

## Standard Alloy Boron Steels<sup>B</sup>

### Chemical Composition Ranges and Limits

Grade	C	Mn	P Max	S Max	Si	Ni	Cr	Mo
50B44	.43/.48	.75/1.00	0.035	0.04	.15/.35	—	.20/.60	—
50B46	.44/.49	.75/1.00	0.035	0.04	.15/.35	—	.20/.35	—
50B50	.48/.53	.75/1.00	0.035	0.04	.15/.35	—	.40/.60	—
50B60	.56/.64	.75/1.00	0.035	0.04	.15/.35	—	.40/.60	—
51B60	.56/.64	.75/1.00	0.035	0.04	.15/.35	—	.70/.90	—
81B45	.43/.48	.75/1.00	0.035	0.04	.15/.35	.20/.04	.35/.55	.08/.15
94B17	.15/.20	.75/1.00	0.035	0.04	.15/.35	.30/.60	.30/.50	.80/.15
94B30	.28/.33	.75/1.00	0.035	0.04	.15/.35	.30/.60	.30/.50	.08/.15

**A** Silicon may be specified by the purchaser as 0.10% maximum. The need for 0.10% maximum generally relates to severe cold-formed parts.

**B** These steels can be expected to contain 0.0005 to 0.003% boron. If the usual titanium additive is not permitted, the steels can be expected to contain up to 0.005% boron.