AWS SHADE SELECTOR

Filter Lenses for Protection During Shielded Metal Arc Welding[1]

Operation	Electrode Size	Arc Current (Amperes)	OSHA Minimum Protective Shade Number	ANSI & AWS Shade Number Recommendations
Shielded Metal Arc Welding (SMAW)	Less than 3/32 in (2.4 mm)	Fewer than 60	7	-
	3/32-5/32 in (2.4-4.0 mm)	60-160	8	10
	More than 5/32-1/4 in (4.0-6.4 mm)	More than 160-250	10	12
	More than 1/4 in (6.4 mm)	More than 250-550	11	14

Filter Lenses for Protection During Other Welding and Cutting Operations

Operation	Arc Current (Amperes)	OSHA Minimum Protective Shade Number	ANSI & AWS Shade Number Recommendations
Gas Metal Arc Welding (GMAW) and Flux Cored Arc Welding (FCAW)	Fewer than 60	7	-
	60-160	10	11
	More than 160-250	10	12
	More than 250-500	10	14
Gas Tungsten Arc Welding (GTAW)	Fewer than 50	8	10
	50-150	8	12
	More than 150-500	10	14
Air Carbon Arc Cutting (CAC-A) (Light)	Fewer than 500	10	12
Air Carbon Arc Cutting (CAC-A) (Heavy)	500-1000	11	14
Plasma Arc Welding (PAW)	Fewer than 20	6	6-8
	20-100	8	10
	More than 100-400	10	12
	More than 400-800	11	14
Plasma Arc Cutting (PAC) (Light)*	Fewer than 300	8	9
Plasma Arc Cutting (PAC) (Medium)*			
	300-400	9	12
Plasma Arc Cutting (PAC) (Heavy)*	More than 400-800	10	14
Torch Brazing (TB)		3	3 or 4
Torch Soldering (TS)		2	2
Carbon Arc Welding (CAW)		14	14

Filter Lenses for Gas Welding and Oxygen Cutting Operations

Operation	Electrode Size	Arc Current (Amperes)	OSHA Minimum Protective Shade Number
Gas Welding	Under 1/8 in (3.2 mm)	4	5
	1/4 in to 1/2 in (3.2- 12.7 mm)	5	6
	Over 1/2 in (12.7 mm)	6	8
Oxygen Welding	Under 1 in (25 mm)	3	4
	1 in to 6 in (25-150 mm)	4	5
	Over 6 in (150 mm)	5	6

[1] https://www.osha.gov/Publications/OSHAfactsheet-eyeprotection-during-welding.pdf

* Values apply where the actual arc is clearly seen. Lighter filters may be used when the arc is hidden by the workpiece.