



ANSI Z87.1-2015 OVERVIEW

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ANSI/ISEA has released Z87.1-2015, the **American National Standard for Occupational and Educational Personal Eye and Face Protection Devices**, which can be obtained from the ANSI web store following this link; <http://webstore.ansi.org/RecordDetail.aspx?sku=ANSI%2fISEA+Z87.1-2015>.

The ANSI/ISEA Z87.1-2015 continues to focus on product performance and attempts to harmonize with international standards while keeping the needs of the end user in mind with consideration to workplace hazards and regulatory obligations.

This 2015 standard continues to differentiate protectors based on specific hazards with additional emphasis placed on enabling users to select the appropriate protector based on their environment and the hazard.

The ANSI/ISEA Z87.1 standard and OSHA – why the standard is important

- OSHA adopts ANSI standards, thus making them regulatory requirements
- OSHA currently has adopted three versions of ANSI Z87.1 as compliant with regulatory requirements: Z87.1-2003, Z87.1-1989 (R- 1998) and Z87.1-2010
 - OSHA issued a notice of proposed rulemaking on March 13, 2015 that it intends to amend its regulations to incorporate by reference the three most recent versions of ANSI's Occupational and Educational Eye and Face Protection Standard. The comment period closed in April.
 - The proposed rulemaking is still being reviewed by the agency; no final regulations have been published at the time of this writing.

ANSI/ISEA Z87.1-2015, what's different, what's new:

- The 2015 version clarifies wording regarding minimum lens thickness requirements
 - The 2010 version stated that testing should be completed on lenses 2.0mm-2.2mm thick
 - New wording allows for the lens to be tested at the minimum thickness for which it is designed to be sold
- The 2015 version
 - Addresses protectors known as "magnifiers" and "readers."
 - Eliminates minimum thickness requirements for non-prescription protectors that pass the requirements for impact rated protectors
 - Eliminates the need for performing dropball testing on a protector that has been tested for and meets the impact rated compliance criteria.

ANSI Z87.1-2015 Points of Interest for Labs

Minimum Lens Thickness for impact rated protectors:

The biggest change for labs relates to testing for high impact resistant lens material qualification (LMQ). Under the 2010 revision, reference lenses submitted for LMQ test were required to be 2.0mm to 2.2mm thick. The upper boundary of 2.2mm meant that some material/coating combinations that might otherwise pass the ballistic tests at higher thicknesses were rejected. In 2015, the definition of the reference lens was changed to simply require a **minimum of 2.0 mm, with no maximum**. Suppose, for example, if a lab submits reference lens samples at 2.5 mm thick which pass the LMQ. Any lens produced by that lab of the same material/coating combination having at least that center thickness will qualify for marking as "high impact." Labs should keep records of minimum lens thickness on all reference lenses submitted for LMQ testing, and ensure that lab procedures stipulate the minimum passing thickness as the minimum allowable thickness for high impact resistant protectors.

Section 6.2.5 which describes the Prescription Lens Material Qualification Test, indicates that any "lens of the same or greater thickness at its thinnest point, made by the same manufacturer of same material, coating, and processes may bear the "+" mark." The standard does not explicitly indicate what constitutes "same processes," and leaves that to the manufacturer to define. It is recommended that labs retest when there are significant changes to manufacturing processes including, but not limited to, surfacing and coating. For example, changing the hard coat lacquer used as a base for AR coating should be considered a change in process. Changing from conventional lap finishing/polishing to "direct-to-polish" surfacing should also be considered a process change.

Section 6.2.6 which describes the Prescription Lens Mounting Qualification hasn't changed from the 2010 revision of the standard. To review, 10 complete devices for each type of lens retention system offered, each having lenses no less than 2.0 mm thick which pass the Prescription Lens Material Qualification Test (above), are to be tested. The test includes mounting the complete device on an EN headform, which is described in the standard. Six of the devices are subjected to the high velocity test and four are subjected to the high mass test. All ten devices must pass. The testing needs to be done only once for each lens retention system offered. Retesting is required when any significant change in production is made.

In 2010, a Request for Interpretation from the Z87.1 Committee indicated that manufacturers with multiple labs need only perform the Lens Mounting Qualification Test once if it could be shown that the manufacturing processes are the same in each facility. Again, there is no definition as to what qualifies as a difference in manufacturing processes and it is left to the manufacturer to define.

Drop Ball Testing

Table 5, includes changes which stipulate the velocities and ball sizes for high velocity impact testing, allow for greater compliance with non-U.S. standards. This may simplify the testing requirements for entities that supply both within the U.S. and also other countries.

Lens and Frame Markings

Lens markings are the same as in ANSI Z87.1-2010 and defined in Table 3. There are also examples given in Annex L. Spectacle eyewear meeting the impact rated requirements has the lens marked with the manufacturer's (lab's) logo and a "+." ANSI Z87.1-2015 requires that frames used for a general purpose protector are marked as Z87- 2. Frames used for an impact-rated protector are marked with Z87-2 + (the lenses would also have a + symbol). Detachable side shields are marked both marked with Z87+. If the side shield is permanent, they need not be marked.

The Eye and Face Protection Selection Tool is valuable for identifying and selecting the eye and face protection for the end-user. This free tool can be downloaded from: <https://safetyequipment.org/wp-content/uploads/2015/06/Eye-and-Face-Selection-Guide-tool1.pdf>

Should you have any further questions regarding this update, please contact Michael Vitale. Technical Director & Lens Division Liaison. 703-548-2684 or mvitale@thevisioncouncil.org