

**North Carolina Department of Labor  
Occupational Safety and Health Division**

**Raleigh, North Carolina**

Field Information System

Standards Notice 38A

**Subject:** Eye and Face Protection in Chemical Operations

**A. Standards.**

1. **29 CFR 1910.132(a) - Application.** Protective equipment including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation, physical contact.
2. **29 CFR 1910.132(c) - Design.** All personal protective equipment shall be of safe design and construction for the work to be performed.
3. **29 CFR, 1910.133(a)(1).** The employer shall ensure that each affected employee uses appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.
4. **29 CFR 1910.133(b)(1).** Protective eye and face devices purchased after July 5, 1994 shall comply with ANSI Z87.1-1989, "American National Standard Practice for Occupational and Education al Eye and Face Protection," which is incorporated by reference, as specified in § 1910.6 or shall be demonstrated by the employer to be equally effective.
5. **29 CFR 1910.133(b)(2).** Eye and face protective devices purchased before July 5, 1994 shall comply with the ANSI "USA standard for Occupational and Educational Eye and Face Protection," Z87.1-1968 which is incorporated by reference as specified in §1910.6, or shall be demonstrated by the employer to be equally effective.
6. **29 CFR 1926.28(a).** The employer is responsible for requiring the wearing of appropriate personal protective equipment in all operations where there is an exposure to hazardous conditions or where this part indicates the need for using such equipment to reduce the hazards to the employees.
7. **29 CFR 1926.102(a)(1).** Employees shall be provided with eye and face protection equipment when machines or operations present possible eye or face injury from physical, chemical, or radiation agents.

8. **29 CFR 1926.102(a)(2).** Eye and face protection equipment required by this Part shall meet the requirements specified in American National Standards Institute Z87.1-1968, Practice for Occupational and Educational Eye and Face Protection.
9. **29 CFR 1926.102(a)(5).** Table E-1 shall be used as a guide in the selection of face and eye protection for the hazards and operations noted.
10. Additionally, many expanded health standards, such as benzene, formaldehyde, and ethylene oxide, reference 29 CFR 1910.132 and 1910.133.

B. **Discussion.**

Significant uncertainty and concern has been expressed regarding what is considered acceptable personal protective equipment for the eyes and/or face of personnel working with chemicals. Chemical usage may occur in almost any work environment, and usually involves hot or corrosive liquids, vapors, gases, and in some cases, solids. The hazards associated with these operations are physical or chemical burns to eyes or skin, eye or skin irritation, and/or distraction or temporary blindness resulting in other physical injury from operations or equipment involved. Because specific operations are too numerous to be considered individually, this Notice will establish general guidelines for the type of eye and face protection required.

C. **Interpretation.**

1. Based on the standards listed in above, the specific requirements of ANSI Z87.1 and the hazards involved the determination of eye and face protective equipment required in chemical operations will be based on the following:
  - a. Highly corrosive or toxic by eye or skin absorption, liquids, vapors, gases, or airborne particles will require ventilated acid hood, full face respirator, or special protective suits.
  - b. Hot, strongly irritating, and/or corrosive liquids, vapors, gases, or airborne particles require both chemical goggles and face shield, or special chemical hood.
  - c. Moderate irritants will require chemical goggles and face shield.
  - d. Slight irritants require chemical goggles or face shield used with safety glasses with side shields.
2. Degrees of irritation likely to result from exposure to chemicals may be determined by label information, manufacturer's data sheets, chemical dictionaries, and injury records. Factors that must be considered are exposure time, concentration, characteristic, and temperature. Mixtures of hazardous chemicals may increase or reduce the overall hazard, but the hazard should be assumed to be that of the most hazardous component. Professional judgment guided by knowledgeable inquiry and evaluation is a most important factor in determining the hazard and deciding the level of protection required.
3. Where inadequate protection is provided or adequate protection is not used, a citation for violation of the appropriate standard shall normally be recommended by the compliance officer.

**Note:** This interpretation is addressed to the problem of eye and face protection only. Other protective equipment may be required for other exposures.

D. **Effective Date.**

SN 38 is canceled. This SN is effective on the date of signature. It will remain in effect until revised or canceled by the Director.

Signed on Original

J. Edgar Geddie, Ph.D.  
Health Standards Officer

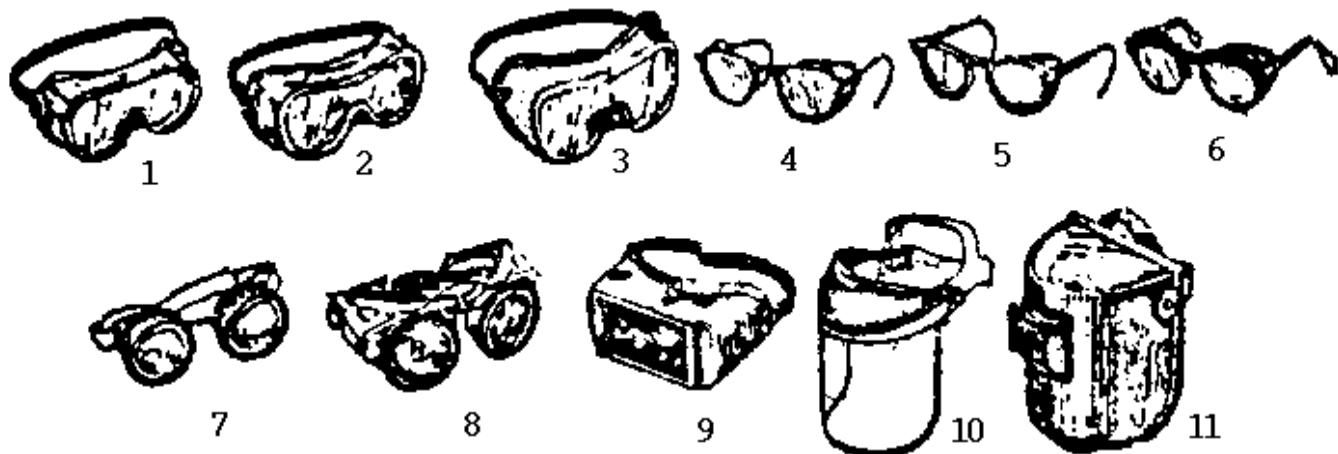
Signed on Original

Allen McNeely  
Director

8/09/05

Date of Signature

TABLE E-1—EYE AND FACE PROTECTOR SELECTION GUIDE



- |  |   |
|--|---|
| 1. GOGGLES, Flexible Fitting, Regular Ventilation      | ** 7. WELDING GOGGLES, Eyecup Type, Tinted Lenses (Illustrated)             |
| 2. GOGGLES, Flexible Fitting, Hooded Ventilation       | 7A. CHIPPING GOGGLES, Eyecup Type, Clear Safety Lenses (Not Illustrated)    |
| 3. GOGGLES, Cushioned Fitting, Rigid Body              | ** 8. WELDING GOGGLES, Coverspec Type, Tinted Lenses (Illustrated)          |
| * 4. SPECTACLES, Metal Frame, with Sideshields         | 8A. CHIPPING GOGGLES, Coverspec Type, Clear Safety Lenses (Not Illustrated) |
| * 5. SPECTACLES, Plastic Frame, with Sideshields       | ** 9. WELDING GOGGLES, Coverspec Type, Tinted Plate Lens                    |
| * 6. SPECTACLES, Metal-Plastic Frame, with Sideshields | 10. FACE SHIELD (Available with Plastic or Mesh Window)                     |
|  | ** 11. WELDING HELMETS  |

\* Non-side shield spectacles are available for limited hazard use requiring only frontal protection.

\*\* See Table E-2, in paragraph (b) of this section, Filter Lens Shade Numbers for Protection Against Radiant Energy.

NOTE: In ANSI Z87.1-1968, under Face Shields "S.2.1 Function" the specific statement is made, "Such devices should be worn over suitable basic eye protection devices."

Applications		
Operation	Hazards	Recommended Protectors
Acetylene-Burning, Acetylene-Cutting, Acetylene-Welding	Sparks, harmful rays, molten metal, flying particles	7, 8, 9
Chemical Handling	Splash, acid burns, fumes	2, 10 (for severe exposure add 10 over 2)
Chipping	Flying particles	1, 3, 4, 5, 6, 7A, 8A
Electric (arc) Welding	Sparks, intense rays, molten metal	9, 11 (11 in combination with 4, 5, 6, in tinted lenses advisable)
Furnace Operations	Glare, heat, molten metal	7, 8, 9 (for severe exposure add 10)
Grinding-Light	Flying particles	1, 3, 4, 5, 6, 10
Grinding-Heavy	Flying particles	1, 3, 7A, 8A (for severe exposure add 10)
Laboratory	Chemical splash, glass breakage	2 (10 when in combination with 4, 5, 6)
Machining	Flying particles	1, 3, 4, 5, 6, 10
Molten Metals	Heat, glare, sparks, splash	7, 8, (10 in combination with 4, 5, 6, in tinted lenses)
Spot Welding	Flying particles, sparks	1, 3, 4, 5, 6, 10