

TYTON® DUCTILE IRON PIPE SYSTEMS PN30/25 RUBBER RING JOINT DN375-750

For Potable Water, Raw Water,
Sewer and Aggressive Fluids



THE BENEFITS OF DUCTILE IRON

Pressure Class PN 30/25 meets the minimum pressure class requirements to satisfying a wide range of distribution systems.

Peace of mind considering water hammer, rogue surges, cyclic stresses, varying soil loads, unpredictable traffic loads, and all unforeseen rigours of a pipe system in construction, operation and maintenance.

Operational savings and benefits via larger bores with reduced headlosses, reduced pumping costs and increased flows.

EXTERNAL ZINC & SYNTHETIC RESIN COATING

The external barrel is protected with a 200g/m² metallic zinc layer comprising of 99% pure zinc and finished with an average synthetic resin layer of 100µm DFT providing active corrosion protection. Active protection means the pipe continues to be protected in the case of superficial damage to the external coating.

INTERNAL CEMENT, SEAL COAT & POLYURATHANE LININGS

Dimax cement linings are centrifugally applied. The pipes are spun with high radial acceleration, around 100g and are simultaneously vibrated, producing a very dense smooth lining of extremely low permeability.

From years of proven in service experience, Dimax cement linings are proven to be hydraulically smooth with Colebrook-White k factors for all new pipes commonly in the order of 0.01-0.03mm.

Dimax cement mortar protects the ductile iron actively due to the chemistry at the iron and cement interface. The cement mortar forms a passive film that inhibits oxidation of the pipe surface.



DN 375-750

TYTON XCEL

TYTON XCEL is synonymous with the introduction of pressure class DI Pipe into Australia. Efficiency gains and cost savings are achieved without sacrificing the time proven superior performance capabilities associated with ductile iron.

Lining Options

The standard lining is a centrifugally spun cement mortar lining made up of Type SR (Sulphate Resisting) cement.

An additional Seal Coat applied to the cement lining surface is available as an option to inhibit the leaching of lime where very aggressive, soft waters of low hardness (total alkalinity <30mg/L) or high dissolved CO₂ are being conveyed.

For the conveyance of potable water, recycled water & raw water

TYTON XTREME

TYTON XTREME incorporates a highly wear resistant Calcium Aluminate Cement (CAC) mortar lining.

This lining protects the internal surface from corrosion, tuberculation and bacteriogenic acid attack when conveying aggressive fluids common in sewage and wastewater pipelines. Perfectly watertight & prevents root ingress.

For the conveyance of wastewater including:

- Gravity & Pressure Sewer effluent
- Domestic waste waters
- Mining slurries & process water
- Fluids between pH4 and pH12

TYTON XCEED

When it comes to highly aggressive fluids Polyurethane (PU) is the lining which simply exceeds all expectation.

TYTON XCEED's PU lining is applied in accordance with EN15655 and has an average thickness of 1300-1500µm.

For the conveyance of potable water, wastewater & sewer including:

- Very soft water (hardness less than 1mg/L) combined with extremely long residence times
- Mineral water, i.e. water whose chemical specifications must remain unchanged between the pipeline inlet and outlet
- Aggressive conveyants including septic sewage, high CO₂, chlorides, sulphates & brine

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NOMINAL SIZE	Symbol	Units	375	450	500	600	750	
KEY METRICS	Nominal pressure	PN	Nom	30	30	30	30	25
	Mean external diameter	\varnothing_y	mm	426	507	560	667	826
	Effective laying length	L_e	m	5.70	5.70	5.70	5.70	5.70
	Joint defelection	°	deg	2.5	2.5	2.5	2.5	1
UNLINED PIPE	Mean internal diameter	DI	mm	413	493	544	649	807
	Pipe barrel mass per metre	m_b	kg/m	58.6	79.7	95.4	131.2	171.8
	Pipe mass including socket	M_b	kg	367	492	586	799	1,048
SOCKET	Socket mass	S	kg	32.7	37.8	42.6	51.2	68.5
DI WALL THICKNESS	Nominal	t	mm	6.3	7.2	7.8	9.0	9.5
	Minimum	a	mm	4.6	5.4	6.0	7.1	7.4
CEMENT MORTAR LINED PIPE	Mean internal diameter	D_c	mm	404	484	535	640	796
	Nominal CML thickness	$t_c \text{ nom}$	mm	5	5	5	5	6
	Minimum CML thickness	$t_c \text{ min}$	mm	3.5	3.5	3.5	3.5	4.5
	Pipe barrel mass per metre	m_L	kg/m	72.4	96.3	113.7	153.0	205.0
	Pipe mass including socket and CML	M_L	kg	446	587	691	924	1,237
THEORETICALLY RATED PRESSURES	Allowable operating pressure	AOP	MPa	3.06	3.01	3.03	3.01	2.53
	Maximum allowable operating pressure	MAOP	MPa	3.67	3.62	3.64	3.62	3.04
	Allowable site test pressure	ASTP	MPa	3.82	3.77	3.79	3.77	3.16
	Burst pressure	BURST	MPa	9	9	9	9	8
STRUCTURAL & HYDRAULIC PROPERTIES	Transform wall thickness	t_t	mm	5.80	6.65	7.25	8.40	8.90
	Celerity of mean CML bore	c	m/s	1,048	1,038	1,034	1,026	985
	Barrel ring stiffness	S_D	kN/m/m	37	33	32	29	18
	Buckling pressure	P	kPa	392	350	337	310	193
FREIGHT	Pipes (lined) per truck	P/T	n	40	24	24	12	8
	Kilos per truck	$n \times M_L$	kg	17,824	14,077	16,580	11,082	9,897
WATER MASS	Mass of water contained in pipe	m_w	kg/m	128	184	225	322	498
MASS FULL	Mass of pipe full of water	M_T	kg/m	206	286	345	484	715
BENDING MOMENT AND FOS AGAINST FLEXURAL YIELD	Moment = $wL^2/8$ for simply supported beam over ELL	M_b	kNm	8.23	11.42	13.80	19.27	28.47
	$y = DE/2$	y	mm	213	254	280	334	413
	$I = \pi (D_o^4 - D_i^4) / 64$	I	mm ⁴	1.35E+08	2.68E+08	4.01E+08	8.01E+08	1.59E+09
	$\sigma = My/I$ Note max $M = 3wl^2/8$	σ_y	MPa	39	32	29	24	22
	FOS = Yield stress / Working stress	FOS	η	7.7	9.3	10.4	12.5	13.6

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CERTIFICATIONS

AS/NZS2280 – Ductile Iron Pipes & Fittings
Licence No. - WMK26514 SMK26514
AS4020 – Testing for use in contact with drinking water
EN15655.1 – Polyurethane lining of pipes and fittings



Certified Product

