

University of Michigan Personal Protective Equipment Guideline - Certification of Hazard Assessment

Employee Information	
Job Title	
Date	
Department	
Supervisor	
Location	
Analysis By	
Employee Name(s)	
Signature	

Review		
Task(s)	Potential Hazard(s)	PPE Recommended

Supplement to the Hazard Assessment

TABLE I. Eye and Face Protection Selection Chart

TYPE	HAZARD(S)	ASSESSMENT SEE NOTE (1)	PROTECTORS	LIMITATIONS	NOT RECOMMENDED
I M P A C T	Chipping, grinding, machining, masonry, work, riveting, and sanding	Flying fragments, objects, large chips, particles, sand, dirt, etc.	Spectacles, goggles, face shields SEE NOTE (1) (3) (5) (6) (10) For severe exposures add N.	Protective devices do not provide unlimited protection. SEE NOTE (7)	Protectors that do not provide protection from side exposure SEE NOTE (10) Filter or tinted lenses that restrict light transmittance, unless it is determined that a glare hazard exists. Refer to OPTICAL RADIATION.
H E A T	Furnace operations, pouring, casting, hot dipping, gas cutting, and welding	Hot sparks	Face shields, goggles, spectacles *For severe exposure add N. SEE NOTE (2) (3)	Spectacles, cup and cover type goggles do not provide unlimited protection. SEE NOTE (2)	Protectors that do not provide protection from side exposure
		Splash from Molten metals	*Face shields worn over goggles H, K	---	
		High temperature exposure	Screen face shields, reflective face shields SEE NOTE (2) (3)	SEE NOTE (3)	
C H E M I C A L	Acid & chemicals handling, degreasing, plating	Splash	Goggles, eyecup, and cover types * For severe exposure, add N.	Ventilation should be adequate but well protected from splash entry.	< None >
		Irritating mists	Special purpose goggles	SEE NOTE (3)	
D U S T	Woodworking, buffing, general dusty conditions	Nuisance dust	Goggles, eyecup, and cover types	Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleaning may be required.	< None >

O P T I C A L R A D I A T I O N	Welding: Electric Arc	TYPICAL FILTER LENS SHADE	PROTECTORS	Protection from optical radiation is directly related to filter lens density. SEE NOTE (4) Select the darkest shade that allows adequate task performance.	Protectors that do not provide protection from optical radiation SEE NOTE (4) < None >
		10 – 14	Welding Helmets or Welding Shields		
		SEE NOTE (9)			
	Welding: Gas Cutting Torch Brazing	4 – 8 3 – 6 3 – 4	Welding Goggles or Welding Shields	SEE NOTE (3)	
	Torch Soldering	1.5 – 3	Spectacles or Welding Faceshield		
	Glare	Spectacle SEE NOTE (9) (10)		Shaded or special Purpose lenses as suitable SEE NOTE (8)	

NOTES TO TABLE I. EYE AND FACE PROTECTION SELECTION CHART:

- Care should be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards should be provided. Protective devices do not provide unlimited protection.
- Operations involving heat may also involve light radiation. As required by the standard, protection from both hazards must be provided.
- Faceshields should only be worn over primary eye protection (spectacles or goggles).
- 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.
- As required by the standard, persons whose vision requires the use of prescription (Rx) lenses must wear either protective devices fitted with prescription (Rx) lenses or protective devices designed to be worn over regular prescription (Rx) eyewear.
- Wearers of contact lenses must also wear appropriate eye and face protection devices in a hazardous environment. It should be recognized that dusty and/or chemical environments may represent an additional hazard to contact lens wearers.
- Caution should be exercised in the use of metal frame protective devices in electrical hazard areas.
- Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleansing may be necessary.
- Welding helmets or faceshields should be used only over primary eye protection (spectacles or goggles).
- Non-sideshield spectacles are available for frontal protection only, but are not acceptable eye protection for the sources and operations listed for "impact."

11. Ventilation should be adequate, but well protected from splash entry. Eye and face protection should be designed and used so that it provides both adequate ventilation and protects the wearer from splash entry.
12. Protection from light radiation is directly related to filter lens density. See note (4). Select the darkest shade that allows task performance.

Protector Types (from table 1 above):

TABLE II. FILTER LENSES FOR PROTECTION AGAINST RADIANT ENERGY

Operations	Electric Size 1/32 in.	Arc Current (amps)	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 – 1,000	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 soldering	---	---	2
Torch brazing	---	---	3
Carbon arc welding	---	---	14

Operations	Plate Thickness (inches)	Plate Thickness (mm)	Minimum Protective Shade
Gas Welding:	---	---	---
Light	Under $\frac{1}{8}$	Under 3.2	4
Medium	$\frac{1}{8}$ to $\frac{1}{2}$	3.2 to 12.7	5
Heavy	Over $\frac{1}{2}$	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

* 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.

** 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.