HIGH VOLTAGE XLPE CABLES FOR SYSTEM VOLTAGES UPTO 33 KV
ALLAHABAD
B-30, Ekanki Kunj Housing Scheme,
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Mumbai - 400 020, Maharashtra.
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GOA
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Salolte, Goa - 403 722, India.
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UNIVERSAL CABLES LIMITED
P.O. Birla Vikas, Satna - 485 005 (M.P.), India.
Phone : +91 7672 25712127 • Fax : +91 7672 257129
E-Mail : headoffice@unistar.co.in, sales@unistar.co.in
Website : www.universalcablesltd.com, www.unistar.co.in
FORM III [See Regulation 7(1) (D) (d)]

BUREAU OF INDIAN STANDARDS

LICENSE FOR THE ENVIRONMENTAL MANAGEMENT SYSTEMS CERTIFICATION

Licence No. CRO/EMS/L-9000310.2 (Renewed)

1. By virtue of the power conferred on it by the Bureau of Indian Standards Act, 1986 (63 of 1986), the Bureau hereby grants to

M/s Universal Cables Ltd., P.B. No. 9, Satna 485001 (M.P.)

(hereinafter called the Licensee) the right and licence to be listed in the Bureau's register(s) of Licensees of Environmental Management Systems Certification in respect of the activities or processes particularly described in the schedule hereeto, bearing the same number as this licence. Such activities or processes shall be undertaken by the Licensee at only the address(es) given above, and under the Environmental Management Systems in accordance with

IS/ISO 14001 : 2004

2. The licence is granted subject to the relevant provisions of the above Act and the rules and regulations made thereunder governing the licences referred to above, and the Licensee hereby covenants with the Bureau duly to observe with the said Rules and Regulations.

3. This licence shall be valid from 03 Feb 2007 to 02 Feb 2010, and may be renewed as prescribed in the Regulations.

Signed, Sealed and Dated this Seventeenth day of August, Two Thousand and Seven

Deputy Director General

For BUREAU OF INDIAN STANDARDS

Schedule to Licence No. CRO/EMS/L-9000310.2

Issued to M/s Universal Cables Ltd., P.B. No. 9, Satna 485001 (M.P.)

SCHEDULE

Activities/Process with respect to which the firm has been granted the licence for Environmental Management Systems Certification:

"All activities carried out at Universal Cables Ltd., Satna for manufacture and supply of Power, Control, Instrumentation and Telecom cables and Power Capacitors".

Deputy Director General

For BUREAU OF INDIAN STANDARDS

MSC - F6.4-12 (EMS), Dec. 2004
FORM III [See Regulation 7(1) (D) (d)]

BUREAU OF INDIAN STANDARDS

Licence for the quality management systems certification
(Accredited by Raad voor Accreditatie, Netherlands)

Licence No. QSC/L-8000094.4

1. By virtue of the power conferred on it by the Bureau of Indian Standards Act, 1986 (63 of 1986), the Bureau hereby grants to

   M/s Universal Cables Ltd., P.O. Birla Vikas, Satna – 485 005 (MP)

(herinafter called the Licensee) the right and licence to be listed in the Bureau’s register(s) of Licensees of Quality Management Systems Certification in respect of the products or processes particularly described in the schedule hereto, bearing the same number as this licence. Such products shall be manufactured by the Licensee at only the address(es) given above, and under the Quality Management Systems in accordance with IS/ISO 9001:2000

2. The licence is granted subject to the relevant provisions of the above Act and the rules and regulations made thereunder governing the licences referred to above, and the Licensee hereby covenants with the Bureau duly to observe with the said Rules and Regulations.

3. This licence shall be valid from 16 June 2006 to 15 June 2009 and may be renewed as prescribed in the Regulations.

Signed, Sealed and Dated this 26th day of June, Two Thousand and Six

Twentysixth

Deputy Director General

for BUREAU OF INDIAN STANDARDS

Schedule to Licence No. QSC/L-8000094.4

Issued to

M/s Universal Cables Ltd., P.O. Birla Vikas, Satna – 485 005 MP

SCHEDULE

Products/Processes with respect to which the firm has been granted the licence for Quality Management Systems Certification:

Design, Development, Manufacture and Supply of Power Cables, Control Cables, Instrumentation & Telecom Cables

Deputy Director General

for BUREAU OF INDIAN STANDARDS

MSC - P6.4-17 Dec., 2004
COMPANY PROFILE

Universal Cables Limited (UCL) was established in the year 1962 as a modern mass production Unit for manufacture of Paper Insulated Power Cables in technical collaboration with world’s largest cable producer, BICC, UK. Late Shri M.P. Birla who has adorned the chair of the Company from the day of its inception for over 25 years enabled the Company to flourish in a highly competitive world, while distinguishing itself by the latest technological tie ups with the foremost leaders in the world of this industry and the most up-to-date technology. His successor Late Smt. Priyamvada Birla, who became chairperson of the Company in 1990 guided company to grow and touch new horizons by setting new challenges and targets time to time and by diversifying into Telecom field. Company is continuously meeting objectives & targets being set time to time by the Board of Directors under the able and active advice and analytical approach of Shri D.R. Bansal who heads the Company.

Universal Cables Limited, entered into a collaboration agreement with M/s. ASEA BROWN BOVERI KABEL, AB of Sweden in the year 1977 for manufacture of Cross-linked Polyethylene (XLPE) insulated Power Cables for the first time in the country. Today Company is the foremost manufacturer of XLPE cables with modern dry cured dry cooled process for voltage range extending from Low Voltage to Extra High Voltage. To meet the growing demand of Extra High Voltage Underground Power Cables of 220 kV, Universal Cables Ltd has ventured into this market segment and introduced the VCV (Vertical Continuous Vulcanization) Technology first time in India in technical collaboration with the world leader in cable manufacturing, The Furukawa Electric Co. Ltd., Japan (In association with VISCAS Corporation, Japan) for manufacturing Extra High Voltage cables in the range of 220 kV to 400 kV.

In 1983, UCL embarked on a joint venture with MPAVN for manufacture of Jelly Filled Telephone Cable in technical collaboration with one of the world’s leading manufacturers of Telephone Cable, M/s. ERICSSON CABLE AB of Sweden. This unit is named M/s. Vindhya Telelinks Limited (VTL) and is situated at Rewa, approximately 50 km away from UCL.

In 1993, UCL & VTL jointly entered into the field of Optical communication by way of manufacturing Optical Fibre Cables in technical and financial collaboration with M/s. ERICSSON CABLE AB of Sweden under the name M/s. BIRLA ERICSSON OPTICAL LIMITED (BEOL).

OPTICAL FIBRE DIVISION

In the year 2006, Optic Fibre Goa Limited (A Joint Venture of UCL and other Group Companies), merged with the company and is now a part of UCL. The manufacturing facilities of this division are located at Goa. The technical collaborators are Ericsson Network Technologies AB of Sweden.

CAPACITOR DIVISION

UCL also has a capacitor division. It was set up in the year 1967, in technical collaboration with world-renowned company TOSHIBA, Japan to manufacture Paper & Power Capacitors. In 1977 this division entered into a technical collaboration with General Electric Company of USA to manufacture Mixed Dielectric Capacitors. Subsequently the collaboration was extended to include All Polypropylene (all PP) Dielectric Capacitors impregnated with Non PCB oil. Today the Capacitor Division is rated to be the foremost manufacturer of All PP Power Capacitors in LT & HT range in the country.

This division offers complete scheme for power solutions.
factor improvement and can supply capacitors along with associated equipments on turnkey basis. It can also carry out harmonic analysis of Power System on request and design & supply Filter Banks.

UCL is a vibrant progressive company, a leader in its field of activities, serving the aspiration of the nation in the field of Power Development.

UCL also believe in playing the role of good corporate citizen and has always participated in developing the neighbourhood particularly in the area of education, drinking water, agriculture, environmental protection and infrastructure development.

QUALITY CONSCIOUSNESS
Whether conventional or specially designed to any Indian or International specification, UCL’s products are put to the grill of rigorous in-process quality checks by-stage inspection and testing. Its quality is taken as standard in the world market.

MEANS ARE AS IMPORTANT AS THE END
UCL proudly claim to have the most sophisticated plant, equipment laboratory and testing facilities available in the country. The entire plant is housed in a dust-proof pressurized building to ensure consistency in the product quality.

CERTIFICATION
The above claim is certified by various test authorities of the country like ERDA, Vadodara and CPRI, Bhopal & Bangalore and all consultants like EIL, DCPL, M.N.Dastur, Lloyds Bureau of Shipping, MECON, Crown Agents and others. This confirms the dependability and reliability of UCL products.

ISI MARKING
All standard UNISTAR cables are ISI marked.

IS/ISO CERTIFICATION
UCL is also accredited with IS/ISO 9001 for Quality management System and IS/ISO 14001 for Environmental Management System & OHSAS-18001 for occupational health & safety Management.

TECHNICAL ADVICE
The Company welcomes enquires on cable engineering problems and provides solutions through its design and development team. It also assists customers in cable design to suit their specific requirement.

RESEARCH & DEVELOPMENT
UCL emphasizes on in-house Research and Development. The R&D programme is mainly directed to applied research for product development, process development and technological up-gradation.

The R&D Laboratory of UCL is a recognized unit of Department of Scientific and Industrial Research of Govt. of India.

ACHIEVEMENTS
Recent achievements of the company’s R & D efforts are as under:

- Pressure tight cable for Indian Navy
- High temperature thin walled flexible elastomeric cables for Rolling stock application.
- Insulated Cadmium copper Catenary conductor used under over line structure in 25 kV AC traction.
- Heat shrinkable cable accessories.
- High voltage all polypropylene film power capacitors.
- Water cooled high frequency capacitors for electric furnace.
- High temperature traction motor lead wires
- Zero halogen low smoke fire survival cables for metro coaches and Indian Navy
- Underground Railway Signalling quad cable for special purposes in Railway electrified area
- High stress low voltage capacitors
- Mixed dielectric power capacitors with nontoxic impregnant.

‘UNISTAR’ XLPE CABLES
Crosslinked Polyethylene Cable abbreviated as XLPE Cable was developed to overcome the susceptibility of PILC Cables to ingress of moisture. Polyethylene which has the best electrical properties, but poor thermal properties on account of its thermoplastic nature in comparison to impregnated paper, is crosslinked by dry Nitrogen curing process to improve its thermomechanical properties without loss of electrical properties. ‘Unistar’ XLPE Cables are manufactured and tested as per national / international standards and also as per specific requirement of customers. Dimension of cables conforming to IS-7098 Part (II) are given in table - 1 to 12

‘Unistar’ XLPE Cable has the following advantages :-
- Higher power rating
Higher emergency overload rating
Higher short circuit rating
Higher resistance to moisture
Higher insulation resistance
Simpler jointing & termination compared to PILC & PVC Cables.

These cables may also be supplied with improved fire performance characteristics. The sheath of these cables shall be specially formulated to meet the requirement of Flame Retardance (FR) or Flame Retardance with reduced halogen evolution and Low Smoke (FRLS).

‘UNISTAR’ XLPE Cable finds its applications in power transmission & distribution, railways, fertilizer, and petrochemical plants, submarine and under water power transmission, instrumentation and control, etc. Cross-sectional view of 3 core XPLE cable to IS:7098 part-II

MANUFACTURING

Manufacture of XLPE cables requires great skill at all stages of processing. Extrusion should be smooth, homogeneous and free from objectionable voids and contaminations. Material handling system must be designed to ensure minimum contamination. For high voltage cable, conductor and insulation shields should be uniform and smooth and must adhere to insulation without any void, imperfection and contamination. To ensure the above, ‘UNISTAR’ XLPE Cables are manufactured by triple extrusion technique in a most sophisticated catenary continuous vulcanizing extrusion line, employing most advanced technology, imported from ABB Cables Sweden with dry curing.

TEST AND QUALITY CONTROL

‘UNISTAR’ XLPE cables are subjected to all routine and type tests as per relevant manufacturing specifications which include high voltage test, partial discharge test, dielectric power factor test, heating cycles test, impulse withstand test etc. Beside this, ‘UNISTAR’ XLPE cable are subjected to special long term development test programmes to ensure that cables manufactured are true to design life of 50 years. The Quality Control Department which is independent of production, maintains strict control on raw material, manufacturing process and final testing as per quality assurance scheme recommended by our collaborators ABB Cables, Sweden

INSTALLATION & ACCESSORIES

‘UNISTAR’ XLPE Cables are smaller and on an average 30% lighter than paper and 10% lighter than PVC insulated cables. Techniques employed in the installation of low voltage XLPE cables are similar to that employed for standard PVC insulated power cables. Some accessories such as compression lugs and ferrules, glands, splicing and termination kits as used for PVC cables may be used for XLPE cables. Additional advantage for XLPE cables is that it can withstand higher
soldering temperature and hot pouring compound. For high voltage cables, different methods may be employed for splicing and termination, these are as under:-

(a) Taped termination and splicing : This is the most popular method. It does not require special skill or equipment except crimping tool or welding equipment for conductor jointing.

Taped splice : In the taped splice, insulation is built up by wrapping a special electric grade self bonding EP rubber tape around the jointed conductor. Core screening and conductor screening are performed by using semi-conducting self-bonding tape.

Taped termination : A termination is built up on the site to the dimensions given in the installation instruction. The electric field grading is performed by a semiconductor layer with non-liner resistivity/stress characteristics. This type of field grading is a patented process of ABB Cable and has proved to be highly reliable. Termination takes very little space and is recommended for installations where many parallel cables are to be connected to one joint.

(b) Slip in moulded EP rubber termination and splicing : This type of termination consists of a premoulded stress cone and skirts made of very resilient weather-proof EP Rubber. These are suitable for all application with round conductor cable and also in polluted area. Compared to taped termination this is somewhat quicker and easier to install. On the other hand material cost is higher and a large stock is required, since one set of material covers only a small range of cable sizes.

(c) ‘THERMOFIT’ termination and splicing : These are made of heat shrinkable radiation vulcanized cross linked polyethylene tubing (semi-conducting and insulation grade) and skirts. These are fitted to the cable end or joints and set in position by shrinkfitting by application of heat. This is a patented process of Ray Chem Corporation, USA and one of the easiest and reliable methods of termination and splicing. Standard kits are available from the manufacturer.

(d) Epoxy Cast Termination & Splicing : These are available for cables upto and including 11 KV grade from standard manufacturer in our country. Standard kits are marketed under various trade names.

TECHNICAL SERVICES
Our technical service department is specially organised to assist our valued customers in finalising the section, design, installation, jointing and termination of XLPE Cables. This department also organises demonstration of jointing & termination techniques of XLPE Cables.

SUSTAINED CURRENT RATINGS OF HV XLPE CABLES
The current ratings of HV XLPE Cables given in the different tables are based on the following assumptions.

(i) Maximum conductor temperature for continuous operation : 90°C
(ii) Ambient air temperature : 40°C
(iii) Ground temperature : 30°C
(iv) Thermal resistivity of soil : 1.5 km/w
(v) Depth of laying (to the highest point of the cables laid direct in the ground)
   a) 3.3, 6.6 & 11 KV cables : 90 cm
   b) 22 and 33 KV : 105 cm
(vi) Max. conductor temperature at the end of a short circuit : 250°C

METHOD OF INSTALLATION
1. Multi core cables installed singly.
2. Single core cables laid in trefoil formation with screen/armour bonded at both ends.