ASHLOK

YOUR ULTIMATE SOLUTION FOR EARTHING

SOLDIERS OF SAFETY

SOS

Quality is remembered long after the price is forgotten

- Sir Henry Royce, founder of the Rolls Royce motorcar

ASHLOK

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 fathered the earthing revolution of India.

Today, we are at the forefront of every other earthing project being executed in the country. 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

WHAT IS EARTHING

Earthing is the process of creating an alternative path for the flow of fault/ excessive currents safely into the ground in the presence of minimal resistance or impedance.

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:

a. Safe Earthing Electrode
b. Back Fill Compound
c. Lightning Arrester

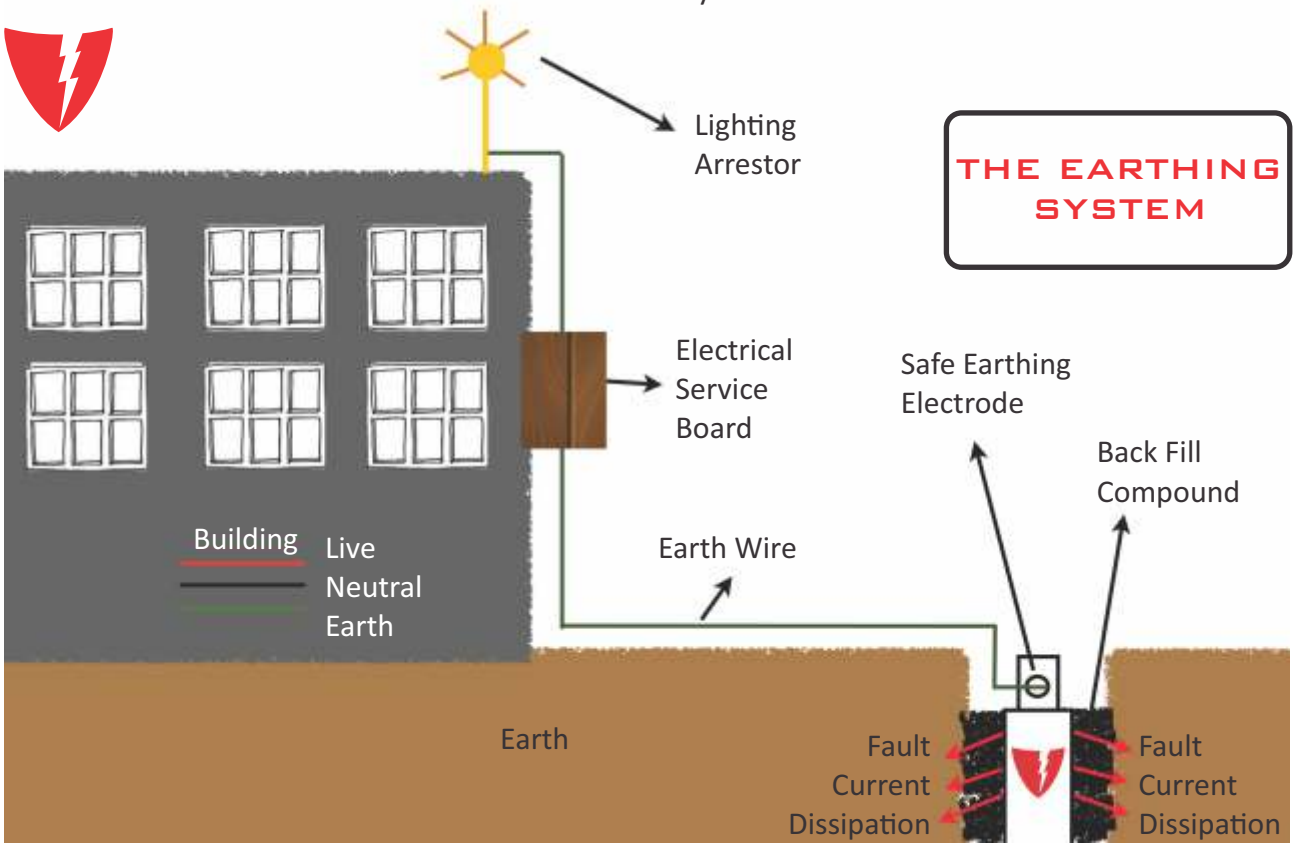
THE EARTHING SYSTEM

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 Compounds

These are earth enhancement compounds which have different properties depending on soil and other atmospheric conditions. Essentially, an ideal BFC has high electrical conductivity, moisture capture and retention abilities and anti corrosive properties. It works in tandem with the Safe Earthing Electrode. Together both form the efficient earthing system.



ACCESSORY

Lightning Arrestor

It is a metallic device 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.

Did You Know

Lightning can hit anything on the ground. Even a person standing on the ground next to the Empire State Building. The most common misconception is that lightning strikes only the tallest of structures.

PRODUCTS & SERVICES

Ashlok is a complete earthing solution provider, right from the technical design of the site, to production, trading, sales, service and execution of the earthing system.

Safe Earthing Electrodes

- Hot Dip Galvanized Electrodes
- Zinc Coated Electrodes
- Alloy Coated Electrodes
- Copper Plated Electrodes
- Copper Bonded Rods
- IC99 IBT Electrodes

Back Fill Compounds

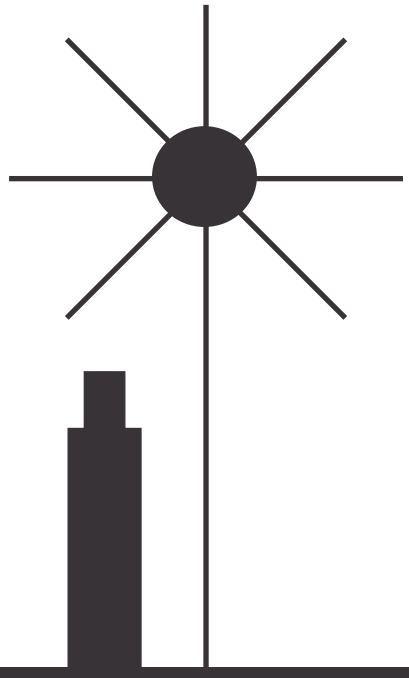
- Conductolite
- Electrodite
- Humedite
- Terra Ion (Soil Ion Enhancer)

Lightning Arrester

- Zeus
- Franklin

Services

- Earthing Installations (All types of soil conditions)
- Soil Testing



Applications

Industrial units, power plants, transmission towers, offices, residences, commercial structures, telecommunications towers, wind farms, power stations, mines, electrical &electronic equipment and almost in every place where electricity is used.

Certifications, Tests & Approvals

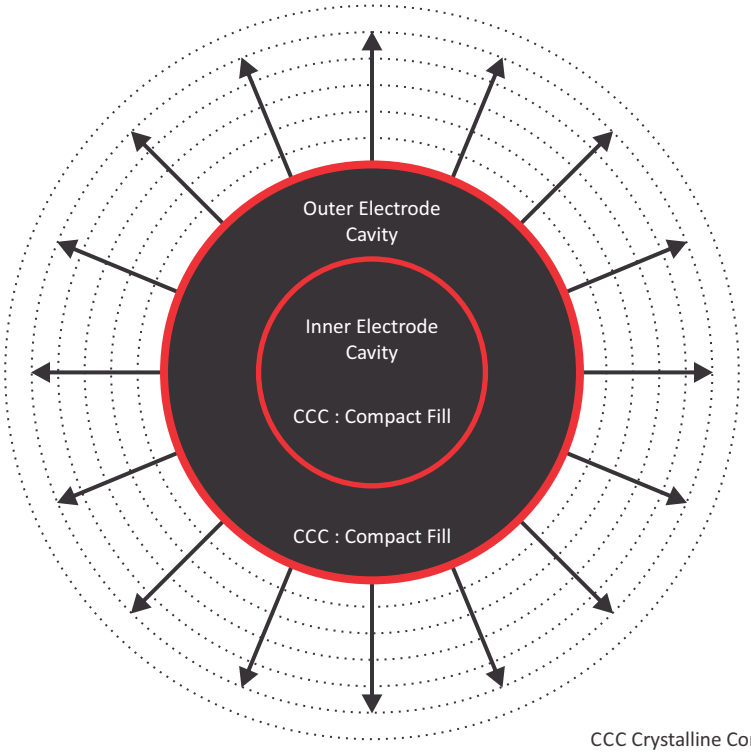
ISO9001:2008
Central Power Research Institute - India
MAHA DISCOM

TECHNOLOGY

Pipe In Pipe Technology PiP

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 : 19999

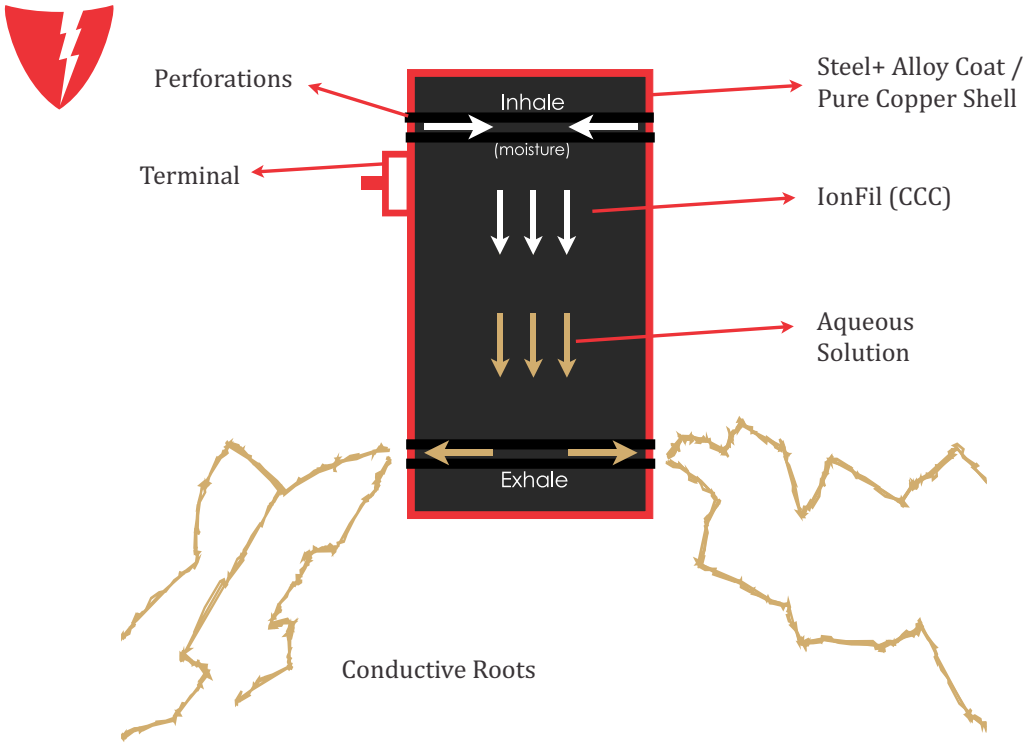
Available in the following sizes (vary with product)

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

Ionic Breathing Technology IBT

The IBT or the Ionic Breathing Technology has been developed to meet the needs of earthing in harsher environments. The design of the system has added a dynamic element in the functioning of the electrode.

The terminal end incorporates perforations which is complemented by similar perforations at the bottom end. The cavity in-between the electrodes is filled with IonFill which contains hygroscopic elements. These elements capture the moisture from the surrounding environment and 'inhale' it from the terminal end. This moisture mixes with the IonFill forming a concentrated aqueous solution which is electrically conductive and steadily flows down due to gravity, 'exhaling' out through the bottom end. Once exhaled, it flows through the soil and forms conductive roots around the electrode increasing the effective surface area.



CCC Crystalline Conductive compound

Description : Ashlok Ionic Breathing Technology

Available in the following sizes

Model	Length, m	Pipe Diameter (min) mm
ASEEL-19	2 & 3	48.4
ASEEL-39	2 & 3	76.2

Ashlok Designed Production Process ADP

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 COMPACT

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 ION

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.

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.

600.6 billion kWh

India's Electricity Consumption
2008 - CIA

Safe Earthing Electrode

ASEEL HDG | Hot Dip Galvanized

Hot dip galvanized for corrosion protection

Designed for fast fault current dissipation

Low maintenance earthing system

Easy & fast installation on site

Most suitable for soil condition with
pH value between 5.0 & 8.0

ADP PiP COMPACT

Model	Length, m	Inner Pipe Diameter (min) mm	Outer Pipe Diameter (min) mm
ASEEL-19	2 & 3	25.4	50.8
ASEEL-39	2 & 3	38.1	76.2

ASEEL CP | Copper Plated

Copper coating thickness of 100 - 250 + microns
as per UL Standards

Very high electrical conductivity
(5.96x107 s/m) and anti - corrosion properties

Long service life

Best suited for harsh environments

ADP PiP COMPACT

Model	Length, m	Inner Pipe Diameter (min) mm	Outer Pipe Diameter (min) mm
ASEEL-19	2 & 3	26.4	50.8
ASEEL-39	2 & 3	41.9	80

Safe Earthing Electrode

ASEEL ZC | 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

ADP PiP COMPACT

Model	Length, m	Inner Pipe Diameter (min) mm	Outer Pipe Diameter (min) mm
ASEEL-19	2 & 3	26.4	48.3
ASEEL-39	2 & 3	41.9	76

ASEEL AC | Alloy Coated

Specialized alloy coating of minimum 100 microns

Suitable for soil condition with pH value ranging from 3.5 to 12

ADP PiP COMPACT

Model	Length, m	Inner Pipe Diameter (min) mm	Outer Pipe Diameter (min) mm
ASEEL-19	2 & 3	26.4	48.3
ASEEL-39	2 & 3	41.9	76

Safe Earthing Electrode

ASEEL CB | Copper Bonded

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

Model	Length, m	Rod Diameter (min) mm
ASEEL-09	3	ON ORDER

ASEEL IC99 Ionic Breathing Electrode

Base material of steel coated with specialized alloy/ pure copper tube

Internal cavity charged with ionic compound

Top & bottom perforations for self breathing action

ADP IBT ION

Model	Length, m	Pipe Diameter (min) mm
ASEEL-19	2 & 3	48.3
ASEEL-39	2 & 3	76.2

COMPARISON

ASHLOK EARTHING SYSTEMS VS. CONVENTIONAL EARTHING

Construction: Pipe In Pipe Design **Corrosion Protection:** External (any one) - Copper Plating (80-100 microns) - Specialised Alloy Coating - Hot Dip Galvanized - Zinc Coated	**Construction:** Single Perforated Pipe **Corrosion Protection:** External - Inadequate galvanization (30-40 microns)
Internal - Anti Corrosive Crystalline Conductive Mixture (CCM) - CCM pressure filled in interior cavity of both pipes	**Internal** - NIL
Extra high current carrying capacity of up to 60 kilo ampere for 1.00 second as tested by Central Power Research Institute (CPRI).	Cross sectional area non uniform and comparatively much lower reducing current carrying capacity. No tests.
Electrode not in direct contact with soil. As a result, much longer system life and better efficiency.	Pipe in direct contact with soil. Corrosion prone and inefficient in the longer run.
Back Fill Compound (B.F.C) used around the electrode inside the earth pit to define the working environment of the earthing system. pH value ranges from 6.8 to 8.4. It is anti corrosive by nature and electrically conductive. Made up of environment friendly elements which is tested and approved by NABL labs.	Use of raw salt & charcoal accelerates oxidation (corrosion) of galvanized pipe leading to exposure of base material over a short period of time. This results in pre-mature failing of earthing system depending on various conditions like soil and climate.
Average effective life* of 15 - 20 years.	Average effective life of 2 to 5 years.
Good and consistent earth resistance values over time.	Good earth resistance values at time of installation. Values vary and increase over time due to fast degradation of earthing system.
Large & adequate surface area for efficient current dissipation.	Low/ inadequate surface area for current dissipation.

COMPARISON

ASHLOK EARTHING SYSTEMS VS. CONVENTIONAL EARTHING

Watering of earth pit is required during hot and long summer months for moisture addition.	Watering of earth pit required at regular intervals since earth pit has no moisture retaining B.F.C. Recharging of salt/charcoal over time mandatory.
Very low maintenance earthing system.	Extremely high maintenance with chances of pre-mature failure high.
Installation - fast installation - small area required for earth pit	Installation - time intensive installation process - larger area required
Production under ADP (Ashlok Designed Production) processes.	Manufactured on order by workshops in a disorganized sector.
- Quality control on raw material - Ashlok designed production machinery - Intensively trained production personnel to assess quality and strictly follow it - Follow QIQO code (Quality In Quality Out)	
Excellent after sales + service support across India & U.A.E.	No sales or service support post installation.

1. Ashlok is India's first professional earthing technology company in action since 1999.
2. The above comparison is based on Ashlok's Pipe In Pipe (PIP) design Safe Earthing Electrodes (S.E.E).
3. This includes HDP (Hot Dip Galvanized), CP (Copper Plated), ZC (Zinc Coated) and AC (Alloy Coated) electrodes.
4. Ashlok also trades in Copper Bonded Earth Rods which it delivers on order only.
5. In 2012, Ashlok introduced the 'Self Breathing' earth electrodes for extreme condition earthing requirements powered by the unique 'Ionic Breathing Technology' or IBT.

*The life & efficiency of an earthing system depends on various contributing factors like soil resistivity, climatic conditions, moisture availability, soil type, maintenance, installation and over all quality of earthing system. Ashlok earthing systems are designed to give the best possible working environment for an earthing system at a given site condition.

Back Fill Compounds

The soil in different parts of the world is different and so a BFC is required to give the earth electrode stable surroundings for functioning.

The Back Fill Compounds are ground enhancing compounds which are added (mixed with soil) around the electrode in the earth pit. Their basic properties help in reducing soil resistivity and improve electrical conductivity of the earthing system while retaining moisture.

Over the years we have understood the need for specific BFCs for different soil environments and with that understanding, we recommend the advanced range of BFCs manufactured by Baron Minerals Pvt. Ltd. Their products match our specifications and also meet our stringent quality requirements.

Electrodite

It houses all the properties that an ideal BFC should. Constituting natural elements, it reduces soil resistivity, helps retain moisture and is an efficient soldier in the dissipation of fault current. It is hygroscopic in nature and swells when it comes in contact with water thereby engaging constant contact between the electrode surface and soil which is crucial in the performance of an earthing system. Best for normal soil conditions.

TerraIon (Soil Ion Enhancer)

The latest addition to our earth specific range of BFCs, TerraIon is an electrolyte based Back Fill Compound which is powered by neutralizing and diffusing agents.

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.

Humedite

Moisture plays a very important role in the earthing system because the dissipation of fault current depends considerably on the capillary and electro osmotic action of soil.

Specifically developed for relatively dry conditions, Humedite captures moisture from the surrounding environment and 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 and is far less susceptible to shrinkage.

Conductolite

The electrical conductivity is one factor which decides how fast the fault current gets dissipated into the soil. The soil resistivity is a factor that works against the dissipation of current.

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 anti corrosive properties.

Installation Method

It is very important that the Ashlok earthing system is installed correctly for the system to work at its full efficiency. Upon proper installation, the system will give very good (minimum) earth resistance values compared to the conventional systems of earthing. It will require no maintenance under normal soil conditions except the normal watering of pits during hot summer seasons. The standard installation method description is packaged with every electrode manufactured by us.

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.

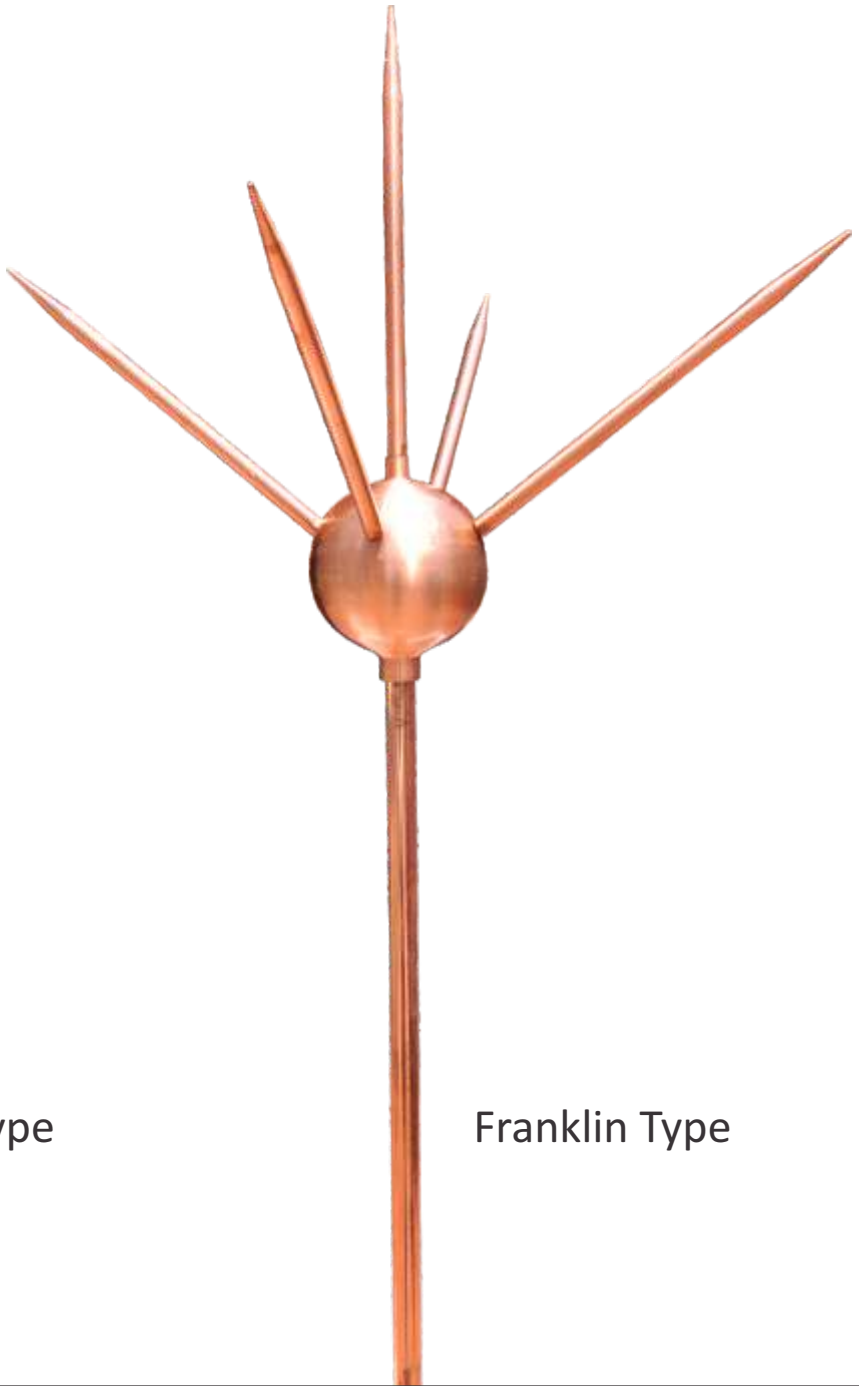
Lightning Arrestor

When the electrical potential between two clouds or between a cloud and the earth reaches a sufficiently high value of about 10,000V, the air becomes ionized along a narrow path and a lightning flash results which can extend up to multiple kilometers.

Buildings are protected from lightning by metallic lightning arrestors or surge arrestors extending to the ground from a point above the highest part of the roof. The arrestor has a pointed edge on one side and the other side is connected to a long thick copper strip/ wire (down conductor) which runs down the building and connects to the earthing system.

In the event of lightning falling on the building, the lightning arrestor directs the charge through the down conductor and into the earth through the earthing system - safely.

Zeus Type



Franklin Type

FREQUENTLY ASKED QUESTIONS

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?
The earthing system combines the application of the Safe Earthing Electrode and its corresponding specified Back Fill Compound. Both these components of the earthing system have to work in tandem to deliver the optimum earth results.

While the Safe Earthing Electrode forms the core of the system, the B.F.C forms the working environment for the electrode. The B.F.C is crucial primarily because soil conditions & properties vary from place to place. Therefore, you cannot use the electrode separately.

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.

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

ASHLOK

Examples of a few companies from our client list who have chosen the Ashlok way.

Airport Authority Of India
Air Force
Air Tel
All India Radio (Air)
Amar Raja Power Systems Limited
Ashok Leyland
Bhaba Atomic Research Centre
Bharat Electronics Limited
BHEL
BPCL
BSNL
Caiern Energy India Limited
Central Public Work Department
Cetex Petroleum
Chennai Port Trust
Cognizent Technology
Department Of Civil Aviation
Doordarshan
Ebene Cyber City, Mauritius
Engine Factory, Avadi
Ford India Limited
GE Power Control Limited
GTL Limited
HCL Technologies Limited
Heavy Vehicles Factory
Hero Honda Limited
Hewlett Packard
HPCL
Hyundai Motors (India) Ltd
Idea Cellular
India Today
IIT
IOCL
Indian Railways
IGCAR Kalpakkam
Infosys Technologies
Intel Technologies (I) Ltd
International Tech Park
ISRO
Jindal Vijayanagar Steel Ltd
Jindal Aluminum Ltd
Kerala Electricity Board
L&T
Lucas TVS
LG Electronics
Mazgaon Port Trust
Military Engineering Services
Motorola, Bangalore
MRF Limited
NAL, Bangalore
NALCO
NTPCL
Nissan Motors
Nokia
ONGC
Rane TRW Steering
Rourkela Steel Plant (Rsp)
Schenck Jenson & Nicholson
Siemens
Shell India Limited
Standard Chartered Bank
State Bank Of India
TADA, Andhra Pradesh
Tata Chemicals Limited
Tata Tele Services Limited
Taj (Group) Hotels
TNEB
Texas Instruments
Tidel Park, Chennai
Toyota
Tube Investments Of India LTD
United Telecoms Limited
Ultratech Cements
VSNL
Vikram Sarabhai Space Centre
Zuari Cements

why?

ASHLOK

India's first professional earthing company founded in 1999

Pioneered India's earthing revolution by designing the pipe in pipe technology

Set industry standards for earthing throughout the country with the T-19 and T-39

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

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