

TABLE I-1—FILTER LENSES FOR PROTECTION AGAINST RADIANT ENERGY—Continued

Operations	Electrode size 1/32 in.	Arc current	Minimum protective shade
Air carbon .....	(Light) .....	Less than .....	10
Arc cutting .....	(Heavy) .....	500 .....	11
		500-1000 .....	
Plasma arc welding .....		Less than .....	6
		20 .....	8
		20 - .....	10
		100 .....	11
		100 - .....	
		400 .....	
		400 - .....	
		800 .....	
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

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

FILTER LENSES FOR PROTECTION AGAINST RADIANT ENERGY

Operations	Plate thickness— inches	Plate thickness— mm	Minimum* protective shade
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

\* 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.

(b) *Criteria for protective eye and face devices.* (1) Protective eye and face devices purchased after May 20, 1982, shall comply with the American National Standards Institute, ANSI Z87.1-1989, "Practice for Occupational and Educational Eye and Face Protection," which is incorporated by reference as specified in §1915.5, or shall be demonstrated by the employer to be equally effective.

(2) Eye and face protective devices purchased before May 20, 1982, shall comply with "American National Standard Practice for Occupational and Educational Eye and Face Protection, Z87.1-1979," which is incorporated by reference as specified in §1915.5, or shall be demonstrated by the employer to be equally effective.

#### § 1915.154 Respiratory protection.

Respiratory protection for shipyard employment is covered by 29 CFR 1910.134.

#### § 1915.155 Head protection.

(a) *Use.* (1) The employer shall ensure that each affected employee wears a protective helmet when working in areas where there is a potential for injury to the head from falling objects.

(2) The employer shall ensure that each affected employee wears a protective helmet designed to reduce electrical shock hazards where there is potential for electric shock or burns due to contact with exposed electrical conductors which could contact the head.

(b) *Criteria for protective helmets.* (1) Protective helmets purchased after August 22, 1996, shall comply with ANSI

## § 1915.156

Z89.1-1986, "Personnel Protection—Protective Headwear for Industrial Workers—Requirements," which is incorporated by reference, as specified in § 1915.5, or shall be demonstrated by the employer to be equally effective.

(2) Protective helmets purchased before August 22, 1996, shall comply with the "American National Standard Safety Requirements for Industrial Head Protection, Z89.1-1969," which is incorporated by reference as specified in § 1915.5, or shall be demonstrated by the employer to be equally effective.

### § 1915.156 Foot protection.

(a) *Use.* The employer shall ensure that each affected employee wears protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects or objects piercing the sole.

(b) *Criteria for protective footwear.* (1) Protective footwear purchased after August 22, 1996, shall comply with ANSI Z41-1991, "American National Standard for Personal Protection—Protective Footwear," which is incorporated by reference, as specified in § 1915.5, or shall be demonstrated by the employer to be equally as effective.

(2) Protective footwear purchased before August 22, 1996, shall comply with the "American National Standard for Personal Protection—Protective Footwear Z41-1983," which is incorporated by reference, as specified in § 1915.5, or shall be demonstrated by the employer to be equally effective.

### § 1915.157 Hand and body protection.

(a) *Use.* The employer shall ensure that each affected employee uses appropriate hand protection and other protective clothing where there is exposure to hazards such as skin absorption of harmful substances, severe cuts or lacerations, severe abrasions, punctures, chemical burns, thermal burns, harmful temperature extremes, and sharp objects.

(b) *Hot work operations.* The employer shall ensure that no employee wears clothing impregnated or covered in full or in part with flammable or combustible materials (such as grease or oil) while engaged in hot work operations or working near an ignition source.

## 29 CFR Ch. XVII (7-1-03 Edition)

(c) *Electrical protective devices.* The employer shall ensure that each affected employee wears protective electrical insulating gloves and sleeves or other electrical protective equipment, if that employee is exposed to electrical shock hazards while working on electrical equipment.

### § 1915.158 Lifesaving equipment.

(a) *Personal flotation devices.* (1) PFDs (life preservers, life jackets, or work vests) worn by each affected employee must be United States Coast Guard (USCG) approved pursuant to 46 CFR part 160 (Type I, II, III, or V PFD) and marked for use as a work vest, for commercial use, or for use on vessels. USCG approval is pursuant to 46 CFR part 160, Coast Guard Lifesaving Equipment Specifications.

(2) Prior to each use, personal flotation devices shall be inspected for dry rot, chemical damage, or other defects which may affect their strength and buoyancy. Defective personal flotation devices shall not be used.

(b) *Ring life buoys and ladders.* (1) When work is being performed on a floating vessel 200 feet (61 m) or more in length, at least three 30-inch (0.76 m) U.S. Coast Guard approved ring life buoys with lines attached shall be located in readily visible and accessible places. Ring life buoys shall be located one forward, one aft, and one at the access to the gangway.

(2) On floating vessels under 200 feet (61 m) in length, at least one 30-inch (0.76 m) U.S. Coast Guard approved ring life buoy with line attached shall be located at the gangway.

(3) At least one 30-inch (0.76 m) U.S. Coast Guard approved ring life buoy with a line attached shall be located on each staging alongside of a floating vessel on which work is being performed.

(4) At least 90 feet (27.43m) of line shall be attached to each ring life buoy.

(5) There shall be at least one portable or permanent ladder in the vicinity of each floating vessel on which work is being performed. The ladder shall be of sufficient length to assist