductor, PVC insulated, laid up, innersheathed, G.I. wire armoured and PVC sheathed cable having 3 cores of 2.50 sq.mm conductor size.

4 core x 4.0 sq.mm AYWY: Aluminium conductor, PVC insulated, laid up, innersheathed, G.I. wire armoured and PVC sheathed cable having 4 cores of 4.0 sq.mm conductor size.

3 ½ core x 50 sq.mm AYFY: Aluminium conductor, PVC insulated, laid up, innersheathed, Steel strip armoured and PVC sheathed cable having 3 cores of 50 sq.mm and 1 core of 25 sq.mm conductor size.

The following tables give construction details of Polycab cables as per IS: 1554 (Part I) 1988.

For current rating of Polycab cables with H.R. insulation increase the rating given in the following tables by 15%.

The weights of the cables mentioned in the following tables are approximate and given for guidance only. They should never be used as criteria to check the lengths of the cables supplied. The best way to check the length of the supplied cable is by resistance method. Take the resistance of the full drum and divide the reading by the resistance of 1 mtr. length.

To decide the size of the conductor, particularly that of the sector shaped conductor, we recommend the following method.

Take weight of a small conductor piece and measure its weight in grams. Then find out the weight of the conductor in gms per meter length. Divide it by 2.7 in case of Aluminium and by 8.9 in case of copper. It will give the area of the conductor in sq.mm.

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TABLE-11 "POLYCAB" 1.1 KV THREE CORE, COPPER CONDUCTOR, PVC INSULATED, INNER SHEATHED,

ARMOURED PVC SHEATHED CABLES CONFORMING TO IS : 1554 (PART I) AMENDED UPTO DATE

Nominal Cross Sectional Area	Nominal Thickness of Insula-tion	Nominal Thickness of Inner Sheath	Armour		Minimum 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 Dia.	Galv. Flat Steel Strip Nominal Thickness					Direct In Ground	In Ducts	In Air
Sq. mm	mm	mm	mm	mm	mm	mm	Kgs./Km	Ohm/Km	Amps.	Amps.	Amps.
*1.5	0.6	0.3	1.4	-	1.24	12.5	405	12.100	21	17	17
*2.5	0.9	0.3	1.4	-	1.24	14.0	475	7.410	27	24	24
*4.0	1.0	0.3	1.4	-	1.24	15.5	580	4.610	36	30	30
*6.0	1.0	0.3	1.4	-	1.24	17.0	700	3.080	45	38	39
*10	1.0	0.3	1.4	-	1.40	19.0	890	1.830	60	50	52
16	1.0	0.3	-	0.8	1.40	20.0	950	1.150	77	64	66
25	1.2	0.3	-	0.8	1.40	22.0	1270	0.727	99	81	90
35	1.2	0.3	-	0.8	1.40	25.0	1600	0.524	120	99	110
50	1.4	0.3	-	0.8	1.56	27.0	2150	0.387	145	125	135
70	1.4	0.4	-	0.8	1.56	31.0	2800	0.268	175	150	165
95	1.6	0.4	-	0.8	1.56	34.0	3670	0.193	210	175	200
120	1.6	0.4	-	0.8	1.72	38.0	4470	0.153	240	195	230
150	1.8	0.5	-	0.8	1.88	42.0	5500	0.124	270	225	265
185	2.0	0.5	-	0.8	1.88	46.0	6650	0.099	300	255	305
240	2.2	0.6	-	0.8	2.2	52.0	8450	0.075	345	295	355
300	2.4	0.6	-	0.8	2.36	56.5	10450	0.060	385	335	400
400	2.6	0.7	-	0.8	2.52	64.0	13525	0.047	425	360	455

* If required, these sizes can be offered with standard conductors also

TABLE-12 "POLYCAB" 1.1 KV THREE CORE, COPPER CONDUCTOR, PVC INSULATED, INNER SHEATHED

UNARMOURED PVC SHEATHED CABLES CONFORMING TO IS : 1554 (PART I) AMENDED UPTO DATE

Nominal Cross Sectional Area	Nominal Thickness of Insulation	Nominal 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 Ducts	In Air
Sq. mm	mm	mm	mm	mm	Kgs./Km	Ohm/Km	Amps.	Amps.	Amps.
*1.5	0.8	0.3	1.8	11.5	160	12.100	21	17	17
*2.5	0.9	0.3	1.8	12.5	220	7.410	27	24	24
*4.0	1.0	0.3	1.8	13.5	290	4.610	36	30	30
*6.0	1.0	0.3	1.8	15.0	370	3.080	45	38	39
*10	1.0	0.3	1.8	16.5	510	1.830	60	50	52
16	1.0	0.3	1.8	17.5	660	1.150	77	64	66
25	1.2	0.3	2.0	22.0	990	0.727	99	81	90
35	1.2	0.3	2.0	23.0	1290	0.524	120	99	110
50	1.4	0.3	2.0	27.0	1780	0.387	145	125	135
70	1.4	0.4	2.2	31.0	2410	0.268	175	150	165
95	1.6	0.4	2.2	33.0	3190	0.193	210	175	200
120	1.6	0.4	2.2	36.0	3920	0.153	240	195	230
150	1.8	0.5	2.4	41.0	4910	0.124	270	225	265
185	2.0	0.5	2.6	45.0	6040	0.099	300	255	305
240	2.2	0.6	2.8	50.0	7750	0.075	345	295	355
300	2.4	0.6	3.0	55.5	9620	0.060	385	335	400
400	2.6	0.7	3.4	63.5	12715	0.047	425	360	455

* If required, these sizes can be offered with stranded conductors also

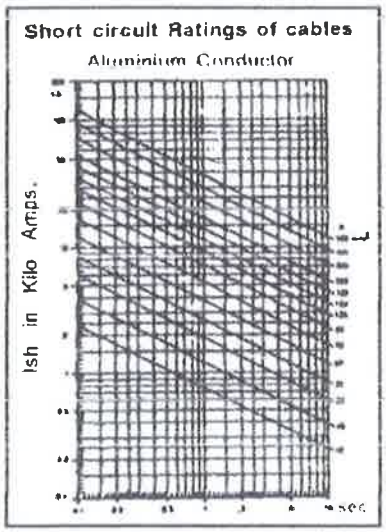
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Normal current rating of POLYCAB cable as given in the tables takes into account temporary overloading which often occurs in use. However, to safeguard against excessive thermal damage, it is essential that protective switchgear of a proper rating is used in circuit.

Cables laid in air or in ducts can safely be overloaded to 1.5 times the amount given in the current rating tables for four hours provided the protective system uses a class P fuse designed to operate at a 50% overload.

In case the protective circuit has a different fuse rating, select a cable by multiplying the tripping current by 0.67 to arrive at a suitable size of cable. For example, for carrying 200 amps current in the air 70 sq.mm. single core cable is suitable (current rating is 230 amps.) This cable can therefore be overloaded to the extent of 230 x 1.5 = 345 amp. provided that the protective fuse rating is 230 x 1.5 = 345. However, if the protective fuse rating is 400 amps. normal rating 400 x .67 = 268 amps., 95 sq. mm cable should be used. Similarly current rating for cables in the ground can safely used for an overload factor of 1.3 for four hours. It is essential that the protection is designed to operate at a 30% overload. In case this is different, select a cable to carry 0.77 times the current at which protection is designed to operate.



SHORT CIRCUIT RATING FOR ALUMINIUM CONDUCTOR CABLES

With a high increase in KVA capacity of the power distribution system, cable are expected to carry short circuit currents of high magnitude. Normally rated at 70° C, our insulating materials permit a short circuit temperature of 160° C. With the high interrupting capacity expected of a cable under short circuit, it is essential that protective fuses in the system are designed to minimise the duration as far as possible. Short circuit rating of a cable can be calculated as under

Where $Ish = \frac{75.8 \times A}{\sqrt{t}}$

Ish : Short circuit current in r. m. s. amps.
t : Duration of short circuit in seconds.
A : Area of conductor in sq. mm

Constants are tabulated below for different duration of short circuit.

Duration of short circuit in seconds	1 cycle =0.02 seconds	2 cycle =0.04 seconds	5 cycle =0.01 seconds	10 cycle =0.02 seconds	25 cycle =0.02 seconds	50 cycle =0.02 seconds	2 seconds	3 seconds	4 seconds	5 seconds
Short circuits constant per unit area	536	378	239	169	107	75.7	53.0	43.6	37.8	34.0

Example : Short circuit rating of 150 sq.mm. conductor area with a short circuit duration of 0.5 seconds = 150 x 107 = 16050 amps.

SHORT CIRCUIT RATING FOR COPPER CONDUCTOR CABLES

The following formula gives the Short Circuit Rating of Copper conductor, PVC insulated cables

Where $Ish = \frac{113 \times A}{\sqrt{t}}$

Ish : Short circuit current in r. m. s. amps.
t : Duration of short circuit in seconds.
A : Area of conductor in sq. mm

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A. CABLE INSPECTION

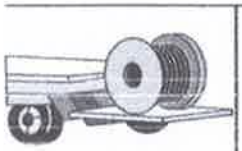
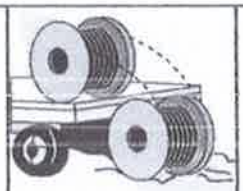
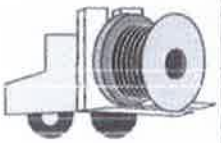
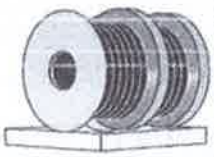
Inspect every cable reel for damage before accepting the shipment.Be particularly alert for cable damage if:

1. A reel is lying flat on its side
2. Several reels are stacked
3. Other freight is stacked on a reel
4. Nails have been driven into reel flanges to secure shipping blocks
5. A reel flange is damaged
6. A cable covering is removed, stained or damaged
7. A cable end seal is removed or damaged. A reel has been dropped (hidden damage likely)

B. CABLE HANDLING & STORAGE

Damage to cables can occur due to the incorrect handling to which the drums and cables may be subjected; causing breakdown of the drum flanges and in exceptional cases, movement of the drum barrel takes place. Once this breakdown of the drum occurs, the cable is immediately exposed to damage. Cables damaged during handling & storage can cause service failures when the subject cable is put to use.

Thus the following is a list of Do's and Don'ts that should be followed while handling and storing the cables before it is put to use.

Do's		Don'ts	
	When off loading reels from a truck, lower reels carefully using a hydraulic gate, hoist or forklift truck		Never drop reels. If reels must be rolled, roll in opposite direction of the cable wraps to keep cable from loosening on the reel.
	If a fork lift is used, approach the reel from the flange side. Position the forks such that the reel is lifted by both reel flanges. Also Consideration should be given to, Traffic patterns during off-loading & damage during the time in storage		Do not allow the lift forks to contact the cable. Care must be taken by the fork lift operator not to make sudden turns or stops.
	Cable reels should be stored on hard surfaces resting on the flanges edge (flanges vertical). Align reels flange to flange and, if possible, arrange so that first in is first out.		Multiple reels stacked on top of each other ("Pancake" storage) is not recommended for cable drums. The weight of the stack can total thousands of kgs. creating an enormous load on the bottom reel. Also, damage to the reel and/or cable will likely occur when the reel is flipped for transit. A concentration of stress on the reel flange may cause it to break and subsequently damage the cable.
	When using a hoist, install a mandrel through the reel arbor holes and attach a sling. Use a spreader bar approximately 6 inches longer than the overall reel width placed between the sling ends just above the reel flanges.		This may lead to the bending of the reel flanges and mashing the cable

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C. PRE- INSTALLATION

To ensure safety during cable installation, following shall be checked prior to installation.

1. The cable selected is proper for designed application.
2. The cable has not been damaged in transit or storage.

Review all applicable state and national codes to verify that the cable chosen is appropriate for the job. Also consult your local electricity authority. Next, you must identify any existing cable damage and prevent any further damaged from occurring. This is done through proper cable inspection, handling and storage.

D. INSTALLATION & LAYING

Mechanical stresses during installation are generally more severe than those encountered while in service. Thus care should be taken as regards to the following while installation and laying of cables.

1. Polycab recommend the laying and installation of cables as per IS: 1255/84.
2. Care shall be taken during laying to avoid sharp bending, and twisting.
3. Cable shall be un wound from the drum by lifting the drum on the center
4. Shaft supported both ends with suitablejacks / stands.
5. Under no circumstances the cable winding shall be lifted off a coil or drum lying flat at the flanges. This would cause serious twist and damages.
6. Suitable protection shall be provided to the cables against mechanical damages, it includes covers, pipes etc.

E. RECOMMENDED MINIMUM BENDING RADIUS FOR HEAVY DUTY CABLES.

Single Core : 20 x D

Multicore : 15 x D

Where D= Diameter of cable in mm

F. RECOMMENDED SAFE PULLING FORCE WITH STOCKINGS:

a) For Unarmoured Cable : $P = 5\ D^2$

b) For Armoured Cable : $P = 9\ D^2$

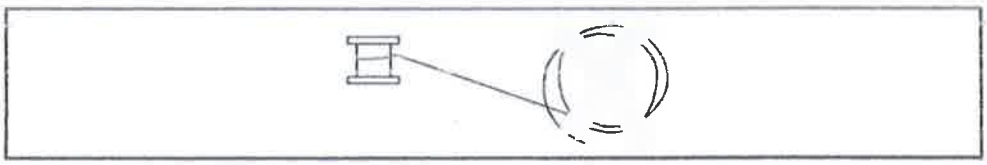
Where P = Pulling Force
Where D = Diameter of cable in mm

G. RECOMMENDED SAFE PULLING FORCE WHEN PULLED WITH PULLING EYE :

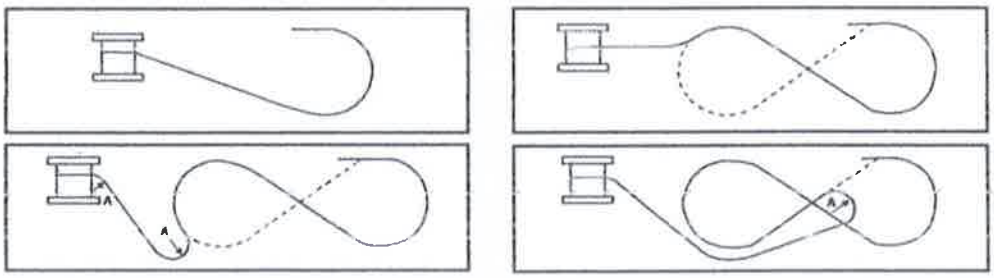
a) For Aluminium Conductor : 30 N/mm²

b) For Copper Conductor : 50 N/mm²

DO NOT ATTEMPT "COILING" OF CABLE ON THE GROUND

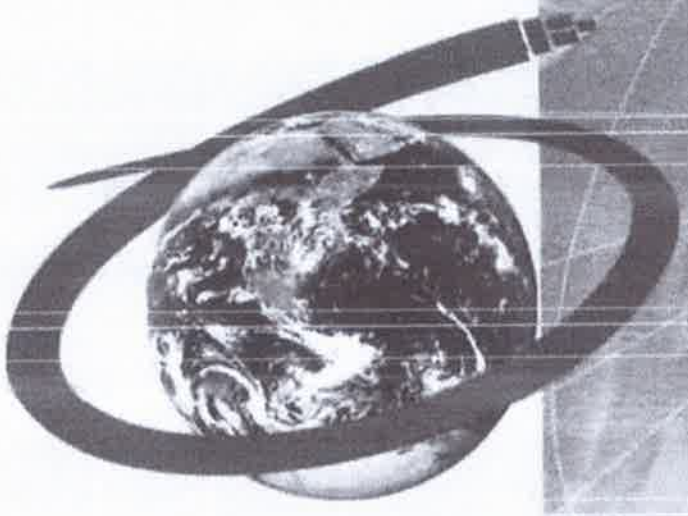


ON THE GROUND CABLE CAN BE FLAKED IN A FIGURE OF EIGHT FORMATION



Note: R Minimum Permissible bending radius of cable.

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Wiring the World

POLYCAB

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E-Mail : info@polycab.com
www.polycab.com

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Fwd: Vendor Appointment for SITC of HVAC work - ACME Ozone Sales Gallery

Mukesh Mahajan

---------- Forwarded message ---------
From: Santosh Rahate
Date: Mon, 14 Feb 2022, 12:55
Subject: Fwd: Vendor Appointment for SITC of HVAC work - ACME Ozone Sales Gallery
To: Mukesh Mahajan

---------- Forwarded message ---------
From: Rajesh Parab
Date: Mon, 14 Feb 2022, 10:53 am
Subject: Vendor Appointment for SITC of HVAC work - ACME Ozone Sales Gallery
To: Ajay Gosale, Rashmi Singh Chauhan
Cc: Anita Pancha, Rakesh Mahadik, Prashant Desai, Santosh Rahate, Rajesh Kumar, Yash Palande, Bhagwan Ravishet, Dushant Ranavare

Vendor Appointment
Dear All The following Contract has been finalized for- Project : ACME Ozone Sales Gallery

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Vendor Appointment

Dear All

The following Contract has been finalized for-

Project	**ACME Ozone Sales Gallery**
Vendor for	**SITC of HVAC work**
Vendor Details as follows Name of the Company	**M/s. Ace Global Aircon Services Ltd.**
Contact Person	**Mr. Ajay Ubale** ajay.a[illegible] **Contact No - 9619899955**

Dear Sir

Please start coordinating with our Project Team and submit the required drawing, local samples immediately for approval to our Design team. We have a very tight schedule for the subject work, requesting you to immediatel, start the work. We are in process of releasing the orders which will follow shortly.
The Contact detail of our site representatives are as follows

Mr. Santosh Rahate ([illegible] **)**

Rajesh Parab
Sr. Executive - Procurement

[illegible]

Please do not print this email unless it is absolutely necessary

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