

ANSI Standard for Emergency Equipment UPDATED

What you need to know about the 2004 revisions to ANSI Z358.1.

by Crystal Elfe

A drench shower hidden behind boxes on a cluttered factory floor or a portable eyewash station without flushing fluid can have devastating consequences. Not only could these types of violations cause permanent injury to someone, but they could negatively impact the company's balance sheet. That's why it is critical to stay up to date with the American National Standard for Emergency Eyewash and Shower Equipment. ANSI periodically updates the Z358.1 safety standard and has recently released its 2004 update, the first revision since 1998.*

In a nutshell, the ANSI Z358.1 standard sets the guidelines for emergency safety equipment fixtures and installation practices. The standard is periodically reviewed to ensure the best safety parameters are in place. A breakout is provided in different sections of the standard for plumbed and self-contained emergency showers, plumbed and self-contained eyewash equipment, eye/face wash equipment, combination units and supplemental equipment. Each section addresses how the equipment should perform, as well as testing procedures to ensure proper operation, installation, maintenance and training. Illustrations and appendices are also provided for more details.

* This article is only intended to highlight areas of key changes in the 2004 standard. It is recommended that users consult the ANSI Z358.1-2004 standard directly.

Key Changes to the ANSI Standard

Drench Hoses — Not Just a Supplement. The uses for drench hoses have been expanded in the 2004 standard. In the 1998 standard, drench hoses had a minimum flow requirement of 3.0 gpm and were not to be used as replacements for eyewashes or drench showers. Drench hoses were simply to be used to supplement these devices. The 2004 standard eliminates any flow requirement for drench hoses. Although the 2004 version still does not allow drench hoses to replace a drench shower, it does allow these hoses as a replacement for an eyewash or combination eye/face wash— as long as the drench hose meets the appropriate requirements.

Keep in mind that eyewashes and eye/face washes each have separate guidelines within the ANSI standard. An eyewash only flushes your eyes while an eye/face wash flushes one's eyes and face simultaneously. The most notable distinction between these two categories of fixtures relates to the volume of flushing fluid that must be dispensed. Eyewashes must be able to provide flushing fluid at 0.4 gpm at 30 psi (1.5 liters). Eye/face washes must be able to provide flushing fluid at 3.0 gpm at 30 psi (11.4 liters). These re-



Emergency fixtures, such as this eyewash unit, should be accessible within 10 seconds of hazardous workstations. Ideally, fixtures should be located in open areas free of any obstructions.



Emergency fixtures must be easy to locate in case of an emergency. Good lighting, brightly colored fixtures and signs can help users find eyewashes and drench showers if necessary.

quirements have not changed from the 1998 to 2004 standards.

Simplified Testing. In the past, ANSI mandated specific testing procedures that ANSI-approved testing agencies must follow to certify a self-contained eyewash as ANSI compliant. The 1998 standard required the following steps:

- Fill the eyewash with flushing fluid and then activate. Record the time needed to fill a gallon container.
- Verify that the water gently flows at 0.4 gpm at similar heights.

- After 15 minutes of operation, use the water collected to refill the container.

- Activate the unit again. Beginning 12 minutes after the flow, the time it takes to fill the gallon container must be 2 minutes or less.

While the 1998 standard emphasized specific testing procedures, the 2004 standard does not delve into those details. Rather, the 2004 standard notes the 15-minute test must meet the 0.4

gpm characteristics throughout the testing period. How to best verify that the product meets these requirements is up to the discretion of each ANSI-approved testing agency.

Choosing a reputable emergency equipment manufacturer whose products consistently meet ANSI testing requirements can provide peace-of-mind. Don't settle for products that look like they may comply or

claim to be certified. While emergency fixtures may look similar, it does not mean their quality or performance capabilities are equal.

Only an independent, third-party organization can confirm that a manufacturer's product is certified to the ANSI standard. Well-known manufacturers clearly document compliance with ANSI standards because the testing and requirements are so important. If you have any compliance concerns, inquire about them before purchasing a product to ensure your safety needs are met.

Shower Heights and Pressure – Know Your Numbers. Should the drench showerhead be installed at a particular height, or is there a range? It's a good question, and one the 2004 standard clarifies. In both the plumbed and self-contained portions of the ANSI standard, it is indicated that the distance between where the user stands and the showerhead should be between 82 and 96 inches.

The 1998 standard specified the range of 82 to 96 inches, as well. However, the testing procedure in the plumbed portion of the standard also mentioned a set dimension of 84 inches from the surface the user stands on to the showerhead portion. As you can imagine, this had been causing some confusion during installation.

Also worth noting in the 2004 standard is a requirement for plumbed showers to have a flushing fluid flow of 20 gpm at 30 psi. No pressure re-

ANSI Z358.1-2004 At-a-Glance

Here are a few additional points to keep in mind about the ANSI standard for emergency eyewash and shower equipment:

1. The 15-Minute Flush

Showers must be able to provide 75.7 liters of flushing fluid per minute (20 gpm) for at least 15 minutes.

TIP: Don't forget to install a floor drain or some other means of proper fluid disposal that complies with local, state and federal codes. It's not an ANSI requirement, but there can be a lot of clean up if forgotten.

2. The Tepid Water Shower

Appendix B6 indicates 60- to 100-degrees Fahrenheit as a suggested tepid water temperature range.

TIP: Fifteen minutes may feel like forever under extreme cold or heat. Put yourself in the user's place. Could you shower for at least 15 minutes at the current water temperature?

3. The 10-Second Rule

Emergency showers or eyewashes must be accessible within 10 seconds or less of a hazard. To be effective, employees must be informed and trained on the use and location of emergency equipment.

TIP: If you asked any employee in your facility to locate the closest emergency fixture in their work area, could they do so? Employees change and people are forgetful. Make it a point to periodically remind workers of nearby safety equipment.



Plumbed emergency fixtures should be tested weekly to be sure they are working properly. This type of heavy-duty tester provides a convenient way of testing drench showers to comply with ANSI specifications for weekly testing – without getting wet. The watertight funnel has a weighted bottom and directs water to a drain or bucket.

striction is designated in the 1998 standard.

More Details. To be sure plumbed units are always in proper operating condition, they should be activated on a weekly basis. ANSI standards from both 1998 and 2004 note this requirement. However, this year's revision of-

fers more specific rationale regarding why it is so critical.

Beyond confirming that units work, ANSI offers a couple of reasons for regular activation:

- Sedimentation is cleared, which can clog the supply line.
- Flushing stagnate water from plumbed fixtures reduces the chance of microbial hazards.

Consistent activation makes the difference between meeting minimum requirements for installed products, and having emergency equipment that is truly functional and provides the best performance in the event of an emergency. An inspection tag noting activation attached to each emergency fixture is a helpful tool to facilitate this process. This log may also serve as important documentation upon a plant inspection.

Another minor area of revision for

the 2004 standard falls under personal wash units. Personal wash units are those that do not meet the requirements of plumbed or self-contained emergency equipment. They provide immediate flushing prior to the user accessing an ANSI-approved emergency fixture. The verbiage in this section is similar to the 1998 ANSI standard with a couple modifications. First, the 2004 standard specifies that tepid flushing fluid must be supplied. Second, the scope of emergency fixtures is widened. The 1998 standard only addresses personal *eyewash* equipment.

One final revision includes the expert who should be responsible for determining the best solution for particular emergency applications. A facility safety/health advisor is now indicated as the key contact for water temperature and related issues. These individuals are deemed to be the best

consultants, rather than simply “medical advisors” who were mentioned throughout the 1998 standard.

Amended Appendices

While the appendices that follow the ANSI standard are not considered part of the requirements, they are helpful. There are several points that serve as guidelines for addressing issues that fall into gray areas.

First, the ANSI standard requires that emergency showers or eyewashes be accessible within 10 seconds or less of the hazard. Facility managers and others often ask, “How far of a distance is that?” According to the revised appendix, 10 seconds is approximately 55 feet.

Second, doors are a concern since they may hinder a user accessing emergency equipment. According to the 2004 appendix, it’s acceptable for one door to separate potential users from emergency fixtures under certain conditions. However, the door cannot have a lock and it must open in the direction moving towards the shower or eyewash.

Lastly, the temperature range of “tepid” water is mentioned. The ANSI standard states that each application and situation must be evaluated on a case by case basis. However, as a general rule, 100-degrees Fahrenheit is probably the highest temperature water should be, while the lower end should be 60-degrees Fahrenheit. The appendices indicate that temperatures over 100 degrees may intensify chemical burns to the skin and eyes, and hypothermia becomes a concern on the lower end of the scale.

Implementing a Safety Plan

To ensure you are meeting the necessary requirements, take a few moments to review the entire 2004 ANSI standard in detail. Be sure to resolve any concerns by consulting with a safety/health advisor. Emergency product manufacturers can also be a good resource for emergency planning and can help with job-site evaluations. It’s worth the time to plan ahead, because in an emergency every second counts.

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Crystal Elfe is an associate product manager at Bradley Corp., a leading manufacturer of plumbing fixtures, washroom accessories, partitions, emergency fixtures and solid plastic lockers. She can be reached at Bradley Corp., W142 N9101 Fountain Blvd., Menomonee Falls, Wis. 53052-0309. For more information, call (800) BRADLEY or visit www.bradleycorp.com.

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