FREE PRINTABLE CHART

BEGINNER STICK WELDING ROD CHART

The four rods most new welders start with: what each one is for, AC or DC, and amps by rod size. All four weld in every position.

Rod	Best for	Current	3/32 in 2.4 mm	1/8 in 3.2 mm	5/32 in 4.0 mm
E6010	**Rusty, dirty or painted steel; root passes and tacks** Deep, digging arc that freezes fast. DC only: it won't run on an AC-only welder.	**DCEP** Electrode positive	**40–80** amps	**75–125** amps	**110–170** amps
E6011	**Rusty or dirty steel on an AC welder** The AC version of E6010, with the same digging arc.	**AC or DCEP**	**40–80** amps	**75–125** amps	**110–170** amps
E6013	**Thin sheet metal and light-duty parts** Soft arc, shallow penetration, smooth bead. Needs clean metal.	**AC, DCEP or DCEN** DCEN on thin sheet: it penetrates less	**45–90** amps	**80–130** amps	**105–180** amps
E7018	**Strong, ductile welds on structural steel** Low hydrogen. Soft arc, moderate penetration. Needs clean metal. Keep the rods dry in a rod oven.	**DCEP or AC**	**70–110** amps (ESAB)	**90–160** amps (ESAB)	**130–220** amps (ESAB)

These are full ranges. Brands differ, so the box or data sheet for your rods has the final word.

ROD SIZE FOR YOUR PLATE

1/8–3/16 in plate (3–6 mm)	**3/32 in rod**
1/4–3/8 in plate (6–12 mm)	**1/8 in rod**
1/2–1 in plate (12–25 mm)	**5/32 in rod**

Thinner sheet: ESAB doesn't recommend stick; TIG suits it better.

WHICH ROD?

AC-only welder
E6011, E6013 or E7018. Not E6010.

Rusty, dirty or painted steel
E6010 on DC, E6011 on AC.

Thin, clean sheet
E6013.

Strong structural welds
E7018, kept dry.

HOOK UP THE LEADS

DCEP (reverse)
Electrode holder on +, ground clamp on −.

DCEN (straight)
Electrode holder on −, ground clamp on +.

AC
Either lead on either terminal.

READ THE NUMBER

Printed on every rod and box.

E	70	1	8
Electrode for stick welding	Weld is at least 70,000 psi strong	All positions (2 = flat and horizontal only)	Coating and current: low hydrogen with iron powder, AC or DCEP

Sources: E7018 amps from ESAB's Atom Arc 7018 data sheet. Other amps from the shop chart in Randy Williams's guide to welding rod sticking on weldingtribe.com. Uses, coatings, positions and current from "Introduction to Welding", Washington State Board for Community and Technical Colleges (CC BY 4.0), section 8.3, after AWS A5.1. Rod size by plate thickness from ESAB, "Polarity in Stick Welding". Compiled by Welding Tribe, October 2026. Free to print for your shop or class.