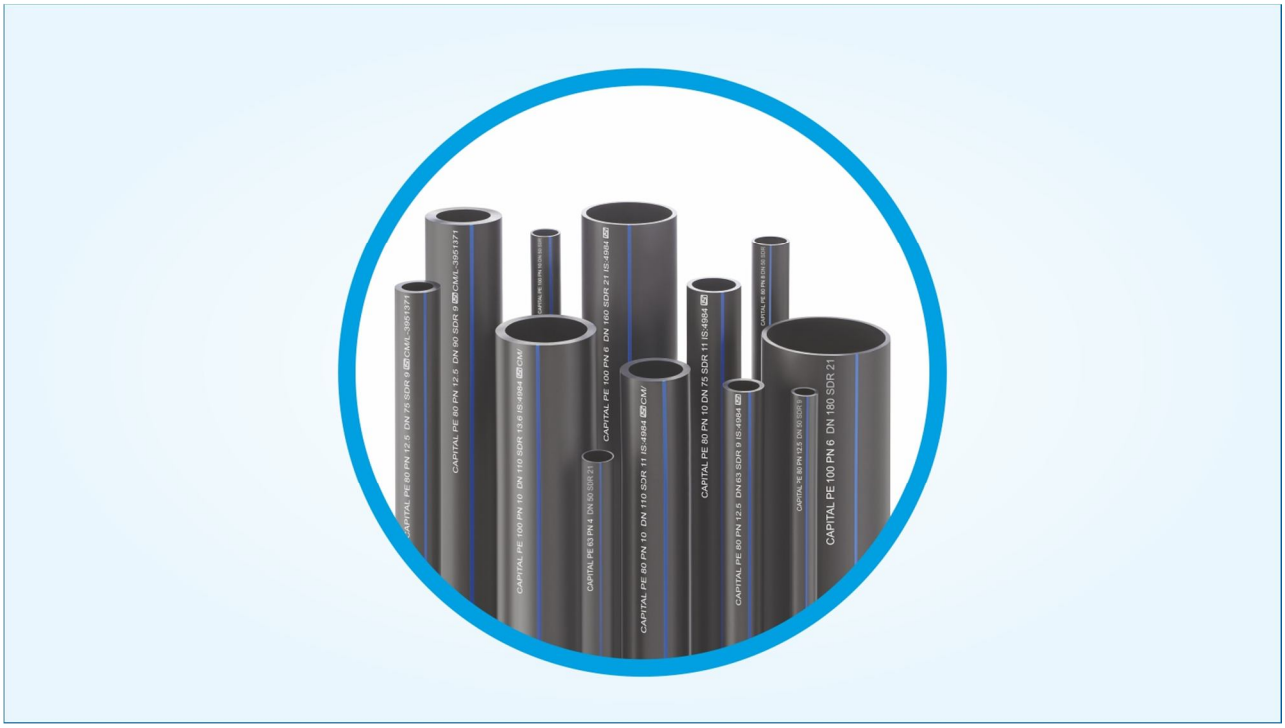
HDPE Pipe



We offer a wide range of High Density Polyethylene (HDPE) Pipes which are uses across various industries as well as water supply in agriculture & domestic purpose. CAPITAL HDPE pipes are manufactured from 100% virgin PE granules to ensure our committment of best quality. HDPE Pipes are the best option in today's market due to its advantages over cast iron G.I. Pipe, mild & stainless steel pipes because of properties like resistence to corrosion, durable, light in weight & flexibility etc.

Specifications
Range Dia. : 16 mm to 450 mm OD
Standard : IS 4984 : 2016
Grade : PE 63, PE 80, PE 100
Color : Blacke with Three Stripes
Application : Water Supply, Lift Irrigation, Drip Main & Distribution Pipe Line, Chemical, Food & Dairy Plants Pipe Lines insted of Metal Or Cement Pipes.

Mechanical and Physical Properties

Property	Value	Unit
Density (Base Material)	940– 965	Kg/M³
Melt flow index (192°C /2.16 Kg)	≤ 0.3	g /10 Minutes
Melt flow index (192°C /5.0 Kg)	0.2 – 1.1	g /10 Minutes
VST	120 - 130	°C
Crystalline melting Range	130 - 133	°C
Viscosity Number	390	Cm³/g

Hardness	58 – 65	Shore " D"
Tensile Strength at Yield	20 – 26	MPa
Ultimate tensile Strength	30	MPa
Elongation At Break	>600	%
Elastic Modulus	900 - 1200	MPa
Flexural Stress (3.5% Deflection)	13.8 – 20.3	MPa
Charpy Notched Impact at	0°C 16	KJ/M²
Thermal Stability at 210°C	≥20	Minutes
Carbon Black Content	2 - 3	%

PE Pipe Wall Thickness for raised temperature

The wall thickness of pipes are based on the maximum allowable hydrostatic design stress at 30°C water temperature for 50 years of life. In case of variation in water temperature, the working pressure needs to be modified as per given chart. However, occasional rise in temperature as in summer seaoson with concurrent corresponding reduction in temperature during night has no deleterious effects on the life and working pressure of PE pipes

Generation	Material grade	Material	Method of mfr.
First Generation	PE32 & PE40	LDPE	Unimodal
Remarks: Manufacturing method did not change with the field requirement.			
Second Generation	PE 63 & PE 80	HDPE	Unimodal
Second Generation	PE 80	MDPE	Unimodal
Remarks: Method of manufacturing has changed to give better strength to the raw material.			
Third Generation	PE80 & PE100	HDPE	Bimodal
Third Generation	PE80	MDPE	Bimodal

Why we choose polyethylene (PE) pipes as against AC/CI or DI?

Polyethylene pipe systems offer significant advantages over ductile iron, steel and cement systems. Some of its advantages are as follows

Longevity: PE pipes have the Long track record of excellent performance, approaching 100 years worldwide.

- **Corrosion resistance**: PE is basically chemically inert. This pipe system does not rust and corrode. This system resists chemical attack from aggressive soils. There is no need for protective layer or finishing process. PE pipe has very good abrasion resistance also.

- **Leak tight:** Butt fused joints create a homogenous system. The fusion weld for this system is very strong Therefore, unlike ring type joints or the other mechanical jointing systems, there is no risk of leakage resulting from joint distortion.
- **Optimum flow rate:** Smooth inside pipe surface allows for a high Hazen-Williams "c" factor. "c" remains constant throughout the lifetime of the system due to an innate high resistance to scale and biological build up.Polyethylene (PE) is also biologically inert.
- **Excellent water hammer characteristics to withstand surges:** The inherent properties of polyethylene allow the system to significantly lower the effect of surges compared to PVC and ductile iron systems.
- **Flexibility:** PE pipes can be coiled and supplied in length of up to 300m for small diameter pipes. This feature is one of the ma ny contributions to cost savings during the installation process.
- **Resistance to geological conditions:** PE piping systems have inherent resistance to ground temperature fluctuations and earth instability because of high impact and breakage resistance.
- **Seismic Resistance:** The toughness, ductility and flexibility of PE pipe combined with its other special properties, such as its leak-free fully restrained heat fused joints, make it well suited for installation in dynamic soil environments and in areas prone to earthquakes.
- **Abrasion Resistance:** PE pipe is a frequent choice for the transport of granular or slurry solutions, such as sand, fly ash and coal. The advantage of polyethylene in these applications is its wear resistance, which for example when conveying fine grain slurries has been shown in laboratory tests to be three to five times greater than for steel pipe. PE pipe has elastic properties that under proper flow conditions allow particles to bounce off its surface. This feature combined with PE's toughness results in a service life that exceeds that of many metal piping materials. There are several factors that affect the wear resistance of a pipeline. The concentration, size and shape of the solid materials, along with the pipe diameter and flow velocity, are the major parameters that will affect the life of the pipeline.
- High strain allowed virtually eliminated failure due to freezing pipes.
- PE pipe can Achieve Maximum Cold Bending Radius
- Reduced installation costs

Jointing Methods

- Butt Fusion
- Saddle Fusion
- Electro Fusion
- Flange Joint
- Insert Joint
- Compression Joint
- Shoulder Groove Joint
- Sure Loc Joint
- Threaded Joint.

Capital Polyplast manufactures PE Pipe and Fittings which are widely accepted in following applications.

Industrial

Infrastructure

• Untreated and Treated Effluent

- Chemical Process Lines
- Corrosive Liquids
- Effluent Disposal
- Building & Construction
- Fertilizers
- Food Processing Industry
- Marine Intake and Outfall
- Salt Pan
- Fire Fighting Systems
- Material Handling - Pneumatic Conveyance of Particulates
- Fly-Ash Slurry and others

Sewerage

- Pumping Main for Sewerage
- Force Main for Sewer
- Gravity Main for Sewer
- Rehabilitation of Sewer Lines

Irrigation & Agricultural

- Rising Main & Distribution Systems
- Lift and Gravity Irrigation
- Drip Irrigation
- Gated Pipe Irrigation
- Sprinkler Irrigation
- Sub Soil Drainage
- Aquaculture
- Stay Cable Pipe for Cable Stayed Bridges
- Desalination Plant
- Culverts and Storm Water Drains
- Thermal & Nuclear Power Station
- Hydel Power Plants
- Dredging & Sand Stowing
- Infiltration Gallery

Mining Industry

- Leach Lines
- Coal Decant Systems
- Mine Drainage
- Coal Tailings
- Slurry and Sludge Transport
- De-watering
- Dust Suppression
- Sand Stowing

Gas & Air

- Natural and LP Gas Distribution
- Coal Bed Methane Gas Collection & Distribution
- Air: Chilled air conveyance
- Bio-gas conveyance
- Inert gas conveyance (argon, nitrogen, helium)

Municipalities, Corporations and Public Utilities

• Pumping Mains for Water

• Potable Water Distribution System

• House Service Connections

• Waste Water Treatment Plants.

• Aeration and Odour Control Ducting

• Landfill - Leachate Collection &

Conveyance

• Landfill - Methane Gas Extraction

& Convenyance

Ducting

• Electrical Cable Ducting

• Telecommunication Cable Ducting

• Optical Fibre Cable Ducting

• Micro Duct - House Connections

Advantages of HDPE Pipes

- Long Efficient 100 years of Service Life
- Light in Weight, Flexible and Fatigue Resistant
- Joints are Monolithic and 100% Leak-proof
- Operation and Maintenance Cost as good as NIL
- Low Energy Consumption & shall Not Increase with Time (highest C value among pipe MOCs, Hazen Williams C value = 150)
- Acidic or Alkaline soil-state environment do not affect
- Lowest Water Hammer/Surge pressure effect among all pipe materials
- Resistant to Hydrogen Sulphide Gas, High Abrasion Resistance
- Superior Chemical Resistance Fluid pH ranging from 1 to 14
- Suitable in Earthquake Prone area & Unstable Soil Strata
- Suitable for Underwater Installation (construction advantages)
- Suitable for Undulating Land
- Low Life Cycle Cost due to Non-bio Degradability & Low Pumping Cost
- Offers many advantages in Trenchless Construction

S.No.		Features Characteristics
1	Life Expectancy	PE Pipe has a Life Expectancy of about 100 years.
2	Joint	PE pipe is normally joined by butt fusion method which creates a joint that is as strong or stronger than the pipe itself, and is virtually leak free
3	Leak Proof	Butt-fused joints create a homogenous, monolithic joint leading to leak proof system.

4	Corrosion Resistance & Biological Effects	Does not rust, rot, or corrode. Capital PE pipes are non-conducting and inert and hence immune to galvanic and electrochemical corrosion. Capital PE pipes do not rust or corrode, both inside and outside. PE pipes do not degrade due to biological effects. They are not digestible and do not contain ingredients that would attract animals like rodents. The exceptionally smooth and flexible surfaces of the Capital PE pipes do not offer any abrasion effects to rodent's teeth like steel, CI and DI pipes.
5	Chemical Resistance	PE pipe has excellent chemical resistance. pH is 1 to 14
6	UV Protection	Black PE pipe containing 2 to 3.0% carbon black can be safely used outside in the sun without damage from UV exposure.
7	Impact & Toughness	Tough and good Impact Resistance.
8	Pressure Ratings & Dia,	PE pipe is available in various sizes 16mm 450 mm dia. and pressure ratings of PN-2, PN2.5, PN-3.2, PN-4, PN-5, PN-6, PN-8, PN-10, PN-12.5 & PN-16, PN-20 (PN = kgf/cm^2) DSR41, SDR33, SDR26, SDR21, SDR17, SDR13.6, SDR11, SDR9, SDR7.4, SDR6
9	Lightweight	It is lighter than Metal or Concrete pipe. It is easier to handle & install as compared to above materials.
10	Flexibility	PE pipe can be bent to a minimum radius of 25 times the pipe diameter. This flexibility of PE pipe allows it to be curved under, over & around obstacles as well as directional changes.
11	Coiled Pipe	PE pipe is also available in coil form upto 140mm dia. with specific SDR.
12	Earth quake / Soil settlement resistance	Found good in case of earth quake and soil settlement. Capital PE pipes have excellent resistance to Environmental Stress Cracking which is due to the combined actions of stress and the environment. The strain ability of Capital PE pipes under stress is higher than any conventional pipes, thereby the pipes never fail due to prism loads and soil settlement due to seasonal changes
13	Water Hammer	The water hammer effect in the Capital PE pipes are the lowest when compared to conventional pipes for similar operating conditions, thereby reducing the number of safety appurtenances necessary in the system as well the cost of maintenance.