



**DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS**

**DIRECTOR'S OFFICE**

**GENERAL INDUSTRY SAFETY STANDARDS**

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(By authority conferred on the director of the department of licensing and regulatory affairs  
by sections 16 and 21 of 1974 PA 154, MCL 408.1016 and 408.1021,  
and Executive Reorganization Order Nos. 1996-2, 2003-1, 2008-4, and 2011-4,  
MCL 445.2001, 445.2011, 445.2025, and 445.2030)

R 408.13301, R 408.13301a, R 408.13304, R 408.13305, R 408.13306, R 408.13311, R 408.13321, R 408.13322,  
R 408.13324, R 408.13325, R 408.13327, R 408.13329, R 408.13330, R 408.13342, R 408.13345, R 408.13346,  
R 408.13347, R 408.13352, R 408.13353, R 408.13360, R 408.13362, R 408.13366, R 408.13375, R 408.13387,  
and R 408.13389 of the Michigan Administrative Code are amended, as follows:

**PART 33. PERSONAL PROTECTIVE EQUIPMENT**

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## GENERAL PROVISIONS

### R 408.13301 Scope.

**Rule 3301.** (1) This standard shall apply to all places of general industry employment in this state and includes requirements of the employer and use by the employee of personal protective equipment and provides reasonable and adequate means, ways, and methods for the proper selection and safe use of this equipment.

(2) Hearing protection shall be in compliance with Occupational Health Standard Part 380 "Occupational Noise Exposure in General Industry," as referenced in R 408.13301a.

(3) Respiratory protection shall be in compliance with Occupational Health Standard Part 451 "Respiratory Protection," as referenced in R 408.13301a.

### R 408.13301a Adopted and referenced standards.

**Rule 3301a.** (1) The following standards are adopted by reference in these rules and are available from IHS Global, 15 Inverness Way East, Englewood, Colorado, 80112, USA, telephone number: 1-800-854-7179, [www.global.ihs.com](http://www.global.ihs.com), at a cost as of the time of adoption of these rules, as stated in these rules.

(a) American National Standards Institute Standard (ANSI) Z-41 "American National Standard for Personal Protection -- Protective Footwear," 1999 edition. Cost \$25.00.

(b) ANSI/ISEA (International Safety Equipment Association) Z-87.1 "Occupational and Educational Personal Eye and Face Protection Devices," 2010 edition. Cost \$60.00

(c) ANSI Z-87.1 "Occupational and Educational Personal Eye and Face Protection Devices," 2003 edition. Cost \$68.00.

(d) ANSI Z-87.1 "Practice for Occupational and Educational Eye and Face Protection," 1989 edition, revised 1998. Cost: \$148.00.

(e) American Society of Testing Materials Standard (ASTM) D-120 "Standard Specification for Rubber Insulating Gloves," 2009 edition. Cost: \$58.00.

(f) ASTM D-178 "Standard Specification for Rubber Insulating Matting," 2001 edition with 2010 supplement. Cost \$47.00.

(g) ASTM D-178 "Standard Specification for Rubber Insulating Matting," 1993 edition. Cost \$56.00.

(h) ASTM D-1048 "Standard Specification for Rubber Insulating Blankets," 2012 edition. Cost \$47.00.

(i) ASTM D-1049 "Standard Specification for Rubber Insulating Covers," 1998 edition with 2010 supplement. Cost \$47.00.

(j) ASTM D-1050 "Standard Specification for Rubber Insulating Line Hose," 2005 edition with 2011 supplement. Cost \$47.00.

(k) ASTM D-1051 "Standard Specification for Rubber Insulating Sleeves," 2008 edition. Cost \$58.00.

(l) ASTM F-478 "Standard Specification for In-Service Care of Insulating Line Hose and Covers," 2009 edition. Cost \$52.00.

(m) ASTM F-479 "Standard Specification for In-Service Care of Insulating Blankets," 2006 edition with 2011 supplement. Cost: \$47.00.

(n) ASTM F-496 "Standard Specification for In-Service Care of Insulating Gloves and Sleeves," 2008 edition. Cost \$58.00.

(o) ASTM F-2412 "Standard Test Methods for Foot Protection," 2005 edition. Cost \$64.00.

(p) ASTM F-2413 "Standard Specification For Performance Requirements For Protective Footwear," 2005 edition. Cost \$56.00.

(q) ASTM F-819 "Standard Terminology Relating to Electrical Protective Equipment for Workers," 2010 edition. Cost \$41.00.

(r) ASTM F-1236 "Standard Guide for Visual Inspection of Electrical Protective Rubber Products," 1996 edition with 2012 supplement. Cost: \$47.00.

(s) Institute of Electrical and Electronics Engineers IEEE Standard 516 "Guide for Maintenance Methods on Energized Power Lines," 2009 edition. Cost: \$135.00.

(2) The following standards are adopted by reference in these rules and are available from Document Center, Inc., Customer Service, 121 Industrial Road, Suite 8, Belmont, CA 94002, USA, telephone:(650) 591-7600 or via the internet at website: [www.document-center.com](http://www.document-center.com); at a cost as of the time of adoption of these rules, as stated in these rules.

(a) ANSI Z-89.1 "American National Standard for Industrial Head Protection," 2009 edition. Cost \$61.25.

(b) ANSI Z-89.1 "American National Standard for Industrial Head Protection," 2003 edition. Cost: \$20.00.

(c) ANSI Z-89.1 "American National Standard for Personnel Protection—Protective Headwear for Industrial Workers--Requirements," 1997 edition. Cost: \$20.00.

(3) The standards adopted in these rules are available for inspection at the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, P.O. Box 30643, Lansing, Michigan, 48909-8143.

(4) Copies of the standards adopted in these rules may be obtained from the publisher or may be obtained from the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, P.O. Box 30643, Lansing, Michigan, 48909-8143, at the cost charged in this rule, plus \$20.00 for shipping and handling.

(5) The following Michigan occupational safety and health standards (MIOSHA) are referenced in these rules. Up to 5 copies of these standards may be obtained at no charge from the Michigan Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services section, P.O. Box 30643, Lansing, MI, 48909-8143 or via the internet at website: [www.michigan.gov/mioshastandards](http://www.michigan.gov/mioshastandards). For quantities greater than 5, the cost, at the time of adoption of these rules, is 4 cents per page.

(a) Construction Safety Standard Part 45 "Fall Protection," R 408.44501 to R 408.44502.

(b) Occupational Health Standard Part 380 "Occupational Noise Exposure in General Industry" R 325.60101 to R 325.30128.

(c) Occupational Health Standard Part 451 "Respiratory Protection," R 325.60051 to R 325.60052.

(d) General Industry Safety Standard Part 86 "Electric Power Generation, Transmission, and Distribution," R 408.18601 to R 408.18605.

(6) The appendices are informational only and are not intended to create any additional obligations or requirements not otherwise imposed or to detract from any established obligations or requirements.

#### **R 408.13302 Definitions, A to E.**

**Rule 3302.** (1) "Absorptive lens" means a filter lens whose physical properties are designed to attenuate the effect of glare, reflective, and stray light.

(2) "Apparatus" means electrical equipment.

(3) "Bare hand technique" means a method of working on energized conductors by isolating the employee from any ground potential and by placing the employee in continuous firm contact with the energized electric field.

(4) "Bump hat or cap" means a device worn on the head to protect the wearer from bumps or blows but which does not meet the requirements of protective helmets.

(5) "Chin protector" means the portion of a device that offers protection to a wearer's chin, lower face, and neck.

(6) "Conductor" means a material, such as a bus bar, wire, or cable, suitable for carrying an electric current.

(7) "Corrective lens" means a lens ground to the wearer's individual prescription.

(8) "Cover lens" means a removable disc or colorless glass, plastic-coated glass, or plastic that covers a filter lens and protects it from weld spatter, pitting, or scratching when used in a goggle.

(9) "Cover plate" means a removable pane of colorless glass, plastic-coated glass, or plastic that covers a filter plate and protects it from weld spatter, pitting, or scratching when used in a helmet, hood, or goggle.

(10) "Energized" also known as "live," means to be electrically charged, or that to which voltage is being applied.

(11) "Eye size" means a measurement expressed in millimeters and denoting the size of the lens-holding section of an eye frame

#### **R 408.13303 Definitions; F, G.**

**Rule 3303.** (1) "Face shield" means a device worn in front of the eyes and a portion or all of the face, whose predominant function is protection of the eyes and face.

(2) "Filter lens" means a lens that attenuates specific wavelengths of ultraviolet, visible, and infrared radiation according to the composition and density of the lens.

(3) "Filter plate" means a removable pane in the window of a helmet, hood, or goggle that absorbs varying proportions of the ultraviolet, visible, and infrared rays according to the composition and density of the plate.

(4) "Foot or toe protection" means a device or equipment, such as, but not limited to, safety toe footwear, toe protectors, or foot guards, that protects an employee's foot or toes against injury.

(5) "Footwear" means apparel worn on the feet, such as shoes, boots, slippers, or overshoes, excluding hosiery.

(6) "Frame" means a device which holds the lens or lenses on the wearer.

(7) "Front" means the part of a spectacle or goggle frame that is intended to contain the lens or lenses.

(8) "Goggle" means a device with contour-shaped eyecups or facial contact with glass or plastic lenses, worn over the eyes and held in place by a headband or other suitable means for the protection of the eyes and eye sockets.

#### **R 408.13304 Definitions; H, I.**

**Rule 3304.** (1) "Hair enclosure" means a hat, cap, or hair net specifically designed to protect the wearer from hair entanglement in moving machinery.

(2) "Handshield" means a hand-held welding helmet. See "welding helmet."

(3) "Headband" means that part of a goggle, helmet, or hood suspension consisting of a supporting band that encircles the head.

(4) "Headgear" means that part of a protective helmet, hood, or faceshield that supports the device on the wearer's head, usually consisting of a headband and crown strap.

(5) "Helmet" also called a hard hat or cap, means a device that is worn on the head that is designed to provide limited protection against impact, flying particles, or electric shock.

(6) "Hood" means a device that is worn to provide protection against acids, chemicals, abrasives, and temperature extremes and entirely encloses the whole head including face, neck, and shoulders. Air-line hoods and hoods used to protect wearers from inhalation or harmful atmospheres are not included in this part.

(7) "Isolated" means that all energized conductors or the exposed energized parts of equipment are isolated from the work area by an insulated barrier. Conductors may be isolated by moving them out of reaching distance by use of hot line tools.

#### **R 408.13305 Definitions; L to R.**

**Rule 3305.** (1) "Lanyard" means a tether attached to a safety belt or harness at one end and to a lifeline or a fixed object at the other.

(2) "Lens" means the transparent part of a protective device through which the wearer sees, also referred to as a plate or window for some devices.

(3) "Lifeline" means a rope line, except where used in tree trimming, attached at one end to a fixed object or attended by a person and to which a safety belt or lanyard is secured.

(4) "Lift-front" means a type of mounting frame for a welding helmet, hood, or goggles which is made of 2 connected parts. The front part, which may be removed from the line of vision, contains the high density filter plate with its cover plate, and the back part, which is fixed to the helmet, contains a low density or clear impact-resistant plate.

(5) "Light" means an optical radiation weighted by its ability to cause visual sensations.

(6) "Manufacturer" means a business entity that marks or directs the permanent marking of the components or complete devices as compliant with this standard, and sells them as compliant.

(7) "Metatarsal guards" means guards that are designed to protect the top of the foot from the toes to the ankle over the instep of the foot. These guards may be attached to the outside of shoes.

(8) "Non-removable lens" means a lens and holder that are homogeneous and continuous.

(9) "Plano lens" means a lens which does not incorporate a corrective prescription; this lens is not necessarily flat.

(10) "Prescription lens" means a lens manufactured to the wearer's individual corrective prescription.

(11) "Protective footwear" means footwear that is designed, constructed, and classified to protect the wearer from a potential hazard or hazards.

(12) "Protective helmet," "protective hat or cap," or "safety hat or cap" means a rigid device, often referred to as a safety cap or hat, that is worn to provide protection for the head or portions thereof against impact, flying particles, or electric shock, or any combination thereof, and which is held in place by a suitable suspension.

(13) "Protector" means a device that provides eye or face protection against the hazards of processes encountered in employment.

(14) "Radiant energy or radiation" means the following kinds of radiant energy which are pertinent to this standard:

- (a) Ultraviolet.
- (b) Visible light.
- (c) Infrared.

(15) "Reaching distance" means the employee's reach as extended by a conductive material or equipment.

#### **R 408.13306 Definitions; S to W.**

**Rule 3306.** (1) "Safety belt" means a device, usually worn around the waist which, by reason of its attachment to a lanyard and lifeline or a structure, will prevent a worker from falling.

(2) "Safety harness" means a belt with a shoulder strap worn around the waist and shoulder and capable of restraining a pull or fall of an employee.

(3) "Safety strap" means a restraining line secured at both ends to a safety belt or harness to hold an employee to a fixed object.

(4) "Safety toe footwear" means footwear containing a safety toe box of steel or equivalent material capable of meeting the requirements of this part.

(5) "Sanitizing" means an act or process of destroying organisms that may cause disease.

(6) "Shield" means a device to be held in the hand, or supported without the aid of the operator, whose predominant function is protection of the eyes and face.

(7) "Shell" means the portion of welding helmet or handshield that covers the wearer's face and is the part of a helmet which includes the outermost surface.

(8) "Side shield" means a part of, or attachment to, a spectacle that provides side impact-resistance.

(9) "Snood" means a flexible attachment to the back of a hood or helmet for protection against injury to the back of the head and neck.

(10) "Spectacles" also known as "safety glasses" means a protective device intended to shield the wearer's eyes from certain hazards, depending on the spectacle type; also means a device patterned after conventional-type spectacle eyewear, but of more substantial construction, with or without sideshields, and with plano or corrective impact-resistant lenses of clear or absorptive filter glass or plastic.

(11) "Temple" means the part of a spectacle frame commonly attached to the front and generally extending behind the ear of the wearer.

(12) "Toe guards" means the guards that fit over the toes of regular shoes to protect the toes from impact and compression hazards. These guards may be attached to the outside of shoes.

(13) "Welding goggle" means a goggle intended for limited welding applications.

(14) "Welding faceshield" means a faceshield intended for limited welding applications. Faceshields shall be used only in conjunction with spectacles or goggles or both.

(15) "Welding helmet" means a protective device intended to provide protection for the eyes and face against optical radiation and weld spatter, which shall be worn only in conjunction with spectacles or goggles.

(16) "Window" means the lens portion of a face shield (Lens is defined in R 408.13305(2)).

## HAZARD ASSESSMENT

### **R 408.13308 Personal protective hazard assessment and equipment selection.**

**Rule 3308.** (1) An employer shall assess the workplace to determine if hazards are present, or are likely to be present, that necessitate the use of personal protective equipment.

(2) If the hazards are present or are likely to be present then the employer shall do all of the following:

(a) Select, and have each affected employee use, the types of personal protective equipment that will protect the affected employee from the hazards identified in the hazard assessment.

(b) Communicate selection decisions to each affected employee.

(c) Select the personal protective equipment that properly fits each affected employee.

(d) Select personal protective equipment that shall be designed and constructed to be safe for the work to be performed.

Note: Non-mandatory Appendix B contains an example of procedures that complies with the requirement for a hazard assessment.

(3) An employer shall verify that the required workplace hazard assessment has been performed through a written certification which identifies all of the following information:

(a) The workplace evaluated.

(b) The person certifying that the evaluation has been performed.

(c) The date or dates of the personal protective hazard assessment.

(d) The document is a certification of hazard assessment.

## TRAINING

### **R 408.13309 Personal protective equipment training.**

**Rule 3309.** (1) An employer shall provide training to each employee who is required by these rules to use personal protective equipment. The training shall include all of the following:

(a) When personal protective equipment is necessary.

(b) What personal protective equipment is necessary.

(c) How to properly don, doff, adjust, and wear the personal protective equipment.

(d) The limitations of the personal protective equipment.

(e) The proper care, maintenance, useful life, and disposal of the personal protective equipment.

(2) Each affected employee shall demonstrate an understanding of the training specified in subrule (1) of this rule and the ability to use the equipment properly before being allowed to perform work requiring the use of personal protective equipment.

(3) When an employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by subrule (2) of this rule, the employer shall retrain the employee. The occurrence of any of the following circumstances requires retraining:

(a) Changes in the workplace that render previous training obsolete.

(b) Changes in the types of personal protective equipment to be used that render previous training obsolete.

(c) Inadequacies in an affected employee's knowledge or use of assigned personal protective equipment which indicate that the employee has not retained the requisite understanding or skill.

### **R 408.13310 Employer's and employee's responsibilities.**

**Rule 3310.** (1) An employer shall not permit defective or damaged personal protective equipment to be used.

(2) An employee shall use all of the personal protective equipment provided by the employer.

## PAYMENT FOR PERSONAL PROTECTIVE EQUIPMENT

### **R 408.13310a Payment for personal protective equipment (PPE).**

**Rule 3310a.** (1) An employer shall provide at no cost to employees the personal protective equipment necessary to protect against hazards that the employer is aware of as a result of any required assessments.

(2) An employer shall pay for replacement PPE, as necessary, under either of the following conditions:

(a) When the PPE no longer provides the protection it was designed to provide.

(b) When the previously provided PPE is no longer adequate or functional.

(3) When an employee has lost or intentionally damaged the PPE issued to him or her, an employer is not required to pay for its replacement and may require the employee to pay for its replacement.

(4) An employer is not required to pay for prescription safety eyewear with removable or permanent sideshields if the employer provides safety eyewear that fits over an employee's prescription lenses.

(5) An employer is not required to pay for non-specialty prescription safety eyewear, provided that the employer permits these items to be worn off the job-site.

(6) An employer is not required to pay for non-specialty safety-toe protective footwear, including steel-toe shoes or steel-toe boots, provided that the employer permits these items to be worn off the job-site.

(7) An employer shall provide, at no cost to employees, metatarsal guards attachable to shoes when metatarsal protection is necessary if both the following apply:

(a) If metatarsal protection is necessary and an employer requires employees to use metatarsal shoes instead of detachable guards, then the employer shall provide the metatarsal shoe at no cost to the employee.

(b) If an employer provides metatarsal guards and allows the employee, at his or her request, to use shoes or boots with built-in metatarsal protection, then the employer is not required to pay for the metatarsal shoes or boots.

(8) An employer is not required to pay for either of the following:

(a) Everyday clothing, including any of the following:

- (i) Long-sleeve shirts.
- (ii) Long pants.
- (iii) Street shoes.
- (iv) Normal work boots.
- (v) Ordinary clothing.
- (vi) Skin creams.

(b) Other items used solely for protection from weather, including any of the following:

- (i) Winter coats.
- (ii) Jackets.
- (iii) Gloves.
- (iv) Parkas.
- (v) Rubber boots.
- (vi) Hats.
- (vii) Raincoats.
- (viii) Ordinary sunglasses.
- (ix) Sunscreen.

(9) An employer shall pay for protection when ordinary weather gear is not sufficient to protect an employee and special equipment or extraordinary clothing is needed to protect the employee from unusually severe weather conditions. Clothing used in artificially-controlled environments with extreme hot or cold temperatures, such as freezers, is not considered part of the weather gear exception.

(10) All of the following apply to upgraded and personalized PPE:

(a) An employer is not required to pay for PPE requested by an employee that exceeds the PPE requirements, provided that the employer provides PPE that meets the standards at no cost to the employee.

(b) If an employer allows an employee to acquire and use upgraded or personalized PPE, then the employer is not required to reimburse the employee for the equipment, provided that the employer has provided adequate PPE at no cost to the employee.

(c) An employer shall evaluate an employee's upgraded or personalized PPE to ensure that it complies with all of the following:

- (i) Is adequate to protect from hazards present in the workplace.
- (ii) Is properly maintained.
- (iii) Is kept in a sanitary condition.

(11) If the provisions of another MIOSHA standard specify that the employer shall pay for specific equipment, then the payment provisions of that standard prevails.

## EYE AND FACE PROTECTION

### **R 408.13311 Eye and face protection; consensus standards.**

**Rule 3311.** (1) All protective eye and face protection devices, shall be in compliance with any of the following consensus standards:

(a) ANSI/ISEA Z-87.1 "Occupational and Educational Personal Eye and Face Protection Devices," 2010 edition, as adopted in R 408.13301a.

(b) ANSI Z-87.1 "Occupational and Educational Personal Eye and Face Protection Devices," 2003 edition, as adopted in R 408.13301a.

(c) ANSI Z-87.1 as adopted in R 408.13301a.

(2) Protective eye and face protection devices that the employer demonstrates are at least as effective as protective eye and face protection devices that are constructed in accordance with 1 of the consensus standards adopted in subrule (1) of this rule shall be considered to be in compliance with this rule.

### **R 408.13312 Use of eye and face protection.**

**Rule 3312.** (1) An employer shall ensure that each affected employee uses appropriate eye or face protection, when exposed to eye or face hazards from any of the following:

- (a) Flying objects or particles.
- (b) Harmful contacts.
- (c) Exposures.
- (d) Molten metal.
- (e) Liquid chemicals.
- (f) Acids or caustic liquids.
- (g) Chemical fumes, gases or vapors.
- (h) Glare.
- (i) Injurious radiation.
- (j) Electrical flash.
- (k) A combination of these hazards

Note: Appendix B, Appendix Table 1, "Eye and Face Protector Selection Chart," and Appendix Figure 1, "Eye and Face Protective Devices Chart," which shall be used as a guide in the selection of the proper eye and face protection.

(2) An employer shall ensure that each affected employee uses eye protection that provides side protection when there is a hazard from flying objects. Detachable side protectors, such as clip-on or slide-on sideshields, that are in compliance with the pertinent requirements of this rule are acceptable.

(3) A protector shall be in compliance with all of the following minimum requirements:

(a) Provides adequate protection against the particular hazards for which it is designed.

(b) Fits snugly and does not unduly interfere with movements of the wearer.

(c) Is capable of withstanding sanitizing.

(4) An employer shall ensure that eye and face personal protective equipment is distinctly marked to facilitate identification of the manufacturer.

(5) Limitations or precautions indicated by the manufacturer shall be transmitted to the user and care taken to ensure that the limitations or precautions are observed.

**R 408.13312a Filter lenses.**

**Rule 3312a.** (1) An employer shall ensure that each affected employee uses equipment that has filter lenses which have shade numbers appropriate for the work being performed for protection from injurious light radiation.

(2) Table 1 is a listing of appropriate shade numbers for various operations.

(3) Table 1 reads as follows:

<b>TABLE 1 FILTER LENSES FOR PROTECTION AGAINST RADIANT ENERGY</b>			
<b>OPERATIONS</b>	<b>PLATE THICKNESS (INCHES)</b>	<b>PLATE THICKNESS (MM)</b>	<b>MINIMUM* PROTECTIVE SHADE</b>
Gas Welding: Light Medium Heavy	Under 1/8 1/8 to 1/2 Over 1/2	Under 3.2 3.2 to 12.7 Over 12.7	4 5 6
Oxygen Cutting Light Medium Heavy	Under 1 1 to 6 Over 6	Under 25 25 to 150 Over 150	3 4 5
<b>OPERATIONS</b>	<b>ELECTRODE SIZE 1/32 IN.</b>	<b>ARC CURRENT</b>	<b>MINIMUM* PROTECTIVE SHADE</b>
Shield metal Arc welding	Less than 3 3 to 5 more than 5 to 8 more than 8	Less than 60 60 to 160 161 to 250 251 to 550	7 8 10 11
Gas metal arc welding and flux	cored arc welding	Less than 60 60 to 160 161 to 250 251 to 500	7 10 10 10
Gas tungsten arc	welding	Less than 50 50 to 150 151 to 500	8 8 10
Air carbon Arc cutting	(Light) (Heavy)	Less than 500 500 to 1000	10 11
Plasma arc welding		Less than 20 20 to 100 101 to 400 401 to 800	6 8 10 11
Plasma arc cutting	(Light)** (Medium)** (Heavy)**	Less than 300 300 to 400 401 to 800	8 9 10
Torch brazing Torch soldering Carbon arc welding			3 2 14
* As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade that gives a 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 light filters may be used when the arc is hidden by the workpiece.			



**R 408.13313 Maintenance and cleanliness of protectors.**

**Rule 3313.** (1) A face or eye protector shall be kept clean and in good repair.

(2) Cleaning facilities for protectors shall be provided away from the hazard, but readily accessible to the wearer.

(3) A slack, worn out, sweat-soaked, knotted, or twisted headband shall be replaced.

(4) A face or eye protector is a personal item and shall be for the individual and exclusive use of the person to whom it is issued. If circumstances require reissue, the protector shall be thoroughly cleaned, sanitized, and in good condition.

**WELDING HELMETS AND HAND SHIELDS**

**R 408.13320 Purposes, types, styles, and marking.**

**Rule 3320.** (1) The devices described in R 408.13320 to R 408.13330 are designed to provide protection for the face, eyes, ears, and neck against intense radiant energy and spatter resulting from arc welding.

(2) A helmet and a hand shield are the only permissible types.

(3) A helmet and a hand shield shall be made with the same basic design and of the same basic materials: an opaque, bowl-shaped or modified bowl-shaped device containing a window with filter plate which allows the wearer to see the radiant object, yet prevents harmful intensities or radiation from reaching his eyes. A helmet shall be supported on the head by an adjustable headgear. A hand shield shall have a handle attached to the bottom by which it is held in the hand. The basic designs may be modified to provide protection against special hazards, but modified equipment shall meet the same requirements as the basic design.

(4) A helmet and a hand shield shall bear a permanent and legible marking by which the manufacturer may be readily identified.

**R 408.13321 Rigid helmet bodies.**

**Rule 3321.** A helmet body of a rigid helmet shall be of such size and shape as to protect the face, forehead, ears, and neck to a vertical line back of the ears. It shall have 1 or more openings in the front for filter plates or filter lenses. The helmet body shall be attached to the headgear so that it will not come in contact with any part of the head and so that it can be lifted up from in front of the face and hold its position in front of the head. The helmet body shall be made of vulcanized fiber, reinforced plastic, or other suitable material which shall be thermally insulating, noncombustible or slow-burning, opaque to visible, ultraviolet, and infrared radiations, and capable of withstanding sanitizing. The inside of the helmet body shall have a low-light reflecting finish. Rivets or other metal parts, if terminating on the inside surface, shall be adequately separated from the wearer's head.

**R 408.13322 Rigid helmet headgear or cradles.**

**Rule 3322.** A rigid helmet shall have a headgear or cradle that shall hold the helmet body comfortably and firmly on the wearer's head, but shall permit the helmet body to be tilted back over the head. The headgear shall be readily adjustable for all head sizes from 6 1/2 to 7 5/8, without the use of tools. The headgear shall be made of materials which are thermally insulating, noncombustible or slow-burning, resistant to heat, and capable of withstanding sanitizing. Where required, the headgear shall be fitted with a removable and replaceable sweatband covering at least the forehead portion of the headband. The sweatband shall be made of leather or other suitable material which is slow-burning and non-irritating.

**R 408.13323 Rigid helmet headgear substitutes.**

**Rule 3323.** A headgear for a rigid helmet may be replaced by an impact resistant hat or cap that meets the requirements of R 408.13370 to R 408.13378 of this part, or other suitable device to which the helmet body is connected, if the helmet body may be lifted and adjusted to permit unobstructed vision or lowered to furnish complete protection, as required. The alternative device shall meet the requirements for sanitizing and resistance to heat and, in addition, shall meet the applicable requirements of any additional functions, such as protection against falling objects.

**R 408.13324 Rigid helmet filter plates.**

**Rule 3324.** (1) A filter plate on a rigid helmet shall fit into the frame and cover the window.

(2) Both surfaces of a filter plate shall be well polished and shall be free from striae, waves, or other defects that would impair the optical quality of the surfaces. Filter plate surfaces shall be flat and substantially parallel.

(3) Table 2 of R 408.13312 shall be used to select the proper shade number of filter lenses or plates during welding operations.

(4) When specified, a filter plate shall be impact-resistant, unless impact-resistant eye protection is worn in conjunction with a welding helmet.

(5) A filter plate shall be marked with the shade designation and a permanent and legible marking by which the manufacturer may be readily identified. In addition, a glass filter plate, when treated for impact-resistance, shall be marked with the letter "H."

(6) A cover plate made of plain glass, of glass coated on 1 or on both sides with plastic, or of a slow-burning solid plastic sheet shall be used to protect a filter plate from damage. A cover plate shall be the same peripheral size and shape as the filter plate, and the thickness of a cover plate shall not be less than 0.050 inches. A cover plate shall transmit not less than 75% of the luminous radiation and shall be substantially free from optical imperfections.

**R 408.13325 Nonrigid helmets.**

**Rule 3325.** A helmet may be made of non-rigid materials where it is to be used in confined spaces, or may be collapsible for convenience in carrying or storing. The helmet may be of the same general shape as a rigid helmet, except that a more complete covering of the top of the head is necessary in order to maintain the face, side, and windows in proper position. The requirements for the filter plates, cover plates, and lens mounting frame are the same as for a rigid helmet. A headgear may be used. The material shall be non-conducting and opaque to ultraviolet, visible, and infrared radiations. Stitched seams shall be welted. No stitching shall be exposed.

**R 408.13327 Hand shield.**

**Rule 3327.** A hand shield shall be constructed of materials similar to those used for a helmet and in like manner. The materials, lens mounting arrangement, and filter and cover plates shall conform to the requirements for the corresponding parts of the helmet body with headgear. The handle shall be made of a material that is a non-conductor of electricity and is noncombustible or slow-burning. It shall be of such size and shape as to be held easily by 1 hand and shall be firmly attached to the lower portion of the shield. A hand shield intended for use by other than a welding operator shall have filter and cover plates suitable for the intended use.

**R 408.13329 Helmet and hand shield lift fronts and chin rests.**

**Rule 3329.** (1) The lift front of a helmet shall be fabricated from metal, plastic, or other suitable material. A snap hinge shall be provided so that the front part will stay up or down but will not remain in a partially opened position. The lift front seal against the helmet shall be light tight. The lift front shall be designed to accommodate 3 plates: a clear impact-resisting plate in the back or fixed part; a filter plate, impact-resisting, when specified; and a cover plate in the front part. The back or fixed part plate shall be clear heat-treated glass or plastic not more than 3/16 inch thick or less than 1/8 inch and capable of withstanding the impact test.

(2) To avoid contact of a helmet or hand shield with the face of the wearer, a chin rest or adjustable position stop shall be provided. They shall be constructed of suitable rigid material and shall be detachable from the body of the helmet or hand shield.

**R 408.13330 Helmet snoods, neck protectors, and aprons.**

**Rule 3330.** (1) A snood, or back-of-head-and-neck protector where required shall be of material that is flame resistant, that is a good insulator of heat and electricity, and that is capable of withstanding sanitizing. They shall be designed for easy attachment to the helmet, helmet headgear, or cradle.

(2) An apron or bib, where required for a helmet, shall be of nonflammable, nonconducting material that is flexible and capable of withstanding sanitizing.

**R 408.13332 Effect of head protection standards.**

**Rule 3332.** The characteristics and performance requirements of these rules for welding helmets shall in no way be altered through their attachment to protective hats and caps, as required by R 408.13370 to R 408.13378 of this part.

**FACE SHIELDS****R 408.13340 Purposes and uses.**

**Rule 3340.** (1) The devices described in R 408.13340 to R 408.13347 of this part are designed to provide protection to the front part of the head, including forehead, cheeks, nose, mouth, and chin, and to the neck, where required, from flying particles and sprays of hazardous liquids, and to provide filter protection where required. Such devices shall be worn over suitable basic eye protection devices.

(2) Typical uses for face shields include, but are not limited to, the following situations:

- (a) Woodworking operations where chips and particles fly.
- (b) Metal machining causing flying particles.
- (c) Buffing, polishing, wire brushing, and grinding operations causing flying particles or objects.
- (d) Spot welding.
- (e) Handling of hot or corrosive materials.

**R 408.13342 Types and materials.**

**Rule 3342.** (1) Face shields are of 3 basic styles: headgear without crown protector; headgear with crown protector; and headgear with crown protector and chin protector. Each of these styles shall accommodate any of the following styles of windows:

- (a) Clear transparent.
  - (b) Colored transparent.
  - (c) Wire screen.
  - (d) Combination of plastic and wire screen.
  - (e) Fiber window with filter plate mounting.
- (2) Materials used in the manufacture of a face shield shall be non-irritating to the skin when subjected to perspiration and shall be capable of withstanding frequent sanitizing. Metals, when used, shall be resistant to corrosion. Plastic materials shall be slow-burning. Clear or colored plastic materials used in windows shall be of an optical grade. Plastic windows shall not be used in connection with welding operations unless they meet the requirements of table 1 of this part.

**R 408.13343 Components.**

**Rule 3343.** A face shield shall consist of a detachable transparent plastic window, wire screen window, or opaque frame with window; a tilting support, an adjustable headgear; and, as required, a crown protector and chin protector.

**R 408.13344 Windows.**

**Rule 3344.** (1) A window shall be designed to fit the contour of the window support.

(2) A window supporting or window holding member, which shall be a band or crown protector, shall be attached to the headgear. The window support shall position the window in front of the face to provide clearance for the nose and eyeglasses of the wearer.

(3) The attachment of the window to the window support shall be secure and shall permit easy removal and replacement. The several sizes and types of windows for a face shield shall be interchangeable for attachment to the window support.

(4) A plastic or wire screen window without frame shall be not less than 9 1/2 inches wide at the top and 8 1/2 inches wide at the bottom, measured over its curved surfaces when attached and in position on the window support, and not less than 6 inches high. A window, when used in a frame, shall not be less than 4 inches wide and 2 inches high, and the frame shall conform to the dimensions specified for a window without a frame. A plastic window shall be not less than 0.040 inch nominal thickness.

(5) The exposed borders of a wire screen window shall be suitably bound or otherwise finished to eliminate sharp, rough, or unfinished edges. A wire screen window shall not be less than 20-mesh screen.

(6) A window support shall be pivotally attached to the sides of the headgear to permit easy tilting, either upward or downward, of the supporting member and of the window attached thereto. The window shall be capable of being tilted sufficiently upward so that the center of its bottom edge shall be out of the line of horizontal vision. The tension of the tilting mechanism shall be sufficient to hold the window without slippage in either the up or down position.

**R 408.13345 Headgear.**

**Rule 3345.** (1) A headgear shall consist of at least a headband and a crown strap. The headgear shall be made from materials having a low heat conductivity. The design shall hold the window and window support comfortably and firmly in place on the wearer's head and shall provide for tilting the window away from the face.

(2) A headgear shall be readily adjustable to head sizes from 6 1/2 to 7 5/8 without the use of tools. The crown strap or band shall be attached to and extend between the front and rear centers or from the middle sides of the headband. It shall form an arc over the head to assist in positioning and holding the headgear in place. An adjusting device shall be positive and hold firmly in place after being adjusted. Its mechanisms and movements shall be protected so that the wearer's hair cannot catch in the device.

(3) For greater protection, a headgear may be replaced by an impact-resistant hat or cap to which the window support is connected. The attachment may be either rigid or swiveled. If swiveled, the design shall permit lifting and adjusting the window to permit unobstructed vision or lowering to furnish protection.

**R 408.13346 Crown and chin protectors.**

**Rule 3346.** (1) A crown protector and chin protector shall be made of material having an impact-resistance not less than that of the plastic window. When the crown protector is used in conjunction with the chin protector for protection against sprays of hazardous liquids, the assembly of the crown protector and window support and the assembly of the chin protector and window shall not allow liquids to pass through any opening in the assembly and reach the face, forehead, or chin of the wearer.

(2) A crown protector shall be shaped to cover at least the frontal portion of the head and shall extend around each side at least to a vertical line at the front of the ears. It may be an integral part of the window support or a separate assembly. The design shall provide a comfortable clearance over the forehead and the head of the wearer.

(3) A chin protector shall be shaped to cover at least the chin and upper part of the neck. The design shall provide a comfortable clearance under the chin of the wearer.

**R 408.13347 Marking; special operating conditions.**

**Rule 3347.** (1) When a face shield is used in atmospheres or working areas requiring special conditions of non-conductivity or non-sparking materials used shall meet these requirements. A face shield shall be plainly and permanently labeled, identifying it as a "non-conductive face shield" or "non-sparking face shield."

(2) A headgear and a plastic window shall bear a permanent and legible marking by which the manufacturer may be readily identified. A window offered for protection against glare shall also bear its shade designation.

**EYE PROTECTORS****R 408.13350 Prescription lenses.**

**Rule 3350.** An employer shall assure that each affected employee who wears prescription lenses while engaged in operations that involve eye hazards shall wear eye protection which incorporates that prescription in its design or shall wear eye protection which can be worn over the prescription lenses without disturbing the proper position for the prescription lenses or protective lenses.

**R 408.13352 Materials.**

**Rule 3352.** Materials used in the manufacturing of eye protectors shall combine mechanical strength and lightness of weight to a high degree, shall be non-irritating to the skin when subjected to perspiration, and shall withstand frequent sanitizing. Metals, where used, shall be corrosion resistant. Plastic materials, when used, shall be noncombustible or slow-burning. Cellulose nitrate, or materials having flammability characteristics approximating those of cellulose nitrate, shall not be used.

**R 408.13353 Lenses.**

Rule 3353. (1) Lenses intended for use in eye protectors are of 4 basic types, as follows:

(a) Clear lenses which are impact-resisting and provide protection against flying objects.

(b) Absorptive lenses of shades 1.7 through 3.0 which are impact-resisting and provide protection against flying objects and glare or which are impact-resisting and provide protection against flying objects, and narrow-band spectral transmittance of injurious radiation.

(c) Protective-corrective lenses which are impact-resisting and either clear or absorptive, as specified for persons requiring visual correction.

(d) Filter lenses which are impact-resisting and provide protection against flying objects and narrow-band spectral transmittance of injurious radiation.

(2) Glass filter lenses intended for use in eyecup goggles shall be heat treated.

(3) The height of the safety lens shall not be less than 30 millimeters.

**R 408.13355 Eyecup goggles; components.**

**Rule 3355.** Eyecup goggles shall consist of 2 eyecups with lenses and lens retainers, connected by an adjustable bridge, and a replaceable and adjustable headband or other means for retaining the eyecups comfortably in front of the eyes. Recommended applications for the use of eyecup goggles are shown in table 1 of R 408.13312(6).

**R 408.13356 Eyecup goggles; types and models.**

**Rule 3356.** (1) Eyecup goggles shall be of 2 types as follows:

(a) Cup-type goggles designed to be worn by individuals who do not wear corrective spectacles.

(b) Cover cup-type goggles designed to fit over corrective spectacles.

(2) The 2 types of eyecup goggles are subdivided into the following classes:

(a) Chipper's models providing impact protection against flying objects.

(b) Dust and splash models providing protection against fine dust particles or liquid splashes and impact.

(c) Welder's and cutter's models providing protection against glare, injurious radiations, and impact.

(3) The basic designs may be modified to provide more protection against special hazards, but the modified equipment shall meet the same requirements as the basic design.

**R 408.13357 Eyecup goggles; fit.**

**Rule 3357.** (1) The edge of the eyecup of eyecup goggles which bears against the face shall have a smooth surface free from roughness or irregularities which might exert undue pressure or cause discomfort to the wearer. The eyecups shall be of such shape and size as to protect the entire eye sockets.

(2) Cover cup-type goggles shall provide ample clearance and not interfere with the spectacles of the wearer. The edge of the goggles which bears against the face shall have a smooth surface free from roughness or irregularities which might exert undue pressure or cause discomfort to the wearer.

**R 408.13359 Eyecup ventilation.**

**Rule 3359.** (1) Eyecups of chipper's models shall be ventilated in a manner to permit circulation of air.

(2) Eyecups of dust and splash models shall be ventilated in a manner to permit circulation of air. The ventilation openings shall be baffled or screened to prevent direct passage of dust or liquids into the interior of the eyecups.

(3) Eyecups of welder's and cutter's models shall be ventilated in a manner to permit circulation of air and shall be opaque. The ventilation openings shall be baffled to prevent passage of light rays into the interior of the eyecup.

**R 408.13360 Eyecup lenses and retaining rings.**

**Rule 3360.** (1) An eyecup shall be provided with a rigidly constructed lens retaining ring of metal or of plastic designed to accommodate lenses and to permit their ready removal and replacement without damage to the eyecup or to the lenses and without the use of tools. The ring shall provide a complete clamping action against the lens. Lens retainers for welder's and cutter's models shall accommodate a filter lens, fiber gasket, and cover lens.

(2) A filter lens shall be marked with the shade designation and a permanent and legible marking by which the manufacturer may be readily identified. A glass filter lens, when treated for impact-resistance, shall also be marked with the letter "H."

**R 408.13362 Flexible and cushioned fitting goggles; construction.**

**Rule 3362.** Flexible and cushioned fitting goggles shall consist of a wholly flexible frame, forming a lens holder or with a separable lens holder or a rigid frame with integral lens or lenses, having a separate cushioned fitting surface on the full periphery of the facial contact area. Materials used shall be chemical-resistant, non-toxic, non-irritating, and slow-burning. There shall be a positive means of support on the face, such as an adjustable headband of suitable material or other suitable means of support to retain the frame comfortably and snugly in place in front of the eyes. A frame which is a lens holder or has a separable lens holder shall hold the lenses firmly and tightly and be removable or replaceable without the use of tools. The goggles may be ventilated or not, as required by their intended use. Where chemical goggles are ventilated, the openings shall be such as to render the goggles splashproof.

**R 408.13363 Flexible and cushioned fitting goggles; protection.**

**Rule 3363.** (1) Chipper's models of flexible and cushioned fitting goggles shall provide protection against impact.

(2) Dust and splash models shall provide protection from fine dusts, fumes, liquids, splashes, mists, and spray, alone or with reflected light or glare, wind, and impact.

(3) Gas welder's and cutter's models shall provide protection against glare, injurious radiations, and impact.

**R 408.13364 Flexible and cushioned fitting goggles; marking.**

**Rule 3364.** (1) The frame of flexible and cushioned fitting goggles shall bear a trademark or name identifying the manufacturer.

(2) Each separate lens shall be distinctly marked in a manner by which the manufacturer may be identified.

(3) A heat-treated glass filter plate or lens shall also be marked with the shade designation and the letter "H".

(4) The marking shall be clear cut and permanent and so placed as not to interfere with the vision of the wearer.

**R 408.13366 Foundrymen's goggles; construction.**

**Rule 3366.** A foundryman's goggles shall consist of a mask made of a flexible, non-irritating, and noncombustible or slow-burning material, such as a leather or flexible plastic, suitable lens holders attached thereto, lenses, and a positive means of support on the face, such as an adjustable headband, to retain the mask comfortably and snugly in place in front of the eyes. The edge of the mask on contact with the face shall be provided with a binding of corduroy or other suitable material. The lens holders shall hold the lenses firmly and tightly and may be readily removable or replaceable. The lens holders shall be ventilated to permit circulation of air.

**R 408.13367 Foundrymen's goggles; protection.**

**Rule 3367.** (1) A foundryman's goggles shall provide protection against impact and hot-metal splash hazards encountered in foundry operations such as melting, pouring, chipping, babbitting, grinding, and riveting. Where required, they shall also provide protection against dusts.

(2) Applications for use of foundryman's goggles are shown in table 1.

(3) Materials shall resist flame, corrosion, water, and sanitizing.

**SPECTACLES**

**R 408.13369 Spectacles.**

**Rule 3369.** (1) Spectacles, also known as safety glasses, of metal, plastic, or a combination thereof, shall consist of lenses in a frame that supports the lenses around their entire periphery of suitable size and shape for the purpose intended connected by a nose bridge, and retained on the face by temples or other suitable means.

(2) The spectacles, also known as safety glasses, shall be furnished with or without sideshields depending upon their intended use.

(3) The frames, temples, and sideshields may be metal or plastic, and when made of plastic, shall be of the slow-burning type.

(4) Spectacles, also known as safety glasses, shall provide protection to the eye from flying objects, and, when required, from glare and injurious radiations.

(5) Spectacles, also known as safety glasses, without sideshields are intended to provide frontal protection.

(6) Where side as well as frontal protection is required, the spectacles, also known as safety glasses, shall be provided with sideshields.

Note: Appendix B, Appendix Table 1 "Eye and Face Protector Selection Chart," and Appendix Figure 1, "Eye and Face Protective Devices Chart," shall be used as a guide in the selection of the proper eye and face protection.

(7) Frames shall be designed for industrial exposure and shall bear a trademark identifying the manufacturer on both fronts and temples. The frame front shall carry a designation of the eye size and bridge size, where applicable. Temples shall be marked as to the overall length or fitting value.

(8) Temples may be of the cable or spatula type, as specified, and shall be of such design as to permit adjustment and fit comfortably and securely on the wearer. The size of the temples shall be clearly marked.

(9) Safety lens in frames which do not comply with this part shall not be worn.

## HEAD PROTECTION EQUIPMENT

### R 408.13370 Use of head protection.

**Rule 3370** (1) An employer shall ensure that each affected employee is provided with, and wears, head protection equipment and accessories when the employee is required to be present in areas where a hazard exists from any of the following:

- (a) Falling or flying objects.
- (b) Other harmful contacts or exposures.
- (c) Where there is a risk of injury from any of the following:

- (i) Electric shock.
- (ii) Hair entanglement.
- (iii) Chemicals.
- (iv) Temperature extremes.

(2) Service facilities shall be provided for the sanitizing and replacement of needed parts when necessary and before head protection equipment is re-issued.

(3) Head protection equipment that has been physically altered or damaged shall not be worn or reissued to an employee.

(4) An employee shall not physically alter, and shall guard against damage to, the head protection equipment provided.

(5) An employee shall use the provided head protection equipment in accordance with the instructions and training received.

### R 408.13372 Criteria for head protection.

**Rule 3372.** (1) An employer shall provide each employee with head protection that meets the specifications contained in any of the following consensus standards:

(a) ANSI Z-89.1 "American National Standard for Industrial Head Protection," 2009 edition, as adopted in R 408.13301a.

(b) ANSI Z-89.1, "American National Standard for Industrial Head Protection," 2003 edition, as adopted in R 408.13301a.

(c) ANSI Z-89.1 "American National Standard for Personnel Protection—Protective Headwear for Industrial Workers--Requirements," 1997 edition, as adopted in R 408.13301a.

(2) Any head protection device that the employer demonstrates is at least as effective as a head protection device constructed in accordance with 1 of the consensus standards adopted in subrule (1) of this rule is considered to be in compliance with this rule.

### R 408.13375 Protective helmets.

**Rule 3375.** (1) Protective helmets shall be described by impact type and electrical class. All protective helmets shall meet either Type I or Type II requirements. All helmets shall be further classified as meeting Class G, Class E, or Class C electrical requirements. Helmets shall be classified as follows:

(a) Impact type protective helmets shall be either of the following:

- (i) Type I helmets intended to reduce the force of impact resulting from a blow only to the top of the head.
- (ii) Type II helmets intended to reduce the force of impact resulting from a blow to the top or sides of the head.

(b) Electrical classes for protective helmets shall be 1 of the following:

- (i) Class G, general protective helmets are intended to reduce the danger of contact with low voltage conductors. Test samples shall be proof-tested at 2200 volts (phase to ground). This voltage is not intended as an indication of the voltage at which the helmets protects the wearer.
- (ii) Class E, electrical protective helmets are intended to reduce the danger of contact with higher voltage conductors. Test samples shall be proof-tested at 20,000 volts (phase to ground). This voltage is not intended as an indication of the voltage at which the helmet protects the wearer.
- (iii) Class C, conductive protective helmets are not intended to provide protection against contact with electrical hazards.

(2) A metallic head device shall not be furnished by an employer or used by an employee for head protection, except where it has been determined that the use of other types of protective helmets or safety hats or caps is impractical, such as where chemical reaction will cause the deterioration of other types of head protection.

(3) A protective helmet furnished by an employer shall be identified on the inside of the shell with the name of the manufacturer.

(4) When used in conjunction with protective helmets, faceshields, welding helmets, and goggles shall be in compliance with the requirements in these rules, and hearing protection shall be in compliance with Occupational Health Standard Part 380 "Occupational Noise Exposure," as referenced in R 408.13301a.

(5) Winter liners and chin straps used in conjunction with class E helmets for high-voltage protection shall not contain any metallic parts or other conductive materials.

(6) Winter liners and chin straps used in areas where there is a danger of ignition from heat, flame, or chemical reaction shall be made of materials that are non-burning or flame retardant.

(7) Bump hats or caps or other limited-protection devices shall not be used as a substitute for protective helmets for the hazards described in R 408.13370.

(8) An employer shall ensure that protective helmets designed to reduce electrical shock hazard shall be worn by each affected employee who is near exposed electrical conductors that could come in contact with the employee's head.

**R 408.13376 Hoods.**

**Rule 3376.** (1) A hood shall be made of materials that combine all of the following:

(a) Have mechanical strength and lightness of weight to a high degree.

(b) Be non-irritating to the skin when subjected to perspiration.

(c) Be capable of withstanding frequent cleaning and disinfection.

(2) Materials used in the manufacture of hoods shall also be suitable to withstand the hazards to which the user may be exposed.

(3) A hood shall bear a permanent and legible marking by which the manufacturer may be readily identified.

(4) A hood shall be designed to provide adequate ventilation for the wearer.

(5) A protective helmet shall be used in conjunction with a hood where there is a head injury hazard and the hood shall be designed to accommodate such helmet.

**R 408.13378 Hair enclosures; face and head.**

**Rule 3378.** (1) A hat, cap, or net shall be worn by a person where there is a danger of hair entanglement in moving machinery or equipment, or where there is exposure to means of ignition.

(2) Hair enclosures include all of the following:

(a) Be designed to be reasonably comfortable to the wearer.

(b) Completely enclose all loose hair.

(c) Be adjustable to accommodate all head sizes.

(3) Be material used for hair enclosures of all of the following:

(a) Fast dyed.

(b) Non-irritating to the skin when subjected to perspiration.

(c) Capable of withstanding frequent cleaning.

(4) Hair enclosures shall not be reissued from 1 employee to another unless it has been thoroughly sanitized.

**FOOT AND TOE PROTECTION**

**R 408.13383 Criteria for protective footwear.**

**Rule 3383.** (1) Protective footwear shall comply with any of the following consensus standards:

(a) ASTM F-2412 "Standard Test Methods for Foot Protection," 2005 edition, as adopted in R 408.13301a.

(b) ASTM F-2413 "Standard Specification for Performance Requirements for Protective Footwear," 2005 edition, as adopted in R 408.13301a.

(c) ANSI Z-41 "American National Standard for Personal Protection -- Protective Footwear," 1999 edition, as adopted in R 408.13301a.

(2) Protective footwear that an employer demonstrates is at least as effective as protective footwear that is constructed in accordance with 1 of the consensus standards adopted in subrule (1) of this rule, shall be considered to be in compliance with the requirements of this rule.

**R 408.13384 Toe protection.**

**Rule 3384.** Where toe protection other than safety toe footwear is worn, the toe protection shall have an impact value of not less than that required for the safety toe footwear.

**R 408.13385 Use of foot protection.**

**Rule 3385.** (1) An employer shall ensure that each affected employee shall wear protective footwear when working in areas where any of the following occur:

(a) When the use of protective footwear will protect the affected employee from an electrical hazard, such as a static-discharge or electric-shock hazard, that remains after the employer takes other necessary protective measures.

(b) There is a danger of foot injuries due to falling or rolling objects.

(c) There is a danger of objects piercing the sole of the shoe.

(2) An employer shall ensure that safety shoes and boots that are not worn over shoes and that are worn by more than 1 employee are maintained, cleaned, and sanitized inside and out before being issued to another employee

**R 408.13386 Foot protection; requirements.**

**Rule 3386.** If a hazard is created from a process, environment, chemical, or mechanical irritant which could cause an injury or impairment to the feet by absorption or physical contact, other than from impact, then the employer shall provide any of the following to the employee:

(a) Boots.

(b) Overshoes.

(c) Rubbers.

(d) Wooden-soled shoes.

(e) The equivalent to subdivisions (a) to (d) of this subrule.

## ELECTRICAL PROTECTIVE EQUIPMENT

### R 408.13387 Design requirements for specific types of electrical protective equipment.

**Rule 3387.** (1) Rubber insulating blankets, rubber insulating matting, rubber insulating covers, rubber insulating line hose, rubber insulating gloves, and rubber insulating sleeves shall meet the requirements of this rule.

(a) Blankets, gloves, and sleeves shall be produced by a seamless process.

(b) Each item shall be clearly marked as follows:

(i) Class 00 equipment shall be marked class 00.

(ii) Class 0 equipment shall be marked class 0.

(iii) Class 1 equipment shall be marked class 1.

(iv) Class 2 equipment shall be marked class 2.

(v) Class 3 equipment shall be marked class 3.

(vi) Class 4 equipment shall be marked class 4.

(vii) Non-ozone-resistant equipment shall be marked type I.

(viii) Ozone-resistant equipment shall be marked type II.

(ix) Other relevant markings, such as the manufacturer's identification and the size of the equipment, may also be provided.

(c) Markings shall be non-conducting and shall be applied in such a manner as not to impair the insulating qualities of the equipment.

(d) Markings on gloves shall be confined to the cuff portion of the glove.

(3) Electrical requirements shall be all of the following:

(a) Equipment shall be capable of withstanding the alternating current proof-test voltage specified in Table A or the direct current proof-test voltage specified in Table B. All of the following apply:

(i) The proof test shall reliably indicate that the equipment can withstand the voltage involved.

(ii) The test voltage shall be applied continuously for 3 minutes for equipment other than matting and shall be applied continuously for 1 minute for matting.

(iii) Gloves shall be capable of separately withstanding the alternating current proof-test voltage specified in Table A after a 16-hour water soak.

(b) When the alternating current proof test is used on gloves, the 60-hertz proof-test current shall not exceed the values specified in Table A at any time during the test period. All of the following apply:

(i) If the alternating current proof test is made at a frequency other than 60 hertz, the permissible proof-test current shall be computed from the direct ratio of the frequencies.

(ii) For the test, gloves (right side out) shall be filled with tap water and immersed in water to a depth that is in accordance with Table C. Water shall be added to or removed from the glove, as necessary, so that the water level is the same inside and outside the glove.

(iii) After the 16-hour water soak specified in this subrule, the 60-hertz proof-test current shall not exceed the values given in Table A by more than 2 milliamperes.

(c) Equipment that has been subjected to a minimum breakdown voltage test shall not be used for electrical protection. See subrule (3) of this rule.

(d) Material used for Type II insulating equipment shall be capable of withstanding an ozone test, with no visible effects. The ozone test shall reliably indicate that the material will resist ozone exposure in actual use. Any visible signs of ozone deterioration of the material, such as checking, cracking, breaks, or pitting, is evidence of failure to meet the requirements for ozone-resistant material. See subrule (3) of this rule.

(4) Workmanship and finish shall comply with both of the following:

(a) Equipment shall be free of physical irregularities that can adversely affect the insulating properties of the equipment and that can be detected by the tests or inspections required by these rules.

(b) Surface irregularities that may be present on all rubber goods, because of imperfections on forms or molds or because of inherent difficulties in the manufacturing process, and that may appear as indentations, protuberances, or imbedded foreign material are acceptable under the following conditions:

(i) The indentation or protuberance blends into a smooth slope when the material is stretched.

(ii) Foreign material remains in place when the insulating material is folded and stretches with the insulating material surrounding it.



(5) Rubber insulating equipment meeting the national consensus standards in Table 4 is considered to be in compliance with the performance requirements of these rules.

TABLE 2 AMERICAN SOCIETY OF TESTING MATERIALS STANDARDS			
STANDARD TITLE	ASTM NUMBER	EDITION	SUPPLEMENT
Standard Specification for Rubber Insulating Gloves	D-120	2009	-
Standard Specification for Rubber Insulating Matting	D-178	2001	2010
Standard Specification for Rubber Insulating Blankets	D-1048	2012	-
Standard Specification for Rubber Insulating Covers	D-1049	1998	2010
Standard Specification for Rubber Insulating Line Hose	D-1050	2005	2011
Standard Specification for Rubber Insulating Sleeves	D-1051	2008	-
These standards contain specifications for conducting the various tests required in these rules. For example, the alternating current and direct current proof tests, the breakdown test, the water-soak procedure, and the ozone test described in this rule are described in detail in these ASTM standards.			
ASTM F-1236 "Standard Guide for Visual Inspection of Electrical Protective Rubber Products," 1996 Edition with 2012 supplement, as adopted in R 408.13301a, presents methods and techniques for the visual inspection of electrical protective equipment made of rubber. This guide also contains descriptions and photographs of irregularities that can be found in this equipment			
ASTM F-819 "Standard Terminology Relating to Electrical Protective Equipment for Workers," 2010 edition, as adopted in R 408.13301a, includes definitions of terms relating to the electrical protective equipment covered in these rules.			

**R 408.13387a. Electrical protective equipment.**

**Rule 3387a.** (1) Material other than rubber that offers protection equivalent to or greater than rubber may be used if the material is certified to meet the appropriate ASTM standard tests.

(2) An insulated blanket, glove, or sleeve shall be capable of withstanding the voltage to which it may be subjected.

(3) Exposed conductors or equipment, or both, except for conductors or equipment being directly worked on, that is energized from 750 volts to 28,000 volts phase to ground and that an employee may reach into or touch shall be isolated or covered with at least 1 of the following:

- (a) An insulating blanket.
- (b) An insulating hood.
- (c) An insulating line hose.
- (d) An insulating barrier.

(4) An employee shall use insulating gloves and sleeves capable of withstanding the imposed voltage when performing any of the following activities:

(a) Working directly on, or within reaching distance of, a conductor or equipment at a nominal 750 volts or more phase to ground, except when using barehanded techniques or a hot stick. Sleeves are not required for an employee who performs routine switching operations in a substation or powerhouse. An employee who uses gloves and sleeves and works directly on or within reaching distance of a conductor or equipment energized at more than 5,000 volts phase to ground shall do so from an insulated platform or board or an aerial device that has an insulated basket.

(b) Connecting or disconnecting primary neutrals, pole ground wires, or other conductors normally connected to static wires or energized equipment, except that gloves and sleeves shall not be worn while connecting and disconnecting a service neutral or secondary neutral.

(c) Working on a de-energized conductor that extends into an area in which contact may be made with an energized conductor or exposed parts of energized equipment, unless the conductor is grounded or isolated. Insulating sleeves are optional at voltages of less than 750 volts phase to ground.

(5) An employee shall use insulating gloves capable of withstanding the imposed voltage when performing either of the following activities:

(a) When working with a powered or manual hole digger while using booms or using winch lines to install or remove poles or equipment where the hole digger may contact conductors or equipment energized at a voltage of 300 volts or more phase to ground. An employee shall not use the gloves while in the enclosed cab of the equipment.

(b) When working directly on a conductor or equipment energized at a voltage of more than 240 volts phase to ground. This does not include the use of test equipment.

**R 408.13388 Design requirements for other types of electrical protective equipment.**

**Rule 3388.** (1) The following requirements apply to the design and manufacture of electrical protective equipment that is not covered by R 408.40650:

(2) Insulating equipment used for the protection of employees shall be capable of withstanding, without failure, the voltages that may be imposed upon it.

Note 1 to subrule (2): These voltages include transient over-voltages, such as switching surges, as well as nominal line voltage. See General Industry Safety Standard Part 86 "Electric Power Generation, Transmission, and Distribution," Appendix B, as referenced in R 408.13301a, for a discussion of transient over-voltages on electric power transmission and distribution systems.

Note 2 to subrule (2): See IEEE 516 "Guide for Maintenance Methods on Energized Power Lines," 2009 edition, as adopted in R 408.13301a, for methods of determining the magnitude of transient over-voltages on an electrical system and for a discussion comparing the ability of insulation equipment to withstand a transient overvoltage based on its ability to withstand alternating current voltage testing.

(3) Equipment current shall comply with both of the following:

(a) Protective equipment used for the primary insulation of employees from energized circuit parts shall be capable of passing a current test when subjected to the highest nominal voltage on which the equipment is to be used.

(b) When insulating equipment is tested pursuant to these rules, the equipment current may not exceed 1 microampere per kilovolt of phase-to-phase applied voltage.

Note 1 to subrule (3): This rule shall apply to equipment that provides primary insulation of employees from energized parts. It does not apply to equipment used for secondary insulation or equipment used for brush contact only.

Note 2 to subrule (3): For alternating current excitation, this current consists of the following three components:

(a) Capacitive current because of the dielectric properties of the insulating material itself.

(b) Conduction current through the volume of the insulating equipment.

(c) Leakage current along the surface of the tool or equipment.

The conduction current shall be normally negligible. For clean, dry insulating equipment, the leakage current shall be small, and the capacitive current shall predominate.

Note 3 to subrule (3): Plastic guard equipment is considered to conform to the performance requirements of this rule, if it meets, and is used in accordance with ASTM F-712 "Standard Test Methods and Specifications for Electrically Insulating Plastic Guard Equipment for Protection of Workers," 2006 edition with 2011 supplement, as adopted in R 408.13301a.

**R 408.13389 In-service care and use of electrical protective equipment.**

**Rule 3389.** (1) Electrical protective equipment shall be maintained in a safe, reliable condition.

(2) The following specific requirements apply to rubber insulating blankets, rubber insulating covers, rubber insulating line hose, rubber insulating gloves, and rubber insulating sleeves.

(3) Maximum use voltages shall conform to those listed in Table D.

(4) An employer shall ensure that insulating equipment is inspected for damage before each day's use and immediately following any incident that can reasonably be suspected of causing damage. Insulating gloves shall be given an air test, along with the inspection.

Note to subrule (4): ASTM F-1236 "Standard Guide for Visual Inspection of Electrical Protective Rubber Products," 1996 Edition with 2012 supplement, as adopted in R 408.13301a, presents methods and techniques for the visual inspection of electrical protective equipment made of rubber. This guide also contains descriptions and photographs of irregularities that can be found in this equipment.

(5) Insulating equipment with any of the following defects shall not be used.

(a) A hole, tear, puncture, or cut.

(b) Ozone cutting or ozone checking, that is, a series of interlacing cracks produced by ozone on rubber under mechanical stress.

(c) An embedded foreign object.

(d) Any of the following texture changes:

(i) Swelling.

(ii) Softening.

(iii) Hardening.

(iv) Becoming sticky or inelastic.

(v) Any other defect that damages the insulating properties.

(6) An employer shall ensure that insulating equipment found to have other defects that might affect its insulating properties is removed from service and returned for testing under subrules (10) and (11) of this rule.

(7) An employer shall ensure that insulating equipment is cleaned as needed to remove foreign substances.

(8) Insulating equipment shall be stored in a location and in a manner as to protect it from all of the following:

- (a) Light.
- (b) Temperature extremes.
- (c) Excessive humidity.
- (d) Ozone.
- (e) Other damaging substances and conditions.

(9) Protector gloves shall be worn over insulating gloves, except under the following conditions:

(a) Protector gloves need not be used with class 0 gloves, under limited-use conditions, when small equipment and parts manipulation necessitate unusually high finger dexterity.

Note to subrule (9)(a): Persons inspecting rubber insulating gloves used under these conditions shall take extra care in visually examining them. Employees using rubber insulating gloves under these conditions shall take extra care to avoid handling sharp objects.

(b) If the voltage does not exceed 250 volts, ac, or 375 volts, direct current, protector gloves shall not be used with class 00 gloves, under limited-use conditions, when small equipment and parts manipulation necessitate unusually high finger dexterity.

Note to subrule (9)(b): Persons inspecting rubber insulating gloves used under these conditions shall take extra care in visually examining them. Employees using rubber insulating gloves under these conditions shall take extra care to avoid handling sharp objects.

(c) Any other class of glove may be used without protector gloves, under limited-use conditions, when small equipment and parts manipulation necessitate unusually high finger dexterity but only if the employer can demonstrate that the possibility of physical damage to the gloves is small and if the class of glove is 1 class higher than that required for the voltage involved.

(d) Insulating gloves that have been used without protector gloves may not be reused until they have been tested under the provisions of this rule.

(10) Electrical protective equipment shall be subjected to periodic electrical tests. Test voltages and the maximum intervals between tests shall be pursuant to Table D and Table E.

(11) The test method used in this rule shall reliably indicate whether the insulating equipment can withstand the voltages involved.

Note to subrule (11): The standard electrical test methods considered as meeting this requirement are listed in Table 3.

(12) Insulating equipment failing to pass inspections or electrical tests shall not be used by employees, except as follows:

(a) Rubber insulating line hose may be used in shorter lengths with the defective portion cut off.

(b) Rubber insulating blankets may be salvaged by severing the defective area from the undamaged portion of the blanket. The resulting undamaged area shall not be smaller than 560 millimeters by 560 millimeters (22 inches by 22 inches) for class 1, 2, 3, and 4 blankets.

(c) Rubber insulating blankets shall be repaired using a compatible patch that results in physical and electrical properties equal to those of the blanket.

(d) Rubber insulating gloves and sleeves with minor physical defects, such as small cuts, tears, or punctures, shall be repaired by the application of a compatible patch. Also, rubber insulating gloves and sleeves with minor surface blemishes shall be repaired with a compatible liquid compound. The repaired area shall have electrical and physical properties equal to those of the surrounding material. Repairs to gloves shall be permitted only in the area between the wrist and the reinforced edge of the opening.

(13) An employer shall ensure that repaired insulating equipment is retested before it is used by employees.

(14) The employer shall certify that equipment has been tested pursuant to the requirements of this rule. The certification shall identify the equipment that passed the test and the date it was tested and shall be made available upon request to the department of licensing and regulatory affairs director and to MIOSHA employees or their authorized representatives.

Note to subrule (14): Marking equipment with, and entering onto logs, the results of the tests and the dates of testing are acceptable means of meeting the certification requirement.

<b>TABLE 3 AMERICAN SOCIETY OF TESTING MATERIALS STANDARDS</b>			
<b>STANDARD TITLE</b>	<b>ASTM NUMBER</b>	<b>EDITION</b>	<b>SUPPLEMENT</b>
Standard Specification for Rubber Insulating Gloves	D-120	2009	-
Standard Specification for Rubber Insulating Matting	D-178	2001	2010
Standard Specification for Rubber Insulating Blankets	D-1048	2012	
Standard Specification for Rubber Insulating Covers	D-1049	1998	2010
Standard Specification for Rubber Insulating Line Hose	D-1050	2005	2011
Standard Specification for Rubber Insulating Sleeves	D-1051	2008	-
Standard Specification for In-Service Care of Insulating Line Hose and Covers	F-478	2009	-
Standard Specification for In-Service Care of Insulating Blankets	F-479	2006	2011
Standard Specification for In-Service Care of Insulating Gloves And Sleeves	F-496	2008	-

<b>TABLE A ALTERNATING CURRENT PROOF-TEST REQUIREMENTS</b>					
<b>CLASS OF EQUIPMENT</b>	<b>PROOF-TEST VOLTAGE RMS V</b>	<b>Maximum Proof-Test Current, mA (Globes Only)</b>			
		<b>280-mm (11 in.) Glove</b>	<b>360-mm (14 in.) Glove</b>	<b>410-mm (16 in.) Glove</b>	<b>460-mm (18 in.) Glove</b>
00	2,500	8	12	-	-
0	5,000	8	12	14	16
1	10,000	-	14	16	18
2	20,000	-	16	18	20
3	30,000	-	18	20	22
4	40,000	-	-	22	24

<b>TABLE B DIRECT CURRENT PROOF-TEST REQUIREMENTS</b>	
<b>CLASS OF EQUIPMENT</b>	<b>PROOF-TEST VOLTAGE</b>
00	10,000
0	20,000
1	40,000
2	50,000
3	60,000
4	70,000

NOTE: The dc voltages listed in this table are not appropriate for proof testing rubber insulating line hose or covers. For this equipment, dc proof tests shall use a voltage high enough to indicate that the equipment can be safely used at the voltages listed in Table D.

See ASTM D-1050 "Standard Specification for Rubber Insulating Line Hose," 2005 edition with 2011 supplement and ASTM D-1049 "Standard Specification for Rubber Insulating Covers," 1998 edition with 2010 supplement, as adopted in R 408.13301a, for further information on proof tests for rubber insulating line hose and covers, respectively.

<b>TABLE C GLOVE TESTS – WATER LEVEL<sup>1,2</sup></b>				
<b>CLASS OF GLOVE</b>	<b>ALTERNATING CURRENT PROOF TEST</b>		<b>DIRECT CURRENT PROOF TEST</b>	
	<b>mm</b>	<b>in</b>	<b>mm</b>	<b>in</b>
00	38	1.5	38	1.5
0	38	1.5	38	1.5
1	38	1.5	51	2.0
2	64	2.5	76	3.0
3	89	3.5	102	4.0
4	127	5.0	153	6.0

<sup>1</sup> The water level is given as the clearance from the reinforced edge of the glove to the water line, with a tolerance of  $\pm 13$  mm. ( $\pm 0.5$  in.).

<sup>2</sup> If atmospheric conditions make the specified clearances impractical, the clearances may be increased by a maximum of 25 mm.(1 in.).

<b>TABLE D RUBBER INSULATING EQUIPMENT, VOLTAGE REQUIREMENTS</b>			
<b>CLASS OF EQUIPMENT</b>	<b>MAXIMUM USE VOLTAGE<sup>1</sup> ALTERNATING CURRENT RMS</b>	<b>RETEST VOLTAGE<sup>2</sup> ALTERNATING CURRENT RMS</b>	<b>RETEST VOLTAGE<sup>2</sup> DIRECT CURRENT AVG</b>
00	500	2,500	10,000
0	1,000	5,000	20,000
1	7,500	10,000	40,000
2	17,000	20,000	50,000
3	26,500	30,000	60,000
4	36,000	40,000	70,000

<sup>1</sup> The maximum use voltage is the ac voltage (rms) classification of the protective equipment that designates the maximum nominal design voltage of the energized system that may be safely worked. The nominal design voltage is equal to the phase-to-phase voltage on multiphase circuits. However, the phase-to-ground potential is considered to be the nominal design voltage under the following conditions:

(1) There is no multiphase exposure in a system area and the voltage exposure is limited to the phase-to-ground potential, or

(2) The electric equipment and devices are insulated or isolated or both so that the multiphase exposure on a grounded wye circuit is removed.

<sup>2</sup> The proof-test voltage shall be applied continuously for at least 1 minute, but no more than 3 minutes.

<b>TABLE E RUBBER INSULATING EQUIPMENT TEST INTERVALS</b>	
<b>TYPE OF EQUIPMENT</b>	<b>WHEN TO TEST</b>
Rubber insulating line hose	Upon indication that insulating value is suspect and after repair.
Rubber insulating covers	Upon indication that insulating value is suspect and after repair.
Rubber insulating blankets	Before first issue and every 12 months thereafter; <sup>1</sup> upon indication that insulating value is suspect; and after repair
Rubber insulating gloves	Before first issue and every 6 months thereafter; <sup>1</sup> upon indication that insulating value is suspect; after repair; and after use without protectors
Rubber insulating sleeves	Before first issue and every 12 months thereafter; <sup>1</sup> upon indication that insulating value is suspect; and after repair

<sup>1</sup> If the insulating equipment has been electrically tested but not issued for service, the insulating equipment shall not be placed into service unless it has been electrically tested within the previous 12 months.

## FALL PROTECTION

### R 408.13390 Fall protection.

**Rule 3390.** An employer shall ensure that each employee whose fall protection is not covered by another MIOSHA safety standard, and the employee's work area is more than 6 feet above the ground, floor, water, or other surface, shall be protected as prescribed in Construction Safety Standard Part 45 "Fall Protection," as referenced in R 408.13301a.

The following systems are included in CS Part 45 "Fall Protection:"

- (a) Guardrail systems.
- (b) Safety net systems.
- (c) Personal fall arrest systems.

See Appendix C for reference to the correct safety standards for general industry threshold heights requiring fall prevention/protection equipment.

## HAND PROTECTION

### R 408.13392 Hand protection.

**Rule 3392.** An employer shall select and require employees to use appropriate hand protection when employees' hands are exposed to hazards, such as those from any of the following:

- (a) Skin absorption of harmful substances.
- (b) Severe cuts or lacerations.
- (c) Severe abrasions.
- (d) Punctures.
- (e) Chemical burns.
- (f) Thermal burns.
- (g) Harmful temperature extremes.

### R 408.13393 Hand protection; selection.

**Rule 3393.** (1) An employer shall base the selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection related to all of the following:

- (a) The task or tasks to be performed.
- (b) Conditions present.
- (c) Duration of use.
- (d) The hazards and potential hazards identified.

(2) Hand protection interiors shall be kept free of corrosive or irritating contaminants.

(3) If more than 1 employee wears a pair of gloves, the gloves shall be sanitized before re-issuance.

## BODY PROTECTION

### R 408.13394 Body protection.

**Rule 3394.** (1) An employer shall ensure that each employee who is required to work so that his or her clothing becomes wet due to a condition other than the weather or perspiration uses any of the following:

- (a) Aprons.
- (b) Coats.
- (c) Jackets.
- (d) Sleeves.

(e) Other garments that will keep his or her clothing dry.

(2) The material shall be unaffected by the wetting agent.

(3) The provision of dry, clean, acid-resistant clothing, in addition to rubber shoes or short boots and an apron, shall be considered a satisfactory substitute where small parts are cleaned, plated, or acid-dipped in an open tank.

(4) When abrasive blasting is not protected by an enclosure, the operator shall use heavy canvas or leather gloves and aprons or equivalent protection to provide protection from the impact of abrasives.

R 408.13398. Rescinded.

**APPENDIX A  
RESOURCES  
(NON-MANDATORY)**

For further assistance in implementing requirements for a hazard assessment and the selection of personal protective equipment, contact MIOSHA, OSHA, NIOSH, your union, or industry association.

**MIOSHA**  
Michigan Occupational Safety and Health Administration  
Consultation Education & Training Division (CET) [www.michigan.gov/cet](http://www.michigan.gov/cet)  
Phone: 517.322.1809

**OSHA**  
Federal Occupational Safety and Health Administration <http://www.osha.gov>

**NIOSH**  
National Institute of Occupational Safety and Health <http://www.cdc.gov/niosh>



## **APPENDIX B**

### **GUIDELINES FOR HAZARD ASSESSMENT AND PERSONAL PROTECTIVE EQUIPMENT SELECTION (NON-MANDATORY)**

This Appendix is intended to provide compliance assistance for employers and employees in implementing requirements for a hazard assessment and the selection of personal protective equipment.

#### **1. CONTROLLING HAZARDS.**

PPE devices alone should not be relied on to provide protection against hazards, but should be used in conjunction with guards, engineering controls, and sound manufacturing practices.

#### **2. ASSESSMENT AND SELECTION.**

It is necessary to consider certain general guidelines for assessing the eyes, face, head, hands, feet, and body hazard situations that exist in an occupational or educational operation or process, and to match the protective devices to the particular hazard. It should be the responsibility of the safety officer to exercise common sense and appropriate expertise to accomplish these tasks.

#### **3. ASSESSMENT GUIDELINES.**

In order to assess the need for PPE the following steps should be taken:

a. Survey. Conduct a walk-through survey of the areas in question. The purpose of the survey is to identify sources of hazards to workers and co-workers. Consideration should be given to the basic hazard categories:

- (a) Impact.
- (b) Penetration.
- (c) Compression (roll-over).
- (d) Chemical.
- (e) Heat.
- (f) Harmful dust.
- (g) Light (optical) radiation.

b. Sources. During the walk-through survey the safety officer should observe:

- (a) Sources of motion; i.e., machinery or processes where any movement of tools, machine elements or particles could exist, or movement of personnel that could result in collision with stationary objects.
- (b) Sources of high temperatures that could result in burns, eye injury or ignition of protective equipment, etc..
- (c) Types of chemical exposures.
- (d) Sources of harmful dust.
- (e) Sources of light radiation, i.e., welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.
- (f) Sources of falling objects or potential for dropping objects.
- (g) Sources of sharp objects which might pierce the feet or cut the hands.
- (h) Sources of rolling or pinching objects which could brush the feet.
- (i) Layout of workplace and location of co-workers; and
- (j) Any electrical hazards. In addition, injury/accident data should be reviewed to help identify problem areas.

c. Organize data. Following the walk-through survey, it is necessary to organize the data and information for use in the assessment of hazards. The objective is to prepare for an analysis of the hazards in the environment to enable proper selection of protective equipment.

d. Analyze data. Having gathered and organized data on a workplace, an estimate of the potential for injuries should be made. Each of the basic hazards (paragraph 3.a.) should be reviewed and a determination made as to the type, level of risk, and seriousness of the potential injury from each of the hazards found in the area. The possibility of exposure to several hazards simultaneously should be considered.

#### **4. SELECTION GUIDELINES.**

After completion of the procedures in paragraph 3, the general procedure for selection of protective equipment is to:

- (a) Become familiar with the potential hazards and the type of protective equipment that is available, and what it can do; i.e., splash protection, impact protection, etc.;
- (b) Compare the hazards associated with the environment; i.e., impact velocities, masses, projectile shape, radiation intensities, with the capabilities of the available protective equipment;
- (c) Select the protective equipment which ensures a level of protection greater than the minimum required to protect employees from the hazards; and

(d) Fit the user with the protective device and give instructions on care and use of the PPE. It is very important that end users be made aware of all warning labels for and limitations of their PPE.

**5. FITTING THE DEVICE.**

Careful consideration must be given to comfort and fit. PPE that fits poorly will not afford the necessary protection. Continued wearing of the device is more likely if it fits the wearer comfortably. Protective devices are generally available in a variety of sizes. Care should be taken to ensure that the right size is selected.

**6. DEVICES WITH ADJUSTABLE FEATURES.**

Adjustments should be made on an individual basis for a comfortable fit that will maintain the protective device in the proper position. Particular care should be taken in fitting devices for eye protection against dust and chemical splash to ensure that the devices are sealed to the face. In addition, proper fitting of helmets is important to ensure that it will not fall off during work operations. In some cases a chin strap may be necessary to keep the helmet on an employee's head. (Chin straps should break at a reasonable low force, however, so as to prevent a strangulation hazard). Where manufacturer's instructions are available, they should be followed carefully.

**7. REASSESSMENT OF HAZARDS.**

It is the responsibility of the safety officer to reassess the workplace hazard situation as necessary, by identifying and evaluating new equipment and processes, reviewing accident records, and reevaluating the suitability of previously selected PPE.

**8. SELECTION CHART GUIDELINES FOR EYE AND FACE PROTECTION.**

Some occupations (not a complete list) for which eye protection should be routinely considered are:

- Assemblers.
- Carpenters.
- Chemical process operators and handlers.
- Electricians.
- Grinding machine operators.
- Laborers.
- Lathe and milling machine operators.
- Machinists.
- Mechanics and repairers.
- Millwrights.
- Plumbers and pipe fitters.
- Sanders.
- Sawyers.
- Sheet metal workers and tinsmiths.
- Timber cutting and logging workers.
- Welders.

Appendix Table 1, "Eye and Face Protector Selection Chart," and Appendix Figure 1, "Eye and Face Protective Devices," are intended to aid in identifying and selecting the types of eye and face protectors that are available, their capabilities and limitation for the hazard "activity and assessment" operations that are listed.

**APPENDIX TABLE 1  
EYE AND FACE PROTECTOR SELECTION**

This guide is not intended to be the sole reference in selecting the proper eye and face protector.

Care shall be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of the hazards must be provided.

ACTIVITY AND ASSESSMENT	PROTECTOR CATEGORY AND STYLES	LIMITATIONS	NOT RECOMMENDED
<b>IMPACT</b>			
<p>Chipping, grinding, machining, masonry work, riveting, and sanding.</p> <p>Flying fragments, objects, large chips, particles, sand, dirt, etc.</p>	<p>Spectacles, goggles: B, C, D, E, F, G, H, I, J, K, L. For Severe exposure add N. Respirators, R, T.</p> <p>Faceshields shall only be worn over spectacles or goggles.</p> <p>Persons whose vision requires the use of prescription lenses shall wear either protective devices fitted with prescription lenses or protective devices designed to be worn over regular prescription eyewear.</p> <p>Wearers of contact lenses shall also be required to wear appropriate spectacles or goggles depending on the specific hazard. Dusty and/or chemical environments may represent an additional hazard to contact lens wearers. Wearing of contact lenses under an R respirator is permitted.</p> <p>Goggles, helmets and faceshield windows that bear the marking "Z-87+" comply with the High Impact Test Requirements. Those with "Z-87" markings comply only with Basic Impact Testing Requirements. Spectacle lenses that are marked with the manufacturers logo and a "+" sign comply with the High Impact Test Requirements. Those spectacle lenses marked with the manufacturers logo and no "+" comply only with Basic Impact Testing Requirements. (It is important during the selection process to remember that different product categories are tested at different levels of impact resistance. Goggles are tested at a higher level of impact than spectacles and face shields are tested at a higher level than goggles.)</p> <p>The Z-87-2 frame marking indicates the frame meets high impact requirements with a minimum lens thickness of 2mm.</p>	<p>Protective devices do not provide unlimited protection.</p> <p>Note: Caution should be exercised in the use of metal frame protective devices in electrical hazard areas. Metal frame protective devices could potentially cause electrical shock and electrical burns through contact with, or thermal burns from exposure to the hazards of electrical energy, which include radiation from accidental arcs.</p> <p>Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleaning may be required.</p>	<p>Protectors that do not provide protection from side exposure.</p> <p>Filter or tinted lenses that restrict light transmittance, unless it is determined that a glare hazard exists. Refer to OPTICAL RADIATION.</p> <p>Use of faceshields alone, without spectacles or goggles.</p>

**APPENDIX TABLE 1  
EYE AND FACE PROTECTOR SELECTION**

This guide is not intended to be the sole reference in selecting the proper eye and face protector.

Care shall be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards.  
Adequate protection against the highest level of the hazards must be provided.

ACTIVITY AND ASSESSMENT	PROTECTOR CATEGORY AND STYLES	LIMITATIONS	NOT RECOMMENDED
<b>HEAT</b>			
Furnace operations, pouring, casting, hot dipping, gas cutting, and welding.	Note: Operations involving heat may also involve optical radiation. (See electric arc, gas, and glare under Optical Radiation below.) Protection from both hazards shall be provided. Faceshields shall only be worn over spectacles or goggles.	Spectacles, cup and cover type goggles do not provide unlimited facial protection.	Protectors that do not provide protection from side exposure.
Hot Sparks	Goggles, spectacles: B, C, D, E, F, G, H, I, J, K, L. For severe exposure add N. Respirators R, T.	Operations involving heat may also involve optical radiation. Protection from both hazards shall be provided.	Use of faceshields alone, without spectacles or goggles.
Splash from molten metals	Faceshields worn over goggles H, K. Respirators R, T or S, U if optical radiation hazard exists.		
High temperature exposure	Screen faceshields, Reflective faceshields over spectacles or goggles.		
<b>CHEMICAL</b>			
Acid and chemicals handling, degreasing, plating. Splash and irritating mists.	Indirect vented: goggles, eyecup and cover types: G, H, K. For severe exposure add N. Respirators R, T.  Irritating Mist: Special purpose goggles: G. Cover goggle – No ventilation. Respirators R, T.	Provides protection from splash entry with adequate ventilation.  Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleaning may be required.	Spectacles, welding, helmets, or handshields.
<b>DUST</b>			
Woodworking, buffing, general dusty conditions. Nuisance dust	Goggles, eyecup and cover types: G, H, K. Respirators R, T.	Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleaning may be required.	

**APPENDIX TABLE 1  
EYE AND FACE PROTECTOR SELECTION**




















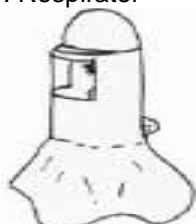


This guide is not intended to be the sole reference in selecting the proper eye and face protector.

Care shall be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of the hazards must be provided.

ACTIVITY AND ASSESSMENT	PROTECTOR CATEGORY AND STYLES		LIMITATIONS	NOT RECOMMENDED
<b>OPTICAL RADIATION</b>				
WELDING: Electric Arc	Note: Welding helmets or handshields shall be used only over spectacles or goggles.		Protection from optical radiation is directly related to filter lens density. Select the darkest shade that allows adequate tasks performance.	Protectors that do not provide protection from optical radiation.
Viewing electric arc furnaces and boilers	TYPICAL FILTER LENS SHADE: 10-14	PROTECTORS: Welding helmets or Welding Shields: O, P, Q Respirators S, U	Note: Filter lenses shall meet the requirements for shade designations in GI Part 33 Table 1.	Note: Filter lenses shall meet the requirements for shade designations in GI Part 33 Table 1.
WELDING: Gas, and viewing gas-fired furnaces and boilers	TYPICAL FILTER LENS SHADE: 4-8	PROTECTORS: Welding goggles, Helmets. Welding Face shields over spectacles or goggles: J, K, L, M, N, O, P, Q or Respirators S, U.	Note: Faceshields and welding helmets shall only be worn over spectacles or goggles.	Use of welding helmets or faceshields alone, without spectacles or goggles.
CUTTING	TYPICAL FILTER LENS SHADE: 3-6	PROTECTORS: Welding goggles, Helmets. Welding face shields: J, K, L, M, N, O, P, Q or Respirators S, U		
TORCH BRAZING	TYPICAL FILTER LENS SHADE: 3-4	PROTECTORS: Welding goggles, Helmets. Welding face shields: J, K, L, M, N, O, P, Q or Respirators S, U		
TORCH SOLDERING	TYPICAL FILTER LENS SHADE: 1.5-3	PROTECTORS: Spectacles or Welding Faceshield over spectacles: B, C, D, E, F, N or Respirators S, U.		
GLARE	Spectacle: A, B, Faceshields N over spectacles or goggles.			

**APPENDIX FIGURE 1  
EYE AND FACE PROTECTIVE DEVICES**

The illustrations shown are only representative of protective devices commonly available at this time.  
Protective devices do not need to take the forms shown, but must meet the requirements of this standard.

<p>A. Spectacle, No sideshield</p> 	<p>B. Spectacle, Half sideshield</p> 	<p>C. Spectacle, Full Sideshield</p> 	<p>D. Spectacle, Detachable Sideshield</p> 	<p>E. Spectacle, Non-Removable Lens</p> 
<p>F. Spectacle, Lift Front</p> 	<p>G. Cover Goggle, No Ventilation</p> 	<p>H. Cover Goggle, Indirect Ventilation</p> 	<p>I. Cover Goggle, Direct Ventilation</p> 	<p>J. Cup Goggle, Direct Ventilation</p> 
<p>K. Cup Goggle, Indirect Ventilation</p> 	<p>L. Spectacle, Headband Temple</p> 	<p>M. Cover Welding Goggle, Indirect Ventilation</p> 	<p>N. Faceshield</p> 	<p>O. Welding Helmet, hand Hold</p> 
<p>P. Welding Helmet, Stationary Window</p> 	<p>Q. Welding Helmet, Lift Front</p> 	<p>R. Respirator</p> 		
<p>S. Respirator</p> 	<p>T1. Respirator</p> 		<p>T2. Respirator</p> 	<p>U. Respirator</p> 

- (1) Care shall 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 must be provided.
- (2) Operations involving heat may also involve optical radiation. Protection from both hazards shall be provided.
- (3) Faceshields shall only be worn over primary eye protection.
- (4) Filter lenses shall meet the requirements for shade designations in General Industry Safety Standard Part 33 "Personal Protective Equipment," Table 1.
- (5) Persons whose vision requires the use of prescription lenses shall wear either protective devices fitted with prescription lenses or protective devices designed to be worn over regular prescription eyewear.
- (6) Wearers of contact lenses shall also be required to wear appropriate covering 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.
- (7) Caution should be exercised in the use of metal frame protection devices in electrical hazard areas.
- (8) Refer to Section 6.5 "Special Purpose Lenses" in ANSI Z-87.1 2003 edition, as adopted in R 408.13301a.
- (9) Welding helmets or handshields shall be used only over primary eye protection.
- (10) Non-sideshield spectacles are available for frontal protection only.

## 9. SELECTION GUIDELINES FOR HEAD PROTECTION.

All head protection (helmets) is designed to provide protection from impact and penetration hazards caused by falling objects. Head protection is also available which provides protection from electric shock and burn. When selecting head protection, knowledge of potential electrical hazards is important.

Protective helmets are described by impact type and electrical class. All protective helmets shall meet either Type I or Type II requirements. All helmets shall be further classified as meeting Class G, Class E, or Class C electrical requirements. Helmets shall be classified as follows:

(a) Impact type protective helmets shall be as follows:

- (i) Type I helmets are intended to reduce the force of impact resulting from a blow only to the top of the head.
- (ii) Type II helmets are intended to reduce the force of impact resulting from a blow to the top or sides of the head.

(b) Electrical classes for protective helmets shall be as follows:

- (i) Class G, General protective helmets are intended to reduce the danger of contact with low voltage conductors. Test samples shall be proof-tested at 2200 volts (phase to ground). This voltage is not intended as an indication of the voltage at which the helmets protects the wearer.
- (ii) Class E, Electrical protective helmets are intended to reduce the danger of contact with higher voltage conductors. Test samples are proof-tested at 20,000 volts (phase to ground). This voltage is not intended as an indication of the voltage at which the helmet protects the wearer.
- (iii) Class C, Conductive protective helmets are not intended to provide protection against contact with electrical hazards.

Where falling object hazards are present, helmets must be worn. Some examples include: working below other workers who are using tools and materials which could fall; working around or under conveyor belts which are carrying parts or materials; working below machinery or processes which might cause material or objects to fall; and working on exposed energized conductors.

Some examples of occupations for which head protection should be routinely considered are:

- Carpenters.
- Electricians.
- Linemen.
- Mechanics and repairers.
- Plumbers and pipe fitters.
- Assemblers.
- Packers.
- Wrappers.
- Sawyers.
- Welders.
- Laborers.
- Freight handlers.
- Timber cutting and logging.
- Stock handlers.
- Warehouse laborers

## **10. SELECTION GUIDELINES FOR FOOT PROTECTION.**

Safety shoes and boots which meet the American Society for Testing and Materials Standards ASTM F 2412 "Standard Test Methods for Foot Protection," 2005 edition, and ASTM F2413 "Standard Specification for Performance Requirements for Protective (Safety) Toe Cap Footwear," 2005 edition standards that provide both impact and compression protection.

Where necessary, safety shoes can be obtained which provide puncture protection. In some work situations, metatarsal protection should be provided, and in other special situations electrical conductive or insulating safety shoes would be appropriate.

Safety shoes or boots with impact protection would be required for carrying or handling materials such as packages, objects, parts or heavy tools, which could be dropped; and, for other activities where objects might fall onto the feet.

Safety shoes or boots with compression protection would be required for work activities involving skid trucks (manual material handling carts) around bulk rolls (such as paper rolls) and around heavy pipes, all of which could potentially roll over an employee's feet.

Safety shoes or boots with puncture protection would be required where sharp objects such as nails, wire tacks, screws, large staples, scrap metal etc., could be stepped on by employees causing a foot injury.

Some occupations (not a complete list) for which foot protection should be routinely considered are:

- Assemblers.
- Carpenters.
- Craters.
- Drywall installers and lathers.
- Electricians.
- Freight handlers.
- Gardeners and grounds- keepers.
- Laborers.
- Machinists.
- Mechanics and repairers.
- Packers.
- Plumbers and pipe fitters.
- Punch and stamping press operators.
- Sawyers.
- Shipping and receiving clerks.
- Stock clerks.
- Stock handlers and warehouse laborers.
- Structural metal workers.
- Timber cutting and logging workers.
- Welders.
- Wrappers.



## **11. SELECTION GUIDELINES FOR HAND PROTECTION.**

Gloves are often relied upon to prevent cuts, abrasions, burns, and skin contact with chemicals that are capable of causing local or systemic effects following dermal exposure. MIOSHA is unaware of any gloves that provide protection against all potential hand hazards, and commonly available glove materials provide only limited protection against many chemicals. Therefore, it is important to select the most appropriate glove for a particular application and to determine how long it can be worn, and whether it can be reused.

It is also important to know the performance characteristics of gloves relative to the specific hazard anticipated; e.g., chemical hazards, cut hazards, flame hazards, etc. These performance characteristics should be assessed by using standard test procedures.

Before purchasing gloves, the employer should request documentation from the manufacturer that the gloves meet the appropriate test standard(s) for the hazard(s) anticipated. Other factors to be considered for glove selection in general include:

(A) As long as the performance characteristics are acceptable, in certain circumstances, it may be more cost effective to regularly change cheaper gloves than to reuse more expensive types; and,

(B) The work activities of the employee should be studied to determine the degree of dexterity required, the duration, frequency, and degree of exposure of the hazard, and the physical stresses that will be applied.

With respect to selection of gloves for protection against chemical hazards:

(A) The toxic properties of the chemical(s) must be determined; in particular, the ability of the chemical to cause local effects on the skin and/or to pass through the skin and cause systemic effects;

(B) Generally, any "chemical resistant" glove can be used for dry powders;

(C) For mixtures and formulated products (unless specific test data are available), a glove should be selected on the basis of the chemical component with the shortest breakthrough time, since it is possible for solvents to carry active ingredients through polymeric materials; and,

(D) Employees must be able to remove the gloves in such a manner as to prevent skin contamination.

## **12. CLEANING AND MAINTENANCE.**

It is important that all PPE be kept clean and properly maintained. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision.

Personal Protective Equipment (PPE) should be inspected, cleaned, and maintained at regular intervals so that the PPE provides the requisite protection. It is also important to ensure that contaminated PPE which cannot be decontaminated is disposed of in a manner that protects employees from exposure to hazards.

**APPENDIX C  
GENERAL INDUSTRY THRESHOLD HEIGHTS REQUIRING FALL PREVENTION/PROTECTION**

This chart provides a breakdown of the fall protection requirements of general industry standards.

Check to see if specific rules relate to your industry or activities.

It's important that you look at the specific language in the standard, which can be found by clicking on the hyperlink.

CONDITION	THRESHOLD	METHOD	STANDARD AND RULE
Over dangerous equipment	No minimum	Standard barrier	<a href="#">Part 2. Floor &amp; Wall Openings, Stairways &amp; Skylights, Rule 213(1)</a>
Open-sided floor, platform, runway, window wall opening	4 feet	Standard barrier	<a href="#">Part 2. Floor &amp; Wall Openings, Stairways &amp; Skylights, Rule 213(2)(5), 217(3)</a>
Vehicle servicing pit	No minimum	12 inch yellow caution line	<a href="#">Part 2. Floor &amp; Wall Openings, Stairways &amp; Skylights, Rule 215(2)(b)</a>
Temporary floor/wall holes, openings	4 feet	Standard barrier or attendant	<a href="#">Part 2. Floor &amp; Wall Openings, Stairways &amp; Skylights, Rule 215(5)</a>
Skylight	36 inches	Wall, standard barrier, skylight guard	<a href="#">Part 2. Floor &amp; Wall Openings, Stairways &amp; Skylights, Rule 215(8)</a>
Chute wall opening	4 feet	Standard barrier	<a href="#">Part 2. Floor &amp; Wall Openings, Stairways &amp; Skylights, Rule 217(2)</a>
Open vat or tank of hazardous substance	No minimum	36 inch barrier	<a href="#">Part 2. Floor &amp; Wall Openings, Stairways &amp; Skylights, Rule 219</a>
Fixed ladder	20 - 30 feet 30 feet or more	Cage, well or safety device Safety device or landing platforms	<a href="#">Part 3. Fixed Ladders, Rules 351(1)(2), 355</a>
Portable ladder		None Required	<a href="#">Part 4. Portable Ladders</a>
Scaffold (except ladder scaffold, boatswain's chair, needle beam)	10 feet	Standard barrier or lifeline and safety belt	<a href="#">Part 5. Scaffolding, Rule 513(2)</a>
Roof	4 feet	Safety belt & lifeline or standard barrier	<a href="#">Part 2. Floor &amp; Wall Openings, Stairways &amp; Skylights, Rule 213(1)</a>
Stationary refuse packer hopper opening	No minimum	Standard barrier	<a href="#">Part 17. Refuse Packer Units, Rule 1732(1)</a>
Overhead crane, footwalk or catwalk	No minimum	Standard barrier	<a href="#">Part 18. Overhead &amp; Gantry Cranes, Rule 1835(2)</a>
Personnel platforms – overhead, underhung, crawler cranes, powered industrial trucks, tractors	No minimum	Standard barrier	<a href="#">Part 18 Overhead &amp; Gantry Cranes,</a> <a href="#">Part 19 Crawler, Locomotive &amp; Truck Cranes,</a> <a href="#">Part 20 Underhung Cranes &amp; Monorail Systems</a> <a href="#">Part 21 Powered Industrial Trucks</a> <a href="#">Part 22 Tractors</a>

**APPENDIX C  
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Check to see if specific rules relate to your industry or activities.

It's important that you look at the specific language in the standard, which can be found by clicking on the hyperlink.

CONDITION	THRESHOLD	METHOD	STANDARD AND RULE
Underhung crane catwalk	No minimum	Standard barrier	<a href="#">Part 20. Underhung Cranes &amp; Monorail Systems</a> , Rule 2016(3)
Manlifts	25 feet No minimum	Standard barrier (emergency landing) Entrances and exits to manlifts	<a href="#">Part 25. Manlifts</a> , Rules 1910.68 (b)(6)(v) and 1910.68 (b)(8)
Telecommunications	4 feet	Personal climbing equipment	GI Part 50 Telecommunications CS Part 30 Telecommunications Rule (g)
Veneer steaming & soaking vats	No minimum	36 inch sides or standard barrier	<a href="#">Part 27. Woodworking Machinery</a> , Rule 2773(1)(2)
When no specific rule applies - climbing on machinery or equipment not equipped with a platform and standard barrier	4 feet	Safety harness and lifeline or lanyard	<a href="#">MIOOSH Act 154</a> , General Duty Clause



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