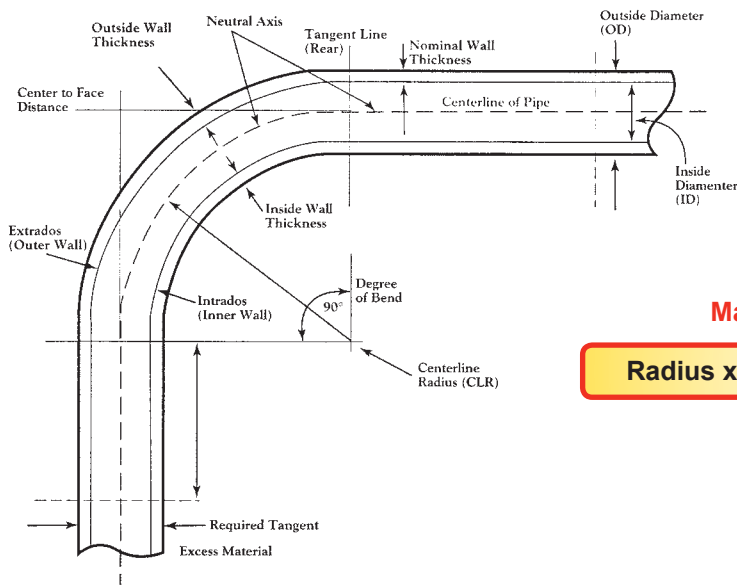


Bend Formula and Terminology



Material Required for a Bend

$$\text{Radius} \times \text{Degree of Bend} \times .0175 = \text{Length}$$

Rotary Draw Bend Reference Information

The following information should be used as a guideline only, exact material consumption may vary.

Material Required for Rotary Draw Bends in Pipe

Angle of Bend	Pipe Size and Centerline Radius					
	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
	1.8	2.2	2.6	3.5	3.9	5.9
	Material Consumption Guideline					
5	.16	.19	.23	.31	.34	.51
10	.31	.38	.45	.61	.68	1.0
15	.47	.58	.68	.92	1.0	1.5
20	.63	.77	.91	1.2	1.3	2.1
25	.79	.96	1.1	1.5	1.7	2.6
30	.97	1.1	1.3	1.8	2.0	3.1
35	1.1	1.3	1.5	2.1	2.4	3.6
40	1.2	1.5	1.8	2.4	2.7	4.1
45	1.4	1.7	2.0	2.7	3.0	4.6
50	1.5	1.9	2.2	3.0	3.4	5.2
55	1.7	2.1	2.5	3.3	3.7	5.7
60	1.8	2.3	2.7	3.6	4.0	6.2
65	2.0	2.5	2.9	3.9	4.4	6.7
70	2.2	2.6	3.1	4.2	4.7	7.2
75	2.3	2.8	3.4	4.5	5.1	7.7
80	2.5	3.0	3.6	4.8	5.5	8.3
85	2.6	3.2	3.8	5.1	5.8	8.8
90	2.8	3.4	4.0	5.5	6.1	9.3
100	3.1	3.8	4.5	6.8	6.1	10.3
110	3.4	4.2	4.9	6.7	7.4	11.4
120	3.7	4.6	5.4	7.3	8.1	12.4
130	4.0	4.9	5.9	7.9	8.8	13.4
140	4.4	5.3	6.3	8.5	9.5	14.5
150	4.7	5.7	6.8	9.1	10.2	15.5
160	5.0	6.1	7.2	9.7	10.8	16.5
170	5.3	6.5	7.7	10.3	11.5	17.6
180	5.6	6.9	8.1	11.0	12.2	18.6

To calculate total pipe length, add distance from end of pipe to the first bend, plus first bend arc length, plus distance to second bend.

Minimum Distance Between Bends for Standard Non-Mandrel Tooling

Former Radius	Minimum Distance	
Inches	Millimeters	
.39	10	NA
.47	12	NA
.59	15	NA
.62	16	NA
.70	18	NA
.78	20	NA
.94	24	NA
1.0	26	NA
1.1	28	NA
1.1	30	NA
1.2	32	NA
1.4	36	2.3
1.8	46	3.1
2.2	56	3.7
2.6	67	3.9
3.2	82	3.9
3.5	90	4.3
3.9	100	4.3
4.1	105	4.3
4.4	112	4.3
4.7	120	5.5
5.1	130	5.5
5.7	145	5.9
6.6	170	5.9
7.2	185	5.9
7.4	190	5.9
8.8	225	5.9
10.2	260	6.2
11.8	300	6.2

Consult factory for special tooling request.