TIG WELDING SETTINGS CHART

Starting amps, tungsten, cup, argon flow and filler rod for mild steel, stainless steel and aluminum from 24 gauge to 1/4 in.

METAL THICKNESS	AMPS BY JOINT				TORCH SET-UP			
	Butt	Lap	Corner	Fillet	Tungsten, in	Cup	Argon, CFH	Filler rod, in
MILD STEEL DCEN. Filler rod: ER70S-2.								
24 gauge* 0.024 in	25-35	25-35	25-35	25-35	1/16	#4-#6	7-12	1/16
1/16 in 1.6 mm	55-90	65-100	55-90	65-100	1/16 or 3/32	#4-#6	11	1/16
3/32 in 2.4 mm	90-120	100-130	90-120	100-130	1/16 or 3/32	#4-#6	11	1/16 or 3/32
1/8 in 3.2 mm	95-130	110-155	95-130	110-155	1/16 or 3/32	#4-#6	11	3/32
3/16 in* 4.8 mm	140-220	165-220	165-220	195-250	3/32	#4-#6	13	1/8
1/4 in 6.4 mm	250-330	275-360	250-330	275-360	1/8	#8	13	3/16
STAINLESS STEEL DCEN. Filler rod: ER308L for 304 stainless. ER316L where pitting resistance matters.								
24 gauge* 0.024 in	25-35	25-35	25-35	25-35	1/16	#4-#6	7-12	1/16
1/16 in 1.6 mm	50-80	60-90	50-80	60-90	1/16 or 3/32	#4-#6	11	1/16
3/32 in 2.4 mm	80-110	90-120	80-110	90-120	1/16 or 3/32	#4-#6	11	1/16 or 3/32
1/8 in 3.2 mm	85-120	100-140	85-120	100-140	1/16 or 3/32	#4-#6	11	3/32
3/16 in* 4.8 mm	125-200	150-200	150-200	175-225	3/32	#4-#6	13	1/8
1/4 in 6.4 mm	225-300	250-325	225-300	250-325	1/8	#8	13	3/16
ALUMINUM AC. Filler rod: ER4043 (general use) or ER5356 (stronger).								
24 gauge* 0.024 in	25-35	25-35	25-35	25-35	1/16	#4-#6	8-15	1/16
1/16 in 1.6 mm	65-75	60-70	55-65	55-75	1/16 or 3/32	#4-#6	15	1/16
3/32 in* 2.4 mm	85-110	85-110	85-110	85-110	3/32	#6-#8	10-20	3/32
1/8 in* 3.2 mm	115-135	105-130	90-120	100-140	3/32	#6-#7	17	3/32
3/16 in 4.8 mm	125-150	130-170	130-160	150-180	3/32	#7-#8	21	3/32
1/4 in 6.4 mm	190-220	160-180	140-170	170-190	3/32	#8-#12	25	3/32

Starting points: your machine's own chart or manual wins, and a test bead on scrap of the same metal and thickness comes first. "1/16 or 3/32" tungsten: Miller lists 1/16 in, Lincoln 3/32 in. A cup's number is its opening in sixteenths of an inch. Rows with * have a note below.

TUNGSTEN COLORS

2% ceriated AC and DC, all-purpose	Gray
2% lanthanated AC and DC	Blue
1.5% lanthanated can replace thoriated	Gold
2% thoriated DC, steel	Red
0.8% zirconiated AC, aluminum	White
Pure tungsten AC, older machines	Green

Thoriated grinding dust is slightly radioactive.

SET UP

Steel and stainless: DCEN
Torch on the negative (−) terminal, work clamp on positive (+).

Aluminum: AC
You need an AC/DC TIG welder.

Tungsten tip
Grind it lengthwise to a taper 2–3 times as long as the tungsten is wide, then blunt the very tip.

ROWS WITH *

24 gauge, and 3/32 in aluminum
Lincoln's range for any joint. Cup and argon flow are CK Worldwide's for the tungsten size.

3/16 in steel and stainless
Miller lists 3/32 or 1/8 in tungsten for lap and fillet welds.

1/8 in aluminum
Miller lists 3/32 or 1/8 in filler rod for butt welds.

Sources: amps, tungsten, cup, filler rod diameter and argon flow from Miller Electric's TIG weld setting calculator, with 10% added for mild steel as Miller says, rounded to 5 A. 24 gauge and 0.090 in aluminum from Lincoln Electric's Square Wave TIG 200 quick reference guide (L16988). Cup and argon flow by tungsten size, and color codes, from CK Worldwide, Technical Guide for TIG Welding (Form 116). Compiled by Welding Tribe, November 2026. Free to print for your shop or class.