

# CHEMICAL PROPERTIES OF BOLTS (ASTM F3125)

120 ksi/830 MPa Minimum				
Grade A325, A325M, F1852				
Heat Analysis	Type 1	Type 3		
	Carbon or Alloy Steel with or without Boron	Composition A	Composition B	Based on Corrosion Index <sup>C</sup>
Carbon	0.30 - 0.52	0.33 - 0.40	0.38 - 0.48	0.30 - 0.52 max
Manganese	0.60 min	0.90 - 1.20	0.70 - 0.90	0.60 min
Phosphorus, max	0.035	0.035	0.035	0.035
Sulfur, max	0.040	0.040	0.040	0.040
Silicon	0.15 - 0.30	0.15 - .30	0.30 - 0.50	<i>B</i>
Boron	0.003 max	<i>B</i>	<i>B</i>	<i>B</i>
Copper	<i>B</i>	0.25 - 0.45	0.20 - 0.40	0.20 - 0.60
Nickel	<i>B</i>	0.25 - 0.45	0.50 - 0.80	0.20 <sup>D</sup> min
Chromium	<i>B</i>	0.45 - 0.65	0.50 - 0.75	0.45 min
Vanadium	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>
Molybdenum	<i>B</i>	<i>B</i>	0.06 max	0.10 <sup>D</sup> min
Titanium	<i>B</i>	<i>B</i>	<i>B</i>	<i>B</i>

<sup>A</sup> Carbon requirement is 0.35-0.53 for 1-½ in. and M36 diameter bolts.

<sup>B</sup> Not Specified.

<sup>C</sup> See 6.3.

<sup>D</sup> Either Nickel or Molybdenum must be present in the amount specified.