STEEL PREHEATING CHART

Pre-Heating will eliminate crack formation,
reduce distortion and prevent shrinkage stresses

Metal Group	Metal Designation	%C	Recommended Preheat (°F)
Plain Carbon Steel	Plain carbon steel	Below.20	Up to 200
	Plain carbon steel	.20-.30	200-300
	Plain carbon steel	.30-.45	300-500
	Plain carbon steel	.45-.80	500-800
Carbon Moly Steels	Carbon moly steel	.10-.20	300-500
	Carbon moly steel	.20-.30	400-600
	Carbon moly steel	.30-.35	500-800
Manganese Steels	Silicon structural steel	.35	300-500
	Medium Manganese steel	.20-.30	300-500
	SAE T 1330 steel	.30	400-600
	SAE T 1340 steel	.40	500-800
	SAE T 1350 steel	.50	600-900
	12% Manganese steel	1.25	Usually not required
High Tensile Steels	Manganese moly steel	.20	300-500
	Manten steel	.30 max	400-600
	Armco high Tensile steel	.12 max	Up to 200
	Mayari R steel	.20 max	Up to 300
	Nax high tensile	.15-.25	Up to 300
	Cromansil steel	.14 max	300-400
	Corten steel	.12 max	200-400
	Yoloy steel	.05-.35	200-600
Nickel Steel	SAE 2015 steel	.10-.20	200-300
	SAE 2115 steel	.10-.20	200-300
	2 1/2% nickel steel	.10-.20	200-400
	SAE 2315, 2320 steel	.15-.20	200-500
	SAE 2330, 2340 steel	.30-.40	400-600
Medium Nickel Chromium Steel	SAE 3115, 3125 steel	.15-.25	300-400
	SAE 3130, 3140 steel	.30-.40	500-700
	SAE 3150 steel	.50	600-900
	SAE 3215, 3230 steel	.15-.30	400-600
	SAE 3240, 3250 steel	.40-.50	800-1000
	SAE 3315 steel	.15	500-700
	SAE 3325, 3435 & 3450	.25-50	900-1100
Moly Chromium & Chromium Nickel Steels	SAE 4140 steel	.40	600-800
	SAE 4340 steel	.40	700-900
	SAE 4615 steel	.15	400-600
	SAE 4630 steel	.30	500-700
	SAE 4640, 4820 steel	.40-20	600-800
Low Chrome Moly Steels	2% Cr. - 1/2% Mo.steel	Up to .15	400-600
	2% Cr. - 1/2% Mo. steel	.15-.25	500-800
	2% Cr. - 1% Mo. steel	Up to .15	500-700
	2% Cr. - 1% Mo. steel	.15 max	600-800
Medium Chrome Moly Steel	5% Cr. - 1/2% Mo. steel	Up to .15	500-800
	5% Cr. - 1/2% Mo. steel	.15-.25	600-900
	8% Cr. - 1% Mo. steel	.15 max	600-900
High Chrome Steels	12-14% Cr. type 410	.10	300-500
	16-18% Cr. type 430	.10	300-500
	23-30% Cr. type 446	.10	300-500

The need for preheating increases as the following factors are changed.

1. The larger the mass being welded.
2. The lower the temperature of the parts.
3. The lower the atmospheric temperature.
4. The smaller the weld rod in diameter.
5. The greater the speed of welding.
6. The higher the carbon content of the steel.
7. The greater the alloy content.
8. The more complicated the shape.