



ANSI / ISEA Z87.1-2020

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# American National Standard for Occupational and Educational Personal Eye and Face Protection Devices

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# **American National Standard Occupational and Educational Personal Eye and Face Protection Devices**

Secretariat  
**International Safety Equipment Association**

Approved March 11, 2020  
**American National Standards Institute, Inc.**

## **American National Standard**

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## Foreword (This Foreword is not a part of ANSI/ISEA Z87.1-2020)

ANSI/ISEA Z87.1-2020 represents the sixth revision of the voluntary industry consensus standard for eye and face protection, which is also codified in regulatory text by the U.S. Occupational Safety and Health Administration obliging employers to provide employees with appropriate safety eyewear and face protection that conforms to the industry standard.

The document continues to focus on product performance and harmonization with global standards in an effort to allow new and innovative designs responsive to workplace hazards and end-user needs. To this end, this current version includes criteria and requisite markings for protectors offering relaxed optics, as an option to the long-standing requirements. This in response to the recognition that certain job tasks and applications, such as those performed by first-responder, firefighting or military personnel, may not need require the stringent optical criteria historically imposed. It is cautioned that protectors with relaxed optics may not be appropriate for industrial applications such machinery operation, precision work, or in laboratory environments, and as such, a proper hazard assessment should be conducted.

Additionally, the 2020 version includes testing, performance and marking criteria for lenses with anti-fog properties. While this lens-only assessment is a departure from a final configuration approach generally applied throughout the standard, it is recognized that fogging can impede a wearer's ability to perform work safely. Such requirements are consistent with criteria in similar global standards and have been incorporated for the benefit of the wearer

Other key updates address the emergence of innovating product designs which past editions did not contemplate. These are seen by changings transmittance allowances and expanded welding filter shades. Additional clarifications have been made throughout to provide consistency in testing execution such as when applying dark-state tolerances for automatic darkening welding filters or determining the minimum coverage area with respect to the specified headform.

Suggestions for improvement of this standard are welcome. They should be sent to the International Safety Equipment Association, [isea@safetyequipment.org](mailto:isea@safetyequipment.org).

This standard was processed and approved for submittal to ANSI by the Accredited Standards Committee on Safety Standards for Eye Protection, Z87. Committee approval of the standard does not necessarily imply that all committee members voted for its approval. At the time it approved this standard, the Z87 Committee had the following members:

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# American National Standard for Occupational and Educational Personal Eye and Face Protection Devices

## 1. Preface

This standard for personal eye and face protectors is, as far as possible, designed to be performance oriented.

Every effort should be made to eliminate eye and face hazards in occupational and educational settings. Protectors do not provide unlimited protection. In the occupational and educational environment, protectors are not substitutes for machine guards and other engineering controls. Protectors alone should not be relied on to provide complete protection against hazards, but should be used in conjunction with machine guards, engineering controls, and sound safety practices.

In 1992, the U.S. Occupational Safety and Health Administration began regulating occupational exposure to bloodborne pathogens and, as a result, employers are required to provide personal protective equipment (PPE) including eye and face protection for employees exposed to these hazards. At the time of the publication of this standard, no standards existed for eye and face protection intended to provide protection from bloodborne pathogens. Nevertheless, many employers have elected to provide their employees with PPE conforming to the requirements of ANSI/ISEA Z87.1. These products may or may not provide adequate protection against bloodborne pathogens. Extreme caution must be exercised in the selection and use of personal protective equipment in applications for which no performance requirements or standardized testing exist.

## 2. Scope, Purpose, Application, and Interpretations

### 2.1 Scope

This standard sets forth criteria related to the requirements, testing, permanent marking, selection, care, and use of protectors to minimize the occurrence and severity or prevention of injuries

from such hazards as impact, non-ionizing radiation and liquid splash exposures in occupational and educational environments including, but not limited to, machinery operations, material welding and cutting, chemical handling, and assembly operations. Certain hazardous exposures are not covered in this standard. These include, but are not limited to: bloodborne pathogens, X-rays, high-energy particulate radiation, microwaves, radio-frequency radiation, lasers, masers, and sports and recreation.

### 2.2 Purpose

This standard provides minimum requirements for protectors including selection, use, and maintenance of these protectors as devices to minimize or prevent eye and face injuries.

### 2.3 Application

**2.3.1** The requirements of this standard apply to protectors when first placed in service.

**2.3.2** Protectors bearing the permanent marking Z87 shall meet all applicable requirements of this standard in its entirety. All components of eye and face protectors shall comply with the requirements of this standard. Accessories installed by the manufacturer shall not cause the protector to fail the requirements of this standard. Manufacturers of components, aftermarket components, accessories and complete protectors shall ensure that all required tests have been performed to demonstrate conformance.

**2.3.3** Compliance with this standard cannot always be assured when components are replaced or accessories are added. End users should exercise extreme care in the selection and installation of components to ensure compliance with this standard.

**2.3.4** Non-compliant components shall not be used with ANSI/ISEA Z87.1-compliant components.