Alloy Selector Guide and Welding Procedures

Alloy Steels

Cronatron

Stick Electrodes

A	340	(140,000 PSI)	(Rc 37-40)
B	349	(87,000 PSI)	(Rc 33-36)
C	333*	(125,000 PSI)	(Rc 22)

MIG Wires

A	340M	(140,000 PSI)	(Rc 37-40)
C	333M*	(125,000 PSI)	(Rc 22)

TIG Wires

A	340T	(140,000 PSI)	(Rc 37-40)
B	349T	(87,000 PSI)	(Rc 33-36)
C	333T*	(125,000 PSI)	(Rc 22)

*See page 11-28

Certanium®

Stick Electrodes

C	707*	(125,000 PSI)	(Rc 22)

MIG Wires

C	707M*	(125,000 PSI)	(Rc 22)

TIG Wires

C	707T*	(125,000 PSI)	(Rc 22)

*See page 11-28

T = TIG
M = MIG

Bead Profiles and Techniques

Desired Bead Profile	Fillet welds should be flat to slightly convex with smooth transitions.
Technique	Stringer beads are best.
Helpful Hints	Minimize heat input to decrease HAZ grain growth.
Preheat	Hold at stated preheat temperature for one hour per one inch thickness.

Group	Description	Common Metal Grades
A	Nickel Chrome-Moly Alloy Steels	43XX, 4340
B	Chrome-Moly Alloy Steels	A217, 41XX, 4130, 4140
C	Most 300 Series Stainless Steel and Dissimilar Steels	201, 202, 205, 301, 302, 304, 305, 308, 309, 310, Carbon Steels, Cast Steels

Group	Thickness	Preheat °F	Postheat °F	Minimum Interpass °F	Maximum Interpass °F	Description
Group A – Nickel Chrome-Moly Alloy Steels	<1"	500	Depends	500	N/A	Easily susceptible to cracking. Controlling hydrogen (use hotbox) and using proper preheat is critical to success. A PWHT (Post Weld Heat Treatment) is sometimes done to regain optimal characteristics. A typical stress relief can be done at about 1,200°F and held for one hour per one inch of base metal, followed by a slow cool.
	1" – 2"	500	Depends	500	N/A	
	>2"	500	Depends	500	N/A	
Group B – Chrome-Moly Alloy Steels	<1"	200	Depends	200	N/A	Better weldability than Nickel Chrome-Moly steels but still susceptible to cracking. Controlling hydrogen (use hotbox) and using proper preheat is critical to success. A PWHT (Post Weld Heat Treatment) is sometimes done to regain optimal characteristics.
	1" – 2"	300	Depends	300	N/A	
	>2"	400	Depends	400	N/A	
Group C – Most 300 Series Stainless Steel and Dissimilar Steels	<1"	100	Depends	100	N/A	With the selection of Cronatron 333 or Certanium® 707, most alloyed steels, stainless steels, carbon steels and cast steels can be welded with little or no preheat. They can be welded to similar composition base materials as well as dissimilar composition base materials. A PWHT (Post Weld Heat Treatment) is rarely done since materials of varying chemistry would result in non-uniform characteristics.
	1" – 2"	200	Depends	200	N/A	
	>2"	300	Depends	300	N/A	

For optimal operating parameters, refer to the product page.