

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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TOLERANCES Carbon Steel Bars

1. **PURPOSE:** To publish established manufacturing tolerances.
2. **APPLICATION:** Tolerances shown herein apply, unless otherwise agreed upon by purchaser and vendor. These tolerances apply to all conditions, unless otherwise noted. The term "excl" is used to apply only to the higher figure of the specified range.
3. **DIAMETER OR THICKNESS:**
 - 3.1 **Cold Finished:**

TABLE I

Nominal Diameter or Thickness Inches	Tolerances, Inch, Minus Only			
	Maximum of Carbon Range, %			
	0.28 and under	over 0.28 to 0.55 incl	All Carbons Strain Relieved	over 0.55 and all carbons Heat Treated
ROUNDS				
1.000 and under	0.002	0.003	0.004	0.006
Over 1.000 to 2.000, incl	0.003	0.004	0.006	0.008
Over 2.000 to 4.000, incl	0.004	0.005	0.008	0.010
Over 4.000 to 6.000, incl	0.005	0.006	0.010	0.012
Over 6.000 to 7.750, incl	0.006	0.008	0.012	0.016
HEXAGONS				
0.313 and under	0.002	0.003	0.004	0.006
Over 0.313 to 1.000, incl	0.003	0.004	0.006	0.008
Over 1.000 to 2.500, incl	0.004	0.005	0.008	0.010
Over 2.500 to 3.125, incl	0.005	0.006	0.010	0.012
SQUARES				
0.313 and under	0.003	0.004	0.006	0.008
Over 0.313 to 1.000, incl	0.004	0.005	0.008	0.010
Over 1.000 to 2.500, incl	0.005	0.006	0.010	0.012
Over 2.500 to 4.000, incl	0.006	0.008	0.012	0.016

Note: When rough turned bars are permitted, the above tolerances shall be doubled.

3.1 Cold Finished: (Cont'd.)

TABLE I (Cont.)

		Tolerance, Inch, Minus Only			
		Maximum of Carbon Range, %			
		0.28 and under	over 0.28 to 0.55 incl	All Carbons Strain Relieved	over 0.55 and all Carbons Heat Treated
FLATS					
Thickness and Width					
Nominal Thickness, Inches	Width, Inches				
0.313 and under	under 1.5	0.003	0.004	0.006	0.008
Over 0.313 to 1.000, incl	" "	0.004	0.005	0.008	0.010
Over 1.000 to 1.500, excl	" "	0.005	0.006	0.010	0.012
0.313 and under	1.5 to 4.0, incl	0.005	0.006	0.008	0.012
Over 0.313 to 1.000, incl	" " " "	0.005	0.006	0.010	0.012
Over 1.000 to 4.000, excl	" " " "	0.006	0.008	0.012	0.016
0.313 and under	Over 4.0 to 6.0 incl	0.008	0.010	0.012	0.020
Over 0.313 to 1.000, incl	" " " " "	0.009	0.012	0.014	0.024
Over 1.000 to 6.000, excl	" " " " "	0.010	0.012	0.016	0.024
0.313 and under	Over 6.0	0.013			
Over 0.313 to 1.000, incl	" "	0.014			
Over 1.000	" "	0.015			

Note: The tolerances for flats apply to both width and thickness

3.2 Ground and Polished:

Nominal Diameter Inches	Tolerance, Inch	
Under 2.5	+0.000	-0.002
2.5 and over	+0.000	-0.003