



**COLD  
FINISHED  
SEAMLESS**

**HYDRAULIC AND  
PNEUMATIC LINES**



# CUSTOMISED SOLUTIONS WORLDWIDE

**BENTELER**   
Distribution

## CHEMICAL COMPOSITION (LADLE ANALYSIS)

SPECIFICATION	C		Si		Mn		P		S		Al	
	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.
EN 10305-4 E235 +N	0.17		0.35		1.20		0.025		0.015			
EN 10305-4 E355 +N	0.22		0.55		1.60		0.025		0.015			
BS3602 CFS360NBK	0.17	0.10	0.35	0.30	0.80		0.035		0.035		0.06	(max)
DIN 1630 ST 37.4	0.17		0.35		0.35		0.040		0.04		0.02	(min)
DIN 1630 ST 52.4	0.22		0.55		1.60		0.040		0.035		0.02	(min)

## MECHANICAL PROPERTIES AT ROOM TEMPERATURE

SPECIFICATION	Tensile Rm strength		Min yield strength Re for tubes with wall thicknesses up to and including 16mm	Elongation min.
	min.	max.		
EN 10305-4 E235 +N	340	480	235	25%
EN 10305-4 E355 +N	490	630	355	22%
BS3602 CFS360NBK	360	500	235	25%
DIN 1630 ST 37.4	340	480	235	25%
DIN 1630 ST 52.4	490	650	355	21%

The pressure ratings in this section are calculated using Barlow's Formula.

All tubes are eddy current tested and are marked with size, cast number and specification.

Tubes can be supplied in zinc plated condition with 12, 15 or 25 micron plating thickness and clear or yellow passivation.

A full range of phosphated tubes are also available within 2/3 weeks.

## TOLERANCES

DIN 2391/C	Outside Diameter	> 4mm	≤ 10mm	± 0.1mm
		> 10mm	≤ 30mm	± 0.08mm
		> 30mm	≤ 40mm	± 0.15mm
		> 40mm	≤ 50mm	± 0.20mm
		> 50mm	≤ 60mm	± 0.25mm
		> 60mm	≤ 70mm	± 0.30mm
		> 70mm	≤ 80mm	± 0.35mm
		Wall Thickness	± 10%	
EN 10305-4	Outside Diameter	> 4mm	≤ 10mm	± 0.08mm
		> 10mm	≤ 30mm	± 0.08mm
		> 30mm	≤ 40mm	± 0.15mm
		> 40mm	≤ 50mm	± 0.20mm
		> 50mm	≤ 60mm	± 0.25mm
		> 60mm	≤ 70mm	± 0.30mm
		> 70mm	≤ 80mm	± 0.35mm
		Wall Thickness	± 10%	







OD ins (mm)	WALL		WEIGHT kg/m	WORKING PRESSURE bars	BURSTING PRESSURE bars
	swg	mm			
<b>1 5/8</b> (41.28)	16	1.63	1.594	94	284
<b>1 11/16</b> (42.86)	10	3.25	3.174	181	545
	8	4.06	3.885	227	682
	6	4.88	4.571	273	819
	5	5.39	4.980	301	905
<b>1 3/4</b> (44.45)	16	1.63	1.711	88	264
	14	2.03	2.124	109	328
	12	2.64	2.722	142	427
	10	3.25	3.302	175	526
	6	4.88	4.762	263	790
<b>1 29/32</b> (48.42)	10	3.25	3.621	161	483
	8	4.06	4.442	201	603
	6	4.88	5.240	241	725
<b>2</b> (50.80)	16	1.63	1.965	77	231
	14	2.03	2.442	95	287
	13	2.34	2.796	110	331
	12	2.64	3.136	124	374
	10	3.25	3.811	153	460
	1/4	6.35	6.961	300	900
<b>2 1/8</b> (53.98)	16	1.63	2.105	72	217
<b>2 1/4</b> (57.15)	16	1.63	2.219	68	205
<b>2 3/8</b> (60.33)	16	1.63	2.346	64	194
	10	3.25	4.575	129	387
	6	4.88	6.673	194	582
	1/4	6.35	8.453	252	757
<b>2 1/2</b> (63.50)	16	1.63	2.472	61	184
<b>2 3/4</b> (69.85)	16	1.63	2.726	56	168

**1 Bar = 14.50 p.s.i.**

The pressure ratings given in these tables are for guidance purposes only. Your design pressures should include a suitable allowance over the working pressure to allow for possible fluctuations of pressure during operation. This allowance should be separately determined for each application by your design department



**METRIC**



OD mm	WALL mm	WEIGHT kg/m	WORKING PRESSURE bars	BURSTING PRESSURE bars	OD mm	WALL mm	WEIGHT kg/m	WORKING PRESSURE bars	BURSTING PRESSURE bars		
4	1	0.074	600	1800		3.5	1.60	371	1145		
6	1	0.123	400	1200		4	1.78	436	1309		
	1.5	0.166	600	1800	24	3	1.55	300	900		
	2	0.197	800	2400							
	2.125	0.203	850	2550							
	2.25	0.208	849	2700							
8	0.71	0.128	213	639		25	1.5	0.869	144	432	
1	0.173	300	900	2	1.13		192	576			
1.5	0.240	450	1350	2.5	1.39		240	720			
2	0.296	600	1800	3	1.63		288	864			
2.5	0.339	750	2250	4	2.07		384	1152			
2.75	0.356	822	2466	4.5	2.28		432	1296			
9	2	0.345	533	1600	5	2.47	480	1440			
	10	0.71	0.163	170	511	6	2.81	575	1728		
		1	0.222	240	720	26	4	2.17	369	1107	
		1.5	0.314	360	1080		28	1.5	0.98	128	385
		2	0.395	480	1440			2	1.28	171	514
2.5		0.462	600	1800	2.5			1.57	214	642	
3	0.518	720	2160	3	1.85			257	721		
3.5	0.561	840	2520	3.5	2.11	300	900				
12	1	0.271	200	600	4	2.37	342	1028			
	1.5	0.388	300	900	4.5	2.61	385	1157			
	2	0.493	400	1200	5	2.84	428	1285			
	2.5	0.586	500	1500	30	1.5	1.05	120	360		
	3	0.666	600	1800		2	1.38	160	480		
14	1	0.321	171	514		2.5	1.70	200	600		
	1.22	0.379	209	627		3	2.00	240	720		
	1.5	0.462	256	771		3.5	2.29	280	840		
	2	0.592	342	1028	4	2.56	320	960			
	2.5	0.709	428	1285	5	3.08	400	1200			
3	0.814	513	1542	6	3.55	480	1440				
3.5	0.906	600	1800	32	1.5	1.13	112	337			
15	1	0.345	160		480	35	2	1.63	137	411	
	1.5	0.499	240		720		2.5	2.00	171	514	
	2	0.641	320		960		3	2.37	205	617	
	2.5	0.771	400		1200		4	3.06	274	822	
	3	0.888	480	1440	5		3.70	342	1028		
16	1	0.370	150	450	6	4.29	411	1234			
	1.5	0.536	225	675	38	1.5	1.35	94	284		
	2	0.691	300	900		2	1.78	126	378		
	2.5	0.832	375	1125		2.5	2.19	157	473		
	3	0.962	450	1350		3	2.59	189	568		
18	1	0.419	133	400		4	3.35	252	757		
	1.5	0.610	200	600	5	4.97	315	947			
	2	0.789	266	800	6	4.74	378	1136			
	2.5	0.956	333	1000	42	2	1.97	114	342		
	3	1.110	400	1200		3	2.89	171	514		
3.5	1.252	466	1400	4		3.75	228	685			
20	1	0.469	120	360		5	4.56	285	857		
	1.5	0.684	180	540		50	2	2.37	96	288	
	2	0.888	191	576	3		3.48	144	432		
	2.5	1.079	300	900	4		4.54	192	576		
	3	1.258	360	1080	5		5.55	240	720		
3.5	1.424	420	1260	6	6.51		288	864			
22	1	0.518	109	327	8	8.29	384	1152			
	1.5	0.758	163	490	9	9.10	432	1296			
	2	0.986	218	654	10	9.86	480	1440			
	2.5	1.200	272	818	55	2.5	3.28	109	327		
	3	1.406	327	981		5	6.78	200	600		
24	3	1.55	300	900		6	6.78	200	600		
	25	1.5	0.869	144		432	8	11.2	295	886	
		2	1.13	192		576	80	10	17.3	210	630
		2.5	1.39	240	720						
		3	1.63	288	864						
4		2.07	384	1152							
4.5	2.28	432	1296								

**South - Midlands**

Armstrong Road  
Daneshill Industrial Estate  
Basingstoke  
Hampshire  
RG24 8NU

**North**

New Progress Works  
Crompton Way  
Bolton  
Lancashire  
BL1 8TY

**Scotland**

Unit 3, Abbots Road  
Middlefield Industrial Estate  
Falkirk  
FK2 9HQ

**Automotive**

Telephone: 0845 330 6730  
Fax: 0845 330 6735

E Mail: [automotive@benteler-distribution.co.uk](mailto:automotive@benteler-distribution.co.uk)

Tel 0845 330 6727 Fax 0845 330 6728

[sales@benteler-distribution.co.uk](mailto:sales@benteler-distribution.co.uk)

[www.benteler-distribution.co.uk](http://www.benteler-distribution.co.uk)