STAINLESS STEEL WELDING ROD CHART

Which filler joins which stainless grades, and stainless to mild steel, with the stick rod, TIG rod, MIG wire and flux-cored wire to ask for.

Find one metal at the left, the other along the top	304 / 304L	316 / 316L	321 / 347	409	430	410	Mild steel or carbon steel
304 / 304L	308L	308L	308L (or 347)	309L	309L	309L	309L
316 / 316L	308L	316L	308L	309L	309L	309L	309L
321 / 347	308L (or 347)	308L	347 (or 308L)	309L	309L	309L	309L
409	309L	309L	309L	409 (or 309L)	430 (or 309L)	309L	309L
430	309L	309L	309L	430 (or 309L)	430 (or 309L)	430 (or 309L)	309L
410	309L	309L	309L	309L	430 (or 309L)	410 (or 309L)	309L

The filler for each pair of base metals. Tinted cells: the same grade on both sides. Galvanized steel counts as mild steel once the zinc is off.

Filler: ask for	Stick rod	TIG rod	MIG wire	Flux-cored wire
308L	E308L-16	ER308L	ER308LSi	E308LT1-1/-4
316L	E316L-16	ER316L	ER316LSi	E316LT1-1/-4
347	E347-16	ER347	ER347Si	E347TX-X
409	E309L-16 309L filler	ER409	ER409	E409TX-X
430	E430	ER430	ER430	E430TX-X
410	E410	ER410	ER410	E410TX-X
309L	E309L-16	ER309L	ER309LSi	E309LT1-1/-4

-16 stick rods run on AC or DCEP. Si wires have extra silicon, which helps the puddle wet out in MIG. On a flux-cored wire, -1 is for CO2 and -4 for 75% argon, 25% CO2; "TX-X" stands for those digits: read the spool label.

Stick amps by rod size: whose figures	3/32 in 2.4 mm	1/8 in 3.2 mm	5/32 in 4.0 mm	3/16 in 4.8 mm
Lincoln Excalibur 309/309L-16 Data sheet, DC+ or AC	40–70	60–100	90–140	120–185
ESAB Arcaloy 309L-16 Data sheet, flat position	40–70	65–100	100–145	130–190
Hobart Sterling AP stainless rods Technical guide, DCEP	60–80	80–100	100–140	140–220
Lincoln guide Any 300-series -16 rod, DCEP	30–65	55–95	80–135	120–185
Lincoln guide Any 300-series -17 rod, DCEP	40–80	80–115	100–150	130–200
Lincoln guide Any 300-series -15 rod, DCEP	30–70	45–95	75–130	95–165

GALVANIZED STEEL

Take the zinc off first

Remove it from the whole heated zone before you weld. Lincoln warns that zinc contamination cracks stainless welds. Zinc fume is a health hazard too.

STAINLESS TO MILD STEEL

Keep the heat low

And the penetration shallow, so less mild steel mixes into the weld.

The mild steel side still rusts

Paint it, and carry the paint onto the stainless.

Fume: welding stainless gives off hexavalent chromium, which OSHA says causes cancer. Use local exhaust, keep your head out of the fume, and wear an approved respirator where exhaust can't keep the air clean. For general repair and fabrication: where this chart and your filler maker's data sheet differ, the data sheet wins.

Sources: filler by base metal from Lincoln Electric, "Stainless Steels Welding Guide" (C6.4000), and Hobart Brothers, "Stainless Steel Technical Welding Guide" (rev. 03/21). Stainless to mild steel from the Lincoln Excalibur 309/309L-16 and ESAB Arcaloy 309L-16 data sheets, Hobart and ASSDA Technical FAQ 9. Stick amps: each row is the maker's own document. Compiled by Welding Tribe, November 2026. Free to print for your shop or class.