ANSI/ISEA Z87.1-2015
Revision of
ANSI/ISEA Z87.1-2010

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

Secretariat
International Safety Equipment Association

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American National Standard

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Foreword (This Foreword is not a part of ANSI/ISEA Z87.1-2015)

This document is the latest edition of a standard for eye and face protection that dates back to 1922. Originally part of a government standard that also included respiratory and head protection, the standard first appeared under the Z87.1 designation in 1968, and has been revised five times since then in response to advances in technology, as well as the changing workplace environment.

ANSI/ISEA Z87.1-2015 represents another milestone in this standard's evolution, building on the many years of work that have gone into prior revisions. 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, end-user needs and regulatory obligations.

Since the 2010 revision was a dramatic shift away from product configuration requirements and toward a hazard-based structure, much of the revised language in ANSI/ISEA Z87.1-2015 reflects the effort to fine-tune this approach. Streamlined language for resolution testing provides clarity to test methods to ensure they can be accurately executed, and updated test patterns to complement the language. These patterns can be downloaded from ISEA's website at www.safetyequipment.org.

Other key updates address the emergence of new technologies that are challenging outdated design restrictions, or which past editions did not contemplate. This includes the acknowledgement of protectors known as "magnifiers" and "readers" that have lenses, or portions of lenses, that incorporate magnification properties. The 2015 revision also eliminates minimum thickness requirements for non-prescription protectors that pass the requirements for impact rated protectors, and eliminates the need to conduct drop-ball testing for a protector that is first tested to and meets the impact-rated requirements. Requirements for angular dependence of luminous transmittance for welding filters have been added to address visual effect that welders can find both alarming and distracting. Such requirements are consistent with criteria in similar global standards.

As the standard continues to focus on specific hazard protection, additional emphasis has been placed on enabling users to select protectors appropriate for the working environment, and presenting end-users with information to assist in the selection process. Examples of acceptable and unacceptable markings for protectors that meet the requirements of the standard are included. In addition, information related to conducting an assessment for potential eye and face hazards and protector use and selection considerations has been expanded.

Suggestions for improvement of this standard are welcome. They should be sent to the International Safety Equipment Association, 1901 N. Moore Street, Suite 808, Arlington, VA 22209, 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:

J.P Sankpill, Chairman
Jack B. Hirschmann, Jr., Vice-Chairman

Organization Represented	Name of Representative
American Optometric Association	Gregory Good, O.D., Ph.D.
	Neil Hodur, O.D.
American Society of Safety Engineers	Jack B. Hirschmann, Jr.
American Welding Society	Philip M. Johnson
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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 general 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-compliant components.

2.3.5 The protector manufacturer shall provide test results to the purchaser upon request.