

Chart for Lens Tint for Protection against Radiant Energy

General operations

Operation	Electrode Size in Arc Current 1/32" (0.8mm)	Arc Current	Minimum ¹ Protective Shade
Shielded metal arc welding	< 3	< 60	7
	3-5	60-160	8
	5-8	160-250	10
	> 8	250-550	11
Gas Metal arc Welding and Flux cored arc welding		< 60	7
		60-160	10
		160-250	10
		250-500	10
Gas Tungsten arc welding		< 50	8
		50-150	8
		150-500	10
Air Carbon Arc Cutting	Light	< 500	10
	Heavy	500 – 1,000	11
Plasma Arc Welding		< 20	6
		20-100	8
		100-400	10
		400-800	11
Plasma Arc Cutting	Light ²	< 300	8
	Medium ²	300-400	9
	Heavy ²	400-800	10
Torch Brazing			3
Torch Soldering			2
Carbon Arc Welding			14

¹ As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the visible light of the (spectrum) operation.

² These values apply where the actual arc is clearly seen. Experience has shown that lighter filters may be used when the arc is hidden by the work piece.

Operations	Plate Thickness	Minimum ¹ Protective Shade
Light Gas Welding	< 1/8" (3.2mm)	4
Medium Gas Welding	1/8" - 1/2" (3.2-12.7mm)	5
Heavy Gas Welding	> 1/2" (12.7mm)	6
Light Oxygen Cutting	< 1 (25mm)	3
Medium Oxygen Cutting	1-6" (25-150mm)	4
Heavy Oxygen Cutting	> 6" (150mm)	5

Construction Industry Lens Shades for Radiant Energy

Construction Industry Requirements for Filter Lens Shade Numbers for Protection Against Radiant Energy

Welding Operation	Shade
Shielded metal-arc welding 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	10
Gas-shielded arc welding (nonferrous) 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	11
Gas-shielded arc welding (ferrous) 1/16-, 3/32-, 1/8-, 5/32-inch diameter electrodes	12
Shielded metal-arc welding 3/16-, 7/32-, 1/4-inch diameter electrodes	12
5/16-, 3/8-inch diameter electrodes	14
Atomic hydrogen welding	10 – 14
Carbon-arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 to 6 inches	4 or 5
Heavy cutting, more than 6 inches	5 or 6
Gas welding (light), up to 1/8-inch	4 or 5
Gas welding (medium), 1/8- to 1/2-inch	5 or 6
Gas welding (heavy), more than 1/2-inch	6 or 8

Source: 29 CFR 1926.102(b)(1) (www.OSHA.gov)