
American National Standard Practices for Respiratory Protection (ANSI/ASSE Z88.2-2015)

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On March 4, 2015 the American National Standards Institute (ANSI) approved a new standard, American National Standard Practices for Respiratory Protection, Z88.2-2015. It updates the 1992 revision of Z88.2. ANSI Z88.2 is a voluntary consensus standard, not a law or regulation. But, because it was drafted by a group of experts in the respiratory protection field, ANSI believes it represents the current state-of-the-art in respiratory protection practices. The Occupational Safety and Health Administration (OSHA) respiratory protection standard, 29 Code of Federal Regulations (CFR) 1910.134, is the law.

This revision of ANSI Z88.2, while actually a new standard, represents the fourth major revision of Z88.2. Past versions include:

- Z88.2-1992: American National Standard for Respiratory Protection.
- Z88.2-1980: American National Standard Practices for Respiratory Protection.
- Z88.2-1969: American National Standard Practices for Respiratory Protection.

Since the 1992 version of Z88.2, many regulatory changes have occurred. These include:

- The National Institute for Occupational Safety and Health (NIOSH) promulgated a new 42 CFR 84 replacing the respirator certification regulations located at 30 CFR 11 while also creating new categories of particulate filters along with new testing requirements. (June 8, 1995).
- OSHA promulgated changes to 29 CFR 1910.134 (January 8, 1998).
- OSHA added assigned protection factors to 29 CFR 1910.134 (August 24, 2006).

ANSI Z88.2-2015 is divided into thirteen major sections and has several appendices (annexes). After giving a brief introduction, references, and definitions, the standard discusses respirator program requirements, program administration, standard operating procedures, respirator selection, training, respirator fit tests, wearer seal checks, respirator maintenance, inspection storage and disposal, breathing gas and recordkeeping.

Particulate-removing Respirators

This version of the standard adds classification, selection and use guidance for the particulate filters created when 42 CFR 84 was promulgated. Additional information on N-, R- and P-series filters is also included in the annexes.

Change Schedules

Since the last Z88.2, OSHA (1998) has eliminated the primary reliance on odor, taste and irritation as indicators for changing chemical cartridges and in its place, requires the use of either an

atmosphere-supplying respirator, or if using an air-purifying respirator, a chemical cartridge with an end-of-service-life (ESLI) indicator or the establishment of a cartridge change schedule based on objective data. NIOSH followed suit by eliminating the use-restriction of organic vapor cartridges for only chemicals with good warning properties. This restriction is replaced by requiring the establishment of a change schedule. Z88.2-15 requires change schedules to be established for respirators using gas- or vapor-removing chemical cartridges or canisters that do not have an ESLI. Additional information on establishing the change schedule is provided in an annex.

Assigned Protection Factors

This standard does not establish its own assigned protection factors (APF). Instead, it references the OSHA required APFs and recommends their use. OSHA performed thorough evaluations of respirator performance data by using three independent contractors for various analysis of the data to establish its APFs (2006). Thus it eliminates the conflict between the published ANSI and OSHA APFs. NIOSH, unfortunately, still has recommended APFs that are essentially those recommended in 1986.

To receive the protection provided by the respirator, one needs to wear it for the full duration of exposure. Removing the respirator for short periods of time in the contaminated area can result in a significant reduction in protection. To illustrate this effect, a new annex addressing effective protection factors was added to the standard. While this concept has been around for a long time (3M first discussed this in its *JobHealth Highlights* in 1983 called wear factor), this may be the first time a standard has included this important discussion.

Bioaerosols

A section on the selection of respiratory protection for bioaerosols has been added.

Respirator Users versus Wearers

ANSI Z88.2-2015 defines these two terms to distinguish between the responsibilities of users (employers, respirator program administrators and others) and those of respirator wearers (individuals who actually wear the respirators). ANSI Z88.2-1992 used the term “fit check” to describe the action of determining if the respirator was properly seated to the face. OSHA introduced the term “user seal check” to replace “fit check” so this activity would not be confused with being equal or similar to fit tests. The International Standards Organization (ISO) changed the term “user seal check” to “wearer seal check” to make it clear that the individual respirator wearer is responsible for carrying out this activity.

Voluntary-use

Voluntary-use of respirators is a concept established with the revision of 29 CFR 1910.134 by OSHA in 1998. This practice allows the use of respirators without establishing a complete respirator protection program when respirators are not required either by an OSHA standard or the employer. Z88.2-2015 requires a complete respirator program anytime respirators are used, except for visitors and personnel not assigned to work areas where respirators are used for escape.

Additional Changes

ANSI Z88.2-2015:

- Added the following new terms and definitions; ambient air pump, biomonitoring, change schedule, maximum use concentration, physician or other licensed health care professional, required fit factor, respirator manufacturer, respirator user instruction, user, wearer, wearer seal check and written record.

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- Added filtering facepiece to replace disposable respirator.
 - Expanded the definitions of “confined space” to be consistent with OSHA confined space standard and ANSI Z117. 1, Safety Requirements for Confined Spaces; “canister” to cover all of the various types of canisters used in respiratory protective equipment; and “abrasive blasting respirator.”
 - Replaced “fit check” with “wearer seal check” to highlight this as a wearer responsibility.
 - Provides additional information on the interaction of reduced oxygen concentration and partial pressure on un-acclimatized wearers and respirator selection for oxygen deficient atmospheres.

Related Standards

- ANSI/AIHA Z88.6-2006, *Respiratory Protection-Respirator Use, Physical Qualifications for Personnel*.
- ANSI/AIHA Z88.7-2010, *Color Coding of Air Purifying Respirator Canisters, Cartridges, and Filters*.
- ANSI/AIHA Z88.10-2010, *Respirator Fit Test Methods*.
- CGA C-7-2011, *Guide to the Precautionary Labeling and Marking of Compressed Gas Containers*.
- CGA G7.1-2011, *Commodity Specification for Air*.

For more Information

Copies of Z88.2-2015 can be obtained from the American Society of Safety Engineers, 520 N. Northwest Hwy, Park Ridge, IL 60068 or <http://www.asse.org/ansi/aiha/asse-z88-6-2006-respiratory-protection-respirator-use-physical-qualifications-for-personnel-electronic-copy/>