

WSAA PRODUCT APPRAISAL CERTIFICATE

Clover Pipelines Pty Ltd

Clover/Xinxing - Ductile Iron Cement Mortar Lined (DICL) Pipes

This Appraisal considers PN 20, PN 35 and Flange Class ductile iron pipes in nominal sizes DN 100 to DN 750 manufactured to AS/NZS 2280:2014 Ductile iron pipes and fittings.

The standard joint offered is spigot and socket with a dual hardness elastomeric sealing ring.

Two external coating systems are offered based on metallic zinc (200g/m² minimum) or zinc/aluminium (400g/m² minimum). Each has a finishing layer: For Zn200 black epoxy of 80µm minimum is used, while for ZnAl400 blue epoxy of 100µm minimum is used.

The coating systems are applied to all external surfaces, including the spigot, barrel, socket end face, socket mouth and internal socket profile.

Pipe barrels are lined with cement mortar; either GP (General Purpose Portland Cement) for drinking or recycled water; or HAC (High Alumina Cement) for sewage and aggressive waters with pH>4<12. For GP lined pipes (drinking or recycled water) ≤DN 300, a bituminous seal coat (Inertol BS10) is supplied as default. For GP pipes >DN 300 the bituminous seal coat is optional.

GP lined pipes are coated with black epoxy for zinc based coating systems and blue epoxy for ZnAl based systems, while HAC lined pipes are coated with red epoxy.

Quality and Product Certification details of products listed in this certificate are referenced in Schedule A.

Product Category	Ductile iron pipes
PA Number:	PA 1719
Supplier	Clover Pipelines Pty Ltd
Brand	Clover/Xinxing
Standards	AS/NZS 2280:2014 Ductile iron pipes and fittings
WSAA Product Specification	WSA PS-200 Ductile Iron Pipes (CIOD) for Pressure Applications – Water Supply and Sewerage.
Issue date	Thursday, 22 March 2018
Expiry date	Thursday, 22 December 2023
Recommendations	It is recommended that WSAA members, subject to any specific requirements of the member, accept or authorise the Clover/Xinxing range of ductile iron pipes for pressure pipelines as detailed in this report for use in water supply and sewerage applications, subject to any relevant conditions relating to the design, installation and acceptance testing being in accordance with the relevant WSAA Codes and manufacturer's requirements.
Disclaimer	The disclaimer on Page 2 explains a number of very important limits on your ability to rely on the information in this Product Appraisal Certificate and the assessment criteria used to underlie it. Please read it carefully and take into account when considering the content in this Certificate.

This Product Appraisal Certificate (Certificate) is issued by WSAA on the understanding that:

This Certificate applies to the product(s) as submitted in Schedule A. Any changes to the product(s) either minor or major shall void this Certificate.

To maintain the recommendations of this Certificate any such changes shall be detailed and notified to the Product Appraisal Manager for consideration and review of the Certificate including the product appraisal criteria underlying it and appropriate action. Appraisals and their recommendations will be the subject of continuous review dependent upon the satisfactory performance of products.

WSAA reserves the right to undertake random audits of product manufacture and installation. Where products fail to maintain appraised performance requirements the appraisal and its recommendations may be modified and reissued. Certificates will be reviewed and reissued at regular intervals not exceeding five (5) years.

WSAA reserves the right to withdraw this Certificate at any time in its sole and absolute discretion for any reason.

The following information explains a number of very important limits on your ability to rely on the information in this Certificate. Please read it carefully and take it into account when considering the contents of this Certificate.

Any enquiries regarding this Certificate should be directed to the Product Appraisal Manager Phone: 03 8605 7601 email carl.radford@wsaa.asn.au.

1.1. Issue of Certificate

This Certificate has been published and/or prepared by WSAA and nominated Project Manager and peer group of technical specialists (the Publishers).

The Certificate and the underlying product appraisal criteria have been prepared for use within Australia only by technical specialists that have expertise in the function of products such as those appraised in the Certificate (the Recipients).

By accepting this Certificate, the Recipient acknowledges and represents to the Publisher(s) and each person involved in the preparation of the Certificate and product appraisal criteria underlying it that the Recipient has understood and accepted the terms of this Disclaimer.

1.2. Limits on Reliance on Information and Recommendations

1.2.1. Disclaimer of liability

Neither the Publisher(s) nor any person involved in the preparation of the Certificate and product appraisal criteria underlying it accept(s) any liability for any loss or damage suffered by any person however caused (including negligence or the omission by any person to do anything) relating in any way to the Certificate or the product appraisal criteria underlying it. This includes (without limitation) any liability for any recommendation or information in the Certificate or any errors or omissions.

1.2.2. Intellectual Property and other rights

WSAA does not undertake any assessment of whether the importation, manufacture, sale or use of the Product the subject of this Certificate infringes the intellectual property rights or proprietary rights of any person. Recipients of the Certificate should undertake their own assessment of whether (as relevant) the importation, manufacture, sale or use of the relevant Products infringe the intellectual property rights or other proprietary rights of any person. If the Product infringes intellectual property rights or other proprietary rights there is potential for the supply of the Products to be interrupted.

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The information and any recommendation contained (expressly or by implication) in this Certificate are provided in good faith (and subject to the limitations noted in this Certificate). However, you should treat the information as indicative only. You should not rely on that information or any such recommendation except to the extent that you reach an agreement to the contrary with the Publisher(s).

This Certificate does not contain all information that a person might require for the purposes of assessing any product discussed or appraised within it. The product appraisal criteria used in preparing this Certificate may not address all relevant aspects of the Product.

Recipients should seek independent evidence of any matter which is material to their decisions in connection with an assessment of the Product and consult their own advisers for any technical information required. Any decision to use the Product should take into account the reliability of that independent evidence obtained by the Recipient regarding the Product. Recipients should also independently verify and assess the appropriateness of any recommendation in the Certificate, especially given that any recommendation will not take into account a Recipient's particular needs or circumstances.

WSAA has not evaluated the extent of the product liability and professional indemnity insurance that the provider of the product maintains. Recipients should ensure that they evaluate the allocation of liability for product defects and any professional advice obtained in relation to the product or its specification including the requirements for product liability and professional indemnity insurance.

1.3. No Updating

Neither the Publisher(s) nor any person involved in the preparation of this Certificate or the product appraisal criteria underlying it [has] [have] any obligation to notify you of any change in the information contained in this Certificate or of any new information concerning the Publisher(s) or the Product or any other matter.

1.4. No Warranty

The Publisher(s) do[es] not, in any way, warrant that steps have been taken to verify or audit the accuracy or completeness of the information in this Certificate, or the accuracy, completeness or reasonableness of any recommendation in this Certificate.

SCHEDULE A - QUALITY AND PRODUCT CERTIFICATIONS

Copies of the following Quality and Product Certification Certificates are available for downloading from the WSAA 'Members Only' project portal website.

SCHEDULE A1 CLOVER PIPELINES PTY LTD - MANAGEMENT SYSTEMS

68-74 National Boulevard, Campbellfield, VIC 3061 Australia	
Quality Systems Standard	ISO 9001:2008
Certification Licence No.	102368
Certifying agency	Global Mark
First date of certification	12 May 2014
Current date of certification	12 May 2014
Expiry date of certification	1 September 2018

SCHEDULE A2 XINXING DUCTILE IRON PIPES CO LTD – MANAGEMENT SYSTEMS

Wuan City, Hebei Province, China	
Quality Systems Standard	ISO 9001
Certification licence no.	QAC0031001
Certifying agency	Lloyd's Register QA (Shanghai)
First date of certification	3 July 2003
Current date of certification	1 August 2015
Expiry date of certification	31 July 2018

SCHEDULE A3 CLOVER PIPELINES PTY LTD – PRODUCT CERTIFICATION

49-53 Newton Road, Wetherill Park, NSW 2164	
Product Standard/Spec.	AS/NZS 2280
Certificate No.	AMI 74618
Issuing certification body	Approval Mark International
Current date of certification	18 December 2015
Expiry date of certification	18 December 2020

CLOVER/XINXING DICL PIPE RANGE

SCHEDULE B1 COATING AND LINING SYSTEMS AND AREAS OF APPLICATION

COATING/LINING SYSTEM	C/L	BASE	FINISH	PIPE EXTERNAL COLOUR
Zn200	C	Zn 200g/m ²	Black epoxy 80µm	Black
ZnAl400	C	ZnAl 400g/m ²	Blue epoxy 100µm	Blue
CSC	L	GP cement	Seal coat bitumen 70µm	Black or Blue
C	L	GP cement	As cast	Black or Blue
HAC	L	HAC	NIL	Red

NOTES

1. All masses g/m² and thicknesses µm are minima.
2. Systems are applied to various sections of the pipe perimeter:
 - a. Outer pipe and socket barrel - Zn200 plus black epoxy 80 or ZnAl400 plus blue epoxy 100
 - b. Socket face - Zn200 plus black epoxy 80 or ZnAl400 plus blue epoxy 100
 - c. Socket mouth Zn200 plus black epoxy 80 or ZnAl400 plus blue epoxy 100
 - d. Socket sealing chamber and throat Black epoxy 80 or Blue Epoxy 100
 - e. Pipe bore - GP cement plus seal coat or GP cement or HAC

SCHEDULE B2 CLOVER/XINXING DICL PIPE RANGE (SP/SO)

DN	PN	Effective length (m)	Lining	Coating
225-750	20	5.70	SC CML	Zinc Black Epoxy
225-750	20	5.70	CML	Zinc Black Epoxy
225-750	20	5.70	SC CML	ZnAl Blue Epoxy
225-750	20	5.70	CML	ZnAl Blue Epoxy
100-750	35	5.70	SC CML	Zinc Black Epoxy
100-750	35	5.70	CML	Zinc Black Epoxy
100-750	35	5.70	SC CML	ZnAl Blue Epoxy
100-750	35	5.70	CML	ZnAl Blue Epoxy
100-750	FC	5.70	CML	Zinc Black Epoxy
100-750	FC	5.70	CML	ZnAl Blue Epoxy
100-750	35	5.70	HAC	Zinc Red Epoxy
100-750	35	5.70	HAC	ZnAl Blue Epoxy



**TABLE 3
CLOVER/XINXING DICL PIPE DIMENSIONS**

DN	PN20		PN 35		FC		Nominal Pipe OD (mm)
	Wall Thickness Nominal (mm)	Wall Thickness Minimum (mm)	Wall Thickness Nominal (mm)	Wall Thickness Minimum (mm)	Wall Thickness Nominal (mm)	Wall Thickness Minimum (mm)	
100	-	-	4.9	3.5	7.4	6.0	122
150	-	-	5.0	3.5	7.5	6.0	177
200	-	-	5.0	3.5	8.5	7.0	232
225	4.5	3.0	5.0	3.5	8.5	7.0	259
250	4.6	3.0	5.2	3.6	9.6	8.0	286
300	4.6	3.0	5.9	4.3	9.6	8.0	345
375	4.8	3.1	7.0	5.3	10.7	9.0	426
450	5.4	3.6	8.1	6.3	11.8	10.0	507
500	5.8	4.0	8.8	7.0	11.8	10.0	560
600	6.7	4.8	10.2	8.3	12.9	11.0	667
750	8.0	5.9	12.3	10.2	15.1	13.0	826