



# MAXIMUM SAFE WORKING PRESSURES TUBELINE MEDIUM & HEAVY PRESSURE PIPE

Specification : AS 1074

Nominal Size (DN)	Quality	Outside Diameter mm	Wall Thickness mm	Mass per Metre Black Plain Ends & Grooved kg/m	Maximum Recommended Test Pressure at Ambient Temp		Maximum Safe Working Pressure															
							Metal Temperature °C															
							- 45°C to 50°C		100		150		200		250		300		350		400	
							MPa	P.S.I.	MPa	P.S.I.	MPa	P.S.I.	MPa	P.S.I.	MPa	P.S.I.	MPa	P.S.I.	MPa	P.S.I.	MPa	P.S.I.
20	Medium	26.9	2.6	1.56	22.1	3210	14.7	2140	13.5	1960	12.2	1780	11.0	1600	9.75	1420	8.73	1270	8.05	1170	7.71	1120
	Heavy	26.9	3.2	1.87	27.8	4040	18.5	2690	17.0	2460	15.4	2240	13.8	2010	12.3	1780	11.0	1590	10.1	1470	9.70	1410
25	Medium	33.7	3.2	2.41	21.7	3150	14.5	2100	13.2	1920	12.0	1740	10.8	1570	9.56	1390	8.56	1240	7.90	1150	7.56	1100
	Heavy	33.7	4.0	2.94	27.8	4030	18.5	2690	16.9	2460	15.4	2230	13.8	2000	12.2	1780	11.0	1590	10.1	1470	9.68	1400
32	Medium	42.4	3.2	3.10	16.9	2450	11.3	1640	10.3	1500	9.37	1360	8.41	1220	7.46	1080	6.68	969	6.16	894	5.90	856
	Heavy	42.4	4.0	3.80	21.5	3120	14.4	2080	13.1	1910	11.9	1730	10.7	1550	9.50	1380	8.50	1230	7.84	1140	7.51	1090
40	Medium	48.3	3.2	3.57	14.7	2140	9.81	1420	8.98	1300	8.15	1180	7.32	1060	6.49	942	5.81	843	5.36	778	5.13	745
	Heavy	48.3	4.0	4.38	18.7	2710	12.5	1810	11.4	1660	10.4	1500	9.30	1350	8.24	1200	7.38	1070	6.80	988	6.52	946
50	Medium	60.3	3.6	5.03	13.2	1910	8.78	1270	8.04	1170	7.30	1060	6.55	951	5.81	843	5.20	755	4.80	696	4.59	667
	Heavy	60.3	4.5	6.19	16.7	2420	11.1	1620	10.2	1480	9.25	1340	8.31	1210	7.37	1070	6.60	958	6.08	883	5.83	846
65	Medium	76.1	3.6	6.43	10.3	1500	6.88	998	6.30	914	5.72	829	5.13	745	4.55	661	4.07	591	3.76	545	3.60	522
	Heavy	76.1	4.5	7.93	13.0	1890	8.70	1260	7.96	1160	7.22	1050	6.49	942	5.75	835	5.15	748	4.75	689	4.55	660
80	Medium	88.9	4.0	8.37	9.79	1420	6.53	948	5.98	867	5.42	787	4.87	707	4.32	627	3.87	561	3.57	518	3.42	496
	Heavy	88.9	5.0	10.3	12.4	1800	8.25	1200	7.55	1100	6.85	995	6.15	893	5.46	792	4.89	709	4.50	654	4.31	626
90	Medium	101.6	4.0	9.63	8.52	1240	5.68	825	5.20	755	4.72	685	4.24	615	3.76	546	3.37	489	3.10	450	2.97	431
	Heavy	101.6	5.0	11.9	10.8	1560	7.17	1040	6.56	953	5.96	864	5.35	776	4.74	688	4.25	616	3.92	568	3.75	544
100	Medium	114.3	4.5	12.2	8.52	1240	5.68	825	5.20	755	4.72	685	4.24	615	3.76	546	3.37	489	3.10	450	2.97	431
	Heavy	114.3	5.4	14.5	10.3	1500	6.87	997	6.29	913	5.71	828	5.13	744	4.54	660	4.07	591	3.75	545	3.59	522
125	Medium	139.7	5.0	16.6	7.72	1120	5.15	747	4.71	684	4.28	621	3.84	558	3.41	494	3.05	443	2.81	408	2.69	391
	Heavy	139.7	5.4	17.9	8.36	1210	5.58	809	5.10	741	4.63	672	4.16	604	3.69	535	3.30	479	3.05	442	2.92	423
150	Medium	165.1	5.0	19.7	6.50	944	4.33	629	3.97	576	3.60	523	3.23	469	2.87	416	2.57	373	2.37	344	2.27	329
	Heavy	165.1	5.4	21.3	7.04	1020	4.69	681	4.29	623	3.90	566	3.50	508	3.10	450	2.78	403	2.56	372	2.45	356

- Notes !!
- The above maximum recommended test and working pressures are applicable only to the pipe, if and only if:-
    - The applied loads are only from internal pressure in straight pipe. The pipeline should be supported so that bending and external loads are avoided. The pipeline must also be set up with suitable freedom of angular movement at joints and bends and with provision to accommodate thermal expansion.
    - The maximum working pressure is based on a design strength of 130 MPa at 50°C, and 90% of the nominal wall thickness to allow for the minimum thickness tolerance of the relevant standard.
    - AS 4041 limits the maximum pressure of this type of pipe (Class 2) to 10 MPa when carrying Very Harmful fluids (fluid type 2) and for Harmful gases (fluid type 3). This should be considered when designing pipelines. See the OneSteel (Tubemakers piping systems) publication "Fluid type and classes for pressure piping systems" for information on fluid types.
    - Use of this pipe is prohibited where the pipe contents are Lethal (AS 4041 fluid type 1). See the OneSteel (Tubemakers piping systems) publication "Fluid type and classes for pressure piping systems" for information on fluid types.
  - The piping system working pressures can be limited by the type of couplings or the welding class used in the design of the pipeline.
  - AS 3920.1 gives information on the hazard level of pressure piping and other pressure equipment and the QA required to certify design, manufacture and installation.
  - Pressures have been calculated in accordance with AS 4041 - 1998 and the draft revision ME/1/8/00-28.
 
$$p = 2feMt_r / (D - t_r)$$
 Where  $p$  = Safe working pressure.  
 $f$  = Design strengths from table D2 of AS 4041 for AS 1074 product.  
 $e$  = 0.85 Weld joint factor from table 3.12.2 of AS 4041 for AS 1074 ERW product.  
 $M$  = 0.7 Class design factor from AS 4041 table 3.12.3 for class 2.  
 $t_r$  = 0.9 x wall thickness, in mm.  
 $D$  = Outside diameter, in mm.
  - No allowance has been made for corrosion, threading, grooving or machining.

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