

**C.D. SEAMLESS
MECHANICAL TUBING**
STANDARD MFG. TOLERANCES

ASTM A-519

GENERAL AND TECHNICAL INFORMATION

Group	Size O.D. Inches	Permissible Variations from:					
		Outside Diameter in Inches		Inside Diameter in Inches		Wall Thickness per cent	
		Over	Under	Over	Under	Over	Under
1	3/16 to 1/2 excl.	0.004	0	a,b	a,b	a,b	a,b
2	1/2 to 1-1/2 excl.	0.005c	0c	0a,b	0.005a,b	10a,b	10a,b
3	1-1/2 to 3-1/2 excl.	0.010c	0c	0.a	0.010a	10a	10a
4	3-1/2 to 5-1/2 excl.	0.015	0c	0.005a	0.015a	10a	10a
5	5-1/2 to 8 excl. when wall is less than 5% of O.D.	0.030c	0.030c	0.035c	0.035c	10	10
6	5-1/2 to 8 excl. when wall is 5 to 7.5% of O.D.	0.020	0.020	0.025	0.025	10	10
7	5-1/2 to 8 excl. when wall is over 7.5% of O.D.	0.030	0	0.015a	0.030a	10a	10a
8	8 to 10-3/4 incl. when wall is less than 5% of O.D.	0.045c	0.045c	0.050c	0.050c	10	10
9	8 to 10-3/4 incl. when wall is 5 to 7.5% of O.D.	0.035	0.035	0.040	0.040	10	10
10	8 to 10-3/4 incl. when wall is over 7.5% of O.D.	0.045	0	0.15a	0.040a	10a	10a

- (a) For tubes with inside diameter less than 50% of outside diameter or with wall thickness more than 25% of outside diameter or with wall thickness over 1-1/4", or weighing more than 90 lb per ft., which cannot be successfully drawn over a mandrel, the inside diameter may vary over or under by 10% of the wall thickness. The wall thickness may vary 12-1/2% over or under that specified.
- (b) For the tubes with inside diameter less than 1/2" (or less than 5/8" when the wall thickness is more than 20% of the outside diameter), which cannot be successfully drawn over a mandrel, the wall thickness may vary 15% over or under that specified and the inside diameter will be governed by the outside diameter and wall thickness variations.

C.D. SEAMLESS MECHANICAL TUBING

ASTM A-519

STANDARD MFG. TOLERANCES

- (c) Tubing having a wall thickness less than 3% of the outside diameter cannot be straightened properly without a certain amount of distortion. Consequently such tubes, while having an average outside diameter and inside diameter within the tolerances shown in the table, will require an ovality of tolerance of 1/2% over or under the nominal outside diameter and inside diameter in addition to the tolerances indicated in the table.

WAREHOUSE TOLERANCES LIMITED TO O.D.-AND WALL (except for Cylinder Tubing specially drawn to O.D.-I.D. dimensions.)

HOT FINISHED SEAMLESS MECHANICAL TUBING

ASTM A-519

DIAMETER TOLERANCES-INCHES/MILLIMETERS

OD Size Range Inches Inclusive	As Rolled or Annealed OD, ± Inches	Quenched & Tempered OD & ID ± OD
2.000-2.499	.017	.027
2.500-2.999	.019	.029
3.000-3.499	.021	.032
3.500-3.999	.023	.035
4.000-4.499	.025	.038
4.500-4.999	.027	.041
5.000-5.499	.029	.044
5.500-5.999	.031	.047
6.000-6.499	.033	.050
6.500-6.999	.035	.053
7.000-7.499	.037	.056

OD Size Range Millimeters, Inclusive	As Rolled or Annealed OD, ± Millimeters	Quenched & Tempered OD & ID ± Millimeters
50.80-63.48	0.43	0.686
63.49-76.17	0.48	0.737
76.18-88.87	0.53	0.813
88.88-101.57	0.58	0.889
101.58-114.28	0.64	0.985
114.29-126.97	0.69	1.041
126.98-139.67	0.74	1.118
139.68-152.38	0.79	1.194
152.39-165.08	0.84	1.270
165.09-177.78	0.89	1.346
177.79-190.48	0.94	1.422

Tolerances do not apply to heat treated material or bearing quality tubing.

CONTINUED