WELDING POLARITY CHART

DCEP, DCEN or AC for every common stick rod, MIG wire, flux-cored wire and TIG metal, and which lead goes on which terminal.

Rod or wire	Current	Electrode lead on	Ground clamp on	Notes
STICK SMAW				
E6010	DCEP	+	−	DC electrode positive only.
E6011	DCEP, AC	+	−	The AC version of E6010.
E6012	DCEN, AC	−	+	AWS lists AC or DCEN. Brands differ, so check the box for your rods.
E6013	DCEP, DCEN, AC	+	−	DCEN for thin sheet: it penetrates less.
E7014	DCEP, DCEN, AC	+	−	
E7015	DCEP	+	−	
E7016	DCEP, AC	+	−	
E7018	DCEP, AC	+	−	
E7024	AC, DCEP, DCEN	Either	Either	Usually run on AC. Flat and horizontal fillet welds only.
E7028	DCEP, AC	+	−	Flat and horizontal fillet welds only.
MIG (GMAW), SOLID WIRE				
Steel wire ER70S-3, ER70S-6	DCEP	+	−	With shielding gas. MIG and flux core welders for steel run on DC.
Stainless or aluminum wire	DCEP	+	−	With shielding gas.
FLUX-CORED WIRE FCAW				
E71T-11 self-shielded (no gas)	DCEN	−	+	The common gasless hobby wire. Hobart: all T-11 wires run DCEN.
E71T-8 self-shielded (no gas)	DCEN	−	+	
E70T-7 self-shielded (no gas)	DCEN	−	+	Flat and horizontal only.
E70T-4 self-shielded (no gas)	DCEP	+	−	A gasless wire that runs DCEP. Flat and horizontal only.
E71T-1 gas-shielded (dual shield)	DCEP	+	−	Needs shielding gas.
E71T-GS self-shielded (no gas)	See spool	See spool	See spool	AWS does not set the polarity for GS wires: use the one printed on the spool.
TIG GTAW				
Steel, stainless steel, copper	DCEN	−	+	DCEN puts most of the heat into the work, not the tungsten.
Aluminum, magnesium	AC	Either	Either	AC breaks up the oxide layer on aluminum.

+ is the positive terminal, − the negative. Where a rod takes more than one current, the first is the usual choice and the leads are shown for it. When the box, spool or machine says something different, follow it.

DCEP

Electrode positive: reverse polarity.

Electrode holder, gun or torch	**Positive +**
Ground (earth) clamp	**Negative −**

DCEN

Electrode negative: straight polarity.

Electrode holder, gun or torch	**Negative −**
Ground (earth) clamp	**Positive +**

AC

Either lead can go on either terminal.

Electrode holder, gun or torch	**Either**
Ground (earth) clamp	**Either**

Sources: stick rods from “Introduction to Welding”, Washington State Board for Community and Technical Colleges (CC BY 4.0), Table 8.2, after AWS A5.1. Flux-cored wires from Hobart Brothers, “Choose the Best Flux-Cored Wire”. Polarity basics from ESAB, “Polarity in Stick Welding: The Basics for Beginners”. Compiled by Welding Tribe, November 2026. Free to print for your shop or class.

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