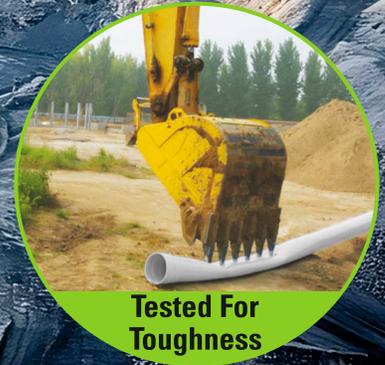




**MINETORQUE**  
MINE WATER WAYS

**IRCR**  
PIPES

**Built  
To  
Last**



- ◆ Impact Resistant & Chemical Resistant Pipes
- ◆ Sustained High Pressure Up To 50 Kg.
- ◆ Special For Highly Acidic & High Pressure Load Up To 100 Ton.
- ◆ Design For Mining Uses

Water Supply Infrastructure  
Irrigation & Agriculture  
Drainage & Sewerage

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## Introduction

We would like to introduce **IRCR**, as one of India's leading manufacturers of latest generation **IRCR**, (Oriented High-Pressure and Leak-Proof pipes) for piped Water Supply Infrastructure, Drainage, Irrigation and Sewerage Mining applications. Our state-of-the-art factory, spread over 100,000 sq. ft located in RIICO Industrial Area manufactures Bi-Axial Oriented Class **IRCR** 110-315 mm in pressure ratings of PN10 to PN50, which covers more than 90% of the piping requirements for Public Pipe Infrastructure.



Our company has a professional team with over 50 years of experience in R&D, manufacturing, sales, and service. We provide high-quality pipes for high-pressure applications. Our company adheres to the motto "Pipe Ways to Progress," with a focus on R&D, Production, and Application of **IRCR** Pipes.

By switching to **IRCR** the government can complete the same water piping project for Rs. 60-70 crores instead of Rs. 100 crores, saving 1000s of crores in the long term.

Today most of the India's drinking water, drainage and waste water infrastructure is affected by leakage and corrosion issues, causing massive losses and inconvenience to Indian citizens. These issues can be avoided with the use of **IRCR**.

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# Benefits for Using IRCR Pipe

- \* **Greater lightness and easy handling:** The manufacturing system of the pipes delivers both health & safety, and economic savings during the pipe installation process.
- \* **Excellent Flexibility:** The high flexibility of the pipes enables withstanding large deformations without suffering structural damages.
- \* **Greater Hydraulic Capacity:** Between 15%-40% higher than pipes made of other material with the same outer diameter
- \* **Higher Chemical Resistance:** IRCR is immune to corrosion so it does not require any coating or special protection, this results in cost savings.
- \* **Higher hydrostatic resistance :** These pipes can endure internal pressure up to twice the nominal pressure conventional pipes can withstand.
- \* **Higher Resistance against water hammers :** The lower celerity figure of the pipes virtually eliminates the possibility of breakage that can occur during the process of opening/closing valves or when starting pumping operations.

## Other Benefits

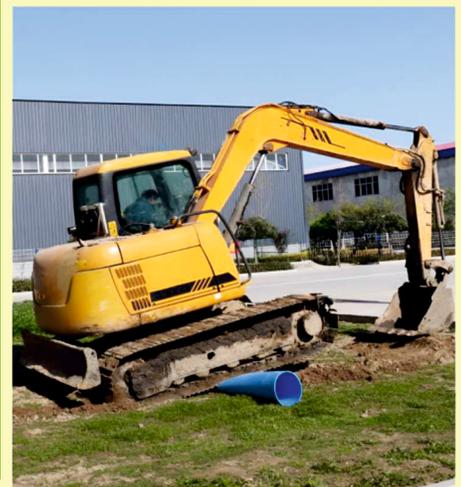
- \* Service Life of 100+ years
- \* 30-80% more economical than Ductile Iron (DI) & HDPE pipes for the same or higher-pressure rating
- \* 100% Leak-Proof
- \* 100% Lead Free & 100% safe for humans



Very High-Pressure rating upto 50 kg/cm<sup>2</sup>

Quick installation (2 times faster than HDPE and 4 times faster than MS)

Rust and Chemical Resistant



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## Product Overview

High-quality IRCR Pipes

High pressure – 40 kg to 50kg up to.

These pipes are specially designed for mining dewatering, industrial, and heavy-duty water applications requiring superior strength, flexibility, and chemical acid resistance at High Pressure.

## Key Features

Lightweight & Easy Handling – Simplifies transportation and installation.

Excellent Flexibility – Withstands pressure variations and movement.

High Water & Chemical Resistance – Suitable for acidic and corrosive environments.

Superior Load Bearing Capacity – Up to 100 Tons, ideal for heavy applications.

Pressure Rating – 25kg to 50kg /cm<sup>2</sup> bursting pressure.

Self-Adhesive Jointing System – Enables quick and secure installation. Also flanged type.

Rust & Corrosion Free – Ensures long service life and low maintenance.

## Specially Designed for Mining Dewatering

1. Load Bearing Capacity up to 100 Tons
2. Crack Resistant Structure
3. Self-Adhesive Jointing/ Flanged Jointing.
4. Quick Installation Process
5. High Chemical Resistance
6. Lightweight with Excellent Flexibility
7. Easy to Handle and Transport
8. Superior Resistance to Water Hammer
9. High Hydrostatic Strength
10. Pressure Endurance up to 50 kg/cm<sup>2</sup>

## Applications

Mining Dewatering

Industrial Water Supply

Agriculture and Irrigation

Infrastructure Drainage Systems

Chemical and Process Water Lines



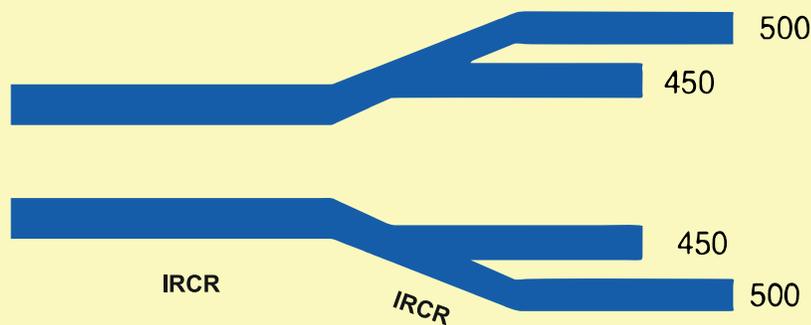
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## IRCR Pipes Material Classification

Material classification, overall design coefficient and nominal pressure of IRCR Pipes. The difference with other material pipes is that IRCR pipes are classified as 450 and 500 based on the MRS (Material Resistance Strength) value.

The higher the pipe class, the greater the material strength and nominal pressure. For the same DN and PN, a higher pipe material class results in greater hydraulic capacity, lower head loss, and reduced cost.

According to the standard requirements and using a comprehensive evaluation method, IRCR pipes achieve Class 500. Our company is able to this by deploying our state-of-the-art IRCR Pipe manufacturing technology and machinery with strict quality control measures.



## The Advantages of IRCR Pipes

### Unbeatable Impact Resistance

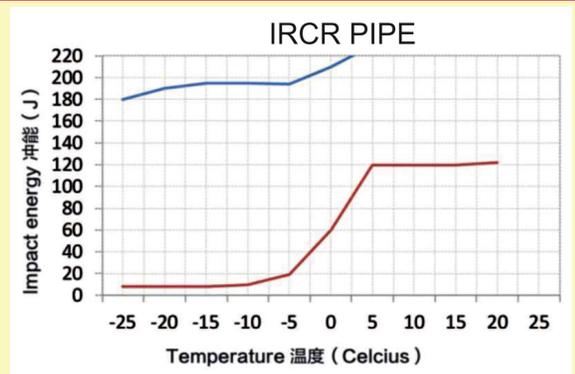
IRCR Pipes have unbeatable impact resistance, especially in cold environment. Its impact resistance doesn't reduce much even in  $-25^{\circ}\text{C}$ .



Above ONRC Below: IRCR



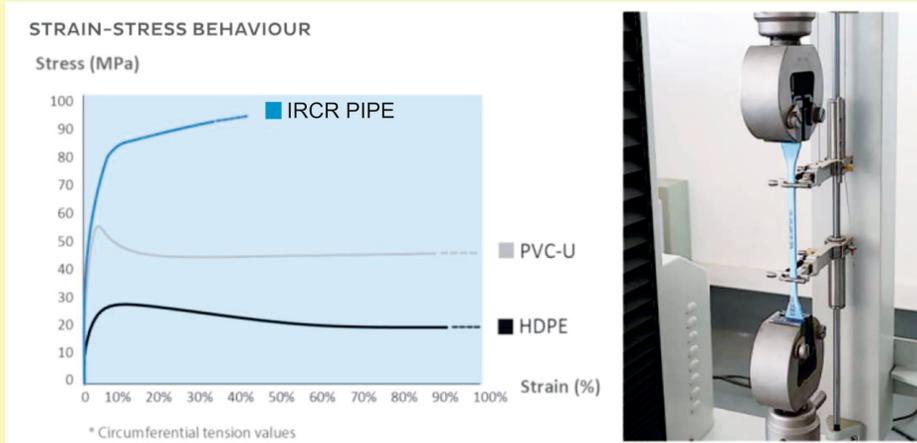
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### Crack Propagation

Because of their net and layered structure, IRCR Pipes prevent the propagation of cracks and scratches and eliminate the risk of rapid crack behaviour.

## The Best Mechanical Properties



### Tensile Resistance

The IRCR stress-strain curve changes significantly compared to conventional plastics. The circumferential tension can achieve even more than 90MPa, it is much higher than that of PVC-U and HDPE Pipe

### High Short-term and long-term hydrostatic resistance

IRCR Pipes offer a resistance to internal pressure of more than 2.5 times the nominal pressure, which means that they can bear sporadic excessive pressure, such as water hammers and other malfunctions in the network. Because the creep behaviour of IRCR material is very slow, this ensures the service life of IRCR pipes is more than 100 Years.



### Material Mechanical Properties

The table below summarises the technical characteristics of IRCR pipes in comparison with other Plastic Pipes.

**IRCR Pipe For Mining Dewatering At High Pressure**



**Road Engineering :** used for Water Supply and Drainage in railways and highways.

**Mine :** Used for ventilation and drainage pipes in mines & Open Cast Mines



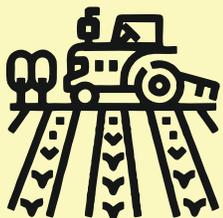
**Municipal  
Engineering**



**Construction  
Engineering**



**Chemical, Pharmaceutical  
and Environmental Protection**



**Agriculture  
and Landscaping**



**Road  
Engineering**



**Mine**  
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**IRCR**  
**PIPES**

**Complete Solution of Chemical  
Water at High Pressure Flow  
Load Resistant in INDUSTRIES  
& MININGS**

### Contact Details

(Providers of IRCR Pipe in INDIA)

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## Hydraulic Design

Technical Feature	Unit	Value
Temperature of conveyance of water	°C	≤45
Density	kg/dm <sup>3</sup>	1.35-1.46
Lineal expansion coefficient	°C <sup>-1</sup>	7×10 <sup>-5</sup>
Poisson coefficient		0.45
EYoung's modulus	Mpa	4000
Axial tensile strength	Mpa	48
Circumferential tensile strength	MPa	85
Hazen Williams coefficient		150
Manning roughness coefficient		0.009

### Calculation of Pipe Head Loss

Pipe head loss is the energy of a hydraulic fluid that is lost along itself due to friction. It can be calculated according to the following formula:

$$h_f = \lambda \cdot \frac{L}{d_i} \cdot \frac{u^2}{2g} \quad \lambda = \frac{0.304}{Re^{0.239}} \quad Re = \frac{u \cdot d_i}{\gamma}$$

$$1000i = 0.000933 \cdot \frac{Q^{1.761}}{d_i^{4.761}}$$

Due to their larger internal diameter, IRCR Pipes experience over 30% less pressure loss compared to IRCR pipes and over 50% less than HDPE pipes. This results in significantly lower energy requirements for fluid transport.

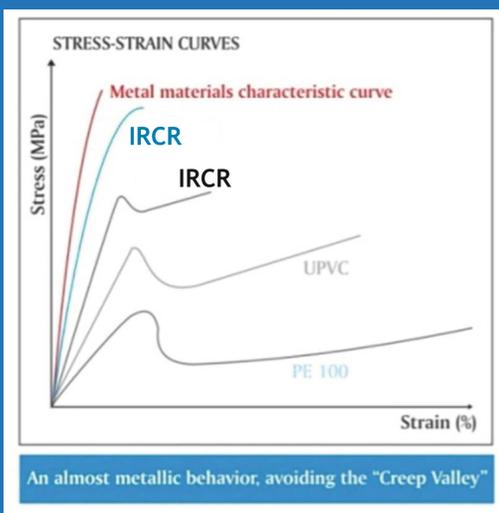
## IRCR Pipes Increase the Hydraulic Capacity

The higher the material strength, the higher the nominal pressure at the same DN and PN. IRCR Pipes have the largest inner diameter, thus giving them the highest hydraulic capacity.

IRCR Pipes can offer 15%-40% more hydraulic capacity than the conventional pipes with the same nominal outside diameter. This means **IRCR Pipes can transport the highest amount of water while consuming the least energy.**



### Excellent for working in extreme water temperature



Hot: up to 45°C  
Cold: down to -25°C

### Completely Corrosion-Resistant

IRCR pipes are immune to corrosion. They can safely convey most corrosive fluids and are suitable for long-term use in corrosive environments. Unlike other materials, they require no special protection or coating, resulting in significant cost savings.



### Completely Water-Tight

The rubber ring is elastomeric and integrated with the pipe, preventing displacement during installation.

IRCR pipes use elastomeric seals that are 100% watertight and guaranteed to stay securely in place once installed.

# Still in Doubt : Comparison with DI vs HDPE vs IRCR



Parameters	DI	HDPE	IRCR
Design Friction Manning's Co-efficient (n Value)	0.011	0.017	0.007-0.009
Rexibility of pipe joint in alignment	20-50	Flexible Pipe	9 deg Per socket for 10mm pipe and big dia pipe 2deg per socket, FLEXIBLE PIPE
Type of Fittings used	CI / DI	MS / CI / DI / FIDPE	DI / majority IRCR
Availability of Fittings	Readymade fittings widely available.	Readymade fittings available.	Available with all MOLECOR TECHNOLOGY IRCR manufacturers
Expected salvage value after 30 years	Rs 25000/MT	Rs. 500 / MT	100% recyclable, 50% Poly
Direct tapping facility	Directly by ferrule.	Direct tapping not possible, saddle strap to be used.	Direct tapping: saddle strap to be used.
Damping Capacity	High specific damping capacity (15-40%), coupled with low notch sensitivity due to presence of graphite flake is the unique feature.	Medium	medium
Application	All applications.	Not recommended for (1) Pumping main, (2) high probability of third-party damage (3) over ground installation (4) presence of high degree of organic contaminates.	1. To be used as Pumping main/ raising main for water SUPPLY and sewage., 2. Lift irrigation, 3. High pressure drain and storm water, 4. Industrial park, 5. Powerplant water nets. 6. Smart cities WATER SUPPLY LINES.
Not Suitable	Extremely aggressive soils/ waters (unless high performance protection is specified)	In case of High-pressure pumping mains Above ground installation Ground contaminated with organic chemicals Major carriageways Risk of third-party damage	For transporting solvents, chemical whose pH is < 3 and 12.hot waters above 60 deg c continuous supply.
Nature and Frequency of Damage	Impact failure or bursting due to crack or water hammer is extremely rare. Frequency of damage - very low.	Often damaged by third party interference. Failure due to material degradation is also common. Frequency of Damage-medium.	Frequency of damage is very low. Very easy to repair damage with PVC-O service joints
CO2 emmission	High from creddle to crate	High as material is max PE	Lowest as only 47% ethylene and rest salt, light weight so material used less. Lower logistic transport cost,
Life Cycle Cost	High from creddle to crate	Medium lower than DI	Lowest as less material used and life of IRCR more than 100 years, no scaling orrusting, low maintainance



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## **IRCR Pipes uses in Industries & Mines**

**Sugar, Cement, Steel, Power, Fertilizer, Mine Irrigation, Municipal Corporation, Air Force, Railways, Dams, Road Works & Many High Pressure & Chemical Nature Sites**



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