



O'NEAL STEEL

THE METALS COMPANY
AN ONI COMPANY

COLD FINISHED ALLOY BARS Cold Drawn or Turned and Polished

TOLERANCES

Specified Size In Inches	Undersize Variations in Inches			
	Max. Carbon Range .28% or less	Max. Carbon Range Over .28 to .55% incl.	Annld. or Stress Relieved after C.F. Max. carb. to .55%	Max. Carbon range over 0.55% with or without stress relieving or annealing after cold finishing. Also, all carbons Heat Tr. or Norm. & Temp. before cold finishing
To 1 incl. (in coils)	.002	.003	.004	.005
To 1-1/2, incl.	.003	.004	.005	.006
Over 1-1/2 to 2-1/2	.004	.005	.006	.007
Over 2-1/2 to 4	.005	.006	.007	.008
Over 4 to 6	.006	.007	.008	.009
Over 6 to 8	.007	.008	.009	.010
Over 8 to 9	.008	.009	.010	.011
Over 9	.008	.010	.011	.012

COLD FINISHED ALLOY BARS

Cold Drawn, Ground and Polished Rounds Turned, Ground and Polished Rounds

TOLERANCES

Diameter in Inches	Cold Drawn, Ground & Polished	Turned, Ground & Polished	
	All Carbons with or without thermal treatment before Cold Drawing	Not Heat Treated All Carb.	Heat* Treated All Carb.
To 1-1/2, incl.	.001	.001	.001
Over 1-1/2 to 2-1/2, excl.	.0015	.0015	.0015
2-1/2 to 3, incl.	.002	.002	.002
Over 3 to 4, incl.	.003	.003	.003
Over 4 to 6, incl.	---	.004	.005
Over 6	---	.005	.006

*Applies to quenched and tempered (heat treated), normalized and tempered, or any similar double treatment prior to turning.

GENERAL AND TECHNICAL INFORMATION

Hot Rolled Alloy Flats TOLERANCES

Tolerances apply to thickness in inches

Specified width in Inches	0.23-.230 excl.	Variations from Thickness in Inches (Tolerances are over or under)						Variations from Width in Inches	
		Under 1/4	1/4 - 1/2	Over 1/2 - 1	Over 1 - 2	Over 2 - 3	Over 3	Over	Under
Up to 1	0.007	.007	.008	.010	—	—	—	1/64	1/64
Over 1 - 2	0.007	.007	.012	.015	1/32	—	—	1/32	1/32
Over 2 - 4	0.008	.008	.015	.020	1/32	3/64	3/64	1/16	1/32
Over 4 - 6	0.009	.009	.015	.020	1/32	3/64	3/64	3/32	1/16

HOT ROLLED ALLOY STRAIGHTNESS Rounds and Squares

Standard Straightness – 1/4" in any feet, or 1/4 x $\frac{\text{number of feet in length}}{5}$ inches

Standard Straightness – 1/8" in any 5 feet, of 1/8 x $\frac{\text{number of feet in length}}{5}$ inches

COLD FINISHED ALLOY BARS

Machining Recommendations

Recommended Minimum Machining Allowance Per Side Percent of Specified Size

Regular Quality Alloy and Special Quality Carbon Steel Bars

	Non- Resultfurized		Resultfurized	
	2" & Under	Over 2"	2" & Under	Over 2"
Centerless Turned or Ground	2.6%	1.6%	3.4%	2.4%

Note 1: Based on bars with special straightness tolerance.

Note 2: Bars turned on centers. Since this operation is dependent upon length and straightness considerations, each item should be negotiated between consumer and supplier.

SIZE TOLERANCES

Cold Finished Bars, Rounds Stainless and Heat Resisting Steels (ASTM A484)

Specified Size in (mm)	Size Tolerance, in (mm) ^{a, b}	
	Over	Under
Over 0.050 to 5/16 (1.27 to 7.94), excl.	0.001 (0.03)	0.001 (0.03)
5/16 to 1/2 (7.94 to 12.7), excl.	0.0015 (0.04)	0.0015 (0.04)
1/2 to 1 (12.7 to 25.4), excl.	0.002 (0.05)	0.002 (0.05)
1 to 1-1/2 (25.4 to 38.1), excl.	0.0025 (0.06)	0.0025 (0.06)
1-1/2 to 4 (38.1 to 101.6) incl. c	0.003 (0.08)	0.003 (0.08)

- Size tolerances are over and under as shown in the above table. Also, rounds can be produced to tolerances all over and nothing under, all under and nothing over or any combination of over and under, if the total spread in size tolerance for specified size is not less than the total spread shown in the table.
- When it is necessary to heat-treat or heat-treat and pickle after cold finishing, size tolerances are double those shown in the table.
- Cold finished bars over 4 in (101.6) in diameter are produced; size tolerances for such bars are not included herein.

Copyright ASTM
Reprinted with permission

SIZE TOLERANCES

Cold Finished Bars, Hexagons, Octagons and Squares Stainless and Heat Resisting Steels (ASTM A484)

Specified Size in (mm)	Size Tolerance, in (mm) ^a	
	Over	Under
Over ^b 1/8 to 5/16 (1.59 to 7.94) excl.	0	0.002 (0.05)
Over ^b 5/16 to Ω (7.94 to 12.7), excl.	0	0.00. (0.08)
Over 1/2 to 1 (12.7 to 25), incl.	0	0.004 (0.10)
Over 1 to 2 (25 to 51), incl.	0	0.006 (0.15)
Over 2 to 3 (51 to 76), incl.	0	0.008 (0.20)
Over 3 (76)	0	0.010 (0.25)

- a. When it is necessary to heat-treat or heat-treat and pickle after cold finishing, size tolerances are double those shown in the table.
- b. Not shown in ASTM A484.

Copyright ASTM
Reprinted with permission

STRAIGHTNESS TOLERANCES

Hot Finished or Cold Finished Bars Machine Straightened Stainless and Heat Resisting Steels (ASTM A484)

Measurement is taken on the concave side of the bar with a straight edge. Hot finished or cold finished bars for machining purposes are furnished machine straightened to the following tolerances:

Hot finished:

1/8 in. in any 5 ft.; but may not exceed

$$1/8 \times \frac{\text{No. of feet in length}}{5}$$

$$\text{Tolerance in mm} - 3.18 \times \frac{\text{length (in meters)}}{1.52}$$

Cold finished:

1/16 in. in any 5 ft.; but may not exceed

$$1/8 \times \frac{\text{No. of feet in length}}{5}$$

$$\text{Tolerance in mm} - 1.59 \times \frac{\text{length (in meters)}}{1.52}$$

Copyright ASTM
Reprinted with permission