



ASHLOK



**Quality is remembered
long after the price
is forgotten**

- Sir Henry Royce,
Founder of the Rolls Royce motorcar

Your Ultimate Solution for Earthing & Lightning Protection

We entered the electrical industry in the early part of the 1970's much before the technological revolution took place. In 25 years, after dealing with electrical products of all types and sizes, we realized that the entire industry's success and failure fell in the hands of an earthing system.

We understood that the conventional system of earthing was unreliable, inefficient, cumbersome and prone to problems which resulted in fire hazards, equipment failures and loss of life due to high voltage shocks/ short circuits etc. We believed that there was a better solution & one that did not involve the aged & ineffective system of earthing.

Challenging convention, in 1999 - we came up with "maintenance free earthing technology" which revolutionised the earthing practices being followed in India and now, it has become a norm to provide earthing or grounding through maintenance free earthing systems only.

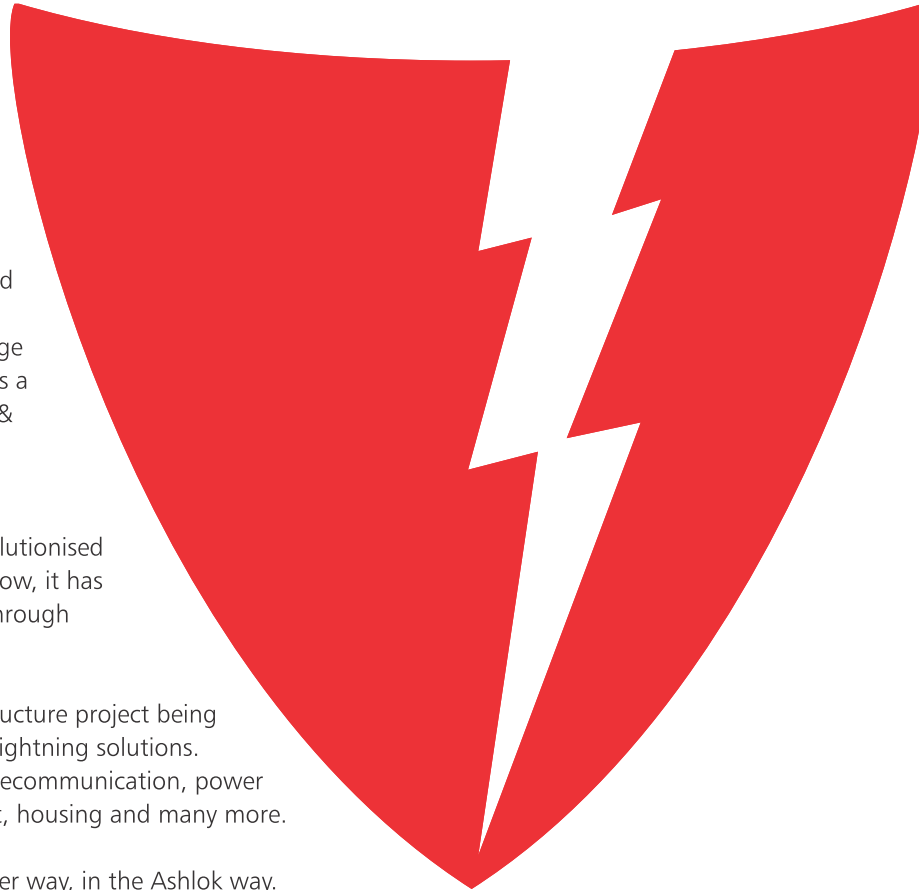
Today, we are at the forefront of every other infrastructure project being executed in the country for providing earthing and lightning solutions. This includes a host of clients from industries like telecommunication, power generation, manufacturing, infrastructure, transport, housing and many more.

We thank you for understanding that there is a better way, in the Ashlok way.

Ashok Tripathy



Chairman
The Ashlok Group





Objectives of earthing

Provide an alternative path for the fault current to flow so that it will not endanger man or machine.

Ensure that all exposed conductive parts do not reach a dangerous potential. Maintain the voltage at any part of an electrical system at a known value so as to prevent over current or excessive voltage developing in the machinery.

End Result

- Human safety
- Protect equipment
- Electrostatic discharge



History

Very early use of electricity was with ungrounded systems. These systems were generally localized. The first AC transmission in 1886 paved the way to the growth of electrical earthing systems. Fatal accidents were reported when persons came in contact with live parts due to insulation damage.

A need was felt to provide an alternate easy path for fault currents, to prevent accidents. Earth being a huge mass was thought to be the best sink for electrical fault current. Metal rods were buried into earth and non-current carrying metal parts (enclosures) of electrical apparatus were connected to these metal rods called earthing electrodes. Electricity today is playing an ever - increasing role in everyone's lives. Unfortunately, its use brings with it a certain degree of danger.

Earthing plays a very important role in protecting man and machine against this danger. Earthing also plays a major role in increasing the reliability of the supply service, as it helps to provide stability in voltage conditions, preventing excessive voltage peak during disturbance, and also as a mean of providing a measure of protection against lightning.

A low resistance earthing system is a key safety element in an effective and quality power system.

The Ashlok Group

What Is Earthing

The primary purpose of earthing is to reduce the risk of serious electric shock from current leaking into uninsulated metal parts of an appliance, power tool, or other electrical devices. In a properly earthed system, such leaking/fault current is carried away harmlessly while tripping the fuse. Earthing also provides protection from large electrical disturbances like lightning strikes and power surges. It also aids in the dissipation of hazardous static electrical charges.

Although most electrical systems have fuses or circuit breakers for protection against a fault current, the human body may be fatally electrocuted by a current of less than one ampere which is well below the point at which a fuse or breaker will operate. Earthing helps minimize such hazards from occurring.

Over the years, billions of dollars worth of property has been destroyed due to electrical failures, short circuits etc causing fires, electrocutions and other mishaps. But more importantly, lives were lost.

This makes earthing of crucial importance everywhere electricity is used.



A complete lightning protection & earthing system constitutes the following:

- Lightning Arrester
- Down Conductor
- Safe Earthing Electrode
- Back Fill Compound





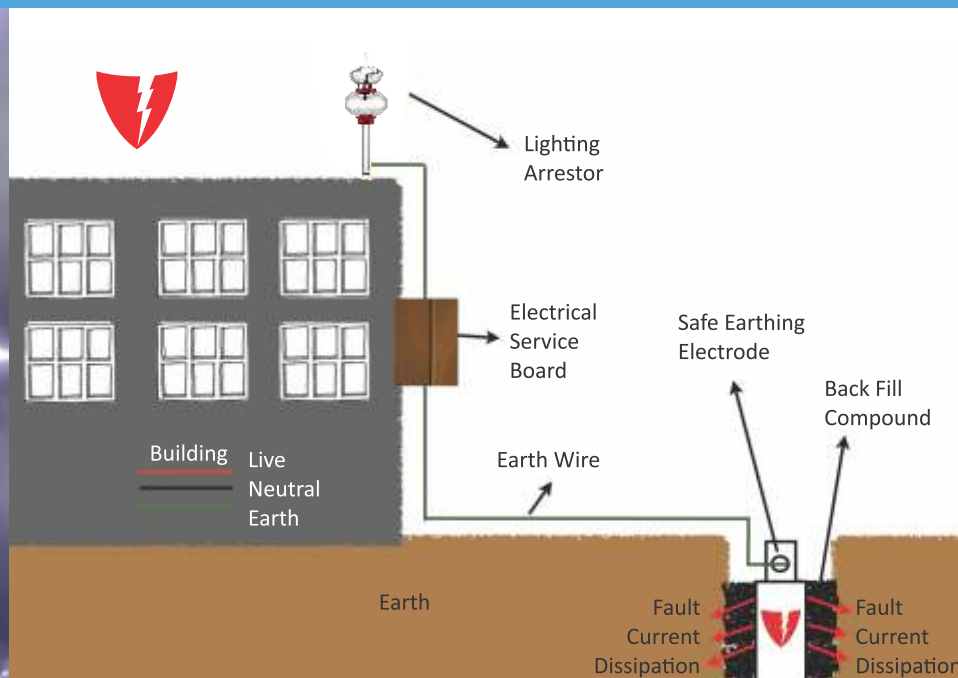
The Earthing System

Safe Earthing Electrode

It is a metal electrode which goes into the ground near the building. It helps in the efficient discharge of all the fault currents/ surge currents present in the electrical system. It also helps in dissipating the high voltages which are passed on through the lightning arrestors atop buildings.

Back Fill Compound(s)

These are earth enhancement compounds, having different properties that can be chosen / selected as per soil & its other properties. Essentially, an ideal BFC should have low resistance, excellent moisture absorption and retention capabilities, and thermally stable. Although, earthing can be provided even without the use of BFC, however, for better performance it is suggested to use the BFC while providing the earthing system.



Lightning Arrestor

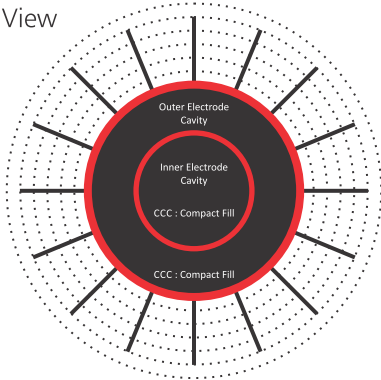
It is a metallic device, usually mounted at the highest point of the building to capture lightning strikes and direct it to the earth via a safe path thereby preventing it from flowing through the building's electrical circuit. In the absence of the lightning arrestor, a lightning strike could destroy electrical equipment and cause harm to human life through electrocutions.

Technology

Pipe In Pipe Technology

Pioneered by ASHLOK in 1999, the Pipe In Pipe design incorporates the use of two pipes of co-axial diameters joined together for enhancing the service life and performance of the over all earthing system. The cavity in-between the electrodes is filled with crystalline conductive compounds IonFill or CompactFill for current dissipation and anti corrosive properties. The electrode cross section has to be circular for the uniform distribution of fault current all around from electrode to earth.

Top View



CCC Crystalline Conductive Compound
..... Fault Current Dissipation
Inner Electrode
Outer Electrode

Description : Ashlok Pipe In Pipe Design
Design Year : 1999

Available in the following sizes (vary with product)

Model	Length, m	Inner Pipe Diameter, mm	Outer Pipe Diameter, mm
ASEEL-19	2 & 3	25.4 - 26.4	48.3 - 50.8
ASEEL-39	2 & 3	38.1 - 41.9	76 - 80



Ashlok Designed Production Process

CompactFill

The volume between the inner and outer pipes of the electrode is occupied by CompactFill, a compound formula developed by ASHLOK which aids in increasing the electrical conductivity, service life and current with-stand capacity of the earthing electrode. It constitutes elements picked up from nature and is anti corrosive too.

IonFill

This is the latest compound formula developed by ASHLOK for the IC99 range of earthing electrodes. The internal cavity of the electrode is occupied by IonFill which constitutes elements which aid in the breathing action of the electrode. They form an integral part of the functioning of the electrode as they trap moisture from the surroundings and enhance electrical conductivity. Through the breathing action of the electrode, they form conductive roots all around the earthing system.

Since earthing systems face different kinds of soil, climatic & electrical environments around the world, it is extremely important that they are manufactured with extreme care, precision and quality.

Defects like varying coating levels on the electrode surface can hamper service life. Improper ratios of CCC components can lead to varying resistance results.

At ASHLOK, we took up the challenge to design our own production processes for the different metallic coatings, internal cavity compound fillings and packaging.

Today, we have our own production systems in place to constantly meet 'A' grade quality norms we have set for ourselves. This is helping us to serve you better - everyday.

CompactFill & IonFill play a crucial roll in the functioning health of the electrode and it is very critical that they are produced in exact proportions and filled with scientific care. A small void in the internal cavity of the electrode can cause fluctuations in results.

For that reason, all the electrodes undergo an ASHLOK designed precision process for the deposition of CompactFill/ IonFill into the internal cavity keeping in tune with our quality policy.



Products & Services

Ashlok is a one stop solution for all your earthing needs, be it design, production of customised earthing equipment, execution and after sales service.

Safe Earthing Electrodes

- Physical Vapour Deposition Electrodes
- Hot Dip Galvanized Electrodes
- Zinc Coated Electrodes
- Alloy Coated Electrodes
- Copper Plated Electrodes
- Copper Bonded Rods
- Self Breathing & Leaching Type Electrodes

Back Fill Compounds

- Conductolite
- Electrodit
- Humedite
- Terra Ion (Soil Ion Enhancer)

Services

- Earthing Installations
(All types of soil conditions)
- Lightning Arrestor(s) Installations
- Soil Resistivity Measurement

Applications

All type of Industrial units, power plants, transmission towers, offices, residences, commercial structures, telecommunications towers, wind farms, power stations, mines and virtually every installation where electricity is used for any purpose.

Certifications | Standards | Approvals

IS 3043 | ISO 9001:2008 | OHSAS 18001
CPRI | GETCO | ERDA | RoHS | CE
IEC 62561-7 | EN 12457-2 | IEC 62321 - 2008-12 Edition-1



Copper Plating (100-250 microns) Specialised Alloy Coating

Hot Dip Galvanized

Production under ADP (Ashlok Designed Production) process.

Anti Corrosive Crystalline Conductive Mixture (CCM)

Zinc Coated Excellent after sales & service support

Extra high current carrying capacity of up to 60 kilo ampere for 1.00 second

Safe Earthing Electrode



ASEEL HD | Galvanized

- Galvanized for corrosion protection
- Designed for fast fault current dissipation
- Low maintenance earthing system
- Easy & fast installation on site



ASEEL CP | Copper Plated

- Copper coating thickness of 100 - 250 + microns as per UL Standards
- Very high electrical conductivity (5.96×10^7 s/m) and anti-corrosion properties
- Long service life
- Best suited for harsh environments



ASEEL Z | Zinc Coated

- Zinc Coated earthing electrode
- Coating thickness of 100+ microns
- Enhanced corrosion protection
- Granular surface finish for compact deposition of BFC all around and improved current dissipation



ASEEL CBR | Copper Bonded Rod

- Copper bonded rods meeting UL467 international standards for Earthing
- Coating thickness of 250 + microns over earth rod
- Projected life of 15 years +
- Excellent electrical conductivity and corrosion resistance



ASEEL PVD | Zinc 150 Microns

- In compliance with IS 3043 | Revised
- Coated using a SPM | PVD Technology
- Coating thickness of 150+ microns
- Uniform surface coating.



ASEEL A | Alloy Coated

- Specialized alloy coating of minimum 100 microns
- Suitable for soil condition with pH value ranging from 3.5 to 12

Model	Length, m	Inner Pipe Diameter (min) mm	Outer Pipe Diameter (min) mm	Rod Diameter (Min) mm
ASEEL 19 HD	2 & 3	25.4	50.8	-
ASEEL 39 HD	2 & 3	38.1	76.2	-
ASEEL 19 Z	2 & 3	26.4	48.3	-
ASEEL 39 Z	2 & 3	41.9	76	-
ASEEL 19 PVD	2 & 3	26.4	48.3	-
ASEEL 39 PVD	2 & 3	41.9	76	-
ASEEL 19 A	2 & 3	26.4	48.3	-
ASEEL 39 A	2 & 3	41.9	76	-
ASEEL 19 CP100 / 250	2 & 3	26.4	50.8	-
ASEEL 39 CP100 / 250	2 & 3	41.9	80	-
ASEEL 14 CBR100/250	2 & 3	-	-	14.3
ASEEL 17 CBR100/250	2 & 3	-	-	17.2

Installation Method

It is very important that Ashlok earthing systems are installed correctly for system to work safely, to get maximum benefit & advantage. Upon proper installation, the earthing system exhibits low earth resistance value compared to conventional earthing system in a given soil conditions. Please note that ASHLOK earthing system once installed needs very little or negligible maintenance, however, pouring of few bucket of waters in side and around the earth pits is recommended in poor soil conditions. It is to be understood that earth resistance value of any earthing system varies from place to place since soils are hardly homogeneous in nature and exhibits different & varying soil resistivity even in close proximity. In such cases, use of multiple earth pits in grid formation is recommended to get the desired earth resistance value.

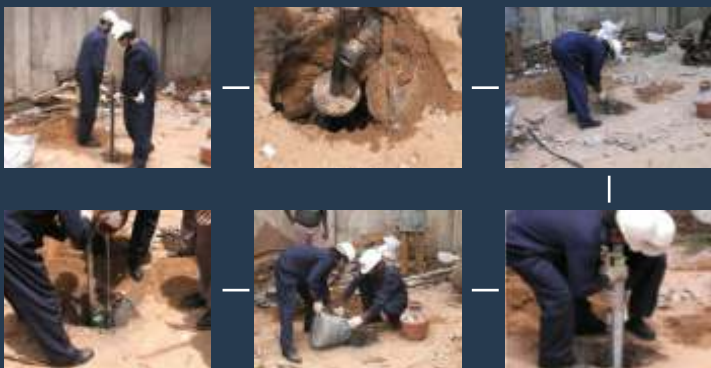
Note: Since there exist varying types of soil & environment conditions around the world, the best resistance values for an earthing system vary.

Normal Soil

- Make a bore of 8" to 10" in dia up to the electrode length of 2/3 meters.
- Fill the bottom 4" of the bore with the supplied BFC (Electrodite).
- Vertically, place the electrode in the centre of the pit.
- Fill the cavity around the electrode with the BFC (Electrodite).
- Ensure there are no air gaps in the BFC filled cavity region.
- Now pour sufficient water into the earth pit until the BFC takes the form of a paste/ mud. Allow the pit to absorb the water and settle.
- Test the earth pit and make the required connections to the electrical service box.

Caution: Avoid excess watering and do NOT hammer the electrode.

For instructions on installation methods for other soil types; and corresponding BFCs, kindly contact us on earthing@ashlok.in or call +91 94440 87356.



Back Fill Compound

The resistance to earth of an electrode is directly proportional to soil resistivity & inversely proportional to the total area of contact established with the soil for fixed land areas. Soil resistivity is a function of several factors. These include the type of soil, moisture content, temperature, mineral content, granularity & compactness. Usually moisture & mineral content are the only factors that can be influenced by any practical control concept. Ionisation of soil & moisture retention are required to reduce soil resistivity, but the mineral content has the most dramatic influence. Ionisation is the first step to reduce soil resistivity.

ELECTRODITE™—It is a regular Back Fill Compound that absorbs & retains the moisture, reduces the soil resistivity & thus helps in quick dissipation of fault current. Constituting natural elements, it is an effective soldier in the dissipation of fault current. It is hygroscopic in nature & swells when it comes in contact with water, thereby engaging constant contact between the electrode surface & soil which is ensures smooth and efficient discharge of fault current. Best for normal soil conditions. Resistivity : < 5 ohm-metre (In ideal moist conditions) ; > 5 ohm-metre (Dry Conditions) | Ph Value : 7.0 - 8.5

Available in : 15 kg & 25 kg

CONDUCTOLITE™—It is a premium conductive carbonaceous material that can be used as an effective durable & high conductive material for earthing that dramatically reduces impedance & enhances the performance, reliability * longevity of earthing systems. Conductolite has been designed to function in soil environments where electrical conductivity is low. It helps to improve the conductivity of the soil to aid in faster current dissipation while at the same time having hygroscopic and anticorrosive properties. Recommended for harsh Conditions. Resistivity : < 0.5 ohm-metre (In dry conditions) | Resistivity is not moisture dependant | Ph Value : 6.5 - 8.0

Available in : 25 kg

The next step is to increase the moisture retention capacity of the soil. These are the two recommended techniques for reducing earth resistivity.

Ashlok has developed four different types of Back Fill Compound(s) for three dimensional augmentation in electrical earthing system. This system should achieve low group resistance value for long periods where obtaining a satisfactory earth resistance has always been a problem in areas of poor soil conductivity.

TERRAION™—It has been recognised that earthing can be improved by lowering the soil resistivity by soil treatment, by applying salt to soil. Salt reduces the soil resistivity but is prone to leach out from treated soil when water is added to it during rainy season & thus it is only a temporary improvement. Moreover it pollutes the ground water & creates other environmental problems besides accelerating the corrosion of the electrode. The formula has been designed keeping in mind the harshest conditions faced by earthing systems around the world. It helps in reducing the soil resistivity and normalizing the soil conditions. It forms a bulk aqueous solution on addition of water and creates conductive roots in the immediate environment of the earthing system. It is a soil ion enhancer which is used in tandem with Conductolite | Humedite | Electrodite. Recommended for Earth Pit recharging. Ph Value : 7.0 - 9.0

Available in : 10 kg

HUMEDITE™ - Moisture plays a very important role in the earthing system because the dissipation of fault current depends considerably on the capillary & electro-osmotic action of soil. Specifically developed for relatively dry conditions, it captures moisture from the surrounding environment & retains it for long periods of time. It has an electrical resistivity of approximately 0.5 ohm-meter which gives minimal resistance to the dissipation of current. When mixed with water it forms a semi-permeable conductive gel around the electrode & is far less susceptible to shrinkage. Recommended for semi-rocky conditions. Resistivity : 1 - 5 ohm-metre (In ideal moist conditions) | Ph Value : 7.0 - 8.0

Available in : 25 kg



FAQ

Frequently Asked Question

Why do I need earthing?

Unfortunately, our electrical ecosystem is not perfect. It is constantly attacked by high voltages, fault currents, surges, short circuits & lightning, all of which can turn deadly. So, any structure which has electricity running through it needs earthing for the protection of property and life.

I already have earthing, but I still get electrical shocks from the equipment I use?

In that case, we suggest you have the earthing tested. The traditional earthing methods have been plagued with corrosion and low conductivity problems for decades. The conventional earthing system methods have a very short service life. They become ineffective and are as good as no earthing at all.

I have seen electrodes with metal plates inside. What is that all about?

Our earthing systems have proven over the last decade that a circular cross section is the best suited design for equal & fast dissipation of current through the electrode and into the earth. We have carried out developmental work on the plate - in - pipe design earlier, but dropped it as it was inefficient and prone to long term problems.

Can I just install the electrode without the Back Fill Compound?

These are earth enhancement compounds, having different properties that can be chosen / selected as per soil & its other properties. Essentially, an ideal BFC should have low resistance,

excellent moisture absorption and retention capabilities, and thermally stable. Although, earthing can be provided even without the use of BFC, however, for better performance it is suggested to use the BFC while providing the earthing system.

What are the factors that determine the life of an earthing system?

Since the earthing system works underground, lot of environmental factors come into play to decide the life of the earthing system. They include

- Soil conditions
- Moisture content
- Climate changes
- Soil resistivity
- Types of soil (normal, sandy, semi rocky, rocky etc.)
- Acidity levels of the soil
- Basic maintenance schedule

Apart from the above, it is very crucial that the installation of the earthing system is done as per specifications, non adherence will not only drastically reduce service life of the system but also hinder earth resistance results.

Where is earthing needed?

Anyplace where electricity is used, earthing is important for safety of life and property. This can include

- Homes
- Offices
- Telecommunication towers
- Power transmission towers & HT/LT lines
- Power generation plants
- Mines
- Transformers
- High rise buildings
- Production plants
- Refineries
- Windmills etc.

Why should I choose Ashlok earthing systems?

From the very beginning, we have been the first to introduce different technologies and earthing designs into the industry, the first to achieve government test approvals and the pioneers of forefront earthing designs existing in the marketplace today.

We have Ashlok earthing system designs working efficiently across Asia in homes, offices & industries of the private & public sector.

Our product range, manufacturing systems, supply network and customer support have earned us a position at the top of the industry today, and our client list speaks for itself why we are at the forefront of every other earthing project being executed in the industry today.

Ashlok is present across India to cater to the earthing needs wherever it might arise. Supported by a robust R&D & Service team to take care of the earthing challenges.

No matter where you are located, we have an earthing solution for you.



To mention a few who chose...

....The Ashlok Way

ABB India Limited
Air Force
Air Tel
Airport Authority Of India
All India Radio (Air)
Allana Groups
Amar Raja Power Systems Ltd
Amararaja Batteries
Apollo Tyres Limited
Ashok Leyland
Asian Paints
BA Continuum India Pvt Ltd
Bajaj Electricals
Bhaba Atomic Research Centre
Bharat Electronics Limited
BHEL
BPCL
Brakes India Pvt Ltd
BSNL
Cadbury India Limited
Cairn Energy India Limited
Central Public Work Dept
Chennai Port Trust
Chettinad Group
Cognizent Technology
CRI Pumps (Pvt) Ltd
Dalmia Cements Bharat Ltd

Dalmia Laminators Ltd
Delhi TVS Diesel System Ltd
DLF Utilities Limited
Doordarshan
ICF
Essar
Ford India Limited
GE India Technology centre Pvt Ltd
GE Power Control Limited
General Dynamics Satcom
Gobal Telecom Limited (GTL)
GHFC
HCL Technologies Limited
Heavy Vehicles Factory
Hero Honda Limited
HP India
HPCL
Hyundai Motors (India) Ltd
IBM India Pvt Ltd
IDBI Bank Limited
Idea Cellular
IGCAR Kalpakkam
IIT
Indian Oil Corporation Ltd
Indian Railways
Infosys Technologies
Intel Technologies (I) Ltd

ISRO
J.K Cements
Jindal Aluminium Limited
Jindal Vijayanagar Steel Ltd
JSW Jaigarh Port Ltd
Kerala Electricity Board
Larsen & Toubro Limited
LG Electronics
Lucas TVS
Mahindra EPC Services Pvt Ltd
Mahindra Holidays & Resorts India Ltd
Madgaon Port Trust
Military Engineering Services
Motorola, Bangalore
MRF Limited
NAL, Bangalore
Nelco Limited
Nestle India Limited
Nissan Motors
Nokia
NTPC
ONGC
Orient Cements
Osram India Pvt Ltd
Panchshil Realty & Developers Pvt Ltd
Prism Cements
Rane TRW Steering

Reliance Industries Ltd
Rourkela Steel Plant
Saint Gobain Glass India Ltd
Schneider Electric India Pvt Ltd
Shell India Limited
Siemens Limited
Southern Railways
Standard Chartered Bank
State Bank Of India
TADA, Andhra Pradesh
Taj (Group) Hotels
Tata Chemicals Limited
Tata Tele Services Limited

Texas Instruments
Thermal Systems (Hyd) Pvt Ltd
Tidel Park, Chennai
TNEB
Total Oil India Pvt Ltd
Toyota
Tube Investments Of India LTD
Ultratech Cements
Vikram Sarabhai Space Centre
VSNL
Wheels India Ltd
Zuari Cements

why?



ASHLOK

India's first professional
earthing company founded
in 1999

Pioneered the concept & changed the understating
of earthing in India by introducing the
revolutionary Maintenance Free Earthing System
designed on Pipe-In-Pipe technology

Changed industry standard for earthing
from conventional to PIP based
Maintenance Free Earthing through
out the country.

International presence with a
dealer network across
India and the United Arab Emirates

Widest and most acclaimed
product range in India

Tried, tested and trusted by all
major corporations of India since 1999

Ashlok Safe Earthing Electrode Limited

58 | SIDCO Industrial Estate | Sector - 1 | 3rd Street | North Phase | Ambattur | Chennai - 600 098 | India

Telefax : +91 044 26254757
Cell : +91 94440 87 356
eMail : earthing@ashlok.com
Website : www.ashlok.com

Dealer Network: India | Nepal | U.A.E.

Printed in India
Copyright © 2016 All Rights Reserved.
Actual color of products might differ slightly from the images depicted in this brochure.
The company has the right to change model description, add or remove products without prior intimation to user.