WELDING SHADE CHART

Lens shade numbers by process and amps: OSHA's minimum, the AWS recommended range and the ANSI Z49.1 suggested shade.

Process	Current or plate	OSHA minimum	AWS range	ANSI suggested
Stick SMAW	Under 60 A rods under 3/32 in	7	–	–
	60–160 A 3/32–5/32 in rods	8	10-12	10
	160–250 A 5/32–1/4 in rods	10	12-14	12
	250–550 A rods over 1/4 in	11	12-14	14
MIG or flux core GMAW, FCAW	Under 60 A	7	7-10	–
	60–160 A	10	10-12	11
	160–250 A	10	–	12
	250–500 A	10	–	14
TIG GTAW	Under 50 A	8	8-10	10
	50–150 A	8	10-12	12
	150–500 A	10	12-14	14
Plasma cutting	Light, under 60 A	8	9-14	–
	Light, 60–80 A	8	9-14	8
	Light, 80–300 A	8	9-14	9
	Medium, 300–400 A	9	9-14	12
	Heavy, 400–800 A	10	9-14	14

Process	Current or plate	OSHA minimum	AWS range	ANSI suggested
Plasma arc welding	Under 20 A	6	–	6-8
	20–100 A	8	–	10
	100–400 A	10	–	12
	400–800 A	11	–	14
Air carbon arc cutting	Light, under 500 A	10	–	12
	Heavy, 500–1000 A	11	–	14
Gas welding oxy-fuel	Plate under 1/8 in 3.2 mm	4	–	4 or 5
	Plate 1/8–1/2 in 3.2–12.7 mm	5	–	5 or 6
	Plate over 1/2 in 12.7 mm	6	–	6 or 8
Oxygen cutting torch	Plate under 1 in 25 mm	3	4-6	3 or 4
	Plate 1–6 in 25–150 mm	4	4-6	4 or 5
	Plate over 6 in 150 mm	5	4-6	5 or 6
Torch brazing	Any	3	4-6	3 or 4
Torch soldering	Any	2	–	2
Carbon arc welding	Any	14	–	14

OSHA: the minimum protective shade. AWS: the American Welding Society's recommended range, where its chart gives one. ANSI: the comfort shade ANSI Z49.1 suggests, where it gives one. A dash means none is given.

HOW TO PICK

OSHA's rule of thumb.

1. Start with a shade too dark to see the weld zone.
2. Go lighter until you can see it well.
3. Never go below the minimum.

WHERE THE ARC IS SEEN

Arc hidden by the workpiece

These shades apply where the arc is clearly seen. Lighter filters can work when the workpiece hides it (OSHA).

Between two rows

At the edge between two OSHA rows, for example exactly 160 A, use the darker one.

SMALL PLASMA CUTTERS

ANSI Z49.1:2021

Lists lighter shades for small cutters: 4 under 20 A, 5 at 20–40 A and 6 at 40–60 A.

OSHA

Its table still sets 8 below 300 A where the arc is clearly seen.

Sources: minimum shades from OSHA 29 CFR 1910.133(a)(5), "Filter Lenses for Protection Against Radiant Energy", with its footnotes. Recommended ranges from the American Welding Society, "Complete Welding Lens Shade Chart & Safety Guide for Eye Protection" (Welding Digest, November 2025). Suggested comfort shades from ANSI Z49.1, "Safety in Welding, Cutting, and Allied Processes", and its AWS F2.2 lens shade selector. Compiled by Welding Tribe, November 2026. Free to print for your shop or class.

weldingtribe.com
/tools/welding-shade-chart/