

*WARM
WELCOME ON*

TECHNICAL SESSION



Cable Jointing Kit & Compound

A Product of ISO:9001:2000 Certified Company.

COMPANY PROFILE

Established in 1994.

Adopt make **Cabseal** for their product range of cable joints & termination.

Range cover Resin cast, Tapex type & later on Heat Shrink Technology for 1.1 KV to 33 KV Power Cables

Achieving vision to get the entire range tested from **CPRI**/Bangalore to supply quality & reliable product.

Established & up dating well equipped test lab. for incoming raw material & finished product.

Approved to use with Govt. organization, Industrial houses,Electrical Consultants & Project groups.

Infrastructure to Design & Develop the kits as per customer requirement & cable parameters.

Awarded with **ISO:9001:2000** certificate for Design, Development, Manufacturing, Supply, Installation & Servicing.

Approval No: I/02006

Certificate of Approval

This is to Certify that the Quality Management System

at

Hari Consolidated Pvt. Ltd.

E-25, Flatted Factories Complex, Handewalan, New Delhi - 55, India
Works: A - 64/5, G.T. Karnal Road, Industrial Area, Delhi - 110 033, India

has been examined by Assessors of QMS Certification Services
and found to be conforming to the requirements of

ISO 9001:2000

in respect of the following activities:

**Design, Development, Manufacture, Supply, Installation/Serviceing
of Cable Jointing Kits for 1.1 KV to 33 KV Electrical Power Cables.**

This Certificate is valid from 31/05/2003 to 22/02/2005.
Original Certification: 22/02/2002

G. C. Mandal
QMS Lead Auditor

Sanjay Kaushik - Technical Manager



Partial list of Major endusers 'Cabseal' Kits

- Tata Iron & Steel Company Ltd.
- Alstom Ltd.
- Crompton Greaves
- Best & Crompton
- Delhi Metro Rail Corporation (KSHI-JV)
- Bharat Electronics Ltd.
- Coal India Ltd. (Various Projects)
- Indian Railways.
- B.S.E.S. Ltd.
- Airport Authority of India (International & National Divisions)
- Military Engineering Services.
- Central Public Works Department
- Bharat Sanchar Nigam Ltd.
- State Electricity Boards
- Bombay Electric Supply & Transport Ltd.
- National Highway Authority of India
- Steel Authority of India Ltd.

Major consultant has also approved & recommending to use Cabseal Kit for various projects.

Apart from above – more then 100000 kits are performing all over the country.

GENERAL REQUIREMENT & STEPS TO INSTALL CABLE JOINT & TERMINATION

- 1. Cable Preparation.
- 2. Applying of Tapes & Shrinking of Tubes & Components.
- 3. Water Seepage.
- 4. Lug Sealing.
- 5. Earth Potential.
- 6. Mechanical Protection.
- 7. Energization.





Cable Jointing Kit

TYPE OF CABLES

PVC Cables

PILC Cables

XLPE Cables

Type of Voltage

-PVC Cable-1.1 kv ,3.3 kv, 11kv

-PILC Cable-1.1 kv to 33 Kv

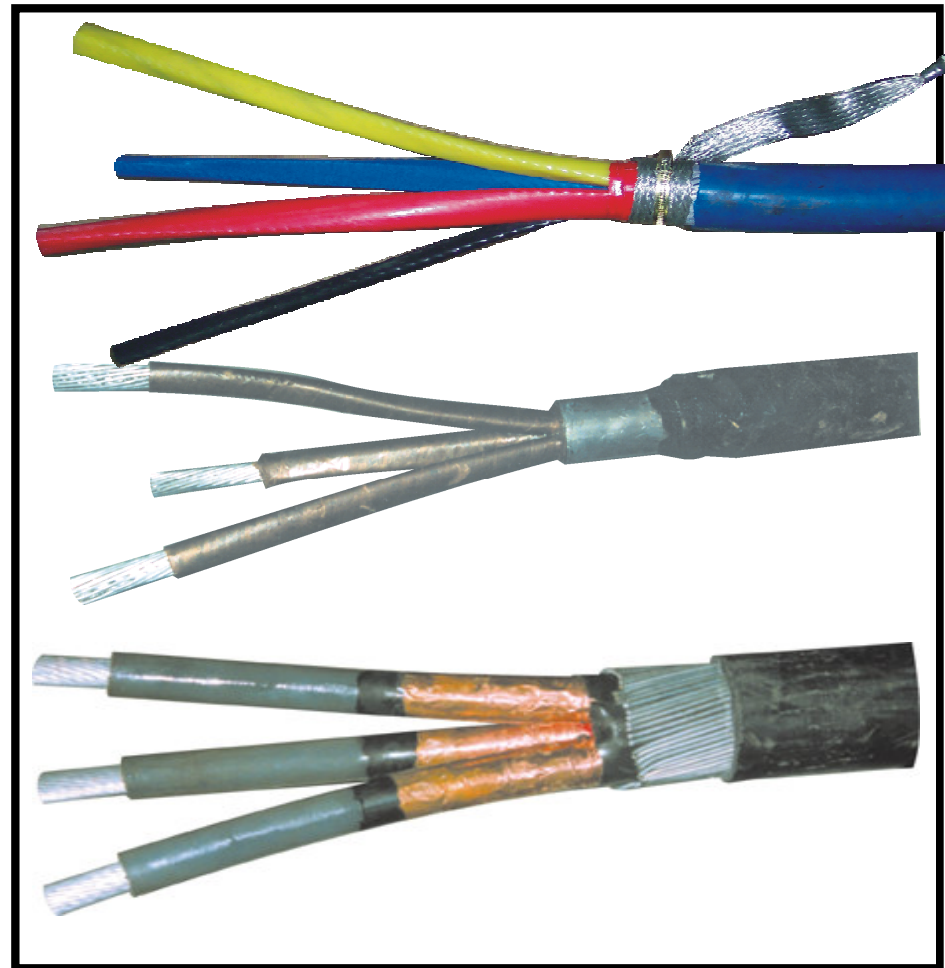
-XLPE Cable-1.1 kv, 3.3 kv, 6.6 kv, 11.kv,22 kv, & 33 kv

Other than above

-Trailing cable for coal mines .

-Submersible cable for submersible pump.

-Control cable for S/stn control rooms.





**ELASTOMERIC CABLES
FOR MINES**

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**ELASTOMERIC CABLE
FOR MINES**



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POLY VINYL

CHLORIDE

(PVC)

CABLE

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CROSS LINKED

POLYETHYLENE

INSULATED

PVC SHEATHED (XLPE)

CABLE





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**PAPER INSULATED
LEAD**

SHEATHED

(PILC)

CABLE



Cable Jointing Kit & Compound

Technology of Joints & Termination

Resin Cast

Castex Type

Tapex Type

Push on Type

Heat Shrinkable Type



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Type of Joints & Termination

Outdoor Termination

Indoor Termination

Straight Through Joints.

Tee Joint

Branch Joint

Control Cable Joints



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Heat Shrinkable

Push-on, Tapex &

Resin-Cast Type

For 1.1 KV-33 KV

**PVC/PILC/XLPE
Cable**

CPRI TESTED





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Suitability of Cable to Joints

PVC Cable	-	Resin Cast Heat Shrinkable Type
PILC Cable	-	Resin Cast Heat Shrinkable Type
XLPE Cable	-	Castex Type Tapex Type Push on Type Heat Shrinkable Type
Trailing Cable	-	Resin Cast Heat Shrinkable Type
Submersible Cable	-	Resin Cast
Control Cable	-	Resin Cast

HEAT SHRINK TECHNOLOGY

Cabseal Heat Shrink Technology Developed with technical backup of Elcon Megarad Srl/Italy

Heat Shrink is an irradiated polyolefin cross-linking tubes based technology.

Anti tracking, Stress Control, Oil barrier, Insulating & Dual Wall tubing etc. are major various tubing are useful in termination & straight joint

All the tubes will be shrunk in the ratio of generally 3:1

Earth Continuity is achieved by electrical grade Cu. Braided wire & Jubilee clamp.

Metallic Cannister-Strip design & box design-will be covered with Heavy Wall Outer Jacketing Tubing having hot melt adhesive lined which gives a unique mechanical protection, sealing & corrosion protection.

Anti tracking cable break out will cover the furcated & earth potential portion of cable terminations.

ElcoMastic (Yellow Mastic) tape provides excellent grounding of stresses at cut back of screen & over Inline connector.

Oil barrier/Resistance tubing avoids oozing off of oil & grease from PILC core & also have insulating properties too.

Production of Heat Shrink tubing/components has 3 stages :



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COMPOUNDING

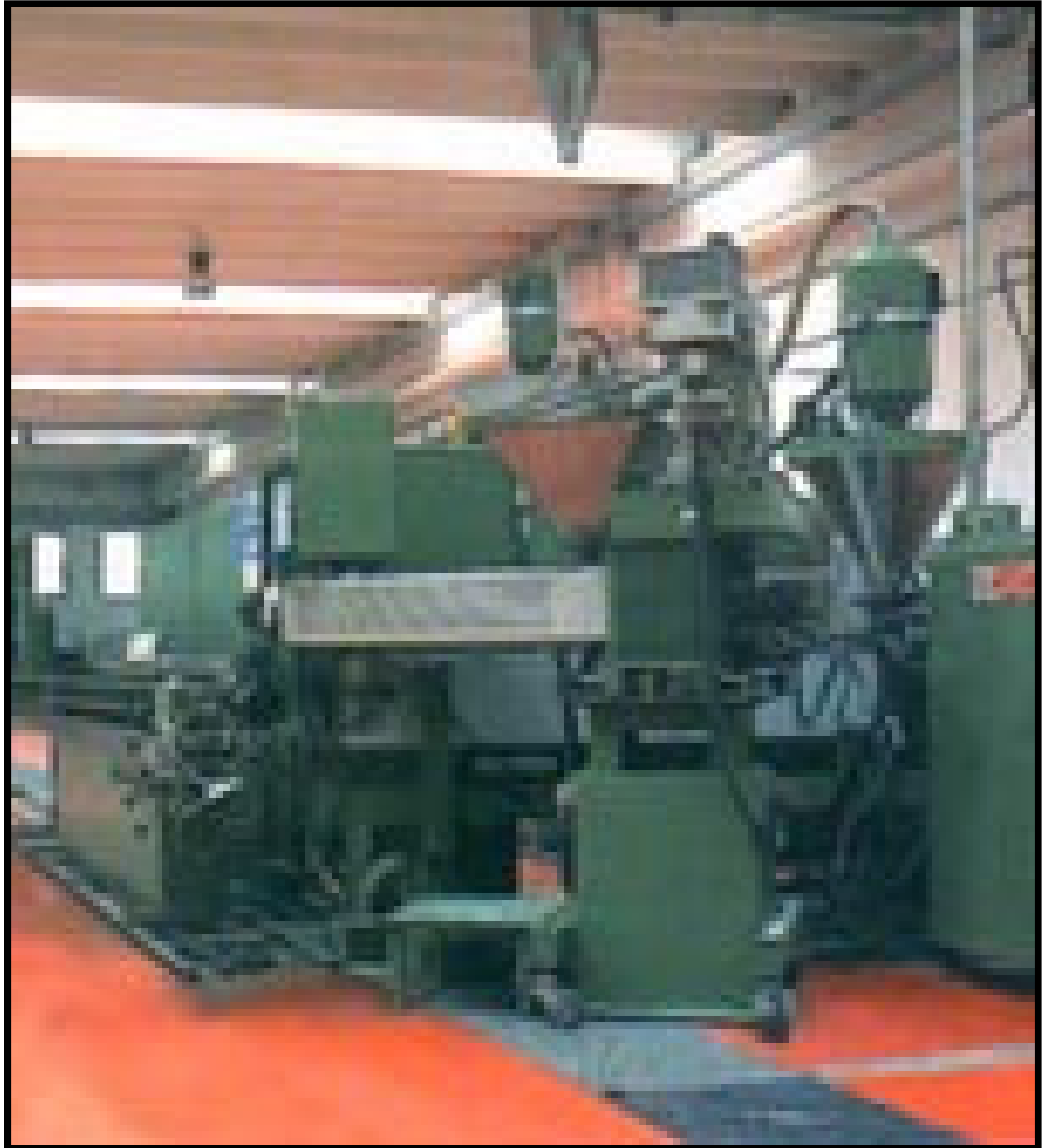
Specific additives are mixed with the polyolefin compound. Each compound is formulated to perform the required physical, electrical and chemical properties. After compounding, the product is released in form of granules.



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EXTRUSION

The granules melted by extruders or moulding machines are given the required form by specific tools. Elcon is able to co-extrude simultaneously multi-layer materials.



EXPANSION

This is a hot temperature deformation process which allows to obtain the product in the final form and dimensions.





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**LV 1.1 KV HEAT
SHRINKABLE END
TERMINATION FOR
PVC/PILC/XLPE CABLES**

Heat Shrinkable cable breakout has a special frame that can cover the furcated portion and can be easily and perfectly fitted. Hot melt adhesive applied to the internal surface to fit and prevent the incursion of water.



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LV 1.1 KV HEAT SHRINK JOINT FOR PVC/PILC/XLPE CABLES



'Cabseal' Heat Shrinkable Type Joints & termination rely on the insulating & sealing properties & on Inline connector region which is being enhanced by a unique mastic tape and irradiated polyolefin tubing being easily & effectively applied by any common person. An elastomeric core separator enhance the insulation and sealing system of the joints.

The image shows three components of a cable jointing kit against a blue background. Each component consists of a white plastic sleeve with two blue circular holes, a brown heat-shrinkable sleeve, and a black cable. The components are arranged in a fan shape, with the white sleeves at the top and the black cables at the bottom. The brown sleeves are positioned between the white sleeves and the black cables, indicating their use in joining the cables.

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**HEAT SHRINKABLE INDOOR
TERMINATION FOR
XLPE CABLE**

Cabseal Heat shrinkable kits consist irradiated polyolefin cable break out, Anti tracking & stress control tubing which prevent the termination even at most extreme atmospheric condition & control the corona extinction level to insure reliable performance.



Cable Jointing Kit

COMPONENTS OF H.V. HEAT SHRINK OUTDOOR TERMINATION FOR XLPE CABLE





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Cable Jointing Kit & Compound

**HEAT SHRINKABLE OUTDOOR
TERMINATION FOR XLPE CABLE**

Heat shrinkable outdoor termination have cable break out to cover furcated portion. Anti tracking tubing has high electrical insulation & anti tacking properties, for long term outdoor exposure to prevent the termination from ultra violet degradation even exposed to ozone & other pollution.



Cable Jointing Kit

COMPONENTS OF H.V. HEAT SHRINK STRAIGHT JOINT FOR XLPE CABLE





Cable Jointing Kit

HEAT SHRINKABLE STRAIGHT THROUGH JOINT FOR XLPE CABLE



Cabseal heat shrink joint consist 3 layer insulating reinforcement.

- 1. Insulating tubing for better electrical insulation control.**
- 2. Stress control tubing to control the stress developed at cut point in semi conducting layer.**
- 3. Dual wall tubing for effectively adheres & removes high concentration of electrical stresses for reliable & long lasting performance . Joint contain metallic cannister & cross linked polyolefin H.S. outer tubing for mechanical protection & stable resistance to water ingress.**



Cable Jointing Kit

COMPONENTS OF HV HEAT SHRINK INDOOR TERMINATION FOR PILC CABLE





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HEAT SHRINK INDOOR TERMINATION FOR PILC CABLE

Heat Shrink Type PILC indoor termination consists of Oil barrier tubing, Cable break out & anti tracking tubing. which provides better insulation as compactable to cable parameters Anti tracking tubing prevent the termination from developing a tracking path on cores for a long term trouble free performance of termination.

Irradiated Polyolefin Cable breakout with inner coated hot melt adhesive cover the furcated portion & can be easily & perfectly fitted

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Cable Jointing Kit

HEAT SHRINK OUTDOOR TERMINATION FOR PILC CABLE



Heat Shrink Type PILC outdoor termination consists of Oil barrier tubing , Cable break out & Anti tracking tubing. Anti tracking tubing having high electrical insulation characteristics & high anti tracking ability for long term Outdoor exposer & fully prevent the termination from ultra violet degradation even when exposed to ozone & high pollution.

Heat shrink anti tracking rain sheds provide better creepage distance.

Irradiated Polyolefin Cable breakout with inner coated hot melt adhesive cover the furcated portion & can be easily & perfectly fitted



Cable Jointing Kit

COMPONENTS OF H.V. HEAT SHRINK STRAIGHT JOINT FOR PILC CABLE





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HEAT SHRINK STRAIGHT THROUGH JOINT FOR PILC CABLE



PILC Heat Shrink Joint rely on Irradiated Polyolefin Oil barrier & Insulating tubing which prevent impregnation / Ozoing of oil & grease from the paper insulation of cores , built up better Insulation over the cores & Metallic cannister with outer jacket tubing protect the joints from outside.

Yellow mastic tape applied over Inline ferrules will also provide insulation on Joint portion



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DESIGN & DEVELOPMENT OF CABSEAL TRANSITION JOINT

‘Transition’ straight joint to join HT PILC cable on one side to HT XLPE cable on other side.

Joint can be installed in humid atmosphere .

Barrier type well designed alum. Crimping type inline Ferrules available in both resin cast tapex type & heat shrinkable technology.

Oil barrier tape to prevent PILC impregnate oil/ grease migrating towards XLPE cable.

One side lower XLPE cable is connected to other side higher PILC cable because of the excellent properties of current carrying capacity of XLPE cable.



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TAPEX TYPE TRANSITION STRAIGHT THROUGH JOINT FOR PILC-XLPE CABLE

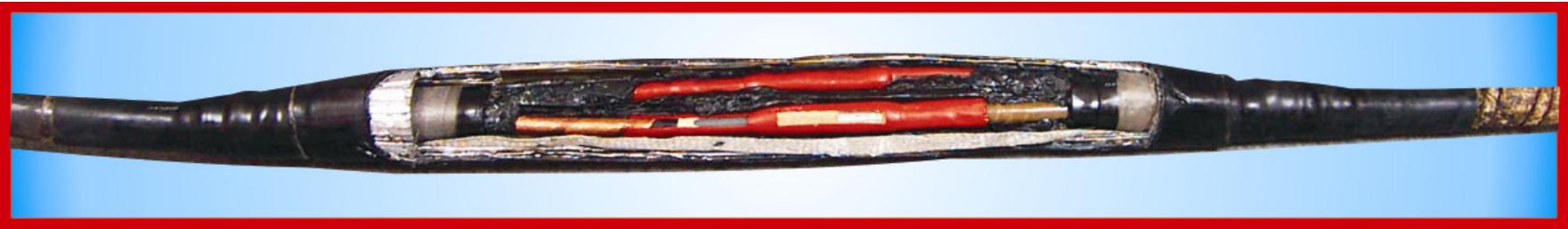


Special designed transition joint are useful where paper insulated (PILC) cable are to be joined with polymeric (XLPE) cable & can be installed in humid atmosphere. Barrier type specially designed inline Ferrules prevent PILC impregnate migration towards XLPE side.



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HEAT SHRINK TYPE TRANSITION STRAIGHT THROUGH JOINT FOR PILC – XLPE CABLE



Transition Heat shrink St. Th. Joint is a unique combination for joining PILC Cable to XLPE Cable. The Joints consist Irradiated Polyolefin Oil barrier tubing on PILC side to avoid the impregnation /oozing of oil and grease from the paper insulation of cores. Yellow mastic & Irradiated Polyolefin red insulating tubing are controlling the stresses developed on XLPE side & provides better insulation.

Elastomeric core separator & mastic tape are also a part of Heat shrink transition joint to enhance the insulation level & moisture sealing properties

TAPEX TECHNOLOGY

Tapex is a tape-based technology achieving High Insulation, Continuity of Semi Conducting layer & controlling the stresses at cut end of screen with

-H.V. EPR Rubber based Self amalgamating Insulating Tape

-H.V. EPR Rubber based Self amalgamating Semi Conducting Tape

-Cold Flow Stress Control Pad Tape

Cold curing Polyurethane based cable-jointing compound with combination of High Impact Polystyrene mould forms a unique design for direct burial, moisture sealing & mechanical protection.

Earth Continuity is being achieved by heavy duty PVC Insulated Alum. Wire with Jubilee Clamps.

PVC boot are being used in termination on the furcated portion & Epoxy Casted Rain Sheds provides excellent creepage distance in Outdoor terminations.

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TAPEX TYPE INDOOR TERMINATION FOR XLPE CABLE

Tapex indoor termination consist stress grading & self amalgamating insulating tapes to control the stress developed at XLPE insulation cut point, fill all voids at screen edges & excellent insulation slim designed kit can be used for 3 sizes of XLPE cables.



Cable Jointing Kit & Compound

**TAPEX TYPE OUTDOOR
TERMINATION FOR
XLPE CABLE**

Tapex outdoor termination consist stress grading & self amalgamating insulating tapes to control the stress developed at XLPE insulation cut point, fill all voids at screen edges & excellent insulation slim designed kit can be used for 3 sizes of XLPE cables.





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**TAPEX TYPE STRAIGHT
THROUGH JOINT FOR XLPE CABLE**



Straight joint designed for direct burial under the ground design consist stress control pad. Highly insulating self amalgamating EPR tapes & Polyurethane based compound for mechanical protection & sealing of cable against ingress of moisture & water.



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PILC INDOOR TERMINATION

RESIN CAST TYPE

Cabseal resin cast system processes excellent mechanical & electrical strength to withstand thermo dynamic effect of fault current compound has low viscosity , low exotherm & low shrinkage characteristic to provide better moisture & chemical resistance good adhesion to cable components.

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**PILC OUTDOOR
TERMINATION**

BUSHING TYPE

Slip on epoxy cast bushing type kit which provides high creepage distance & environmental pollution protection. Casting resin system provide total ingress of moisture & good mechanical strength.



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**PILC OUTDOOR
TERMINATION
MONOCAST TYPE**

**Outdoor monocast termination
consist high impact
Polyurethane compound for
mechanical protection.
Insulating & oil barrier tapes
provide Excellent electrical
insulation.**





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PILC OUTDOOR TERMINATION

PRECAST TYPE

Precast outdoor kits comprise epoxy casted components 3 parts namely Trifurcating body. Cable entry earthing cylinder & bushing to provide extremely high anti tracking properties to with pollution. It saves installation time & tremendous reduction in fault complaints.





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**STRAIGHT THROUGH JOINT-RESIN
CAST TYPE FOR PILC CABLE**



Light weight compact kit with HIP polyurethane mould, cold curing polyurethane based compound which provide excellent electrical & mechanical properties.



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OPTING OF SILICON BASED TECHNOLOGY

SILICON BASED PUSH ON TERMINATION FOR XLPE CABLE





Cable Jointing Kit
ABC Cable Terminations





Cable Jointing Kit

OPTING TECHNOLOGY

ABC- Arial Bundled Cable for Low & High Voltage namely 1.1 Kv & 11Kv suitable in theft prone areas as can be lay in air due to light weight because cable is without armour, inner & outer PVC Sheath.

ABC Cable itself content through GI conductor to hold cable in air & useful for earth connection too in termination as each core of termination earthed individually with crimped Cu. Braided Wire.

Anti Tracking Tubing Shrink on each insulated core for generally a length of 450mm.

Lug sealing tubing protect the termination from ingress of water.

Anti tracking Rain Shed extend the creepage path in Outdoor Terminations.



DETAILS OF TESTS CONDUCTED ON CABSEAL TERMINATIONS & JOINTS AT C.P.R.I., BANGALORE

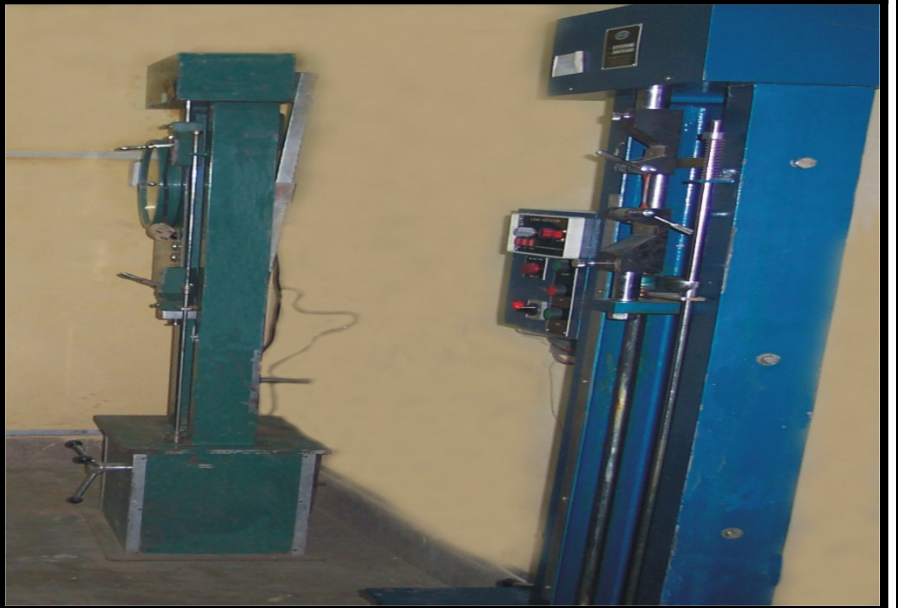
1. 'Cabseal' make 11kv XLPE Heat Shrinkable type Indoor termination & Straight through joint of C.P.R.I., Bangalore with Test Certificate No.CC-7650 dt-29.04.2003 .
2. 'Cabseal' make 11kv PILC Heat Shrinkable Indoor, Outdoor terminations & Straight Through Joint & Heat Shrinkable Transition Straight Through Joint of C.P.R.I., Bangalore with Test Certificate No.CC-7562 dt-10.01.2003.
3. 'Cabseal' make 33kv XLPE Cable Straight Through joint & Heat Shrinkable Outdoor termination of C.P.R.I., Bangalore with Test Certificate No.CC-7476 & CC-7476 (A) dt-20.09.2002.
4. 'Cabseal' make 11kv XLPE Heat Shrinkable type Outdoor termination of C.P.R.I., Bangalore with Test Certificate No.6832 (A) dt-24.01.2001.
5. 'Cabseal' make 11kv XLPE Tapex type termination and Straight Through Joint of C.P.R.I., Bangalore with Test Certificate No.5526 dt-27.10.97 & 5548 dt-03.11.97.
6. 'Cabseal' make 11kv PILC Resin Cast type Straight Through Joint, Indoor & outdoor termination of C.P.R.I., Bangalore with Test Certificate No.6001 dt-19.01.1999.
7. 'Cabseal' make 11kv Tapex Resin Cast type Transition PILC – XLPE Cable Straight Through Joint & Tapex Type Outdoor Termination of C.P.R.I., Bangalore with Test Certificate No.5895 dt-09.10.1998.
8. 'Cabseal' make 1.1kv L.T Resin Cast type Straight Through Joint & terminations of C.P.R.I., Bangalore with Test Certificate No.4658 dt-27.07.1995.
9. 'Cabseal' make 1.1kv L.T Heat shrinkable Type Straight Through Joint & terminations of C.P.R.I., Bangalore with Test Certificate No.DCCD-8008 dt-17.03.2004.



Cable Jointing Kit

INHOUSE TESTING LAB & QUALITY CONTROL





SALES & SERVICE

Presently 'Cabseal' Kits are available generally in every part of India through a established network of Distributors/Dealers who are having established infrastructure to meet out any demands/requirements.

Company backed field engineers are providing all kind of assistance to all the customers/august organization on technical & commercial issues. Installation of 'Cabseal' kits by well skilled cable jointers are also available to install the joint/termination on respective sites of end users.



Cable Jointing Kit & Compound

‘Cabseal’ Resin cast, tapex type & heat shrinkable technology up to 33 kv voltage are tested form CPRI/ Bangalore as per relevant standards & specification. For Reliable & Quality oriented ‘Cabseal’ cable jointing kits,all the components & kits are being tested in well equipped in house test lab.

With Regards

Thanks

Shreeji Traders

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