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**DICABS**  
POWERING PROGRESS

**E-Beam  
Cables**



# DIC ABS

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## ABOUT US :

Starting out as a fledgling ACSR conductor manufacturing facility in 1970, Diamond Power Infrastructure Limited (DICABS), an ISO 9001:2015, 45001:2018, 14001:2015- certified company, has grown to become India's largest and only integrated manufacturer of power transmission equipment. Our journey from modest beginnings to industry leadership is a testament to our unwavering commitment to quality, innovation, and excellence.

### > Our Vision

Looking forward, we are excited about the opportunities that lie ahead. With our strong foundation, extensive expertise, and commitment to excellence, DICABS is poised to continue its leadership in the power transmission and distribution sector. We are committed to exploring new horizons, embracing new technologies, and delivering value to our customers, stakeholders, and the community at large.

### > Powering India's Growth

Today, DICABS is proud to play a crucial role in powering India's growth. Our comprehensive range of products and services, coupled with our relentless focus on innovation and quality, makes us the preferred partner for power transmission and distribution projects across the country. Our dedication lies in driving progress and contributing to the development of a robust and reliable power infrastructure for the nation.

### > Unmatched Manufacturing Process

A highly skilled team operates advanced manufacturing facilities to produce high-quality power transmission products. Utilizing imported machinery like CNC-controlled extruders, the company manufactures HT XLPE power cables up to 400 KV with precision. DICABS is India's largest manufacturer of MV and EHV cables, meeting standards for medium and high voltage solutions in the power industry.

### > Comprehensive Product Range

DICABS offers solutions that span the entire value chain of power transmission and distribution. Our product range covers majority of the T&D infrastructure requirements, ensuring that we can provide integrated solutions for a wide variety of projects. We design our products to meet the highest standards of reliability and performance, from conductors and transformers to cables and insulators. Under the brand name "DICABS," we stand as one of India's leading manufacturers of high-quality HT/LT XLPE and PVC Power, Control, and Aerial Bunched Cables up to 400 KV rating.

## > Leadership in Power Transmission

DICABS, India's largest single-integrated power equipment manufacturer, holds a leadership position in the power transmission and distribution sector. Our extensive experience, coupled with our state-of-the-art manufacturing unit at Vadadala near Vadodara, Gujarat, positions us uniquely in the market to cater to the growing demands of the power sector.

## > State-of-the-art testing facilities

Quality and reliability are paramount to us. Our world-class EHV Testing Facility, NABL-approved, is capable of testing power cables up to 400 KV, making it a unique asset in the country. Additionally, our cables are rigorously tested by leading laboratories such as CPRI, ERDA, RTC, NTH, MPLUN, NSIC, C&I (NABL), NRO (MOHALI), QMTL, DTH, TAG CORPORATION, ATCC, and GTAS, ensuring top-notch quality and reliability

## > Pioneering Innovations

Innovation is at the heart of everything we do. Over the years, we have introduced numerous path-breaking technologies and proactive solutions that have set new benchmarks in the industry. Our commitment to continuous improvement and our ability to pioneer newer technologies have been key drivers of our exponential growth and success



## What is E-Beam Cable ?

E Beam Cable is used for the signal transmission, controlling and measuring system of the electric apparatus and the power distribute apparatus in the field of metallurgy, power and petro chemistry, The rated voltage is up to 450/750V. The cable is available in a round or flat design and comes standard

### > E-Beam cables Features

The electron beam curing in "Wires and Cables" results into improvement of mechanical, thermal, chemical resistant, and other properties. The enhancement of properties results into improved physical properties with reduced thicknesses, higher temperature withstand capability, higher current carrying capacity and thus increased life of these cables. The e-beam cross-linking technology not only increases life and the current carrying capacity, but also prevents fires due to overload short circuits and thus saves precious lives and property.

### > Cross-linking of Wires and Cables with E-Beam

Electron beam cross-linking of wire insulation and cable jackets is usually done with electron energies in the range from 500 keV to 1.5 MeV, although some facilities use higher energies up to 3 MeV. The energy is determined by the thickness, density and atomic composition of the insulation and the diameter of the conductor. The processing technique is highly precise as the stability of the small electron beam diameter in the focus is the basis for high geometrical precision. Elaborating on the gradual demand shift, the growing potential of the E-Beam wires and cables and their role.

### > Benefits of E-Beam Processing

E-beam cross-linking enhances the durability of wire and cable insulation, particularly protecting it from the heat generated during short-circuits and high temperatures. This processing technique significantly improves the performance of Electron Beam Cross-Linked (EBXL) wires and cables, boosting properties such as tensile strength (especially at elevated temperatures), abrasion resistance, thermal resistance, flame propagation resistance, deformation resistance, and cut-through resistance. Additionally, it strengthens both the shear and compressive strength of the wires and cables. With its numerous advantages, it's only a matter of time before EBXL wires and cables become the standard in critical applications. In fact, several companies have already started offering E-beam cables in recent years. However, the Indian market for E-beam cables is still in its early stages and has yet to reach its full potential in meeting industry expectations.

## **ADVANTAGE OF ELECTRON BEAM OVER CHEMICAL CROSS LINKING**

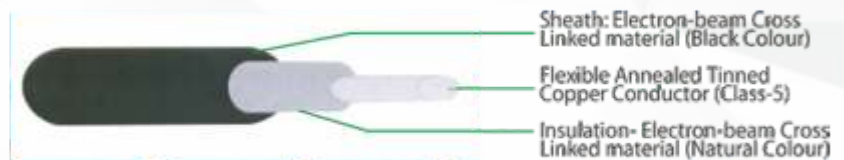
- E-Beam cables achieve a higher degree of crosslinking, up to 75-80%, compared to the 50-55% seen in chemically cross-linked cables.
- Unlike chemical crosslinking, E-beam crosslinking occurs at room temperature, preventing polymer degradation from exposure to high heat. There is no oxidative degradation of the polymer due to residual chemicals, air oxygen, or the cable's operating temperature, which is often an issue with chemical crosslinking.
- The curing time for E-beam cables is significantly shorter than that of chemically cured cables.
- E-beam cables are rated for temperatures up to 125°C, offering long life, higher Ampacity, and enhanced protection against thermal overloads.
- Improved abrasion resistance allows for reduced wall thicknesses, leading to savings in raw materials, space, energy, and weight. This reduction in weight also provides an energy efficiency boost in transportation systems like trains, ships, and planes.

### **> APPLICATION OF E-BEAM TECHNOLOGY**

- Locomotive Cables for Railways
- Solar PV Cable
- Ship Wiring Cables
- Wind Mill Cables
- Flexible wire

## E-BEAM IRRADIATED SOLAR PV CABLE

A solar cable is the interconnection cable used in photovoltaic power generation. Solar cables interconnect solar panels, PV cells and other electrical components of a photovoltaic system. Solar cables are designed to be UV resistant and weather resistant. They can be used within a large temperature range and are generally laid outside.



### > APPLICATION

These cables are designed for connecting photovoltaic power supply and can be used in flexible & fixed installations for indoor / outdoor usage with high mechanical strength under extreme weather condition.

### > FEATURES

- > Continues operating temperature 120°C, hence higher current carrying capacity.
- > In Continuous exposure of UV radiations the cable has excellent weathering properties.
- > Halogen free hence in case of fire, it does not emit toxic material and generates only low smoke.
- > Fire Retardant.
- > Life time over 30 years under harsh environment
- > Very Flexible – Easy Installation as it is made of Stranded Conductors.
- > Withstands high temperatures.

### Standards : BS EN 50618 – 2014

| Single Core Size ( Sq mm) | Wire Diameter Max (mm) | E13XL Insulation Thickness (mm) | EBXL Sheath Thickness (mm) | Overall Diameter Nominal (mm) | Conductor Resistance Max. Ohm/Km | Current Carrying Capacity of DC Solar Cable with XL-COSH Insulation & XL-LOSH Sheathing at 60 Deg. C |                                |                                      |
|---------------------------|------------------------|---------------------------------|----------------------------|-------------------------------|----------------------------------|--|--------------------------------|--------------------------------------|
|                           |                        |                                 |                            |                               |                                  | Single Cable in Air (Amp-)   | Single Cable on Surface (Amp-) | 1Wo adjacent Cable on Surface (Amp.) |
| 1.5 Sq mm                 | 0.26                   | 0.7                             | 0.8                        | 5.4                           | 13.7                             | 30   | 29                             | 24                                   |
| 2.5 Sq mm                 | 0.26                   | 0.7                             | 0.8                        | 5.9                           | 8.21                             | 41   | 39                             | 33                                   |
| 4.0 Sq mm                 | 0.31                   | 0.7                             | 0.8                        | 6.6                           | 5.09                             | 55   | 52                             | 44                                   |
| 6.0 Sq mm                 | 0.31                   | 0.7                             | 0.8                        | 7.4                           | 3.39                             | 70   | 67                             | 57                                   |
| 10 Sq mm                  | 0.41                   | 0.7                             | 0.8                        | 8.8                           | 1.95                             | 98   | 93                             | 79                                   |
| 16 Sq mm                  | 0.41                   | 0.7                             | 0.9                        | 10.1                          | 1.24                             | 132  | 125                            | 107                                  |
| 25 Sq mm                  | 0.41                   | 0.9                             | 1                          | 12.5                          | 0.795                            | 176  | 167                            | 142                                  |
| 35 Sq mm                  | 0.41                   | 0.9                             | 1.1                        | 14                            | 0.565                            | 218  | 207                            | 176                                  |
| 50 Sq mm                  | 0.51                   | 1                               | 1.2                        | 16.3                          | 0.393                            | 276  | 262                            | 221                                  |
| 70 Sq mm                  | 0.51                   | 1.1                             | 1.2                        | 18.7                          | 0.277                            | 347  | 330                            | 278                                  |
| 95 Sq mm                  | 0.51                   | 1.1                             | 1.3                        | 20.8                          | 0.21                             | 416  | 395                            | 333                                  |
| 120 Sq mm                 | 0.51                   | 1.2                             | 1.3                        | 22.8                          | 0.164                            | 488  | 464                            | 390                                  |
| 150 Sq mm                 | 0.51                   | 1.4                             | 1.4                        | 25.5                          | 0.132                            | 566  | 538                            | 453                                  |
| 185 Sq mm                 | 0.51                   | 1.6                             | 1.6                        | 28.5                          | 0.108                            | 644  | 618                            | 515                                  |
| 240 Sq mm                 | 0.51                   | 1.7                             | 1.7                        | 32.1                          | 0.0817                           | 755  | 736                            | 620                                  |

**Table -1 For Single Core cable - Voltage grade 750 V  
(EBXL - Insulation)**

| Sr. No. | Core | Nominal Cross sectional Area (Sq mm) | Conductor               |              |                                  | Insulation                            |                        |
|---------|------|--------------------------------------|-------------------------|--------------|----------------------------------|---------------------------------------|------------------------|
|         |      |                                      | Max. wire diameter (mm) | No. of Wires | Resistance (Ohm/Km) Max. at 20°C | Mn. Wall Thickness of Insulation (mm) | Over all Diameter (mm) |
| 1       | 1    | 1.5                                  | 0.26                    | 30           | 13.7                             | 0.55                                  | 2.7 ± 0.10             |
| 2       | 1    | 2.5                                  | 0.26                    | 50           | 8.21                             | 0.60                                  | 3.3 ± 0.15             |
| 3       | 1    | 4                                    | 0.31                    | 56           | 5.090                            | 0.65                                  | 3.95 ± 0.15            |
| 4       | 1    | 6                                    | 0.31                    | 84           | 3.390                            | 0.70                                  | 4.5 ± 0.2              |
| 5       | 1    | 10                                   | 0.41                    | 80           | 1.950                            | 0.80                                  | 5.6 ± 0.3              |
| 6       | 1    | 16                                   | 0.41                    | 126          | 1.240                            | 0.86                                  | 7.2 ± 0.3              |
| 7       | 1    | 25                                   | 0.41                    | 198          | 0.795                            | 0.96                                  | 8.6 ± 0.3              |
| 8       | 1    | 35                                   | 0.41                    | 266          | 0.565                            | 1.10                                  | 10 ± 0.3               |
| 9       | 1    | 50                                   | 0.41                    | 385          | 0.393                            | 1.20                                  | 11.9 ± 0.3             |
| 10      | 1    | 70                                   | 0.51                    | 348          | 0.277                            | 1.30                                  | 14.2 ± 0.3             |
| 11      | 1    | 95                                   | 0.51                    | 456          | 0.210                            | 1.40                                  | 15.7 ± 0.30            |
| 12      | 1    | 120                                  | 0.51                    | 589          | 0.164                            | 1.50                                  | 17.7 ± 0.30            |
| 13      | 1    | 150                                  | 0.51                    | 741          | 0.132                            | 1.60                                  | 20.3 ± 0.3             |



**CERTIFICATE OF REGISTRATION**



**CLIENTELE**

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