

## AK Steel 410 Cb Martensitic Stainless steel

Category : Metal , Ferrous Metal , Martensitic , Stainless Steel , T 400 Series Stainless Steel

### Material Notes:

AK Steel 410 Cb is an improved version of standard Type 410. The addition of columbium offers 3 major advantages: 1) Greater ease in heat treating, 2) Higher strength and toughness, 3) Improved grain size control. Information provided by AK Steel

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_AK-Steel-410-Cb-Martensitic-Stainless-steel.php](http://www.lookpolymers.com/polymer_AK-Steel-410-Cb-Martensitic-Stainless-steel.php)

Physical Properties	Metric	English	Comments
Density	7.73 g/cc	0.279 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell B	92	92	Hardened at 1850°F for 30 min, oil quenched and tempered for 4 hrs at 1400°F [9.5 mm plate, transverse]
Hardness, Rockwell C	32	32	Hardened at 1850°F for 30 min, oil quenched and tempered for 4 hrs at 500°F [9.5 mm plate, transverse]
	33	33	Hardened at 1850°F for 30 min, oil quenched and tempered for 4 hrs at 1000°F [9.5 mm plate, transverse]
Tensile Strength, Ultimate	655 MPa	95000 psi	Hardened at 1850°F for 30 min, oil quenched and tempered for 4 hrs at 1400°F [9.5 mm plate, transverse]
	1213 MPa	175900 psi	Hardened at 1850°F for 30 min, oil quenched and tempered for 4 hrs at 1000°F [9.5 mm plate, transverse]
	1248 MPa	181000 psi	Hardened at 1850°F for 30 min, oil quenched and tempered for 4 hrs at 500°F [9.5 mm plate, transverse]
Tensile Strength, Yield	503 MPa	73000 psi	Hardened at 1850°F for 30 min, oil quenched and tempered for 4 hrs at 1000°F [plate, transverse]
	@Strain 0.200 %, Thickness 9.50 mm	@Strain 0.200 %, Thickness 0.374 in	
	924 MPa	134000 psi	Hardened at 1850°F for 30 min, oil quenched and tempered for 4 hrs at 1000°F [plate, transverse]
	@Strain 0.200 %, Thickness 9.50 mm	@Strain 0.200 %, Thickness 0.374 in	
	1034 MPa	150000 psi	Hardened at 1850°F for 30 min, oil quenched and tempered for 4 hrs at 1000°F [plate, transverse]
	@Strain 0.200 %, Thickness 9.50 mm	@Strain 0.200 %, Thickness 0.374 in	
Elongation at Break	14 %	14 %	in 2 inches, Hardened at 1850°F for 30 min, oil quenched and tempered for 4 hrs at 1000°F [9.5 mm plate, transverse]

Mechanical Properties	Metric	English	Comments
	15 %	15 %	Hardened at 1850°F for 30 min, oil quenched and tempered for 4 hrs at 500°F [9.5 mm plate, transverse]
	26 %	26 %	in 2 inches, Hardened at 1850°F for 30 min, oil quenched and tempered for 4 hrs at 1400°F [9.5 mm plate, transverse]
Modulus of Elasticity	200 GPa	29000 ksi	
Charpy Impact	11.0 J	8.11 ft-lb	V-Notch, Hardened at 1850°F for 30 min, oil quenched and tempered for 4 hrs at 1000°F [9.5 mm plate, transverse]
	38.0 J	28.0 ft-lb	V-Notch, Hardened at 1850°F for 30 min, oil quenched and tempered for 4 hrs at 500°F [9.5 mm plate, transverse]
	110 J	81.1 ft-lb	V-Notch, Hardened at 1850°F for 30 min, oil quenched and tempered for 4 hrs at 1400°F [9.5 mm plate, transverse]

Thermal Properties	Metric	English	Comments
CTE, linear	9.90 $\mu\text{m}/\text{m}\cdot\text{°C}$	5.50 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 0.000 - 100 °C	@Temperature 32.0 - 212 °F	
	11.6 $\mu\text{m}/\text{m}\cdot\text{°C}$	6.44 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature <=649 °C	@Temperature <=1200 °F	
Thermal Conductivity	24.8 W/m-K	172 BTU-in/hr-ft <sup>2</sup> -°F	
	@Temperature 100 °C	@Temperature 212 °F	
	28.6 W/m-K	198 BTU-in/hr-ft <sup>2</sup> -°F	
	@Temperature 500 °C	@Temperature 932 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.12 %	0.12 %	
Chromium, Cr	11.9 %	11.9 %	
Iron, Fe	87.348 %	87.348 %	As Remainder
Manganese, Mn	0.19 %	0.19 %	
Molybdenum, Mo	0.027 %	0.027 %	
Niobium, Nb (Columbium, Cb)			

Component Elements Properties	0.15 % Metric	0.15 % English	Comments
Phosphorous, P	0.021 %	0.021 %	
Silicon, Si	0.24 %	0.24 %	
Sulfur, S	0.0040 %	0.0040 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000570 ohm-cm	0.0000570 ohm-cm	

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