

STEEL PRODUCTS MANUAL
ALLOY STEEL BARS
AMERICAN IRON AND STEEL INSTITUTE
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Table 6-3

CHECK ANALYSIS TOLERANCES
ALLOY STEELS

Bars, Blooms, Billets and Slabs

Element	Limit or Maximum of Specified Range, per cent	Tolerance, In per cent, Over Maximum Limit or Under Minimum Limit for Size Ranges Shown			
		100 sq. in. or less	Over 100 to 200 sq. in. incl.	Over 200 to 400 sq. in. incl.	Over 400 sq. in. incl.
CARBON	To 0.30 incl. Over 0.30 to 0.75 incl. Over 0.75	0.01 0.02 0.03	0.02 0.03 0.04	0.03 0.04 0.05	0.04 0.05 0.06
MANGANESE	To 0.90 incl. Over 0.90 to 2.10 incl.	0.03 0.04	0.04 0.05	0.05 0.06	0.06 0.07
PHOSPHORUS	Over max. only	0.005	0.010	-0.010	0.010
SULPHUR	To 0.060 incl.*	0.005	0.010	0.010	0.010
SILICON	To 0.40 incl. Over 0.40 to 2.20 incl.	0.02 0.03	0.02 0.06	0.03 0.06	0.04 0.09
NICKEL	To 1.00 incl. Over 1.00 to 2.00 incl. Over 2.00 to 5.30 incl. Over 5.30 to 10.00 incl.	0.03 0.05 0.07 0.10	0.03 0.05 0.07 0.10	0.03 0.05 0.07 0.10	0.03 0.05 0.07 0.10
CHROMIUM	To 0.90 incl. Over 0.90 to 2.10 incl. Over 2.10 to 3.90 incl.	0.03 0.05 0.07	0.04 0.06 0.10	0.04 0.06 0.12	0.05 0.07 0.14
MOLYBDENUM	To 0.20 incl. Over 0.20 to 0.40 incl. Over 0.40 to 1.15 incl.	0.01 0.02 0.03	0.01 0.03 0.04	0.02 0.03 0.05	0.03 0.04 0.06
VANADIUM	To 0.10 incl. Over 0.10 to 0.25 incl. Over 0.25 to 0.50 incl. Min. value specified, check under max. limit	0.01 0.02 0.03 0.01	0.01 0.02 0.03 0.01	0.01 0.02 0.03 0.01	0.01 0.02 0.03 0.01
TUNGSTEN	To 1.00 incl. Over 1.00 to 4.00 incl.	0.04 0.08	0.05 0.09	0.05 0.10	0.06 0.12
ALUMINUM**	Up to 0.10 incl. Over 0.10 to 0.20 incl. Over 0.20 to 0.30 incl. Over 0.30 to 0.60 incl. Over 0.60 to 1.80 incl.	0.03 0.04 0.05 0.07 0.10			
LEAD**	0.15 to 0.35 incl.	0.03***			
COPPER**	To 1.00 incl. Over 1.00 to 2.00 incl.	0.03 0.05			

*Sulphur over 0.060 per cent is not subject to check analysis.

**Tolerances shown apply only to 100 sq. in. or less.

***Tolerance is over and under.