



MILD STEEL PIPE & FITTINGS



AS1579

**ARC-WELDED STEEL PIPELINES
FOR WATER & WASTEWATER
APPLICATIONS**

Version 2.0

clover



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For further information relating to Clover Steel Pipes or any other Clover product contact your local Clover sales office for assistance.

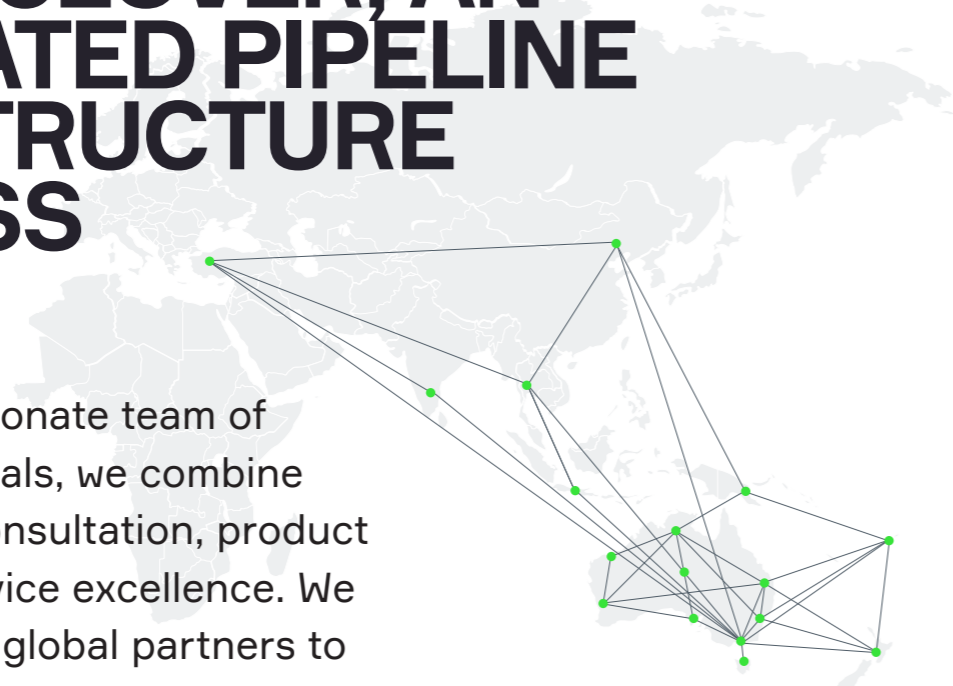
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WE ARE CLOVER, AN INTEGRATED PIPELINE INFRASTRUCTURE BUSINESS

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.

Australia's most complete pipeline infrastructure provider.

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

PLAN

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

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



SUPPLY

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.



We're excited to introduce our latest product: AS1579 arc-welded steel pipelines for water and wastewater applications.

Clover's product range from Erciyas Steel Pipe Co. continues to broaden our capability as a non-biased pipeline provider.

At Clover, we engage with premium supply partners to source products that surpass industry standards. We go beyond simply supplying products on site: our capability spans design, innovative thinking and development expertise to deliver the best installed solution for your application.

Our steel pipe range is part of an exclusive distribution agreement with Erciyas. Erciyas provides steel pipes manufactured to the highest standards in world class, best practice facilities. Their capable team produces and supplies 600,000+ tonnes/year of steel pipe products worldwide on a global scale, to over forty countries.

We are recognised for our efficiency between supply chains, and with our local support and distribution of Australian certified products, we continue to grow across a variety of markets for the benefit of our clients.

Features & benefits

- Superior coatings systems, providing superior corrosion protection.
- Strength and reliability.
- Proven track record in over 40 countries.
- Long life expectancy.
- Compliance with AS1579 requirements.
- Suitable for high pressure appliances up to 6.8Mpa.
- Proven polyethylene coated and cement lined pipes with alternate coatings and linings available to suit specific applications.
- Diverse range of joint types available: including, cylindrical, spherical and Butt weld to suit specific applications.

Applications and Standards

Applications

Steel pipes are the tried and true option for large scale infrastructure and construction projects such as distribution mains, and other large diameter pipeline applications. Whilst steel pipes are used across a variety of markets, industries and applications, our range of steel pipes from Erciyas are engineered for superior water and wastewater pipelines.

Steel is deliberately chosen for applications that require resistance to high pressures and restraint and is widely used in Hydro systems—as part of the renewable energy market. Hydro systems carry water from low to high reservoirs, generating power through the use of turbines.

Standards and Testing

Clover and Erciyas maintain a higher level of compliance for the manufacturing processes and distribution of steel pipes. Key standards in the manufacture of steel pipes for the Australian market include:

- AS1579 Arc-welded steel pipes and fittings for water and wastewater
- AS4321 Polyethylene coatings and linings for pipes and fittings
- AS1281 Cement mortar linings of steel pipes and fittings



Range & Technical Information

Product Range & Base Specifications

Manufacturing Standards:	AS1579 Arc-welded steel pipes for water and wastewater AS4321 PE coatings and linings for pipes and fittings; AS1281 Cement mortar linings of steel pipes and fittings.
External Diameters:	273mm - 2,235mm (larger sizes available up to 4,064mm)
Rated Pressures:	Up to 6.8MPa (based on material selection & wall thickness)
Test Pressures:	1.25 times rated pressure
Standard Coating:	Polyethylene to AS4321
Standard Linings:	Cement Mortar to AS1281
Coating/Lining options:	Polyurethane, FBE or Epoxy
Potable Water:	AS4020

Technical Information

CRITERIA	DETAIL
External Diameters (OD)	273mm – 2,235mm (AS1579)
External Diameters other (OD)	>2,235mm – 4,064mm (International)
Wall Thicknesses	6mm – 35mm (depending on diameter and material)
Minimum Ultimate Tensile Strengths	Standard Australian Grades AS1594 Grade HA200 – 300MPa AS1594 Grade HA250 – 350MPa AS1594 Grade HA300 – 400MPa Typical Grades – Other grades as per project needs
Minimum Yield Strengths	Standard Australian Grades AS1594 Grade HA200 – 200MPa AS1594 Grade HA250 – 250MPa AS1594 Grade HA300 – 300MPa Typical Grades – Other grades as per project needs
Temperature Range	-40°C to 70°C
Rated Pressure - MPa (Maximum Allowable Operating Pressure)	Up to 6.8MPa (based on material selection and wall thickness)
Test Pressure - MPa (Maximum Allowable Test Pressure and combined stresses)	1.25 times rated pressure
Density	7,850 kg/m ³
Modules of Elasticity	207,000 N/mm ²
Poisson's Ratio	0.30

Range & Technical Information

Rated Pressure Calculation

The maximum internal hydrostatic pressure at which hydrostatically tested pipe is suitable for sustained operation is calculated from the following equations;

Rated Pressure (Pr) Maximum working pressure in mPa.

$$Pr = 0.72 \left(\frac{2 \times SMYS \times t}{OD} \right)$$

or

$$Pr = 0.72 \left(\frac{2 \times NMYS \times t}{OD} \right)$$

Pr	Rated pressure MPa
SMYS	Specified minimum yield strength
NMYS	Nominal minimum yield strength
t	Wall thickness of steel
OD	Outside diameter

The maximum rated pressure for pipes produced in accordance with AS1579 is 6.8 MPa. In emergency situations transient pressure may lead to an increase in pipe stress. Under these conditions the maximum allowable combined stresses shall be determined by the designer, but shall not exceed 0.90 x SMYS (1.25 x rated pressure).

Weld process - Spirally Wound Pipe

Welding is carried out inside and outside via a continuous automatic submerged arc welding process. Automatic weld parameters are set for varying materials and steel wall thicknesses. On-line, 100% ultrasonic inspection is carried out during the weld process to ensure weld integrity. Further ultrasonic and radiograph weld test is carried out at final inspection including hydrostatic testing of raw pipe prior to further processing.

Welding is carried out to meet the requirements of AS/NZS1554.1 - Category SP.

Joins

To maintain the integrity of the steel pipeline, the best joint is a welded joint:

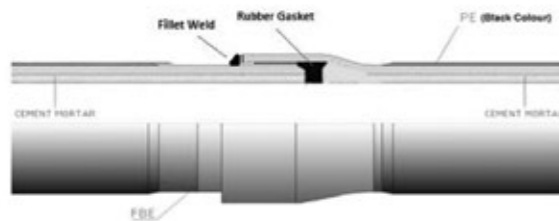
Standard Joint System (Cylindrical)

- Allows for easy, fast and clean installation
- Innovative
- Single weld, seal & restraint system

C-Joint

A cement mortar lined pipe maintains a continuous lining without the need to reinstate the lining to maintain smooth fluid flow. The rubber gasket ensures no damage to cement lining during installation.

- Easily jointing with single weld
- No cement lining reinstatement required
- Maintains smooth internal flow
- Seal coating available



E-Joint

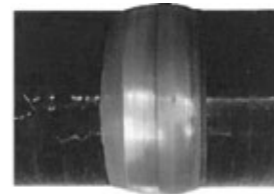
A Polyurethane or Epoxy lined Pipe is an innovative configuration that ensures lining integrity is not compromised during welding.

- Easily jointing with single weld
- Innovative weld zone to ensure integrity of line system
- Available in PU or Epoxy linings

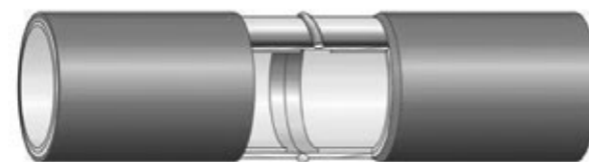


Other Joint Types are available to suit your application type:

Spherical ball joint, angular deflection up to 6° - 10° depending on pipe OD.



Butt weld joint, for high pressure and larger diameters.



Coating & Lining

COATING & LINING CAPABILITIES		MIN DIAMETER (MM)	MAX DIAMETER (MM)
Coating	Polypropylene (standard) & Polypropylene	273	3,048
	FBE	273	2,235
Linings	Epoxy/PU	273	2,540
	Cement Mortar (standard) Seal coat option available	273	3,048
	Epoxy/PU	273	3,048

Standard Coating System Overview

Coating Systems

Polyethylene coating material complies with the material and performance requirements of AS4321:2001 polyethylene coating and lining for pipes and fittings.

The coating consists of a base layer of fusion bonded epoxy with a thermally applied Polyethylene final coating.

The FBE base layer gives excellent corrosion protection and the PE outer layer provides a tough, durable protection for the pipe. As the base epoxy layer is green, it makes it easy to visually identify any discontinuities or damage in the black PE outer coating.

Polyethylene Coating

Our polyethylene coating system is a superior coating than what is currently available in the Australian market. It provides a higher level of corrosion protection, durability and toughness and takes the steel pipelines to the next level.

Linings - Cement Mortar

Cement mortar linings comply with the requirements of AS1281:2001 Cement mortar lining of steel pipes and fittings.

Steel pipes are lined with general purpose Portland cement mortar linings. Linings are applied to give a uniform thickness and finish. Seal coatings are available to apply over the cement mortar lining. Seal coatings limit the interaction between the cement and the contents of the water main. They reduce leaching and consequent elevation of pH levels in supply when conveying soft water, especially where flows are low and residence times are long.




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