



ELECTROTHERM® (INDIA) LTD.

CORPORATE OFFICE

72, Palodia, (Via Thalje)
Ahmedabad 382 115, Gujarat (INDIA)
Tel +91 2717 234553 / 57, 2717 660550
Fax +91 2717 233322
Email pipe@electrotherm.com (Domestic)
Email dipexport@electrotherm.com (International)
Web www.electrotherm.com/dipipe

WORKS

Survey No.325, N.H. No.8A, 310 KM Stone
Nr. Toll Naka, Village - Samakhiyali
Tal. - Bhachau 370 140
Dist. - Kutch, Gujarat (INDIA)
Tel +91 2837 283328, 283344, 283385
Fax +91 2837 283329

BRANCH OFFICES IN INDIA

- Bengaluru
- Bhopal
- Chandigarh
- Chennai
- Delhi
- Hyderabad
- Jaipur
- Kolkata
- Mumbai
- Nagpur
- Pune

This manual has been compiled by ELECTROTHERM (INDIA) LTD. to serve as a ready-reckner for Engineers & Contractors. It consists of comparative analysis of pipeline installations for various situations. However, the information contained in the manual cannot be construed as an exhaustive statement on pipeline design, installation or other technical details. Any inference or conclusions drawn are based on assumptions which may not necessarily be suitable for every installation. Moreover, users must check for the conditions specific to the installation and rely more on prior experience.

Users in their own interest must refer to applicable standards, statutory requirements and governing laws in force prior resorting to purchase.

The company is not liable to users who rely on whole or on part of this manual. It is just a reference guide and not an offer for trade.

No part of this manual can be reproduced without the prior consent of ELECTROTHERM (INDIA) LTD. The company reserves the right to make changes to the manual at any time without notice.



All engineering is
but imitation of nature

ELECTROTHERM® DI PIPES

The Preferred Pipes

WATER



Human Lives

Water is one of the most basic of all needs and we cannot live for more than a few days without it. Yet, most people take water for granted and waste it needlessly without realising that clean water is a very limited resource.

More than 1 billion people around the world have no access to potable water and over 2.5 billion do not have adequate sanitation services. Over 2 million people die each year because of unsafe water and most of them are children!

*Let's dedicate ourselves
to Save Human Lives*

Contents

Water Solution	01
Introduction & Value System	02
Properties & Advantages of Ductile Iron Pipes	03
Process Flowchart	04
Product Portfolio	05
Manufacturing Process	06
Sketch of Ductile Iron Pipe	10
Cross-Sectional Diagram	11
ISO 9001 : 2008 Quality Systems	12
Transport, Handling & Storage	13
Pipe Repair & Cutting	15
Push-on-joint System	16
D I Pipe Installation Guidance	17
D I Pipe Assembly	18
D I Pipe - Polyethylene Encasement	19

ELECTROTHERM®
Water Solution

ELECTROTHERM, since its inception in 1983, has been known for bringing state-of-the-art technology-driven innovative products to the market, be it Induction Melting Furnace, Eco-friendly Electric Vehicles or Solar Process Heating Systems.

With its foundation strongly rooted in metallurgy, ELECTROTHERM now brings to the market superior quality DUCTILE IRON PIPES.





Value System

Vision

- To be a nimble, dynamic and admired Group with global presence
- To achieve profitable growth through customer-centric products, services and technological leadership

Mission

- Always innovate for a better tomorrow

Core Values

- Mutual Respect and Trust
- Integrity

Value Drivers

- Empowerment
- Performance-oriented culture
- Customer success
- Technological differentiation
- Social Responsibility and Environment

Introduction

ELECTROTHERM (INDIA) LIMITED has been a pioneer in engineering in the metal melting industry since 1983. ELECTROTHERM is the only Indian company to have indigenously developed world-class technologies. ELECTROTHERM today is a multi-divisional ISO 9001:2008 Certified company. It has developed robust processes with inbuilt learning and continuous improvements in every job performed. Engineering innovations for the global metal melting industry have been possible due to our focused and dedicated employees along with State-of-the-art manufacturing facilities and R&D centre at Kutch in Gujarat.

A modern manufacturing facility is strategically located on the West Coast of India at Samakhiyali, Dist. Kutch in the State of Gujarat. ELECTROTHERM has the capacity to manufacture 2, 00,000 MT D I Pipes per annum. The D I Pipes are manufactured in sizes DN 80 to DN 1200 in K7 & K9 Class for various applications conforming to various national & international standards. The manufacturing unit is located close to Mundra / Kandla port and offers locational advantage to international clients.

History of Ductile Iron Pipes

Back in 1948, it was observed that addition of magnesium in the molten pig iron could significantly alter the graphite structure in cast iron. In the initial microstructure of grey cast iron, graphite was in the form of flakes but assumed a spheroidal /nodular shape after the addition of magnesium. The mechanical properties of ductile iron as compared to grey cast iron show superior tensile strength, yield strength, ductility and impact resistance. The use of ductile iron has grown at a rapid rate over the past 50 years. The much improved properties were recognized to be of particular benefit to the centrifugal pipe industry and most of the pipe production is now in ductile iron.

ELECTROTHERM®

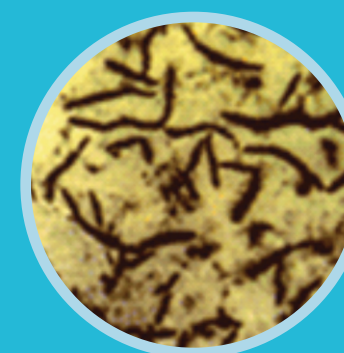
Properties & Advantages of Ductile Iron Pipes

PROPERTIES OF DUCTILE IRON PIPES

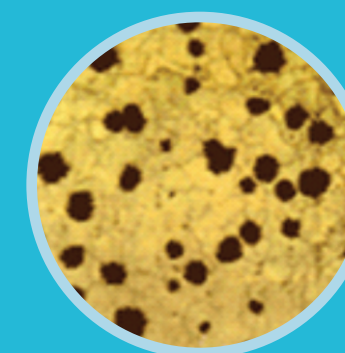
Tensile Strength	Min. 420 Mpa
Elongation at Break	10% Max.
Hardness	230 BHN
Elastic Co-efficient	$1.7 \times 10^4 \text{ Kg/mm}^2$
Density	7050 Kg/m ³
Bending Strength	Over 50 Kg/m ³
Yield Strength	300 Mpa

ADVANTAGES OF DUCTILE IRON PIPES

- High tensile strength and high yield strength
- High impact resistance and fatigue resistance
- High elongation (ductility)
- Good resistance to handling / transportation damage
- Simple Push-on type jointing system
- Offers considerable joint deflection
- Even semi-skilled workers can join the pipes
- Special joints available to resist longitudinal joint withdrawal
- Reliable and cost effective internal and external corrosion protection
- Resistant to stray current effect due to electrical discontinuity at joints
- Impermeable to gas and organic contaminant
- Imported back-fill is normally not required
- Full range of ductile iron fittings available
- Easy pipe location when buried
- Under pressure connections can be provided



MICROSTRUCTURE OF
GREY CAST IRON

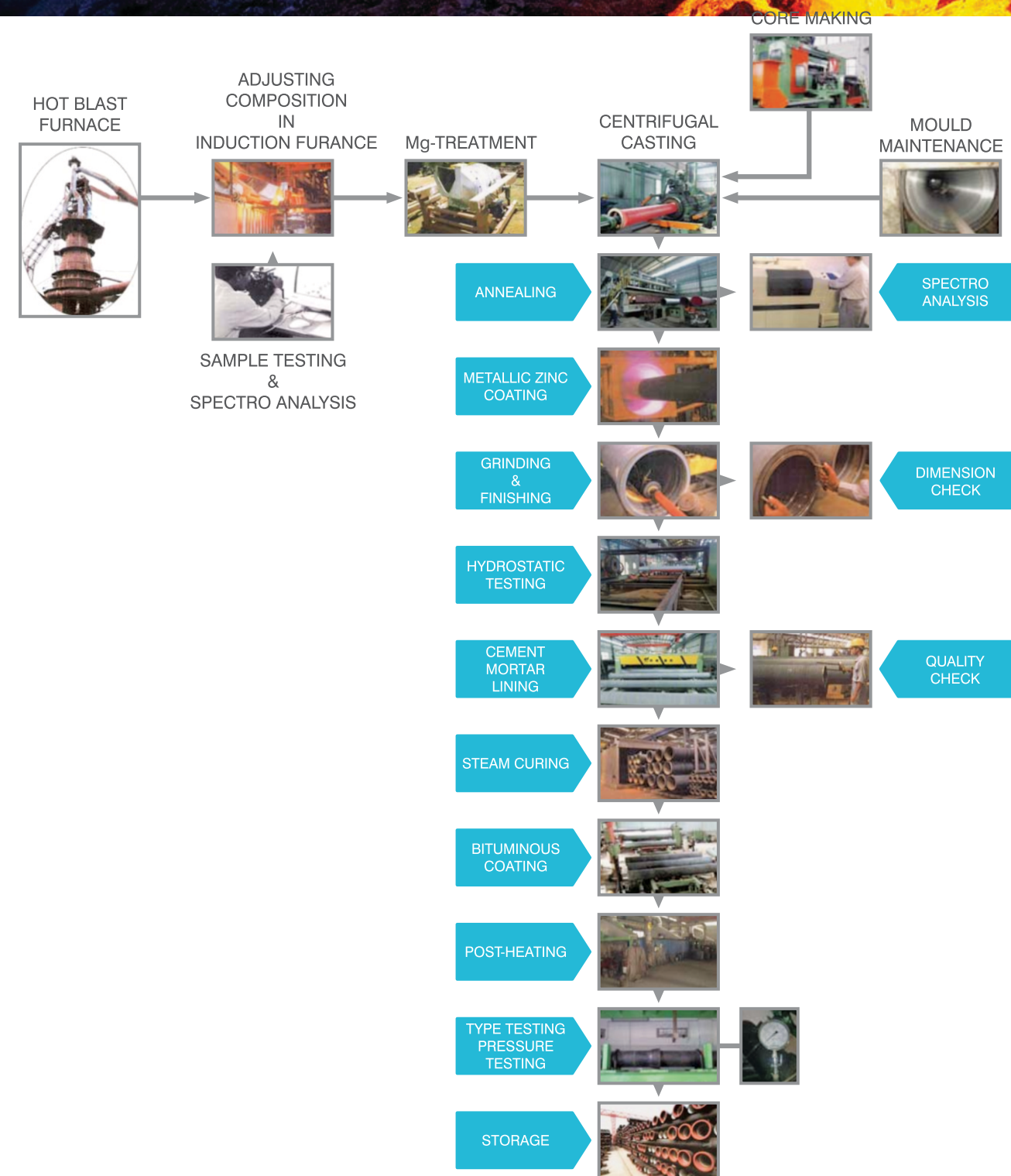


MICROSTRUCTURE OF
DUCTILE IRON



SAMPLE TESTING &
ANALYSIS

ELECTROTHERM®
Process Flowchart



ELECTROTHERM®
Product Portfolio

ELECTROTHERM is committed to exceed customer's expectations in quality, supply and service. The range comprises of Ductile Iron Pipes suitable for Push-on-joints as per BS EN 545, BS EN 598, ISO 2531 & IS 8329.

ELECTROTHERM (India) Ltd. is the first and only Indian manufacturer of DI Pipes having entire size range from DN 80 - DN 1200 (Class K7 & K9) conforming to IS 8329.

PFA - Allowable Operating Pressure
PMA - Allowable Maximum Operating Pressure
PEA - Allowable Test Pressure

Socket & Spigot Pipes (Class K7 & K9)

Nominal Diameter (mm)	Class	Standard length in meter
80 to 1200	K7 & K9	5.5 Meters & 6.0 Meters

DN mm	External Dia. DE	Wall thickness (e) in mm	Wall thickness (e) in mm	Internal Pressure Rating					
				PFA (Max) MPa		PMA MPa		PEA MPa	
				K7	K9	K7	K9	K7	K9
80	98	5.0	6.0	0.8	6.4	1.25	7.7	1.75	9.6
100	118	5.0	6.0	0.8	6.4	1.25	7.7	1.75	9.6
125	144	5.0	6.0	0.8	6.4	1.25	7.7	1.75	9.6
150	170	5.0	6.0	0.8	6.4	1.25	7.7	1.75	9.6
200	222	5.0	6.3	0.8	6.2	1.25	7.4	1.75	7.9
250	274	5.3	6.8	0.8	5.4	1.25	6.5	1.75	7.0
300	326	5.6	7.2	0.8	4.9	1.25	5.9	1.75	6.4
350	378	6.0	7.7	0.8	4.5	1.25	5.4	1.75	5.9
400	429	6.3	8.1	0.8	4.2	1.25	5.1	1.75	5.6
450	480	6.6	8.6	0.8	4.0	1.25	4.8	1.75	5.3
500	532	7.0	9.0	0.8	3.8	1.25	4.6	1.75	5.1
600	635	7.7	9.9	0.8	3.6	1.25	4.3	1.75	4.8
700	738	9.0	10.8	0.8	3.4	1.25	4.1	1.75	4.6
750	790	9.7	11.3	0.8	3.3	1.25	3.9	1.75	4.4
800	842	10.4	11.7	1.0	3.2	1.5	3.8	2.00	4.3
900	945	11.2	12.6	1.0	3.1	1.5	3.7	2.00	4.2
1000	1048	12.0	13.5	1.0	3.0	1.5	3.6	2.00	4.1
1100	1152	14.4	14.4	2.9	2.9	3.5	3.5	4.00	4.0
1200	1255	15.3	15.3	2.8	2.8	3.4	3.4	3.90	3.9

(Source: IS 8329 Standard)

ELECTROTHERM®

Manufacturing Process of Ductile Cast Iron Pipe
Conforming to IS 8329, BS EN 545, BS EN 598 & ISO 2531

1. METAL SECTION

Ductile Iron, also known as Spheroidal Graphite (SG) iron or nodular iron is made by treating liquid iron of suitable composition with pure magnesium before casting. This promotes the participation of graphite in the form of discrete nodules instead of interconnected flakes. The nodular iron so formed has high ductility, allowing casting to be used for pipe making.

The hot metal tapped from induction furnace is transferred into the turning ladle. Pure magnesium is then charged into the reaction chamber through a charging mouth. The hydraulic system provided will tilt the turning table into vertical position, thus allowing molten iron to react with Magnesium. The reaction is allowed for 10 minutes. Once the reaction is complete, the hot metal is transferred to the pouring machine for casting the Ductile Iron Pipes.

2. MOULD SECTION

Water – cooled metal mould process (De-Levoud Process) has been envisaged for centrifugal casting machines for

production of Ductile Iron Pipes from DN 80 to DN 1200. After the spheroidization process, the SG iron is directed towards the centrifugal pouring-cum-casting machine. Molten SG iron is transferred to a quadrant type ladle and from its bottom into a rotating pipe mould with a water jacket inside the centrifugal casting machine.

3. CORE MAKING SECTION

Head core made up of resin coated sand serves to seal the socket end of the mould and form the inside of the socket end of the pipe. As the mould rotates evenly, centrifugal force distributes the metal evenly, forming the pipe wall. Centrifugal casting machine containing the mould is mounted on a set of wheels, which move on a track.

4. SPINNING SECTION

Molten metal is poured into the spinning mould by the means of a pouring trough. As the spinning mould is retracted from the pouring trough, a uniform layer of metal is deposited on the mould. Hydraulically operated extraction devices are provided for easy removal of the moulded pipe.

Water jacket is provided for circulating water continuously around the mould thus cooling it uniformly.

5. HEAT TREATMENT SECTION

The cast pipes are heat treated in an annealing furnace to optimize the strength impulses and ductility of the pipes. The annealing furnace will be of a continuous chain type and will be LDO fired. Annealing furnace will have a pre-heating zone, soaking zone, fast cooling zone and controlled cooling zones. Pipes entering pre-heating zone at 600 °C will be heated to 940 °C. Pipes then enter the soaking zone, where they will be maintained at 940 °C followed by cooling to 780 °C in fast cooling zone. Pipes finally enter controlled cooling zone, where they are cooled to 600 °C. Pipes will be moving inside AF on casting iron rails and pushed by fingers on closed dog type chain.

6. ZINC COATING SECTION

Zinc coating is done with a spray process with the help of Zinc spray guns which ensure smooth and uniform Zinc

deposition. Zinc coating gives stable protective layer of insoluble zinc salt. It provides active protection due to the galvanizing effect, thus increasing corrosion resistance of the pipe in use. Prior to the application of zinc, the pipe surface is kept dry and free from rust or non-adhering particles or foreign matter such as oil or grease. The metallic zinc coating covers the external surface of the pipe and provides a dense, continuous and uniform layer. The uniformity of the coating can be checked by inspection. The mass of zinc is not less than 130 g/m². The purity of zinc is at least 99.99%. The finishing layer uniformly covers the whole surface of the metallic zinc layer and remains free from defects such as bare patches or lack of adhesion. The thickness of the finishing layer remains 70 microns and the local minimum thickness not less than 50 microns. Special coating like extra zinc coating can also be provided.



METAL SECTION



MOULD SECTION



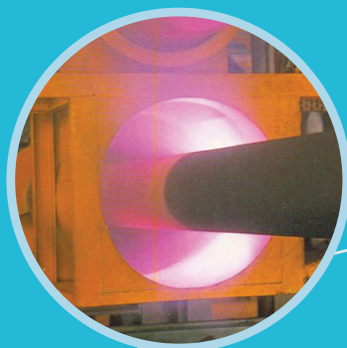
CORE MAKING SECTION



SPINNING SECTION



HEAT TREATMENT SECTION



ZINC COATING SECTION

ELECTROTHERM®

Manufacturing Process of Ductile Cast Iron Pipe
Conforming to IS 8329, BS EN 545, BS EN 598 & ISO 2531

7. INTERNAL GRINDING SECTION

Pipe grinding facilities are provided for cleaning the socket, spigot and the inner wall of the pipe. Spigot end cutting and chamfering is carried out during the grinding process.

8. HYDROSTATIC PRESSURE TESTING SECTION

All the pipes are tested hydrostatically at a pressure depending on the size of Ductile Iron Pipe, as pressure depends on the class of the pipe. Pipes are filled with water until they are full and are then pressurized to a predetermined value of pressure for a fixed duration of time. To perform the test, pressure is applied internally and is steadily maintained for a period of 10 seconds. The pipes withstand the pressure test and shall not show any sign of leakage, sweating or defects of any other kind. The total water in circulation is 30 m³/hr. The water used for hydro-testing

is re-circulated after settling at settling tank provided in this section. About 29 m³/hr of water is reclaimed from the settling tank and 1 m³/hr is required as make up water.

9. CEMENT MORTAR LINING SECTION (CML)

All Ductile Iron Pipes are provided with internal cement mortar lining. The mortar shall contain at least 1 part of cement to 3.5 parts of sand by mass (i.e. S/C ≤ 3.5 by mass in the mortar). Lining thickness will be 3 mm for DN 80 – DN 300, 5 mm for DN 350 – DN 600 and 6 mm for DN 700 – DN 1200 pipes. Equipment required for cement lining of pipes consists of cement batching, mixing and material transfer equipment as well as cement and sand silos, cement lining machine along with traversing equipment etc. Internally lined Ductile Iron Pipe is cured in the curing oven. Special types of linings are also provided like CML with Bitumen Seal Coat

and CML with Epoxy Coat. Lined Ductile Iron Pipe is cured in the curing oven. Special types of linings are also provided like CML with Bitumen Seal Coat and CML with Epoxy Coat.

10. STEAM CURING SECTION

Steam required for curing oven is drawn from the boiler envisaged exclusively for this purpose.

11. INTERNAL POLISHING SECTION

After steam curing, internal polishing of CML is done for a smoother surface which helps in maintaining higher flow rate and 'C' value which helps in saving pumping cost as well.

12. BITUMINOUS COATING SECTION

The pipes are preheated in a hot chamber to dry any moisture from steam curing and to give better adherence

to paint. Bituminous paint is applied by a spraying machine which ensures uniform coating of the Ductile Iron Pipe. Coating is applied on clean surface i.e. dry and free from dust. It must be smooth and tenacious and hard enough not to flow when exposed to a temperature of 65 °C but not so brittle at a temperature of 0 °C as to chip off when scribed with a penknife. The mean thickness of the coating shall not be less than 70 µm and the local minimum thickness shall not be less than 50 µm. For corrosive soils, excess bituminous coating can be provided.



INTERNAL GRINDING
SECTION



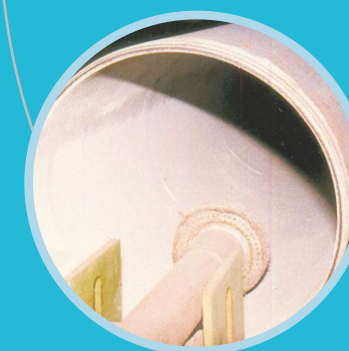
HYDROSTATIC PRESSURE
TESTING SECTION



CEMENT MORTAR
LINING SECTION (CML)



STEAM CURING
SECTION



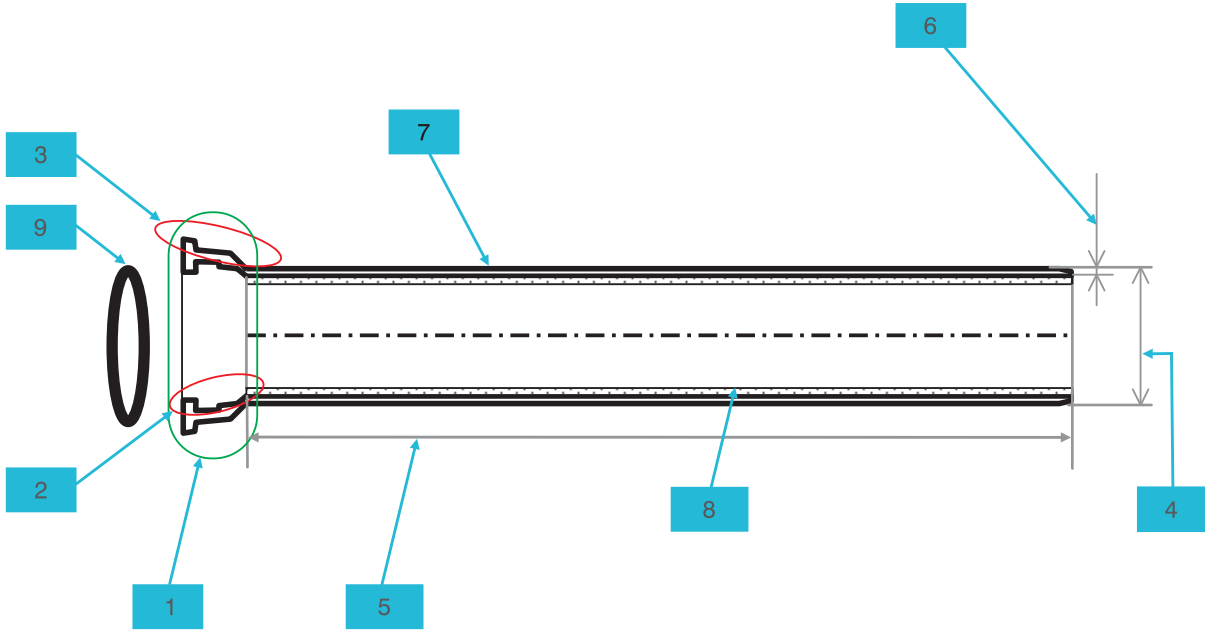
INTERNAL POLISHING
SECTION



BITUMINOUS COATING
SECTION

ELECTROTHERM®

Sketch of Ductile Iron Pipe



1. Push-on-joint System
2. Inside Dimension of Socket
3. Outside Dimension of Socket
4. External Diameter of D I Pipe
5. Nominal Length of the D I Pipe (5.5 / 6.0 m)
6. Wall Thickness (Class K7 & K9)
7. External Coating (Zinc + Bitumen)
8. Internal Cement Mortar Lining (CML)
9. Rubber Gasket

ELECTROTHERM®

Cross-sectional Diagram of Ductile Iron Pipe

1. ZINC COATING

Coating of metallic Zinc at the rate of 130 g/m² is provided and varies depending on how corrosive the external environment is. This coating is provided on the bare metal surface which already has an inner layer of iron oxide developed during the casting process which delays the process of corrosion. Zinc coating is done immediately after heat treatment on the hot pipe. Therefore, sand / shot blasting is not required and oxide coating is never removed.

2. CEMENT MORTAR LINING

CML (Cement Mortar Lining) in a Ductile Iron Pipe has a service record unequalled in the Water Works Industry. Since the first field-applied Grey Iron Pipe in 1922, CML has undergone numerous manufacturing improvements. Today, CML is applied either by the centrifugal process or the projection method, thus maintaining excellent quality control of the CML operation. The linings produced by these methods are dense, smooth and offer very little frictional resistance to the flow of water.

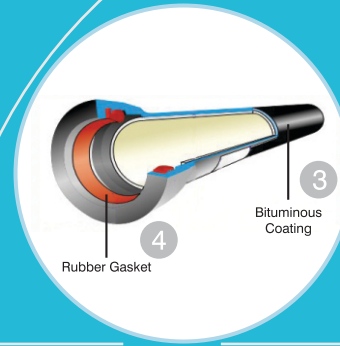
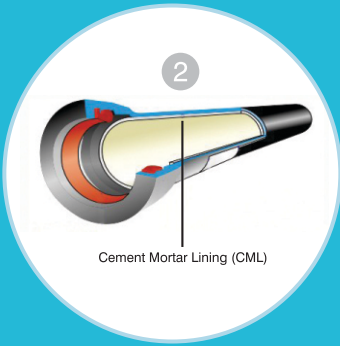
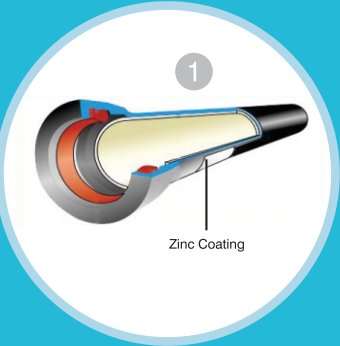
Cement mortar lined Ductile Iron Pipe provides a Hazen Williams Flow Co-efficient or 'C' Value of 140 - a realistic value that is maintained in the pipe.

3. BITUMINOUS COATING

A finishing layer of Bituminous paint is applied to protect the pipe which further increases the life of the Ductile Iron Pipe.

4. RUBBER GASKET

The most popular, quickest and easiest way to assemble Ductile Iron Pipe in underground applications is the use of Push-on-joint. This joint consists of a single rubber gasket made of Ethylene Propylene Diene Monomer (EPDM) or Styrene Butadiene replaced in a groove inside the socket at the bell end of the pipe. After lubricating the joint the beveled end of the pipe is pushed to pass the gasket, compressing it and forming a pressure-tight and dependable seal. Assembly of the Push-on-joint is simple, fast and needs no skilled labour.





ELECTROTHERM®
ISO 9001 : 2008 Quality Systems

ELECTROTHERM (INDIA) LIMITED (an ISO 9001 : 2008 company) has high quality systems and total commitment to quality. Quality features are developed to ensure each and every step of the manufacturing process benefits superior metallurgy and process technologies.

Latest technology is used to manufacture high quality Centrifugally Cast (Spun) Ductile Iron Pressure Pipes and modern equipments are installed to detect and prevent any non-conformance during production and also to prevent its recurrence. This helps us to upgrade the technology whenever required and improve techniques, systems, procedures and carry out continuous innovation to meet the customer's changing needs. Also, it helps us to create most congenial and healthy working environment for attainment of quality goals with excellence.

Quality systems are properly documented to support the internal quality audits and skilled human resources imbued with strong sense of values and commitment to quality.

Computer supported statistical process control is provided on all major processes such as Spectrometer Analysis, Tensile Test, Brinell Hardness Test.

Quality Certifications



**BS ISO 2531
KM 564174**



**BS EN 545
KM 564172**



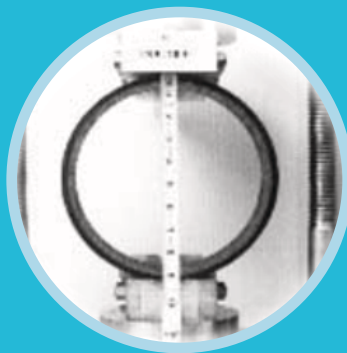
**BS EN 598
KM 564173**



SPECTROMETER
ANALYSIS



BRINELL
HARDNESS TEST



TENSILE TEST

Transport, Handling & Storage

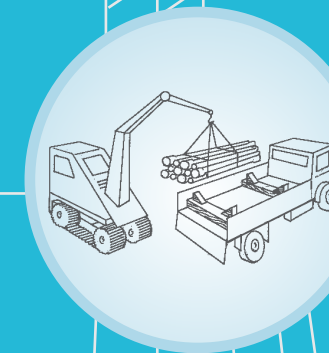
TRANSPORT

All pipes must be secured to the lorry or railway wagon using strips during transit to prevent movement and to minimize damage to the coatings and lining. The pipes may be loaded on the vehicle in a bundle, pyramid or straight-sided formation. Pipes of DN 80 - DN 250 are supplied in bundles or as single pipes as per customer choice. Ductile Iron Pipes of DN 300 - DN 1200 are dispatched as single pipes. Bundles are the preferred means for transporting pipes as the pipe-to-pipe contact is minimized and also speeds up pipe handling and transport. The pyramid loading can be built by resting the pipe between pairs of pipes in the preceding layer with the socket in the successive layers reversed. Straight-sided loading shall only be used where vehicles have dedicated supports along the sides of the platform, where special cradles separating the layers are

used to ensure no metal-to-metal contact occurs between two rows of pipes.

HANDLING

Pipes are heavy objects and care should be taken to ensure that the quality of pipes is not impaired during handling. When fork lift trucks are used for unloading pipes, ensure that the fork blades do not damage the pipe or external protection. Lift the bundles one by one using slings which surround the load and not by means of their retaining straps. When cranes are used for off-loading individual pipes, slings or lifting beams, the purpose designed padded hooks should always be used. Under no circumstances should the wire ropes, chains, unpadded metal hooks or lifting hooks to be used directly in contact with the pipe. Smaller sizes up to DN 400 can be fitted with wide fabric slings.



Transport, Handling & Storage

Where a crane is not available and if the mass permits (normally up to DN 250) then individual pipes should be off-loaded by rolling them down a ramp made of timber skids extending from the vehicle side to the ground. Suitable steadying ropes should be used to prevent the pipes from rolling down at excessive speed and striking other pipes or objects on the ground.

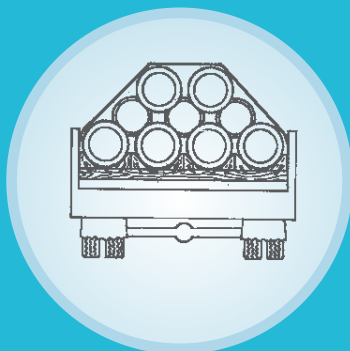
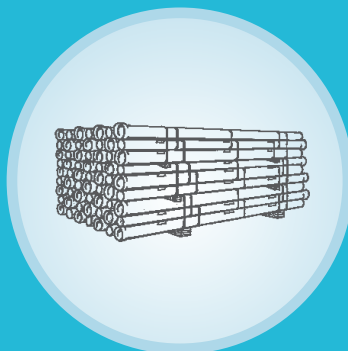
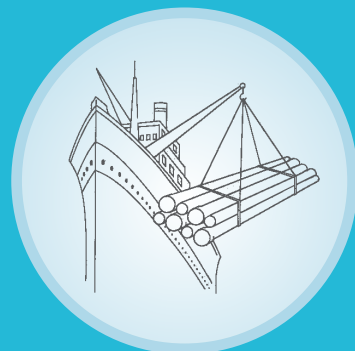
Important - Never let the pipe fall on the floor, even if it is over tires or sand.

STORAGE

On arrival at the storage site, the materials should be inspected and if there is any damage done to the internal or external coating and jointing of the pipes, the surface should be repaired, preferably before stacking.

Bundled pipes are provided with base timbers and can be laid directly on good, leveled and hard standing surface. Bundles can be stacked one over the other with the axes of pipe parallel.

Non-bundled pipes should be stacked on a base of raised wooden battens at least 100 mm thick x 225 mm wide. The battens should be positioned approx. 600 mm from each end of the pipe. Large number of layers should not be formed to avoid deformation of bottom layers.



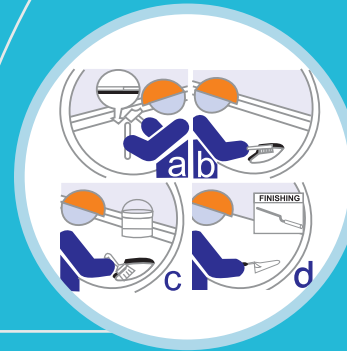
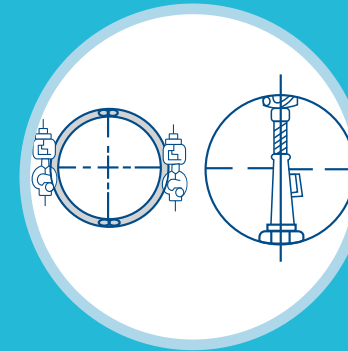
Pipe Repair & Cutting

PIPE REPAIR & CUTTING

Ductile Iron Pipes are not susceptible to handling and transport damage. However, mishandling can damage protective coatings, linings, deform jointing surfaces and may create ovality. All pipes should be examined for ovality, damage and other defects immediately before installation. Measure the length of the major axis. If it exceeds the dimensions specified, corrections would be required prior to jointing. Spigots to be joined into sockets must be chamfered to give a similar profile as the original Spigot end.

ELECTROTHERM REPAIR KIT

ELECTROTHERM always focuses on its customers. Therefore, we ensure and assure all our buyers to enjoy the Electrotherm repair kit on FOC basis (Free of Cost). The kit includes Portland cement and brush, so in case any CML (Cement Mortar Lining) needs attention, the repair kit could be used on-site. Repair manual guidelines should be read before using repair kit for proper repairing of CML as per a, b, c, d in the below diagram.



ELECTROTHERM® Ductile Iron Pipe with Push-on-joint System

ELECTROTHERM's Ductile Iron Pipes with socket-spigot Push-on-joint System is developed and designed to ensure perfect tightness resulting from contact pressure between the rubber gasket inserted in the socket and the spigot end of the connected pipes.

When the pipeline is in operation, the tightness of the whole Push-on-joint System is further strengthened by the water pressure.

The Push-on-joint System allows some angular deflection (as shown below) and provides some flexibility to the pipeline with no interference on the tightness.

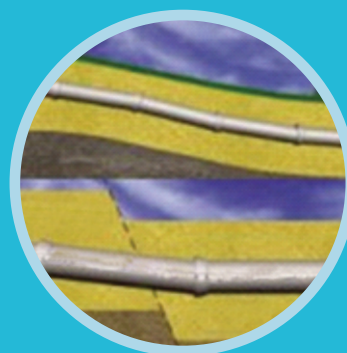
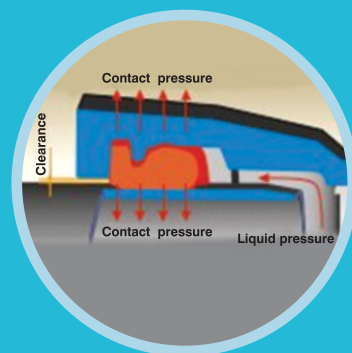
Without any risk of losing its tightness, the pipeline can adjust to the movements of soil. This Push-on-joint System is also particularly recommended in areas with unstable soils and seismic activities.

The Push-on-joint System, due to the allowable angular deflection, enables to adjust the pipeline route design with

a higher radian and subsequently optimize construction cost and time.

The Push-on-joint System, due to the rubber gasket isolating action, prevents early corrosion of pipelines resulting from stray electric currents.

Ductile Iron Pipelines combine outstanding mechanical properties and exceptional functional features of the Push-on-joint System, allowing a safe and long-term operation even in the most difficult environments such as heavy road traffic, unstable soil, seismic areas or areas with stray electric currents.



Installation Guidance - Buried Pipeline

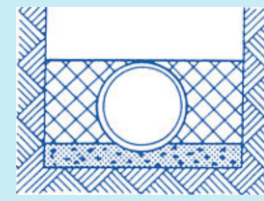
► TYPE 1

Flat-bottom trench
Loose backfill



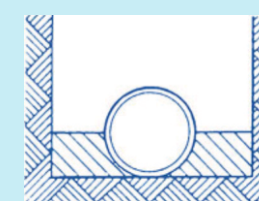
► TYPE 4

Pipe bedded in sand, gravel or crushed stone to depth of 1/8 pipe diameter, 4-inch minimum
Back-fill compacted to top of pipe



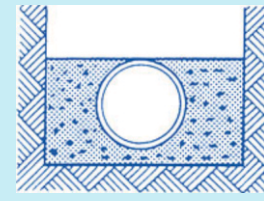
► TYPE 2

Flat-bottom trench
Backfill lightly consolidated to centre-line of pipe



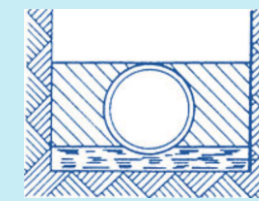
► TYPE 5

Pipe bedded in compacted granular material to centreline of pipe
Compacted granular or select material to top of pipe



► TYPE 3

Pipe bedded in 4-inch loose soil
Backfill lightly consolidated to top of pipe



► Note :

'Flat-bottom' is defined as undisturbed earth
'Loose soil' or 'Select material' is defined as native soil excavated from the trench, free of rocks, foreign materials and frozen earth

Ductile Iron Pipe Assembly

STEP 1

Thoroughly clean the bell with special attention to the gasket recess. Remove any foreign material or excess paint. Clean the spigot or bevelled plain end and remove any sharp edges with a standard file.



STEP 2

After making sure that the correct gasket is being used, insert it into the recess in the bell with the small end of the gasket facing the bell face. Ensure that the gasket fits properly.



STEP 3A, 3B

Apply lubricant to the inside surface only of the gasket, making sure that the entire surface is coated. Apply a generous coating of lubricant to the beveled portion of the plain end.



STEP 4

Guide the plain end into the bell and while maintaining a straight alignment, push the plain end into the bell socket. Once the joint is assembled, necessary deflection can be accomplished. When assembly is complete, the bell face should be aligned between the two white depth rings.



INSTALLATION COMPLETE

Small pipe can be assembled with the use of a long bar, while larger pipe will require additional power, such as a jack or come-along.

A backhoe may be used to assemble pipes of intermediate and large sizes. The plain end of the pipe should be carefully guided by hand into the bell of the previously assembled pipe. The bucket of the backhoe may then be used to push the pipe until fully seated. A timber header should be used between the pipe and backhoe bucket to avoid damage to the pipe.



Polyethylene Encasement

Polyethylene encasement has proved to be an effective corrosion-protection system for millions of feet of Ductile Iron Pipes. Today, it is the most widely used method of protecting Ductile Iron Pipes installed in corrosive environments.

Polyethylene encasement involves simply wrapping the pipe with a tube or sheet of polyethylene immediately before installing the pipe. It is easy for construction crew to install on-site and is by far the most economical way to protect Ductile Iron Pipes.

Polyethylene encasement is a passive protection system and once installed it requires no monitoring, maintenance or supervision.

ADVANTAGES OF POLYETHYLENE ENCASEMENT

- Proven effective protection
- Provides a uniform environment for the pipe, virtually eliminating galvanic corrosion cells
- Protects the pipe without the formation of concentration cells at coating holidays
- Does not deteriorate underground
- Is easily repaired with polyethylene adhesive tape, if damaged
- Does not require any special handling or packaging during shipment
- Is inexpensive
- Is simple to install
- Requires no additional manpower
- Requires no maintenance or monitoring



Clientele

- Ahmedabad Municipal Corporation, Gujarat
- Bangalore Water Supply & Sewage Board, Karnataka
- Gujarat Water Supply & Sewerage Board, Gujarat
- Haryana Urban Development Authority, Haryana
- Himachal Pradesh I &PH Department, Himachal Pradesh
- Hyderabad Metropolitan Water Supply & Sewerage Board, Andhra Pradesh
- Kerala Water Authority, Kerala
- Kolkata Metropolitan Development Authority, West Bengal
- Madhya Pradesh Laghu Udyog Nigam Ltd., Madhya Pradesh
- Maharashtra Jeevan Pradhikaran, Maharashtra
- PHE Department - Haryana, Jammu & Kashmir, Orissa, Rajasthan, West Bengal
- Surat Municipal Corporation, Gujarat
- Uttar Pradesh Jal Nigam, Uttar Pradesh
- Uttarakhand Peyjal Nigam, Uttarakhand
- Leading EPC Contractors like L&T, SPML, Gammon, IVRCL, Ramky, NCC, MEIL, Shriram EPC and many more.

RESPONDING
TO THE WORLD'S
NEED, WITH
RESPONSIBILITY





**RESPONDING
TO THE W🌐ORLD's
NEED, WITH
RESPONSIBILITY**