Welding Amperage Chart

Recommended Settings by Material Thickness

This chart provides general amperage guidelines for different welding processes and material thicknesses. Actual settings may vary based on electrode type, position, joint configuration, and specific application requirements. Always start at the lower end of the range and adjust as needed.

SMAW (Stick) Welding - Mild Steel

Material Thickness	Electrode Size	Amperage Range (AC/DCEP)	Pass Recommendation
1/16" (1.6mm)	1/16" (E6013)	20-40 A	Single pass
3/32" (2.4mm)	3/32" (E6013)	40-80 A	Single pass
1/8" (3.2mm)	1/8" (E7018)	75-125 A	1-2 passes
3/16" (4.8mm)	1/8" (E7018)	110-140 A	2-3 passes
1/4" (6.4mm)	5/32" (E7018)	140-190 A	3-4 passes
3/8" (9.5mm)	3/16" (E7018)	180-250 A	Multiple passes
1/2" (12.7mm)	1/4" (E7018)	230-305 A	Multiple passes

GMAW (MIG) Welding - Mild Steel (Short Circuit Transfer)

Material Thickness	Wire Size	Voltage Range	Wire Speed (IPM)	Amperage Range
18 ga (0.048")	0.023"-0.030"	15-17 V	150-250	40-80 A
16 ga (0.060")	0.023"-0.030"	16-18 V	200-300	60-100 A
14 ga (0.075")	0.030"-0.035"	17-19 V	250-350	80-130 A
1/8" (3.2mm)	0.030"-0.035"	17-20 V	300-400	100-150 A
3/16" (4.8mm)	0.035"-0.045"	18-22 V	350-450	140-200 A
1/4" (6.4mm)	0.035"-0.045"	20-24 V	400-500	180-250 A
3/8" (9.5mm)	0.045"	22-26 V	450-550	220-300 A
1/2" (12.7mm)	0.045"	24-28 V	500-600	280-350 A

GTAW (TIG) Welding - Mild Steel (DCEN)

Material Thickness	Tungsten Size	Amperage Range	Filler Rod Size	Gas Flow (CFH)
0.020" (0.5mm)	0.040"	10-25 A	1/16"	10-15
0.035" (0.9mm)	0.040"	20-40 A	1/16"	10-15
1/16" (1.6mm)	1/16"	30-60 A	1/16"	12-15
3/32" (2.4mm)	1/16"	50-90 A	3/32"	12-15
1/8" (3.2mm)	3/32"	70-130 A	3/32"	15-20
3/16" (4.8mm)	3/32"	110-170 A	1/8"	15-20
1/4" (6.4mm)	1/8"	150-220 A	1/8"-5/32"	18-25
3/8" (9.5mm)	1/8"-5/32"	200-280 A	5/32"-3/16"	20-25

GTAW (TIG) Welding - Aluminum (AC)

Material Thickness	Tungsten Size	Amperage Range	Filler Rod Size	Gas Flow (CFH)
0.040" (1.0mm)	1/16"	30-50 A	1/16"	15-20
1/16" (1.6mm)	1/16"	50-80 A	1/16"	15-20
1/8" (3.2mm)	3/32"	90-135 A	3/32"	15-20
3/16" (4.8mm)	1/8"	130-180 A	1/8"	18-25
1/4" (6.4mm)	1/8"-5/32"	170-230 A	1/8"-5/32"	20-25
3/8" (9.5mm)	5/32"-3/16"	220-310 A	5/32"-3/16"	20-30

Important Notes: These are general guidelines. Actual amperage requirements vary with: • Joint configuration and fit-up • Welding position • Base metal cleanliness • Ambient temperature • Specific electrode/wire manufacturer recommendations • Welder's technique and travel speed