

AS/NZS 2280

# ZINALIUM® DUCTILE IRON PIPE

Version 1.0

IN-GROUND.  
INNOVATION.

clover  
AS/NZS 2280

clover

# WE ARE CLOVER, AN INTEGRATED PIPELINE INFRASTRUCTURE BUSINESS.

Founded by a passionate team of industry professionals, we combine strategic project consultation, product innovation and service excellence.

We work with local and global partners to specify world-leading pipelines across Australia and the Asia Pacific region.

## Future facing pipeline infrastructure.

We believe in new ways of doing—and at Clover, we do things differently. We don't rest on the past, or the present, we're committed to consistent innovation that supports existing communities and establishes new ones.

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## Australia's most complete pipeline infrastructure provider.

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We partner with our clients to offer holistic design-led packages that go beyond supply and delivery—bridging the gap between the design, source and supply of pipeline infrastructure systems.

### PLAN

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Clover's inhouse engineering team combines specialist technical knowledge, creative thinking and on-the-job experience, to offer our clients a range of project planning and design consultation services.



### SOURCE

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Constantly pushing to challenge what's achievable, Clover harnesses an extensive global network of product partners to bring our clients the competitive advantage that comes with choice, availability and cutting edge innovation.



### SUPPLY

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In a project based industry, timing is everything. At Clover, our approach to supply and distribution is based around a dedication to consistency, responsiveness and service excellence.



# EXTENDING PIPE PERFORMANCE.

**Introducing Zinalium®:** an innovative PAM-patented protection system that extends the life and performance of ductile iron pipe in ground.

As an 'active' protection coating, Zinalium offers two key benefits:

1. It protects ductile iron pipe against the long-term impact of soil-based corrosive materials when pipes are installed in the ground, extending the pipe's usage and improving performance over time.
2. It can 'heal' minor damages to the pipe, like scratches or bumps that can occur when transporting pipes to installation sites.

**Zinalium is available in the following ductile iron pipe product configurations:**

#### HYDROCLASS

- Used in potable, recycled and raw water applications
- Manufactured to AS/NZS 2280 'Ductile Iron Pipes and Fittings'
- Available in DN100 – DN750 diameters (larger diameters up to DN2200 available)

#### INTEGRAL

- Used in sewer and wastewater applications
- Manufactured to AS/NZS 2280 'Ductile Iron Pipes and Fittings'
- Available in DN100 – DN750 diameters (larger diameters up to DN2200 available)



## UNDERSTANDING THE PROTECTIVE CONFIGURATION.

A Zinalium-coated pipe consists of three components: the DI pipe itself, a synthetic resin pore sealer, and the Zinalium coating between the two.

### The Zinalium coating

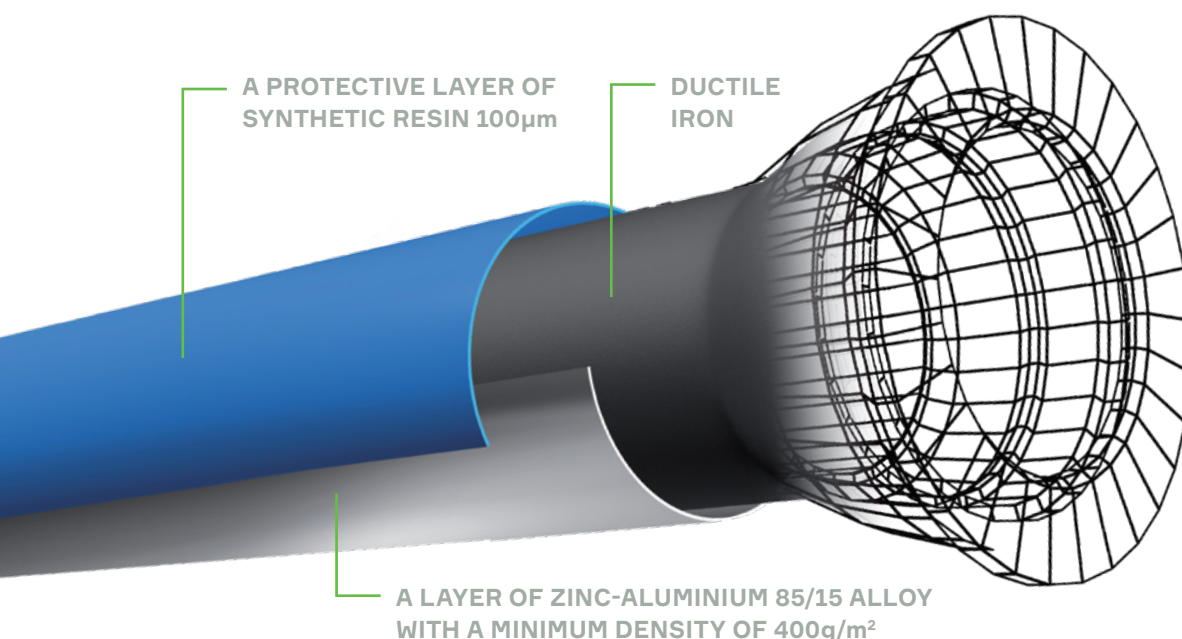
The name—'Zinalium'—highlights this innovative coating's chemical makeup. It is a unique combination of zinc (85%) and aluminium (15%). The Zinalium coating is melted onto the as-cast surface of the pipe by high-pressure air. The alloying ensures the intimate mixing of zinc and aluminium—and the resulting microstructure—optimises the spatial distribution of the zinc in the coating for maximum corrosion protection. The minimum coating application thickness is 400g/m<sup>2</sup>.

### The synthetic resin pore sealer

A synthetic epoxy pore sealer is applied to the as-sprayed zinc-aluminium coating to a minimum thickness of 100µm ensuring the Zinalium coating is gradually exposed to the soil. This stepped exposure ensures the zinc transforms into insoluble corrosion products slowly, creating a powerful layer of protection for the ductile iron pipe. Without the synthetic pore sealer, these vital corrosion products could be dissolved by water and moisture in the soil.

### The ductile iron pipe

PAM ductile iron pipe is globally renowned for long-term performance and maintenance free operation. It is also proven to endure irregular operating conditions and the demands of handling in the field.





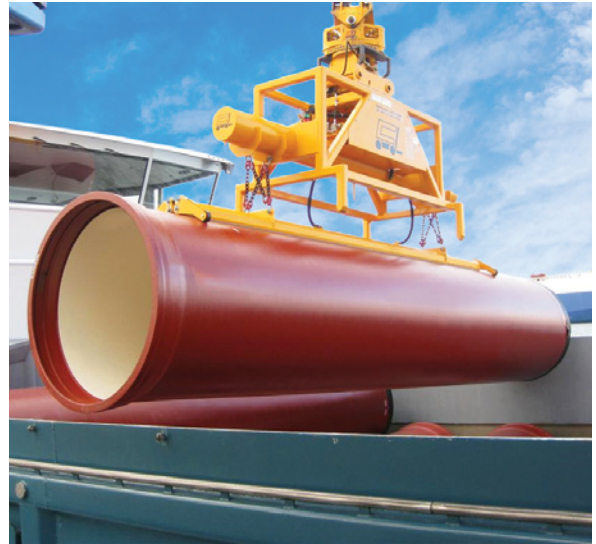
# ENHANCED PROTECTION, LOWERED COSTS.

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Zinalium coating is purpose-engineered to extend pipe service and lifetime. Carefully developed over 40 years of industry-leading research and product design, Zinalium coating can enhance both Total Cost Analysis and life cycle analysis.

As an added bonus for installation efficiency and reduced time on site, Zinalium coated ductile iron pipes can be buried in direct contact with the majority of soils without the need for loose polyethylene sleeving.



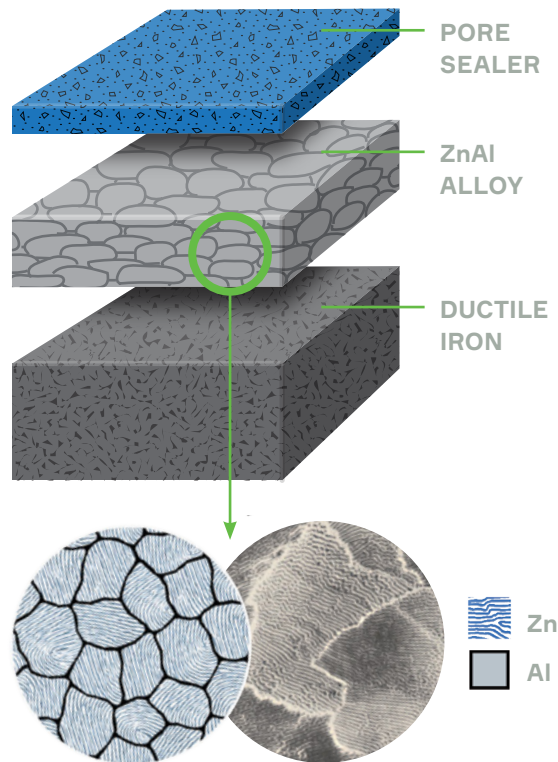
## ACTIVE PROPERTIES, POWERFUL PROTECTION

Zinalium is an active protectant. As it comes into contact with soil, the Zinalium coating begins to transform in a two-phase process known as ‘galvanic protection’:

1. The first phase occurs as zinc reacts to certain materials in the ground. The aggressive soil triggers a slow transformation where the zinc transitions into a variety of zinc-conversion products including zinc oxides, zinc carbonates, zinc oxychlorides, and more.
2. The second phase occurs as the zinc ‘re-sets’ following the transformation.

The transformation creates a stable, dense and binding layer, which takes up exactly the same space and fills all porous gaps that existed in the initial layer of zinc. Over time, it evenly covers the entire surface of the pipe to improve resilience and long-term performance.

Crucially, because the initial zinc layer is highly porous, the newly converted zinc barrier is able to fully form without needing more room between the ductile iron pipe or the resin layer. This ensures the outside layer remains stable, without cracking or warping.





# HYDROCLASS DUCTILE IRON PIPE.

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With active Zinalium corrosion protection, HYDROCLASS Ductile Iron Pipes are the apex of future-facing infrastructure in water applications.

**PAM Hydroclass ductile iron pipes are cement mortar lined with a standard Sulphate Resistant (SR) Blast Furnace Cement (BFC) mortar which is suitable for potable water applications and complies with AS/NZS4020. Optional seal coating also available.**

**HYDROCLASS ductile iron pipes offer leading performance through:**

- High hoop and axial strength, ensuring the pipe can resist the extreme stresses imparted by soil, construction loads and variable pipeline operating conditions, including surge.
- High burst strength, which is well-suited for high-pressure applications.
- Each PAM ductile iron pipe joint can be deflected, allowing the installer to reduce the number of bends required and simplifying installation.

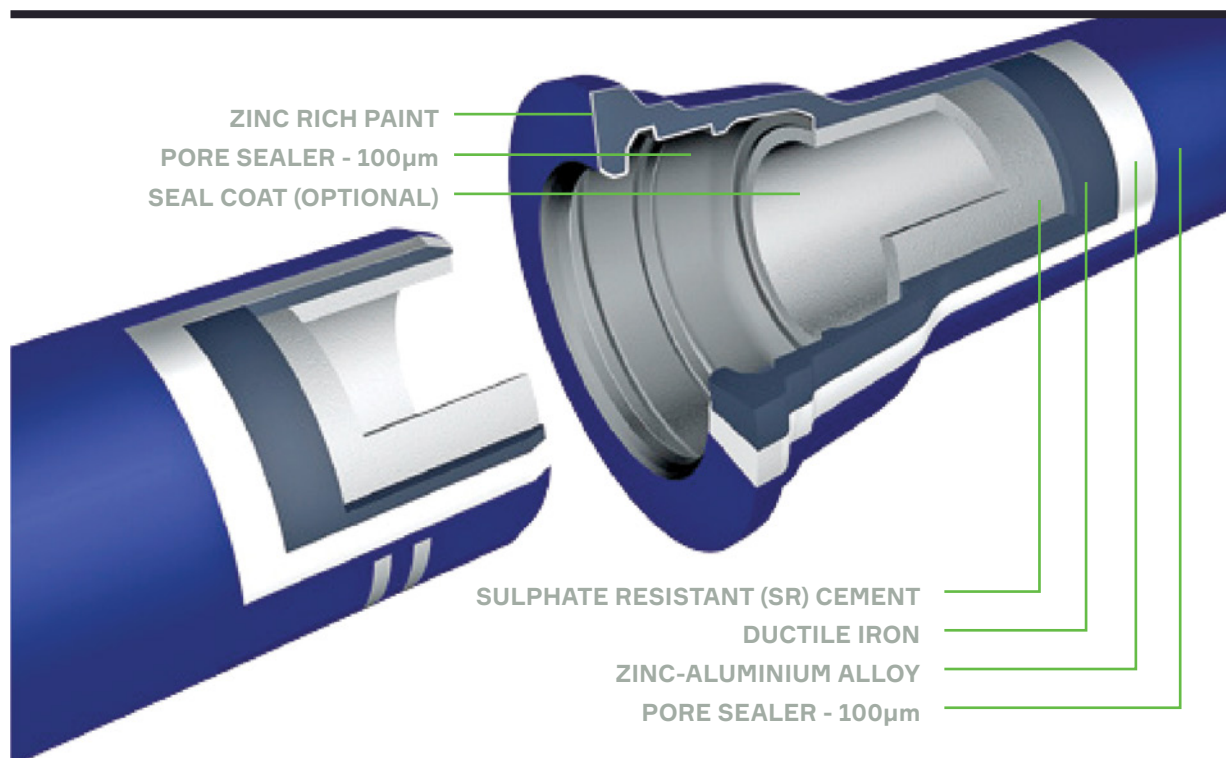
## Applications

- Potable and recycled water supply
- Irrigation and raw water
- Stormwater and drainage
- Buried and above ground

## Options

- Seal coating
- Restraint joints
- Fabricated & Flange Class Pipework available
- Zinc external coating (Zn200 g/m<sup>2</sup>)
- Polyethylene coating and lining options available





## Hydroclass® Zinalium®

### Sulphate Resistant (SR) Cement Mortar Lined

#### Hydroclass Zinalium PN35 Cement Lined + Seal Coat

DESCRIPTION	CODE
100 PN35 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS35100
150 PN35 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS35150
200 PN35 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS35200
225 PN35 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS35225
250 PN35 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS35250
300 PN35 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS35300
375 PN35 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS35375
450 PN35 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS35450
500 PN35 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS35500
600 PN35 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS35600
750 PN35 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS35750

#### Hydroclass Zinalium PN35 Cement Lined

DESCRIPTION	CODE	LENGTH MASS (KG)
100 PN35 DICL Pipe Hydroclass Zinalium 5.75m	DPZH35100	102
150 PN35 DICL Pipe Hydroclass Zinalium 5.75m	DPZH35150	150
200 PN35 DICL Pipe Hydroclass Zinalium 5.75m	DPZH35200	200
225 PN35 DICL Pipe Hydroclass Zinalium 5.75m	DPZH35225	232
250 PN35 DICL Pipe Hydroclass Zinalium 5.75m	DPZH35250	270
300 PN35 DICL Pipe Hydroclass Zinalium 5.75m	DPZH35300	356
375 PN35 DICL Pipe Hydroclass Zinalium 5.75m	DPZH35375	501
450 PN35 DICL Pipe Hydroclass Zinalium 5.75m	DPZH35450	661
500 PN35 DICL Pipe Hydroclass Zinalium 5.75m	DPZH35500	779
600 PN35 DICL Pipe Hydroclass Zinalium 5.75m	DPZH35600	1080
750 PN35 DICL Pipe Hydroclass Zinalium 5.75m	DPZH35750	1596

#### Hydroclass Zinalium PN20 Cement Lined + Seal Coat

DESCRIPTION	CODE
225 PN20 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS20225
250 PN20 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS20250
300 PN20 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS20300
375 PN20 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS20375
450 PN20 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS20450
500 PN20 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS20500
600 PN20 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS20600
750 PN20 DICL Pipe Hydroclass Zinalium Seal Coat 5.75m	DPZHS20750

#### Hydroclass Zinalium PN20 Cement Lined

DESCRIPTION	CODE	LENGTH MASS (KG)
225 PN20 DICL Pipe Hydroclass Zinalium 5.75m	DPZH20225	225
250 PN20 DICL Pipe Hydroclass Zinalium 5.75m	DPZH20250	249
300 PN20 DICL Pipe Hydroclass Zinalium 5.75m	DPZH20300	301
375 PN20 DICL Pipe Hydroclass Zinalium 5.75m	DPZH20375	386
450 PN20 DICL Pipe Hydroclass Zinalium 5.75m	DPZH20450	492
500 PN20 DICL Pipe Hydroclass Zinalium 5.75m	DPZH20500	572
600 PN20 DICL Pipe Hydroclass Zinalium 5.75m	DPZH20600	779
750 PN20 DICL Pipe Hydroclass Zinalium 5.75m	DPZH20750	1138



# INTEGRAL DUCTILE IRON PIPE.

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INTEGRAL Ductile Iron Pipes offer high resistance to abrasive materials, in addition to the performance and longevity you expect from leading ductile iron pipe products.

**PAM Integral ductile iron pipes are lined with Calcium Aluminate Cement (CAC) mortar which is intended for sewerage and aggressive water applications.**

**INTEGRAL ductile iron pipes offer leading performance through:**

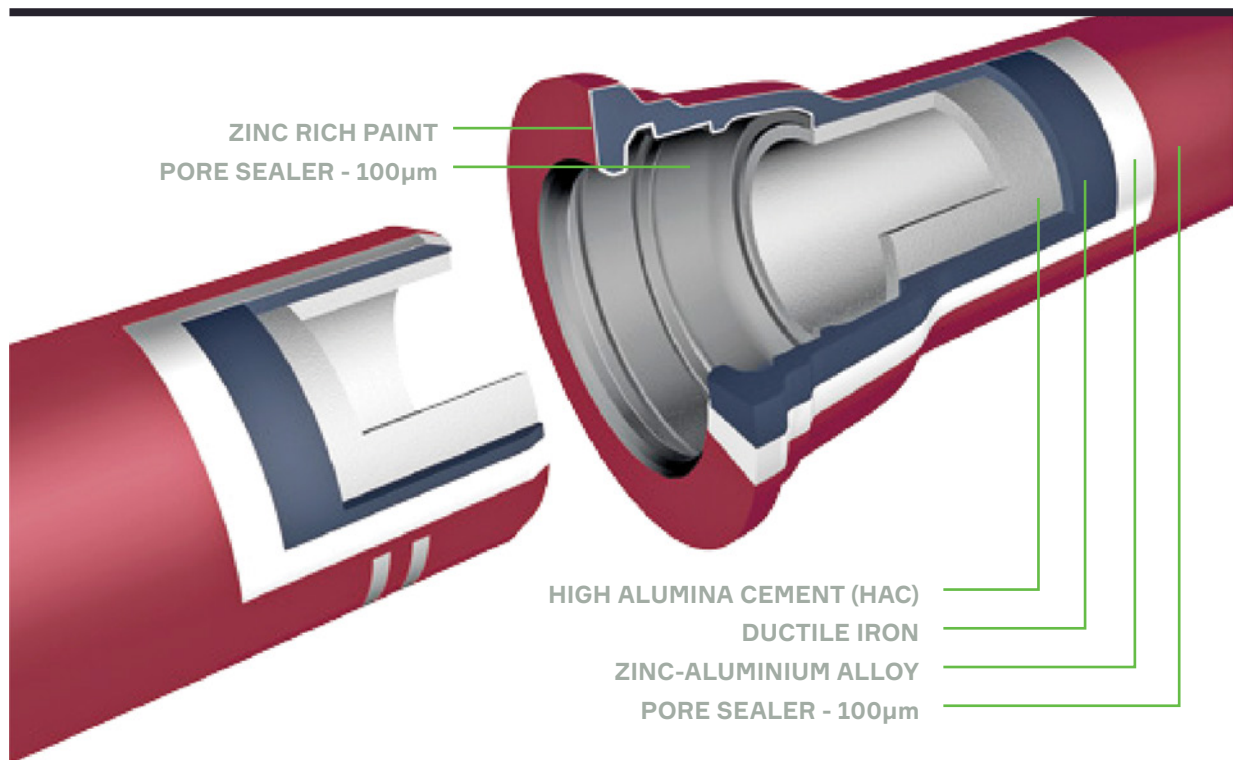
- High hoop and axial strength, ensuring the pipe can resist the extreme stresses imparted by soil, construction loads and variable pipeline operating conditions, including surge.
- High burst strength, which is well-suited for high-pressure applications.
- Each PAM ductile iron pipe joint can be deflected, allowing the installer to reduce the number of bends required and simplifying installation.

## Applications

- Gravity and sewer rising mains
- Mining, slurry and aggressive application
- Buried and above ground

## Options

- Restraint joints
- Fabricated & Flange Class Pipework available
- Zinc external coating (Zn200 g/m<sup>2</sup>)
- Polyethylene coating and lining options available



## Integral® Zinalium®

### High Alumina Cement (HAC) Mortar Lined

#### Integral Zinalium PN35 Calcium Alumina Cement Lined

DESCRIPTION	CODE	LENGTH MASS (KG)
100 PN35 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI35100	102
150 PN35 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI35150	150
200 PN35 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI35200	200
225 PN35 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI35225	232
250 PN35 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI35250	270
300 PN35 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI35300	356
375 PN35 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI35375	501
450 PN35 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI35450	661
500 PN35 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI35500	779
600 PN35 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI35600	1080
750 PN35 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI35750	1596

#### Integral Zinalium PN20 Calcium Alumina Cement Lined


DESCRIPTION	CODE	LENGTH MASS (KG)
225 PN20 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI20225	225
250 PN20 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI20250	249
300 PN20 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI20300	301
375 PN20 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI20375	386
450 PN20 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI20450	492
500 PN20 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI20500	572
600 PN20 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI20600	779
750 PN20 DICL Pipe Integral Zinalium Calcium Alumina 5.75m	DPZI20750	1138

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**For further information relating to Zinalium® Ductile Iron Pipe or any other Clover product contact your local Clover sales office for assistance.**

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