

Welding/Torchcutting Shades

When necessary – Shades in the form of goggles, hand-held shields, or helmets are necessary when you are welding, brazing, or torch-cutting, or when such work is being performed near you. These operations produce **Radiation** of wavelengths and intensities that can seriously damage the eyes.



What is necessary – See the two tables reproduced below for protection recommended and shade values. The hazard assessment for your welding, brazing, or torch cutting operation should prescribe the combination of filter lenses, headgear, and impact goggles, side-shields, or glasses that will be necessary for your overall eye, face, and head protection from heat, fire, and sparks or other flying objects.

How to properly don & doff – Helmet or goggles have been donned properly when they are comfortably situated on head and face in a position that prevents the possibility of exposure of the eyes to the radiant energy emitted by the process. Visually inspect the PPE for damage (cracks, scratches, torn or worn elastic band) before use and after removal. Do not use eyewear with defects or weaknesses. If it is necessary to lift your helmet in the presence of a flame or arc, use a hand-held shade filter to cover your eyes.

Limitations- Filter lenses will only protect your eyes if you use the proper minimum shade and if you only view the radiant energy source **through** the filter. Keep your eyes covered.

Care, maintenance, useful life and disposal – Read manufacturer's instructions for care and maintenance, and keep items clean. Store in a protected, dry, temperate location to protect from damage. Hanging goggles from their elastic band will cause unnecessary wear on the band, causing it to loose its elasticity and fail.

Notes:

- 3. Face shields should only be worn over primary eye protection (spectacles or goggles).
- 4. As required by the standard, filter lenses must meet the requirements for shade designations in 1910.133(a)(5). Tinted and shaded lenses are not filter lenses, unless they are marked or identified as such.
- 9. Welding helmets or face shields should be used only over primary eye protection (spectacles or goggles).
- 10. Non-side-shield spectacles are available for frontal protection only, but are not acceptable eye protection for the sources and operations listed for "impact."
- 12. Protection from light radiation is directly related to filter lens density. See note (4). Select the darkest shade that allows task performance.

Source	Assessment of Hazard	Protection
Welding: electric arc	Optical radiation	Welding helmets or welding shields. Typical shades: 10-14. See notes (9), (12).
Welding: gas	Optical radiation	Welding goggles or welding face shield. Typical shades: gas welding: 4-8, cutting 3-6, brazing 3-4. See note (9).
Cutting, torch brazing, torch soldering	Optical radiation	Spectacles or welding face shield. Typical shades: 1.5-3. See notes (3), (9).
Glare	Poor vision	Spectacles with shaded or special-purpose lenses, as suitable. See notes (9), (10).

Radiation -- ultraviolet, visible, and infrared radiation is produced in welding, brazing, and/or torch cutting processes. These are not **ionizing radiation** (as are X-rays and the gamma, beta, alpha emissions of many radioactive materials), and they do not present the same hazards. But UV, IR and visible wavelengths of electromagnetic radiation are indeed radiation in every sense of the word. They are commonly referred to as **radiant energy** in safety documents pertaining to welding, brazing, and torch cutting.

OPERATIONS		ELECTRODE SIZE 1/32"	ARC CURRENT	MINIMUM* PROTECTIVE SHADE
Shielded metal arc welding		Less than 3	Less than 60	7
		3-5	60-160	8
		5-8	160-250	10
		More than 8	250-550	11
Gas metal arc welding and flux cored arc welding			Less than 60	7
			60-160	10
			160-250	10
			250-500	10
Gas tungsten arc welding			Less than 50	8
			50-150	8
			150-500	10
Air carbon	(Light)	Less than 500	10	
Arc cutting	(Heavy)	500-1000	11	
Plasma arc welding			Less than 20	6
			20-100	8
			100-400	10
			400-800	11
Plasma arc cutting		(Light)**	Less than 300	8
		(Medium)**	300-400	9
		(Heavy)**	400-800	10
Torch brazing			3	
Torch soldering			2	
Carbon arc welding			14	
Gas welding:	Light	Under 1/8	Under 3.2	4
	Medium	1/8 to 1/2	3.2 to 12.7	5
	Heavy	Over 1/2	Over 12.7	6
Oxygen cutting:	Light	Under 1	Under 25	3
	Medium	1 to 6	25 to 150	4
	Heavy	Over 6	Over 150	5