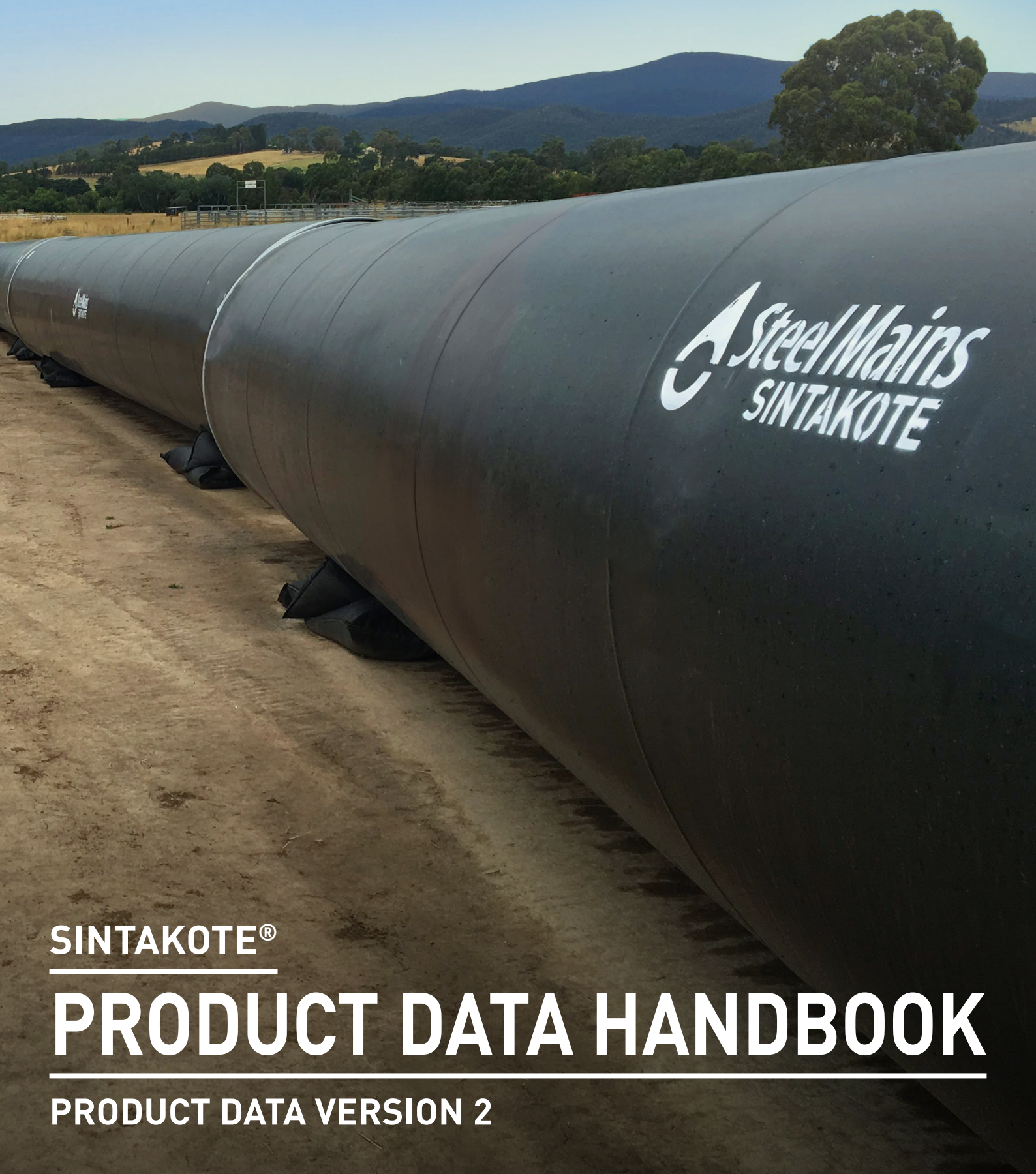




SINTAKOTE®

PRODUCT DATA HANDBOOK

PRODUCT DATA VERSION 2

01

SINTAKOTE PIPE DATA

- Steel strength - Recommended maximum internal pressures
- Coatings
- Linings
- Nominal bores
- Pipe masses
- Pipe lengths
- Welded end pipe specification
- SINTAJOINT® & SINTALOCK® JOINT rated pressures

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SINTAKOTE JOINTING

- SINTAJOINT
- Spherical slip-in joint
- Ball and socket joint
- SINTALOCK rubber ring joint—Type I
- SINTALOCK rubber ring joint—Type II
- Plain butt joint
- Butt joint with collar
- Flange joints

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SINTAKOTE FITTINGS

- SINTAKOTE fittings
- SINTAJOINT fittings
- Fittings configurations



Steel water pipe produced in accordance with AS 1579 is normally manufactured from the following grades of steel manufactured to AS/NZS 1594 - Hot-rolled steel coil or AS/NZS 3678 - Structural steel - hot-rolled plate.

AS/NZ standard grade steels define specific limits for the chemical elements in the steel, such as carbon, manganese, silicon, sulphur and phosphorous. The chemical composition affects the steels mechanical properties, weldability, and corrosion resistance.

STEEL STRENGTH

Table 1:

Wall Thickness t mm	Min. Yield Strength MYS MPa	Min. Tensile Strength MTS MPa	Product Standard	Grade
5 ≤ t ≤ 8	300	400	AS/NZS 1594	HA300
8 < t ≤ 12.7	300	400	AS/NZS 1594	HU300
t > 12.7	250	350	AS/NZS 1594	HA1016

Non-standard - special applications. Please contact Steel Mains to discuss further.

FOR THICKNESSES UP TO 12.7MM

Steel Mains uses guaranteed structural grades of steel, HA300 or HU300 with a specified guaranteed minimum yield strength of 300 MPa in accordance with AS/NZS 1594 for spiral welded steel pipe manufacture.

HA1016 is a chemical analysis grade of steel hence the mechanical property limits are not guaranteed by the steelmaker, but the statistical distributions associated with the chemical analysis limits are accurately known from historical data: Minimum mechanical property values associated with these limits have been identified and are included in Table 1.

Yield strength performance of the steel to make the pipe is assured by the hydrostatic test of each pipe after manufacture to 90% MYS (minimum yield strength).

The hydrostatic factory test not only proves minimum steel strength but also tests the welding and ultimate fitness for purpose.

Steel to other grades and specifications can be supplied if required.



RECOMMENDED MAXIMUM INTERNAL PRESSURES

All pipe manufactured to AS 1579 is hydrostatically proof tested in the factory.

Maximum test pressures are calculated using the following formula.

$$P_t = \frac{0.90 (2 \text{ MYS} \times t)}{D_o}$$

Maximum working pressures (rated pressures) are calculated using the following formula.

$$P_r = \frac{0.72 (2 \text{ MYS} \times t)}{D_o}$$

where:

- t = steel wall thickness
- Do = outside diameter of steel shell
- MYS = Minimum Yield Strength of the steel

LININGS

Steel Mains offers Portland cement, Sulfate Resisting and Calcium Aluminate cement mortar linings. Please contact your local Steel Mains regional office for more information.

Table 2:

Outside Diameter. D _o mm	Cement Mortar Lining Thickness mm	Tolerance ± mm
114 - 273	9	3
>273-762	12	4
>762-1219	16	4
>1219-2159	19	4



COATINGS

SINTAKOTE is a medium-density polyethylene coating which is fusion bonded directly to the steel pipe surface.

SINTAKOTE offers superior corrosion protection and its features include:

- Excellent adhesion
- High iMPact and load resistance
- Excellent chemical resistance
- High dielectric strength
- High electrical resistance
- Low water absorption
- Resistance to soil stresses
- Wide service temperature range (-40°C to 70°C)
- Inbuilt ultraviolet stabiliser

Table 3:

Outside Diameter D _o mm	Sintakote Thickness t _s mm
114 - 273	1.6
>273-762	1.8
>762-1219	2
>1219-2159	2.3

NOMINAL BORES

Nominal bores listed on page 3 - 8 are based on CML thicknesses given in the table under Linings on this page.

PIPE MASSES

Pipe masses are calculated from the following formulae.

Plain steel shell:

$$M_1 = 0.02466(D_o - t)t \quad \text{kg/m}$$

Cement mortar lining:

$$M_2 = 0.00755T(D_o - 2t - T) \quad \text{kg/m}$$

SINTAKOTE:

$$M_3 = 0.00295D_o t \quad \text{kg/m}$$

where

- t = steel wall thickness mm
- Do = outside diameter of steel shell mm
- MYS = Minimum Yield Strength of the steel MPa
- T = cement mortar lining mm

PIPE LENGTHS

Pipes are normally supplied in 6m, 9m, 12.2m and 13.5m total lengths.

Minimum length is usually 6 metres.

STEEL MAINS SINTAKOTE PIPELINE SYSTEM

WELDED END PIPE SPECIFICATIONS

UP TO 300mm WELDED END

Table 4:

OD mm	WT t mm	MYS MPa	Test Pressure P _t		Rated Pressure P _r		SK t _s mm	CML T mm	Bore CML mm	Empty Pipe		Water Filled pipe SKCL kg/m	Buoyant weight SKCL kN/m	Tonnes per Pipe SKCL			
			MPa	m	MPa	m				SKCL kg/m	UCCCL kg/m			6 m	9 m	12.2 m	13.5 m
114	4.8	300	8.5	866	6.8	693	1.6	9	86	19.9	19.4	25.8	0.1	0.1			
168	5	300	8.5	866	6.8	693	1.6	9	140	31.0	30.2	46.4	0.1	0.2	0.3		
190	5	300	8.5	866	6.8	693	1.6	9	162	35.3	34.4	55.9	0.1	0.2	0.3		
219	5	300	8.5	866	6.8	693	1.6	9	191	41.0	40.0	69.7	0.0	0.2	0.4		
240	5	300	8.5	866	6.8	693	1.6	9	212	45.1	44.0	80.4	-0.0	0.3	0.4		
257	5	300	8.5	866	6.8	693	1.6	9	229	48.5	47.2	89.6	-0.0	0.3	0.4		
273	5	300	8.5	866	6.8	693	1.6	9	245	51.6	50.3	98.7	-0.1	0.3	0.5		
290	5	300	8.5	866	6.8	693	1.8	12	256	61.0	59.4	112.4	-0.1	0.4	0.5		

300-500mm WELDED END

Table 5:

OD mm	WT t mm	MYS MPa	Test Pressure P _t		Rated Pressure P _r		SK t _s mm	CML T mm	Bore CML mm	Empty Pipe		Water Filled pipe SKCL kg/m	Buoyant weight SKCL kN/m	Tonnes per Pipe SKCL			
			MPa	m	MPa	m				SKCL kg/m	UCCCL kg/m			6 m	9 m	12.2 m	13.5 m
324	5	300	8.3	849	6.7	680	1.8	12	290	68.4	66.7	134.5	-0.2	0.4	0.6		
324	6	300	8.5	866	6.8	693	1.8	12	288	76.0	74.2	141.1	-0.1	0.5	0.7		
337	5	300	8.0	817	6.4	653	1.8	12	303	71.3	69.5	143.4	-0.2	0.4	0.6		
337	6	300	8.5	866	6.8	693	1.8	12	301	79.1	77.3	150.3	-0.1	0.5	0.7		
356	5	300	7.6	773	6.1	618	1.8	12	322	75.4	73.5	156.9	-0.3	0.5	0.7		
356	6	300	8.5	866	6.8	693	1.8	12	320	83.8	81.9	164.2	-0.2	0.5	0.8		
406	5	300	6.7	678	5.3	542	1.8	12	372	86.4	84.2	195.1	-0.4	0.5	0.8	1.1	
406	6	300	8.0	813	6.4	651	1.8	12	370	95.9	93.8	203.5	-0.4	0.6	0.9	1.2	
406	8	300	8.5	866	6.8	693	1.8	12	366	114.9	112.8	220.1	-0.2	0.7	1.0	1.4	
419	5	300	6.4	657	5.2	525	1.8	12	385	89.2	87.0	205.7	-0.5	0.5	0.8	1.1	
419	6	300	7.7	788	6.2	631	1.8	12	383	99.1	96.9	214.3	-0.4	0.6	0.9	1.2	
419	8	300	8.5	866	6.8	693	1.8	12	379	118.7	116.5	231.5	-0.2	0.7	1.1	1.4	
457	5	300	5.9	602	4.7	482	1.8	12	423	97.6	95.1	238.1	-0.7	0.6	0.9	1.2	
457	6	300	7.1	723	5.7	578	1.8	12	421	108.4	106.0	247.6	-0.6	0.7	1.0	1.3	
457	8	300	8.5	866	6.8	693	1.8	12	417	129.9	127.4	266.4	-0.4	0.8	1.2	1.6	

OD = Outside diameter of steel pipe shell.
Does not include SINTAKOTE thickness

WT = Thickness of steel

SKCL = Thickness of SINTAKOTE external coating

CML = Thickness of cement mortar lining

SKCL = SINTAKOTE cement mortar lining

UCCCL = Uncoated cement mortar lining

Rated Pressure = Maximum allowable operating internal pressure

Tested Pressure = Maximum internal pressure each pipe is tested to during manufacturing

Note:

1. See Table 1 for associated steel grades and relevant minimum yield strength and minimum tensile strength values. (t < 12.7mm - 300MPa, t > 12.7mm - 250MPa)

2. For further sizes and greater pressures please contact your local Steel Mains Regional Sales Office.



STEEL MAINS SINTAKOTE PIPELINE SYSTEM

WELDED END PIPE SPECIFICATIONS

500-700mm WELDED END

Table 6:

OD mm	WT t mm	MYS MPa	Test Pressure P _t		Rated Pressure P _r		SK t _s mm	CML T mm	Bore CML mm	Empty Pipe		Water Filled pipe SKCL kg/m	Buoyant weight SKCL kN/m	Tonnes per Pipe SKCL			
			MPa	m	MPa	m				SKCL kg/m	UCCL kg/m			6 m	9 m	12.2 m	13.5 m
502	5	300	5.4	548	4.3	439	1.8	12	468	107.4	104.8	279.5	-0.9	0.6	1.0	1.3	1.5
502	6	300	6.5	658	5.2	526	1.8	12	466	119.4	116.7	289.9	-0.8	0.7	1.1	1.5	1.6
502	8	300	8.5	866	6.8	693	1.8	12	462	143.1	140.4	310.7	-0.6	0.9	1.3	1.7	1.9
508	5	300	5.3	542	4.3	433	1.8	12	474	108.7	106.1	285.2	-0.9	0.7	1.0	1.3	1.5
508	6	300	6.4	650	5.1	520	1.8	12	472	120.8	118.1	295.8	-0.8	0.7	1.1	1.5	1.6
508	8	300	8.5	866	6.8	693	1.8	12	468	144.8	142.1	316.8	-0.6	0.9	1.3	1.8	2.0
559	5	300	4.8	492	3.9	394	2.0	12	525	120.3	117.0	336.7	-1.3	0.7	1.1	1.5	1.6
559	6	300	5.8	591	4.6	473	2.0	12	523	133.6	130.3	348.4	-1.1	0.8	1.2	1.6	1.8
559	8	300	7.7	788	6.2	630	2.0	12	519	160.1	156.8	371.7	-0.9	1.0	1.4	2.0	2.2
610	5	300	4.4	451	3.5	361	2.0	12	576	131.5	127.9	392.0	-1.6	0.8	1.2	1.6	1.8
610	6	300	5.3	541	4.2	433	2.0	12	574	146.1	142.5	404.8	-1.5	0.9	1.3	1.8	2.0
610	8	300	7.1	722	5.7	578	2.0	12	570	175.1	171.5	430.3	-1.2	1.1	1.6	2.1	2.4
648	5	300	4.2	425	3.3	340	2.0	12	614	139.8	136.0	435.9	-1.9	0.8	1.3	1.7	1.9
648	6	300	5.0	510	4.0	408	2.0	12	612	155.3	151.5	449.5	-1.8	0.9	1.4	1.9	2.1
648	8	300	6.7	680	5.3	544	2.0	12	608	186.3	182.4	476.6	-1.4	1.1	1.7	2.3	2.5
660	5	300	4.1	417	3.3	334	2.0	12	626	142.5	138.6	450.2	-2.0	0.9	1.3	1.7	1.9
660	6	300	4.9	500	3.9	400	2.0	12	624	158.3	154.4	464.1	-1.8	0.9	1.4	1.9	2.1
660	8	300	6.5	667	5.2	534	2.0	12	620	189.8	185.9	491.7	-1.5	1.1	1.7	2.3	2.6

OD = Outside diameter of steel pipe shell.
Does not include SINTAKOTE thickness

WT = Thickness of steel

SKCL = Thickness of SINTAKOTE external coating

CML = Thickness of cement mortar lining

SKCL = SINTAKOTE cement mortar lining

UCCL = Uncoated cement mortar lining

Rated Pressure = Maximum allowable operating internal pressure

Tested Pressure = Maximum internal pressure each pipe is tested to during manufacturing

Note:

1. See Table 1 for associated steel grades and relevant minimum yield strength and minimum tensile strength values. (t < 12.7mm - 300MPa, t > 12.7mm - 250MPa)

2. For further sizes and greater pressures please contact your local Steel Mains Regional Sales Office.

STEEL MAINS SINTAKOTE PIPELINE SYSTEM

WELDED END PIPE SPECIFICATIONS

700-900mm WELDED END

Table 7:

OD mm	WT t mm	MYS MPa	Test Pressure P _t		Rated Pressure P _r		SK t _s mm	CML T mm	Bore CML mm	Empty Pipe		Water Filled pipe SKCL kg/m	Buoyant weight SKCL kN/m	Tonnes per Pipe SKCL			
			MPa	m	MPa	m				SKCL kg/m	UCCL kg/m			6 m	9 m	12.2 m	13.5 m
700	5	300	3.9	393	3.1	315	2.0	12	666	151.3	147.1	499.6	-2.3	0.9	1.4	1.8	2.0
700	6	300	4.6	472	3.7	377	2.0	12	664	168.1	163.9	514.3	-2.2	1.0	1.5	2.1	2.3
700	8	300	6.2	629	4.9	503	2.0	12	660	201.5	197.4	543.7	-1.8	1.2	1.8	2.5	2.7
700	12	250	7.7	786	6.2	629	2.0	12	652	267.9	263.8	601.8	-1.2	1.6	2.4	3.3	3.6
711	5	300	3.8	387	3.0	310	2.0	12	677	153.7	149.5	513.6	-2.4	0.9	1.4	1.9	2.1
711	6	300	4.6	465	3.6	372	2.0	12	675	170.7	166.6	528.6	-2.3	1.0	1.5	2.1	2.3
711	8	300	6.1	619	4.9	495	2.0	12	671	204.8	200.6	558.4	-1.9	1.2	1.8	2.5	2.8
711	12	300	8.5	866	6.8	693	2.0	12	663	272.2	268.0	617.4	-1.3	1.6	2.4	3.3	3.7
762	5	300	3.5	361	2.8	289	2.0	12	728	164.9	160.4	581.1	-2.9	1.0	1.5	2.0	2.2
762	6	300	4.3	433	3.4	347	2.0	12	726	183.2	178.7	597.2	-2.7	1.1	1.6	2.2	2.5
762	8	300	5.7	578	4.5	462	2.0	12	722	219.7	215.2	629.2	-2.4	1.3	2.0	2.7	3.0
762	12	300	8.5	866	6.8	693	2.0	12	714	292.2	287.7	692.6	-1.7	1.8	2.6	3.6	3.9
800	5	300	3.4	344	2.7	275	2.3	16	758	197.0	191.5	648.2	-3.1	1.2	1.8	2.4	2.7
800	6	300	4.1	413	3.2	330	2.3	16	756	216.2	210.7	665.0	-2.9	1.3	1.9	2.6	2.9
800	8	300	5.4	550	4.3	440	2.3	16	752	254.4	249.0	698.6	-2.5	1.5	2.3	3.1	3.4
800	12	300	8.1	826	6.5	661	2.3	16	744	330.4	325.0	765.2	-1.7	2.0	3.0	4.0	4.5
813	5	300	3.3	339	2.7	271	2.3	16	771	200.2	194.7	667.1	-3.2	1.2	1.8	2.4	2.7
813	6	300	4.0	406	3.2	325	2.3	16	769	219.7	214.2	684.2	-3.0	1.3	2.0	2.7	3.0
813	7	300	4.6	474	3.7	379	2.3	16	767	239.2	233.7	701.3	-2.8	1.4	2.2	2.9	3.2
813	8	300	5.3	542	4.3	433	2.3	16	765	258.7	253.2	718.3	-2.6	1.6	2.3	3.2	3.5
813	12	300	8.0	812	6.4	650	2.3	16	757	335.9	330.4	786.0	-1.9	2.0	3.0	4.1	4.5

OD = Outside diameter of steel pipe shell.
Does not include SINTAKOTE thickness

WT = Thickness of steel

SKCL = Thickness of SINTAKOTE external coating

CML = Thickness of cement mortar lining

SKCL = SINTAKOTE cement mortar lining

UCCL = Uncoated cement mortar lining

Rated Pressure = Maximum allowable operating
internal pressure

Tested Pressure = Maximum internal pressure
each pipe is tested to during
manufacturing

Note:

1. See Table 1 for associated steel grades and relevant minimum yield strength and minimum tensile strength values. (t ≤ 12.7mm - 300MPa, t > 12.7mm - 250MPa)
2. For further sizes and greater pressures please contact your local Steel Mains Regional Sales Office.



STEEL MAINS SINTAKOTE PIPELINE SYSTEM

WELDED END PIPE SPECIFICATIONS

900-1200mm WELDED END

Table 8:

OD mm	WT t mm	MYS MPa	Test Pressure P _t		Rated Pressure P _r		SK t _s mm	CML T mm	Bore CML mm	Empty Pipe		Water Filled pipe SKCL kg/m	Buoyant weight SKCL kN/m	Tonnes per Pipe SKCL			
			MPa	m	MPa	m				SKCL kg/m	UCCL kg/m			6 m	9 m	12.2 m	13.5 m
914	6	300	3.5	361	2.8	289	2.3	16	870	247.6	241.4	842.0	-4.1	1.5	2.2	3.0	3.3
914	7	300	4.1	422	3.3	337	2.3	16	868	269.6	263.4	861.3	-3.9	1.6	2.4	3.3	3.6
914	8	300	4.7	482	3.8	385	2.3	16	866	291.5	285.3	880.5	-3.6	1.7	2.6	3.6	3.9
914	10	300	5.9	602	4.7	482	2.3	16	862	335.2	329.0	918.8	-3.2	2.0	3.0	4.1	4.5
914	12	300	7.1	723	5.7	578	2.3	16	858	378.7	372.5	956.9	-2.8	2.3	3.4	4.6	5.1
960	6	300	3.4	344	2.7	275	2.3	16	916	260.3	253.7	919.2	-4.6	1.6	2.3	3.2	3.5
960	8	300	4.5	459	3.6	367	2.3	16	912	306.4	299.9	959.7	-4.2	1.8	2.8	3.7	4.1
960	10	300	5.6	573	4.5	459	2.3	16	908	352.4	345.9	999.9	-3.7	2.1	3.2	4.3	4.8
960	12	300	6.8	688	5.4	550	2.3	16	904	398.2	391.7	1040.0	-3.3	2.4	3.6	4.9	5.4
972	6	300	3.3	340	2.7	272	2.3	16	928	263.6	257.0	939.9	-4.8	1.6	2.4	3.2	3.6
972	8	300	4.4	453	3.6	362	2.3	16	924	310.3	303.7	980.9	-4.3	1.9	2.8	3.8	4.2
972	10	300	5.6	566	4.4	453	2.3	16	920	356.9	350.3	1021.7	-3.8	2.1	3.2	4.4	4.8
972	12	300	6.7	680	5.3	544	2.3	16	916	403.3	396.7	1062.3	-3.4	2.4	3.6	4.9	5.4
1016	8	300	4.3	433	3.4	347	2.3	16	968	324.6	317.7	1060.6	-4.8	1.9	2.9	4.0	4.4
1016	10	300	5.3	542	4.3	433	2.3	16	964	373.4	366.5	1103.2	-4.4	2.2	3.4	4.6	5.0
1016	12	300	6.4	650	5.1	520	2.3	16	960	421.9	415.0	1145.7	-3.9	2.5	3.8	5.1	5.7
1035	8	300	4.2	425	3.3	340	2.3	16	987	330.8	323.8	1095.9	-5.1	2.0	3.0	4.0	4.5
1035	10	300	5.2	532	4.2	425	2.3	16	983	380.5	373.4	1139.4	-4.6	2.3	3.4	4.6	5.1
1035	12	300	6.3	638	5.0	511	2.3	16	979	429.9	422.9	1182.7	-4.1	2.6	3.9	5.2	5.8
1067	8	300	4.0	413	3.2	330	2.3	16	1019	341.2	333.9	1156.7	-5.5	2.0	3.1	4.2	4.6
1067	10	300	5.1	516	4.0	413	2.3	16	1015	392.4	385.2	1201.6	-5.0	2.4	3.5	4.8	5.3
1067	12	300	6.1	619	4.9	495	2.3	16	1011	443.5	436.3	1246.3	-4.5	2.7	4.0	5.4	6.0
1085	8	300	4.0	406	3.2	325	2.3	16	1037	347.0	339.7	1191.6	-5.7	2.1	3.1	4.2	4.7
1085	10	300	5.0	507	4.0	406	2.3	16	1033	399.2	391.8	1237.3	-5.2	2.4	3.6	4.9	5.4
1085	12	300	6.0	609	4.8	487	2.3	16	1029	451.1	443.8	1282.7	-4.7	2.7	4.1	5.5	6.1
1125	8	300	3.8	391	3.1	313	2.3	16	1077	360.0	352.4	1271.0	-6.3	2.2	3.2	4.4	4.9
1125	10	300	4.8	489	3.8	391	2.3	16	1073	414.1	406.5	1318.4	-5.8	2.5	3.7	5.1	5.6
1125	12	300	5.8	587	4.6	470	2.3	16	1069	468.1	460.4	1365.6	-5.2	2.8	4.2	5.7	6.3

OD = Outside diameter of steel pipe shell.
Does not include SINTAKOTE thickness

WT = Thickness of steel

SKCL = Thickness of SINTAKOTE external coating

CML = Thickness of cement mortar lining

SKCL = SINTAKOTE cement mortar lining

UCCL = Uncoated cement mortar lining

Rated Pressure = Maximum allowable operating internal pressure

Tested Pressure = Maximum internal pressure each pipe is tested to during manufacturing

Note:

- See Table 1 for associated steel grades and relevant minimum yield strength and minimum tensile strength values. (t < 12.7mm - 300MPa, t > 12.7mm - 250MPa)
- For further sizes and greater pressures please contact your local Steel Mains Regional Sales Office.

STEEL MAINS SINTAKOTE PIPELINE SYSTEM

WELDED END PIPE SPECIFICATIONS

1200-1500mm WELDED END

Table 9:

OD mm	WT t mm	MYS MPa	Test Pressure P_t		Rated Pressure P_r		SK t_s mm	CML T mm	Bore CML mm	Empty Pipe		Water Filled pipe SKCL kg/m	Buoyant weight SKCL kN/m	Tonnes per Pipe SKCL			
			MPa	m	MPa	m				SKCL kg/m	UCCL kg/m			6 m	9 m	12.2 m	13.5 m
1200	8	300	3.6	367	2.9	294	2.3	16	1152	384.4	376.3	1426.7	-7.4	2.3	3.5	4.7	5.2
1200	10	300	4.5	459	3.6	367	2.3	16	1148	442.2	434.1	1477.3	-6.8	2.7	4.0	5.4	6.0
1200	12	300	5.4	550	4.3	440	2.3	16	1144	499.8	491.7	1527.7	-6.3	3.0	4.5	6.1	6.7
1219	8	300	3.5	361	2.8	289	2.3	16	1171	390.6	382.3	1467.5	-7.7	2.3	3.5	4.8	5.3
1219	10	300	4.4	452	3.5	361	2.3	16	1167	449.3	441.0	1518.9	-7.1	2.7	4.0	5.5	6.1
1219	12	300	5.3	542	4.3	434	2.3	16	1163	507.9	499.6	1570.2	-6.6	3.0	4.6	6.2	6.9
1283	8	300	3.4	343	2.7	275	2.3	19	1229	439.3	430.6	1625.6	-8.5	2.6	4.0	5.4	5.9
1283	10	300	4.2	429	3.4	343	2.3	19	1225	501.1	492.4	1679.7	-7.9	3.0	4.5	6.1	6.8
1283	12	300	5.1	515	4.0	412	2.3	19	1221	562.7	554.0	1733.6	-7.3	3.4	5.1	6.9	7.6
1283	16	250	5.6	572	4.5	458	2.3	19	1213	685.3	676.6	1841.0	-6.1	4.1	6.2	8.4	9.3
1290	8	300	3.3	341	2.7	273	2.3	19	1236	441.7	432.9	1641.5	-8.6	2.7	4.0	5.4	6.0
1290	10	300	4.2	427	3.3	341	2.3	19	1232	503.9	495.1	1696.0	-8.0	3.0	4.5	6.1	6.8
1290	12	300	5.0	512	4.0	410	2.3	19	1228	565.8	557.1	1750.2	-7.4	3.4	5.1	6.9	7.6
1290	16	250	5.6	569	4.5	455	2.3	19	1220	689.2	680.4	1858.1	-6.2	4.1	6.2	8.4	9.3
1404	10	300	3.8	392	3.1	314	2.3	19	1346	549.1	539.6	1972.0	-9.9	3.3	4.9	6.7	7.4
1404	12	300	4.6	470	3.7	376	2.3	19	1342	616.7	607.2	2031.2	-9.2	3.7	5.6	7.5	8.3
1422	10	300	3.8	387	3.0	310	2.3	19	1364	556.2	546.6	2017.5	-10.2	3.3	5.0	6.8	7.5
1422	11	300	4.2	426	3.3	341	2.3	19	1362	590.5	580.9	2047.4	-9.9	3.5	5.3	7.2	8.0
1422	12	300	4.6	465	3.6	372	2.3	19	1360	624.7	615.1	2077.4	-9.6	3.7	5.6	7.6	8.4
1440	10	300	3.8	382	3.0	306	2.3	19	1382	563.4	553.6	2063.4	-10.6	3.4	5.1	6.9	7.6
1440	12	300	4.5	459	3.6	367	2.3	19	1378	632.7	623.0	2124.1	-9.9	3.8	5.7	7.7	8.5
1440	16	250	5.0	510	4.0	408	2.3	19	1370	770.9	761.1	2245.0	-8.5	4.6	6.9	9.4	10.4
1451	10	300	3.7	379	3.0	303	2.3	19	1393	567.7	557.9	2091.8	-10.8	3.4	5.1	6.9	7.7
1451	12	300	4.5	455	3.6	364	2.3	19	1389	637.7	627.8	2152.9	-10.1	3.8	5.7	7.8	8.6
1451	16	250	5.0	506	4.0	405	2.3	19	1381	776.9	767.0	2274.7	-8.7	4.7	7.0	9.5	10.5

OD = Outside diameter of steel pipe shell.
Does not include SINTAKOTE thickness

WT = Thickness of steel

SKCL = Thickness of SINTAKOTE external coating

CML = Thickness of cement mortar lining

SKCL = SINTAKOTE cement mortar lining

UCCL = Uncoated cement mortar lining

Rated Pressure = Maximum allowable operating internal pressure

Tested Pressure = Maximum internal pressure each pipe is tested to during manufacturing

Note:

1. See Table 1 for associated steel grades and relevant minimum yield strength and minimum tensile strength values. ($t \leq 12.7\text{mm}$ - 300MPa, $t > 12.7\text{mm}$ - 250MPa)

2. For further sizes and greater pressures please contact your local Steel Mains Regional Sales Office.



STEEL MAINS SINTAKOTE PIPELINE SYSTEM

WELDED END PIPE SPECIFICATIONS

1500-2159mm WELDED END

Table 10:

OD mm	WT t mm	MYS MPa	Test Pressure P _t		Rated Pressure P _r		SK t _s mm	CML T mm	Bore CML mm	Empty Pipe		Water Filled pipe SKCL kg/m	Buoyant weight SKCL kN/m	Tonnes per Pipe SKCL			
			MPa	m	MPa	m				SKCL kg/m	UCCL kg/m			6 m	9 m	12.2 m	13.5 m
1500	10	300	3.6	367	2.9	294	2.3	19	1442	587.2	577.0	2220.3	-11.7	3.5	5.3	7.2	7.9
1500	12	300	4.3	440	3.5	352	2.3	19	1438	659.5	649.3	2283.6	-11.0	4.0	5.9	8.0	8.9
1500	16	250	4.8	489	3.8	391	2.3	19	1430	803.6	793.4	2409.6	-9.6	4.8	7.2	9.8	10.8
1575	10	300	3.4	349	2.7	280	2.3	19	1517	617.0	606.3	2424.4	-13.2	3.7	5.6	7.5	8.3
1575	12	300	4.1	419	3.3	336	2.3	19	1513	693.0	682.3	2490.9	-12.4	4.2	6.2	8.5	9.4
1575	16	250	4.6	466	3.7	373	2.3	19	1505	844.4	833.7	2623.4	-10.9	5.1	7.6	10.3	11.4
1600	10	300	3.4	344	2.7	275	2.3	19	1542	626.9	616.0	2494.4	-13.7	3.8	5.6	7.6	8.5
1600	12	300	4.1	413	3.2	330	2.3	19	1538	704.1	693.3	2561.9	-12.9	4.2	6.3	8.6	9.5
1600	16	250	4.5	459	3.6	367	2.3	19	1530	858.0	847.2	2696.6	-11.4	5.1	7.7	10.5	11.6
1626	10	300	3.3	339	2.7	271	2.3	19	1568	637.2	626.2	2568.2	-14.2	3.8	5.7	7.8	8.6
1626	12	300	4.0	406	3.2	325	2.3	19	1564	715.7	704.7	2636.9	-13.5	4.3	6.4	8.7	9.7
1626	16	250	4.4	451	3.5	361	2.3	19	1556	872.2	861.2	2773.8	-11.9	5.2	7.8	10.6	11.8
1750	12	300	3.7	377	3.0	302	2.3	19	1688	771.1	759.2	3008.9	-16.2	4.6	6.9	9.4	10.4
1750	16	250	4.1	419	3.3	336	2.3	19	1680	939.8	927.9	3156.5	-14.5	5.6	8.5	11.5	12.7
1829	12	300	3.5	361	2.8	289	2.3	19	1767	806.3	793.9	3258.5	-18.0	4.8	7.3	9.8	10.9
1829	16	250	3.9	401	3.1	321	2.3	19	1759	982.8	970.4	3412.9	-16.3	5.9	8.8	12.0	13.3
2159	12	300	3.0	306	2.4	245	2.3	28*	2079	1095.4	1080.8	4490.1	-25.3	6.6	9.9	13.4	14.8
2159	16	250	3.3	340	2.7	272	2.3	28*	2071	1303.9	1289.3	4672.5	-23.3	7.8	11.7	15.9	17.6

OD = Outside diameter of steel pipe shell.
Does not include SINTAKOTE thickness

WT = Thickness of steel

SKCL = Thickness of SINTAKOTE external coating

CML = Thickness of cement mortar lining

SKCL = SINTAKOTE cement mortar lining

UCCL = Uncoated cement mortar lining

Rated Pressure = Maximum allowable operating internal pressure

Tested Pressure = Maximum internal pressure each pipe is tested to during manufacturing

Note:

1. See Table 1 for associated steel grades and relevant minimum yield strength and minimum tensile strength values. (t ≤ 12.7mm - 300MPa, t > 12.7mm - 250MPa)

2. For further sizes and greater pressures please contact your local Steel Mains Regional Sales Office.

*For pipes with an OD greater than 1829, please contact a Steel Mains representative.

SINTAJOINT & SINTALOCK JOINT

RATED PRESSURES

Table 11:

Pipe OD (mm)	Wall Thickness t mm	Steel MYS MPa	SINTAJOINT		SINTALOCK	
			RRJ-S rated pressure MPa	RRJ-D rated pressure MPa	Type I rated pressure MPa	Type II rated pressure MPa
324	5	300	4.25	N/A	4.17	N/A
324	6	300	4.25	N/A	4.25	N/A
337	5	300	4.25	N/A	4.01	N/A
337	6	300	4.25	N/A	4.25	N/A
356	5	300	4.25	N/A	3.79	N/A
356	6	300	4.25	N/A	4.25	N/A
406	5	300	4.25	N/A	3.33	N/A
406	6	300	4.25	N/A	3.99	N/A
419	5	300	4.25	N/A	3.22	N/A
419	6	300	4.25	N/A	3.87	N/A
457	5	300	4.25	N/A	2.95	N/A
457	6	300	4.25	N/A	3.54	N/A
457	8	300	4.25	N/A	4.25	N/A
502	5	300	4.25	N/A	2.69	4.25
502	6	300	4.25	N/A	3.23	4.25
502	8	300	4.25	N/A	4.25	4.25
508	5	300	4.25	N/A	2.66	4.25
508	6	300	4.25	N/A	3.19	4.25
508	8	300	4.25	N/A	4.25	4.25
559	5	300	3.86	N/A	2.42	3.86
559	6	300	4.25	N/A	2.90	4.25
559	8	300	4.25	N/A	3.86	4.25
610	5	300	3.54	N/A	2.21	3.54
610	6	300	4.25	N/A	2.66	4.25
610	8	300	4.25	N/A	3.54	4.25
648	5	300	3.33	N/A	2.08	3.33
648	6	300	4.00	N/A	2.50	4.00
648	8	300	4.25	N/A	3.33	4.25
648	10	300	4.25	N/A	4.17	4.25
660	5	300	3.27	N/A	2.05	3.27
660	6	300	3.93	N/A	2.45	3.93
660	8	300	4.25	N/A	3.27	4.25
660	10	300	4.25	N/A	4.09	4.25
700	5	300	3.09	N/A	1.93	3.09
700	6	300	3.70	N/A	2.31	3.70
700	8	300	4.25	N/A	3.09	4.25
700	10	300	4.25	N/A	3.86	4.25

Rated Pressure = Maximum allowable operating internal pressure
 Test Pressure = Maximum internal pressure each pipe is tested to during manufacturing
 RRJ-S = Single shore-hardness rubber gasket
 RRJ-D = Dual shore-hardness rubber gasket

1. Sintelock Joint Type I maximum allowed operating hoop stress is 45% of the Yield Strength (YS) for 300MPa YS pipe steel
2. Sintelock Joint Type II is rated at a pressure corresponding to 72% Yield Strength (YS) with a maximum of 4.2MPa Rated Pressure (RS) for 300MPa YS pipe steel
3. Sintelock I and II are rated with steel with a minimum yield strength of steel (t ≤ 12mm - 300 MPa) only)



SINTAJOINT & SINTALOCK JOINT

RATED PRESSURES

Table 11: cont.

Pipe OD (mm)	Wall Thickness t (mm)	Steel MYS (MPa)	SINTAJOINT		SINTALOCK	
			RRJ-S rated pressure (MPa)	RRJ-D rated pressure (MPa)	Type I rated pressure (MPa)	Type II rated pressure (MPa)
711	5	300	3.04	N/A	1.90	3.04
711	6	300	3.65	N/A	2.28	3.65
711	8	300	4.25	N/A	3.04	4.25
711	10	300	4.25	N/A	3.80	4.25
762	5	300	2.83	N/A	1.77	2.83
762	6	300	3.40	N/A	2.13	3.40
762	8	300	4.25	N/A	2.83	4.25
762	10	300	4.25	N/A	3.54	4.25
813	5	300	2.66	N/A	1.66	2.66
813	6	300	3.19	N/A	1.99	3.19
813	7	300	3.72	N/A	2.32	3.72
813	8	300	4.25	N/A	2.66	4.25
813	10	300	4.25	N/A	3.32	4.25
914	6	300	2.84	N/A	1.77	2.84
914	7	300	3.31	N/A	2.07	3.31
914	8	300	3.78	N/A	2.36	3.78
914	10	300	4.25	N/A	2.95	4.25
960	6	300	2.70	N/A	1.69	2.70
960	8	300	3.60	N/A	2.25	3.60
960	10	300	4.25	N/A	2.81	4.25
972	6	300	2.67	N/A	1.67	2.67
972	8	300	3.56	N/A	2.22	3.56
972	10	300	4.25	N/A	2.78	4.25
1016	8	300	3.40	N/A	2.13	3.40
1016	10	300	4.25	N/A	2.66	4.25
1035	8	300	2.80	N/A	2.09	3.34
1035	10	300	2.80	3.68	2.61	4.17
1067	8	300	2.80	N/A	2.02	3.24
1067	10	300	2.80	3.68	2.53	4.05
1085	8	300	2.80	N/A	1.99	3.19
1085	10	300	2.80	3.68	2.49	3.98
1124	8	300	2.80	N/A	1.92	3.07
1124	10	300	2.80	3.68	2.40	3.84
1200	8	300	2.80	N/A	1.80	2.88
1200	10	300	2.80	3.60	2.25	3.60

Rated Pressure = Maximum allowable operating internal pressure
 Test Pressure = Maximum internal pressure each pipe is tested to during manufacturing
 RRJ-S = Single shore-hardness rubber gasket
 RRJ-D = Dual shore-hardness rubber gasket

1. Sintalock Joint Type I maximum allowed operating hoop stress is 45% of the Yield Strength (YS) for 300MPa YS pipe steel
2. Sintalock Joint Type II is rated at a pressure corresponding to 72% Yield Strength (YS) with a maximum of 4.2MPa Rated Pressure (RS) for 300MPa YS pipe steel
3. Sintalock I and II are rated with steel with a minimum yield strength of steel ($t \leq 12\text{mm}$ - 300 MPa) only)

SINTAJOINT & SINTALOCK JOINT

RATED PRESSURES

Table 11: cont.

Pipe OD (mm)	Wall Thickness t (mm)	Steel MYS MPa	SINTAJOINT		SINTALOCK	
			RRJ-S rated pressure MPa	RRJ-D rated pressure MPa	Type I rated pressure MPa	Type II rated pressure MPa
1219	8	300	2.80	N/A	1.77	2.84
1219	9	300	2.80	N/A	1.99	3.19
1219	10	300	2.80	3.54	2.21	3.54
1283	8	300	2.69	N/A	1.68	2.69
1283	10	300	2.80	3.37	2.10	3.37
1290	8	300	2.68	N/A	1.67	2.68
1290	10	300	2.80	3.35	2.09	3.35
1404	10	300	N/A	3.08	1.92	3.08
1404	12	300	N/A	3.68	N/A	3.69
1422	10	300	N/A	3.04	1.90	3.04
1422	12	300	N/A	3.65	N/A	3.65
1440	10	300	N/A	3.00	N/A	3.00
1440	12	300	N/A	3.60	N/A	3.60
1451	10	300	N/A	2.98	N/A	2.98
1451	12	300	N/A	3.57	N/A	3.57
1500	10	300	N/A	2.88	N/A	2.88
1500	12	300	N/A	3.46	N/A	3.46
1575	10	300	N/A	2.74	N/A	2.74
1575	12	300	N/A	3.29	N/A	3.29
1600	12	300	N/A	3.24	N/A	3.24
1626	12	300	N/A	3.19	N/A	3.19
1750	12	300	N/A	2.96	N/A	2.96
1829	12	300	N/A	2.83	N/A	2.83

Rated Pressure = Maximum allowable operating internal pressure
 Test Pressure = Maximum internal pressure each pipe is tested to during manufacturing
 RRJ-S = Single shore-hardness rubber gasket
 RRJ-D = Dual shore-hardness rubber gasket

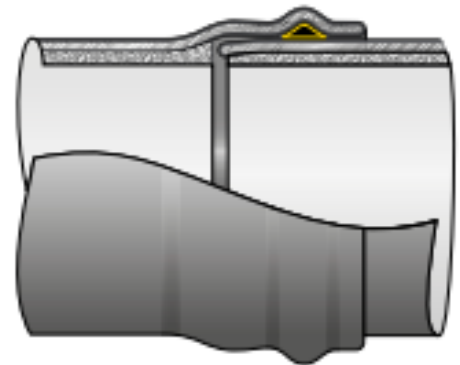
1. Sintelock Joint Type I maximum allowed operating hoop stress is 45% of the Yield Strength (YS) for 300MPa YS pipe steel
2. Sintelock Joint Type II is rated at a pressure corresponding to 72% Yield Strength (YS) with a maximum of 4.2MPa Rated Pressure (RS) for 300MPa YS pipe steel
3. Sintelock I and II are rated with steel with a minimum yield strength of steel ($t \leq 12\text{mm}$ - 300 MPa) only



SINTAKOTE JOINTING



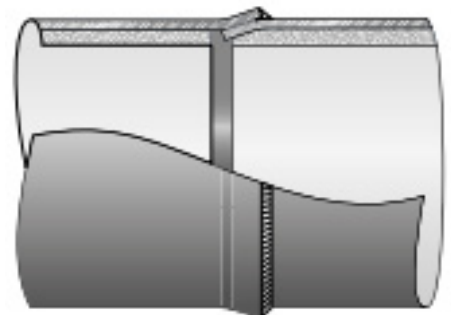
SINTAJOINT



Steel Mains SINTAJOINT, rubber ring joint, features:

- Extremely fast installation speeds over welded joints.
- Speedier backfilling over welded joints as this can be done immediately after the joint has been laid and checked.
- Available from 324 -1829mm outside diameter.
- Each joint provides angular deflection of up to approximately 3° , dependent on diameter.

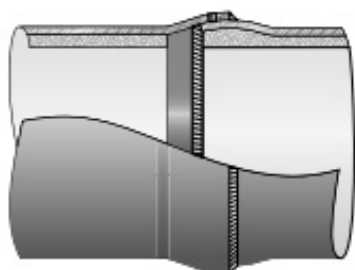
SPHERICAL SLIP IN JOINT



Spherical slip-in Joints are:

- Available in outside diameters ranging from 168 -1422mm.
- Available for wall thicknesses up to 12mm.
- Allow angular deflections of up to 3° dependent on diameter.
- Can generally weld internally above 813mm outside diameter

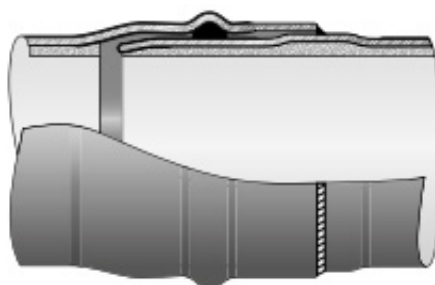
BALL & SOCKET JOINT



Ball and socket joints are:

- Available in outside diameters from 900 to 2159mm.
- Available for wall thicknesses up to 20mm.
- Allow angular deflections of up to 3° for all diameters and wall thicknesses for each joint prior to welding.
- Welding comprises internal and external welds.
- Each joint has a pneumatic test hole for checking joint integrity

SINTALOCK RUBBER RING JOINT—TYPE I

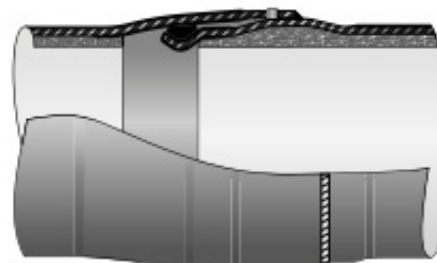


Steel Mains SINTALOCK rubber ring joint—Type I consists of a rubber ring joint and external fillet weld. SINTALOCK manages to combine the advantages of RRJ's with those of welded joints.

SINTALOCK rubber ring joint—Type I offers:

- Structural integrity, similar to that of a welded joint.
- Provides fast installation speeds coMParable to SINTAJOINT.
- Removes the need to enter pipes for welding or lining reinstatement.
- Eliminates or reduces the need for thrust blocks.
- Rated pressures range from 1.6MPa - 5.0MPa.
- Angular deflection up to 1.1°, dependent on diameter.
- Will suit wall thicknesses of ≤10mm.
- Available for 324 - 1440mm outside diameters.

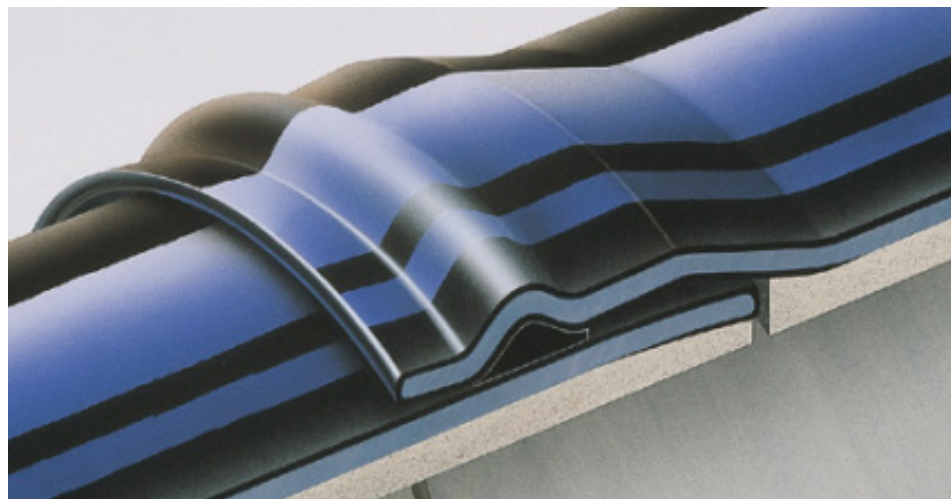
SINTALOCK RUBBER RING JOINT—TYPE II



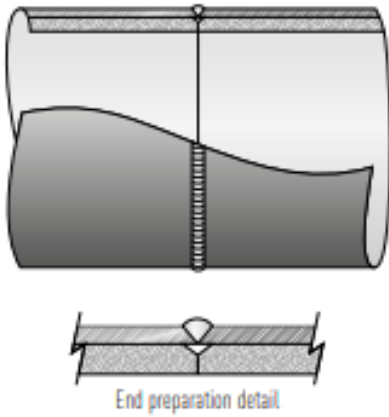
Steel Mains SINTALOCK rubber ring joint—Type II consists of a rubber ring joint and external fillet weld. SINTALOCK manages to combine the advantages of RRJ's with those of welded joints.

SINTALOCK rubber ring joint—Type II offers:

- Structural integrity, similar to that of a welded joint.
- Provides fast installation speeds coMParable to SINTAJOINT.
- Removes the need to enter pipes for welding or lining reinstatement.
- Eliminates or reduces the need for thrust blocks.
- Rated pressures range from 1.6MPa - 5.0MPa.
- Angular deflection up to 1.1°, dependent on diameter.
- Will suit wall thicknesses of ≤12mm. - Available for 502 - 1829mm outside diameters.



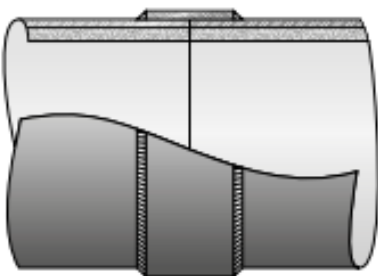
PLAIN BUTT JOINT



Plain butt pipe joints:

- May be satisfactorily welded from one side using a root fill and hot-pass method.
- A full penetration weld is required for this joint.
- This method is particularly useful for small diameter pipes where internal reinstatement of the cement mortar lining cannot be performed by hand.

BUTT JOINT WITH COLLAR



Butt joints with collars:

- Are often used for closing lengths
- Are used to aid with field alignment as the weld collar assists alignment.
- Square end preparation is required for this joint.
- Weld collars are supplied loose in one or two sections.
- Can also be used for smaller diameter pipes to eliminate internal gaps in cement mortar lining.

FLANGED JOINTS

Flanged joints are completely rigid and should not be used for applications where movement of the pipeline is expected, unless special provision is made to accommodate it by, for example, the inclusion of expansion joints.

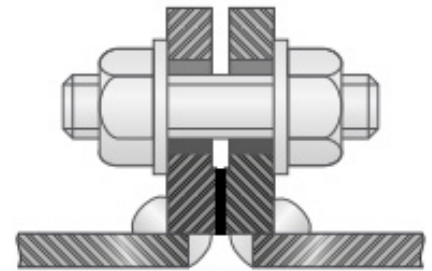
Flanged joints are used mainly for above ground applications, e.g. pumping stations, water and sewage treatment plants and for industrial pipework.

Commonly used at connections to valves or other areas where disassembly of the joint may be required for service or access. They are also used to facilitate the installation and removal of valves in SINTAJoint and welded pipelines and for valve bypass arrangements.

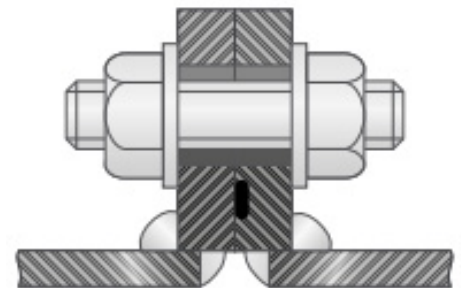
For assembly of flanged joints no field welding or other special equipment is required. Flange dimensions are normally in accordance with AS 4087 and are currently supplied in Class 16, Class 21 and Class 35.

Elastomeric gaskets are only recommended for use with Class 16 flanges, while compressed fibre gaskets are recommended for use with Class 21 and Class 35 flanges.

Note. Compressed fibre gaskets may be used with Class 16 flanges, however this requires the use of high strength bolts because of the higher initial compression necessary.



**RAISED FACE
TYPE FLANGE**



**MATCHED O-RING
TYPE FLANGE**



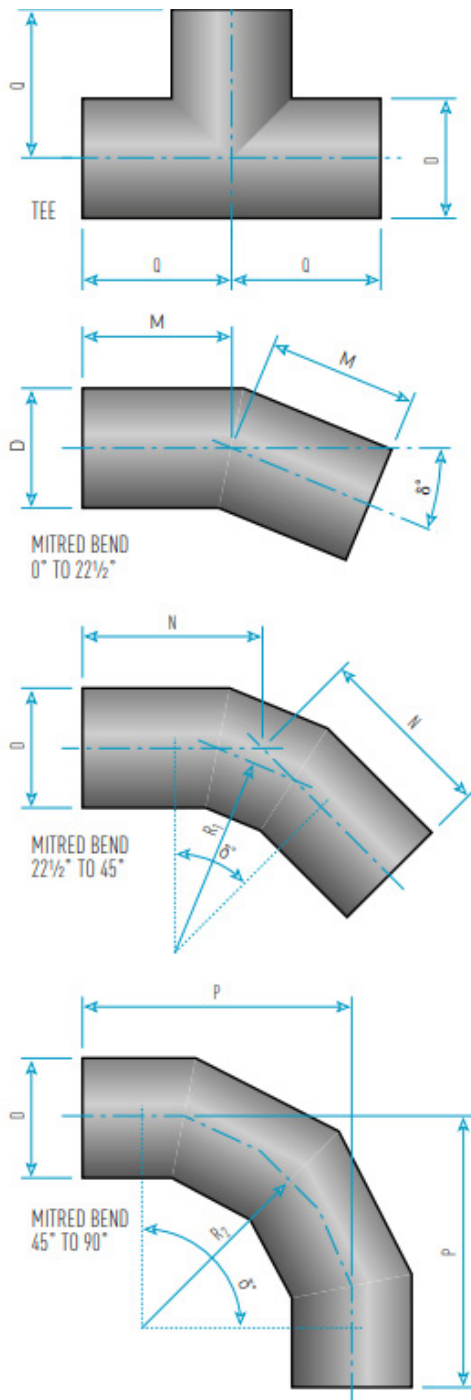
Steel Mains offers customers fittings fabrication at each of their manufacturing facilities around Australia.

All fittings are manufactured from detailed drawings and sign off on customer designs ensures the highest level of quality. Fabricated from pipe, the wall thickness, coating thickness and lining thickness are all in accordance with current pipe data (see pages 3 - 8).

Steel Mains is capable of producing steel:

- Tees- Angle Tees. Minimum 30 degrees
- Y-pieces. 45 degrees (Bifurcates)
- Mitred Bends. Common sizes 11¼, 22½, 45, 90 degrees
- Concentric/Eccentric tapers
- Dismantling Joints
- Expansion Joints
- Scours / Branches
- Reducers
- Stepovers
- Flanges & Weld Collars
- Construction Access Manways
- Manholes

Example details of some fittings are shown on page 16.



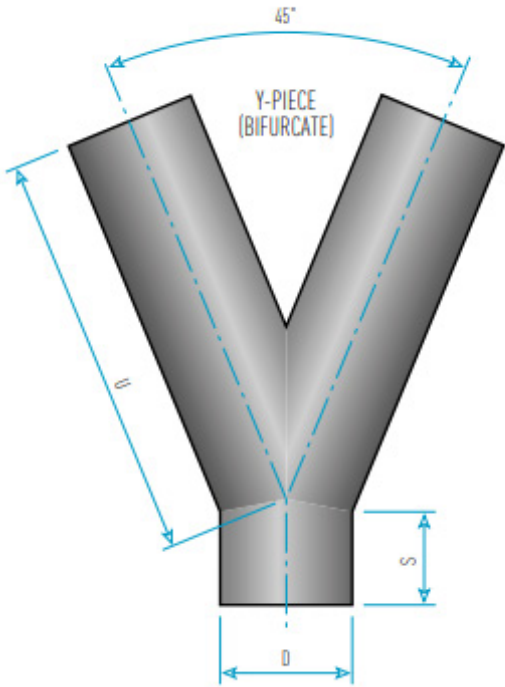
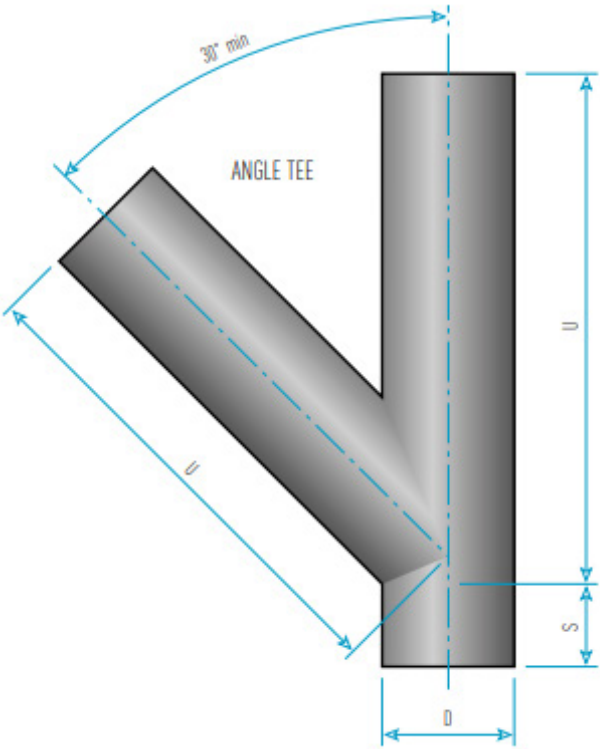
SINTAKOTE FITTINGS—CONFIGURATIONS

Table 14:

Diameter D mm	Mitred Bends					Tee Q mm
	Up to 22½° M mm	22½° < δ ≤ 45° N mm	R1 mm	45° < δ ≤ 90° P mm	R2 mm	
200	300	360	500	650	500	325
250	375	360	500	650	500	350
300	375	380	550	700	550	375
350	450	420	650	800	650	400
400	450	465	750	900	750	425
450	450	485	800	950	800	450
500	450	525	900	1050	900	475
550	525	565	1000	1150	1000	525
600	525	610	1100	1250	1100	575
650	525	650	1200	1350	1200	625
700	525	690	1300	1450	1300	675
750	600	710	1350	1500	1350	750
800	600	755	1450	1600	1450	775
900	600	815	1600	1750	1600	825
1000	750	900	1800	1950	1800	875
1100	750	980	2000	2150	2000	925
1200	825	1065	2200	2350	2200	975
1300	825	1105	2300	2450	2300	1025
1400	825	1190	2500	2650	2500	1075
1500	825	1270	2700	2850	2700	1125
1600	900	1355	2900	3050	2900	1175
1700	900	1395	3000	3150	3000	1225
1800	900	1500	3250	3400	3250	1275
1900	900	1560	3400	3550	3400	1325
2000	900	1645	3600	3750	3600	1375
2100	900	1725	3800	3950	3800	1425

Note.

1. Mitred bend radii designed to restrict stress concentration at inside leg to max of 1.25 times hoop stress in pipe.
2. 'Q' dimension may need to be increased when crotch plate reinforcement or a flange is used.
3. Steel Mains is capable of manufacturing specific sizes.



SINTAKOTE FITTINGS—CONFIGURATIONS

Table 15:

Diameter	Angle Tee (30° minimum)		Y Piece (45°)	
D mm	S mm	U mm	S mm	U mm
200	250	850	250	825
250	250	1000	250	890
300	250	1100	250	950
350	250	1200	250	1025
400	250	1300	250	1100
450	250	1400	250	1150
500	300	1500	300	1225
550	300	1650	300	1300
600	300	1800	300	1350
650	300	1900	300	1425
700	300	2000	300	1500
750	300	2100	300	1550
800	300	2200	300	1600
900	350	2400	400	1750
1000	400	2600	400	1850
1100	400	2800	400	2000
1200	500	3000	500	2150
1300	500	3200	500	2275
1400	500	3400	500	2400
1500	600	3600	600	2550
1600	600	3800	600	2675
1700	600	4000	600	2800
1800	600	4200	600	2950
1900	600	4400	600	3050
2000	600	4600	600	3200
2100	600	4800	600	3325

Steel Mains is capable of manufacturing specific sizes.

SINTAKOTE®



HEAD OFFICE/MANUFACTURING

A: 125 – 175 Patullos Lane, Somerton, VIC, 3062

AUSTRALIA

P: +61 (0) 39217 3100

E: customerservice@steelmains.com

WA MANUFACTURING

A: 6 Leath Rd, Naval Base, WA, 6165

AUSTRALIA

P: +61 (0) 89437 8204

www.steelmains.com

STEEL MAINS PROPRIETARY LIMITED

125-175 PATULLOS LANE, SOMERTON, VICTORIA 3062 AUSTRALIA

WWW.STEELMAINS.COM

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