

DIMAX TYTON® INTERNAL LININGS

FOR POTABLE AND RAW WATER, SEWAGE AND AGGRESSIVE FLUIDS



APPLICATION

Internal linings must be fit for purpose. They must be hydraulically smooth, operate in a range of temperatures and most provide assurance of a long, trouble-free service.

As pipeline bores carry a wide variety of fluids in a range of above and below ground applications, careful selection of a lining for ductile iron pipelines will ensure the safe transportation of:

- Potable water
- Raw water
- Irrigation water
- Gravity and pressure sewage
- Effluent and waste
- Bore water
- Sea water
- Slurries

CERTIFICATIONS

AS/NZS 4020 – Testing for use in contact with drinking water

AS/NZS 2280 – Ductile Iron Pipe & Fittings

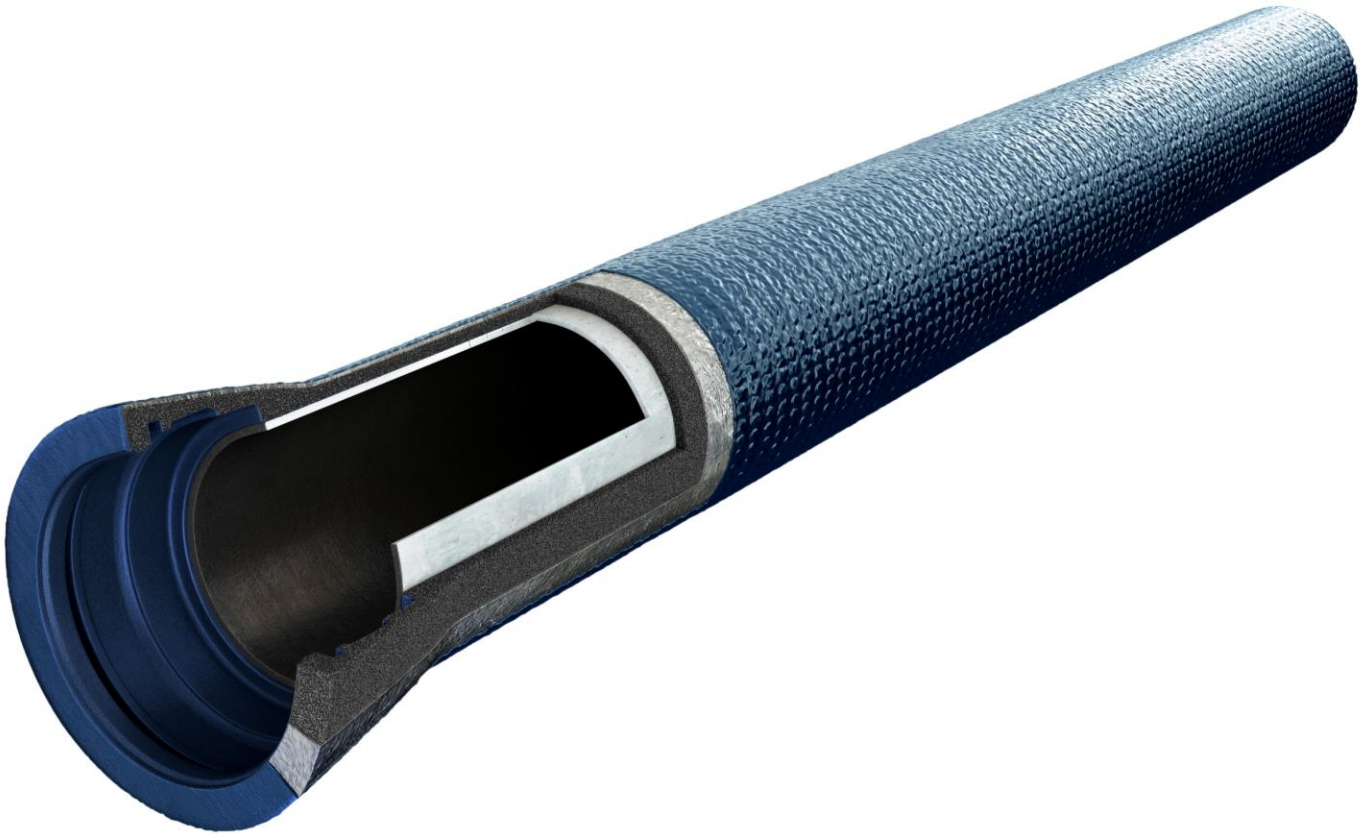
Licence No. WMK26514 SMK26514

EN 15665.1 – Polyurethane lining of pipes and fittings



DIMAX TYTON® INTERNAL LININGS

FOR POTABLE AND RAW WATER, SEWAGE AND AGGRESSIVE FLUIDS



SULPHATE RESISTING CEMENT

Cement mortar is the preferred lining in the protection of ductile iron pipes due to its active, protective nature. Cement mortar forms a passive film at the ductile iron interface that inhibits oxidation of the iron surface and stifles bacteriological action.

When cracks in cement are exposed to fluid filling the pipeline, a process known as 'autogenous healing' takes place. It helps to close any discontinuities that may exist in the lining. Cement is also easily repaired in the field and provides a tough, durable surface.

DIMAX TYTON® XCEL Cement linings are centrifugally spun and made up of Sulphate Resisting (SR) cement, sand and water. Pipes are spun with high radial acceleration, around 100g and are simultaneously vibrated. This process produces a very dense, smooth lining of extremely low permeability and Colebrook-White k factors for new pipes commonly in the order of 0.01-0.03mm.

SEAL COATED CEMENT

Certain aggressive, soft waters of low hardness (total alkalinity <30mg/L) or high dissolved CO₂ may leach lime from cement mortar linings, resulting in an increased pH in the conveyed waters. This is particular with low flows or long residence times such as 1-3 days. This can be overcome with an assessment of water chemistry and operational conditions during the design stage.

The application of an effective seal coat to the cement mortar lining surface will restrict pH increases in the conveyant.

DIMAX seal coat systems, optional with the DIMAX TYTON® XCEL range, have passed all testing to AS/NZS 4020, and demonstrated the essential properties for long life and performance including:

- Good adhesion
- High abrasion resistance
- High permeation resistance

CALCIUM ALUMINATE CEMENT

Available in the DIMAX TYTON® XTREME range of ductile iron pipe, Cement Aluminate (CA) Cement Lining is ideal for aggressive applications such as septic gravity and other aggressive industrial effluents.

CA Cement Lining has excellent performance under bacteriogenic acid attacks, accommodating pH 4 to pH 14. With the additional benefit of resisting abrasion caused by grit and suspended soils, the lining protects the internal surface from chemical and gas attacks, and tuberculation when conveying aggressive fluids common in sewage and wastewater pipelines.

DIMAX TYTON® INTERNAL LININGS

FOR POTABLE AND RAW WATER, SEWAGE AND AGGRESSIVE FLUIDS



IMAGE 1



POLYURETHANE

Polyurethane (PU) is the most effective lining for highly aggressive fluids and has no chemical reaction to chlorine or other disinfectants.

The elasticity of PU allows deformation (like the ductile iron pipe shell). DIMAX XCEED PU lining is applied in accordance with EN 15655 and has average thickness of 1300-1500µm.

Ideal for the conveyance of potable water, wastewater and sewer including:

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

TABLE 1

		SYMBOL	UNITS	100	150	200	225	250	300	375	450	500	600	750
KEY METRICS	Nominal Pressure	PN	Nom	35	35	35	35	35	35	35	35	35	35	35
	Mean external diameter	Ø _y	mm	122	177	232	259	286	345	426	507	560	667	826
	Effective laying length	L _e	m	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
	Joint Deflection	°	deg	3.5	3.5	3.5	3.5	3.5	2.5	2.5	2.5	2.5	2.5	1
POLYURETHANE LINED PIPE	Mean internal diameter	DI	mm	110	165	219	246	273	329	408	487	539	643	799
	Nominal PU thickness	t _{p,nom}	mm	1.3	1.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	Pipe mass including socket	M _u	kg	79	115	152	178	210	284	410	552	658	891	1316
CEMENT MORTAR LINED PIPE	Mean internal diameter	D _c	mm	102	157	212	239	266	323	402	481	532	637	789
	Nominal PU thickness	t _{c,nom}	mm	5	5	5	5	5	5	5	5	5	5	6
	Pipe mass including socket	ML	kg	102	148	198	230	267	353	497.3	656	773	1029	1521
RATED PRESSURES	Allowable operating pressure	AOP	MPa	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
	Maximum allowable operating pressure	MAOP	MPa	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
	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