

# DUCTILE IRON PIPE



## ZINALIUM® HYDROCLASS® & INTEGRAL®

The PAM Hydroclass and Integral Ductile iron pipe range is flexible pipe system suitable for pressure and non-pressure water supply, sewerage and aggressive medium applications.



### ZINALIUM® COATING

- Zinalium is an active corrosion protection system, consisting of a base zinc and aluminium alloy coating (400g/m<sup>2</sup>) and a synthetic epoxy pore sealer (100µm).
- Zinalium extends the lifespan of a pipeline by actively protecting the pipe against the corrosive effects of the surrounding soil.
- Zinalium ductile iron pipes can be directly buried in contact with the majority of soils without polyethylene sleeving. Contact the Clover engineering team to discuss suitable ground conditions.

### HYDROCLASS®

- Hydroclass ductile iron pipes are supplied with a standard Sulphate Resistant (SR) blast furnace slag cement mortar lining and are suitable for potable water, recycled water and raw water applications.
- An optional bituminous seal coat may be applied to the cement mortar lining to restrict lime leaching when conveying soft water, especially with low flow rates and/or lengthy residence times. (Total alkalinity < 30mg/L).
- Hydroclass pipes are supplied with a standard T-type EPDM gasket and feature a blue external colour.

### INTEGRAL®

- Integral ductile iron pipes are supplied with a standard Calcium Aluminate (CA) cement mortar lining and are suitable for gravity sewer, pressure sewer, mining slurry and aggressive applications (mediums with pH concentrations ranging from pH4 and pH12).
- Integral pipes are supplied with a standard T-type EPDM gasket and feature a red external colour.

### SPECIFICATIONS

**Diameter Range:** DN100 to DN750

**Nominal Pressure:** Up to 3,500kPa (PN35)

**End Connection:** Rubber Ring Joint (RRJ) – EPDM

**Certification:**

- AS/NZS2280 “Ductile iron pipes and fittings”
- AS/NZS4020 “Testing of products for use in contact with drinking water”

**WSAA Product Appraisal:** PA 14/18

**WSA Purchase Specification:**

- PS200 - Ductile Iron Pipes (CIOD) for Pressure Applications - Water Supply and Sewerage

### FEATURES

- High hoop and axial strength provides ductile iron pipe the ability to resist the extreme stresses imparted by soil, construction loads and variable pipeline operating conditions.
- Ductile iron is tough allowing it to endure irregular operating conditions and the demands of handling in the field.
- High burst strength makes ductile iron pipe well suited for high-pressure applications.
- Ductile iron pipe has proven long term performance and maintenance free operation.
- Each ductile iron pipe joint can be deflected allowing the installer to reduce the number of bends required.

### APPLICATIONS

- Potable and recycled water supply
- Irrigation and raw water
- Gravity and sewer rising mains
- Mining and slurry
- Stormwater and drainage
- Buried and above ground

### OPTIONS

- Restraint joints
- Fabricated & flange class pipework available
- Zinc external coating (Zn200 g/m<sup>2</sup>)
- Larger diameters available (DN800 to DN2000)
- Polyethylene coating and lining options available
- Higher pressures available (Up to PN100)

# PN35 DUCTILE IRON PIPE

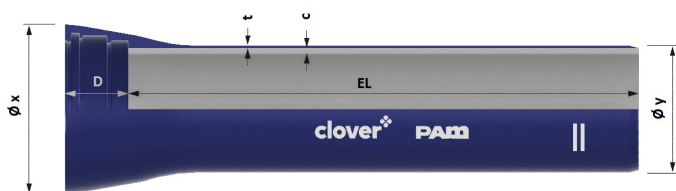


SPECIFICATIONS	SYM	UNITS	DN 100	DN 150	DN 200	DN 225	DN 250	DN 300	DN 375	DN 450	DN 500	DN 600	DN 750
PRESSURE NOMINAL	PN	Nom	35	35	35	35	35	35	35	35	35	35	35
MEAN PIPE OUTSIDE DIAMETER	$\emptyset y$	mm	122 (+1,-2)	177 (+1,-2)	232 (+1,-2)	259 (+1,-2)	286 (+1,-2)	345 (+1,-2)	426 ( $\pm 2$ )	507 ( $\pm 2$ )	560 ( $\pm 2$ )	667 ( $\pm 2$ )	826 ( $\pm 2$ )
EFFECTIVE LENGTH	EL	m	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75
MINIMUM JOINT DEFLECTION	$^{\circ}$	deg	3.5	3.5	3.5	3.5	3.5	2.5	2.5	2.5	2.5	2.5	1
MEAN INTERNAL PIPE DIAMETER - CEMENT MORTAR LINED	$\emptyset z$	mm	102.2	157.0	212.0	239.0	256.6	323.2	402.0	480.8	532.4	636.7	789.4
NOMINAL PIPE WALL THICKNESS	t	mm	4.9	5.0	5.0	5.0	5.2	5.9	7.0	8.1	8.8	10.2	12.3
MINIMUM PIPE WALL THICKNESS	a	mm	3.5	3.5	3.5	3.5	3.6	4.3	5.3	6.3	7.0	8.3	10.2
NOMINAL CEMENT MORTAR LINING THICKNESS	c nom	mm	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0
MINIMUM CEMENT MORTAR LINING THICKNESS	c min	mm	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.5
PIPE SOCKET DEPTH OF ENTRY	D	mm	89	89	102	102	102	102	127	127	127	135	157
PIPE SOCKET OUTSIDE DIAMETER	$\emptyset x$	mm	163	219	279	305	330	392	488	571	626	752	913
WEIGHT OF PIPE LENGTH	W	kg	102	150	200	232	270	356	501	661	779	1 080	1 596

PRESSURE	SYM	UNITS	DN 100	DN 150	DN 200	DN 225	DN 250	DN 300	DN 375	DN 450	DN 500	DN 600	DN 750
ALLOWABLE OPERATING PRESSURE	AOP	MPa	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
MAXIMUM ALLOWABLE OPERATING PRESSURE	MAOP	MPa	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20
ALLOWABLE SITE TEST PRESSURE	ASTP	MPa	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38
BURST PRESSURE	BURST	MPa	21	14	11	11	11	11	11	11	11	11	11

PROPERTIES	SYM	UNITS	DN 100	DN 150	DN 200	DN 225	DN 250	DN 300	DN 375	DN 450	DN 500	DN 600	DN 750
TRANSFORM WALL THICKNESS	tt	mm	4.35	4.35	4.35	4.55	4.95	5.65	6.65	7.65	8.35	9.65	11.65
CELERITY	C	m/s	1 260	1 190	1 130	1 114	1 110	1 095	1 082	1 073	1 070	1 061	1 055
RING STIFFNESS	SN	N/m/m	695 000	219 900	95 900	78 600	75 100	63 500	54 800	49 400	47 700	43 500	40 300
BUCKLING PRESSURE	BP	kPa	7 332	2 320	1 012	829	792	670	578	521	503	459	425

TRANSPORT	SYM	UNITS	DN 100	DN 150	DN 200	DN 225	DN 250	DN 300	DN 375	DN 450	DN 500	DN 600	DN 750
NUMBER OF PIPES PER SEMI-LOAD	-	No.	192	144	108	96	78	60	42	32	28	18	14



PN35 pipes feature a red marking on the socket face

The products shown form part of Clover's continuous improvement program and as such the product designs, specifications and materials may change without notice.

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# PN20 DUCTILE IRON PIPE

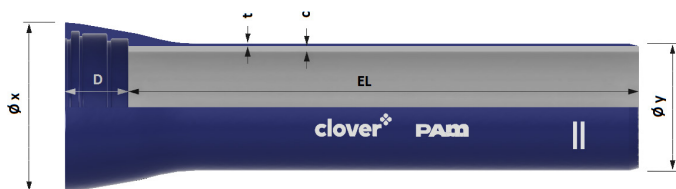


SPECIFICATIONS	SYM	UNITS	DN 225	DN 250	DN 300	DN 375	DN 450	DN 500	DN 600	DN 750
PRESSURE NOMINAL	PN	Nom	20	20	20	20	20	20	20	20
MEAN PIPE OUTSIDE DIAMETER	$\varnothing y$	mm	259 (+1,-2)	286 (+1,-2)	345 (+1,-2)	426 ( $\pm 2$ )	507 ( $\pm 2$ )	560 ( $\pm 2$ )	667 ( $\pm 2$ )	826 ( $\pm 2$ )
EFFECTIVE LENGTH	EL	m	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75
MINIMUM JOINT DEFLECTION	$^{\circ}$	deg	3.5	3.5	2.5	2.5	2.5	2.5	2.5	1
MEAN INTERNAL PIPE DIAMETER - CEMENT MORTAR LINED	$\varnothing z$	mm	240.0	266.8	325.8	406.4	486.2	538.4	643.6	798.0
NOMINAL PIPE WALL THICKNESS	t	mm	4.5	4.6	4.6	4.8	5.4	5.8	6.7	8.0
MINIMUM PIPE WALL THICKNESS	a	mm	3.0	3.0	3.0	3.1	3.6	4.0	4.8	5.9
NOMINAL CEMENT MORTAR LINING THICKNESS	c nom	mm	5.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0
MINIMUM CEMENT MORTAR LINING THICKNESS	c min	mm	3.5	3.5	3.5	3.5	3.5	3.5	3.5	4.5
PIPE SOCKET DEPTH OF ENTRY	D	mm	102	102	102	127	127	127	135	157
PIPE SOCKET OUTSIDE DIAMETER	$\varnothing x$	mm	305	330	392	488	571	626	752	913
WEIGHT OF PIPE LENGTH	W	kg	225	249	301	386	492	572	779	1 138

PRESSURE	SYM	UNITS	DN 225	DN 250	DN 300	DN 375	DN 450	DN 500	DN 600	DN 750
ALLOWABLE OPERATING PRESSURE	AOP	MPa	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
MAXIMUM ALLOWABLE OPERATING PRESSURE	MAOP	MPa	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
ALLOWABLE SITE TEST PRESSURE	ASTP	MPa	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
BURST PRESSURE	BURST	MPa	10	9	7	6	6	6	6	6

PROPERTIES	SYM	UNITS	DN 225	DN 250	DN 300	DN 375	DN 450	DN 500	DN 600	DN 750
TRANSFORM WALL THICKNESS	tt	mm	4.35	4.35	4.35	4.45	4.95	5.35	6.15	7.35
CELERITY	C	m/s	1 104	1 079	1 031	980	961	955	944	934
RING STIFFNESS	SN	N/m/m	68 500	50 700	28 600	16 200	13 200	12 300	11 100	10 000
BUCKLING PRESSURE	BP	kPa	723	535	302	171	139	130	117	105

TRANSPORT	SYM	UNITS	DN 225	DN 250	DN 300	DN 375	DN 450	DN 500	DN 600	DN 750
NUMBER OF PIPES PER SEMI-LOAD	-	No.	96	78	60	42	32	28	18	14



PN20 pipes feature a green marking on the socket face

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