

Guide to safety shower standards

Making sense of safety equipment legislation: A guide to safety shower standards

The current European standards on safety showers are somewhat confusing. The American ANSI standards are more comprehensive but there are some areas of conflict with the EN standards which can leave health and safety professionals confused. To make matters worse, in a post Brexit world, there may emerge a new British standard that replaces the EN standards. This is an attempt to offer guidance through this somewhat confusing landscape.

Back to basics

Before getting into the weeds it's worth remembering what these standards are for. There is no legislative requirement to have any safety showers equipment. So, there is no legal requirement to necessarily have any eye wash or shower unit even in a chemical plant full of highly corrosive acids. This is because no standard can possibly capture the almost infinite complexities of each hazardous situation. If such a standard was written and advised exactly in each situation when and where a manufacturer should place a shower it would be hideously complex. It also would need to be continually updated as new processes involving hazardous materials came about. In short, it would be unworkable.

To avoid the unworkable complexity of an explicit guide to emergency shower deployment the standards do not actually deal with when showers should be used. Instead, a business is required by law to provide adequate and enough first aid equipment suitable for any potential hazard a worker may meet. This very general health and safety legislation means that any company found not to be providing this level of first aid equipment is open to litigation and, heaven forbid the worst happen, corporate manslaughter charges. But it is important to remember that this is not part of the ANSI or EN standards on showers.

What all this, in effect, means is that companies that don't have adequate emergency shower provisions are open to a completely unacceptable levels of risk. So, despite, there being no actual legal requirement to have showers for all practical purposes there is.

What do the standards do?

The standards do not actually, therefore, tell a company if they must have a shower. They do, however, list some design features that shower must have if they are to be considered of a reasonable standard. Having a shower that does not meet these standards, therefore, will not protect against the aforementioned litigation risk. So, at the very least, the standards that are in place give a minimum quality level to help meet one's obligations under the health and safety standards.

General advice

Within both the EN and ANSI standards there does exist some common advice on how to deploy showers.

1- The showers must be visible even in poor light or visibility conditions. This has implications on whether to fit position lights.



- 2- The showers must be on the same level as the hazards. So, it would breach the standards to have a worker who has been splashed by acid to have to navigate stairs or a ladder to access the necessary shower equipment
 - 3- The showers must be within 10 seconds walking distance of the hazard they are being used to protect against.
 - 4- The fluid supply must be sufficient to allow for 15 minutes of continual use.
- This is all fairly straightforward common sense. Where things get a bit more slippery is in factors where the standards vary.

Water temperature

The ANSI standards stipulate that the shower water must be tepid (16-38°C). The EN standards make no such stipulation but do advise that this is so in cold climates. Even though there is nothing in the EN standard that stipulates the shower must be warm, we often advise European customers that they should have a tepid shower because a case can be made that a cold shower that needed to be used for 15 minutes outside in the middle of the UK winter is not fit for purpose. It would be almost impossible for a human to use and using a cold shower in the middle of winter might well actually kill someone due to hypothermic shock. As such, a legal case could be made that sufficient and adequate first aid equipment was not provided. Remember, it is this "sufficient and adequate" clause that is the legislative requirement placed on companies.

A further complication is that some specific chemical hazards have advisory notes that only cold water should be used to remove the contaminant. Certain chemical burns will be exaggerated if warm water is used so the advice from the chemical manufacturer will contradict what the ANSI standard actually says. This is where the somewhat looser language of the EN standard is actually more helpful as it allows for the provision of showers to be contextualized to each situation.

Flow rates

The EN standards differentiate between laboratory settings and production/logistics settings. For labs they stipulate that when there is no local (country) standard in place then 60 l/minute flow should be achieved. Given that another rule is that 15 minutes of continual use should be available then we need at least 900 liters of supply to meet this standard.

For production and logistics sites (most industrial settings) the standards now have adopted elements of the old German DIN standards and now specify three classes of shower, differentiated by flow rates.

No specific advice on which class should be used to protect against which hazard is given. It is up to individual chemical processors and manufacturers to decide which class is most appropriate. This has implications for the size of tanks required to deliver 15 mins of flow.

- Class 1 shower 30-60 l/min so a tank shower will need 450 l minimum
- Class 2 showers 60-100 l/min so a tank shower will need 900 l minimum
- Class 3 showers 100l/min + so a tank shower will need 1500 l minimum

With the American standards the flow rate is 76 liters per minute regardless of site type. So, by similar maths, we need at least 1140 liters of supply fluid. Obviously on a plumbed in shower the amount of fluid available is largely irrelevant as the shower will run continually but when we consider gravity fed tank showers it will dictate the minimum size of the tank.

Frost protection

Frost protection is not specified in the safety shower standards themselves but is very much encompassed by the legislative requirement to provide enough and adequate first aid equipment. If a shower is not able to operate because it has become blocked by ice then a company is wide open to litigation because, clearly, the first aid equipment provided was not adequate. This, like the water temperature, is something that cannot be understood from just the wording in the standards themselves. One needs to understand the basic legal health and safety obligations in order to understand when frost protection is required.

We advise any UK customer that has a shower to have frost protection if there is any chance it might be exposed to sub zero temperatures. This should, of course be common sense, but a naïve reading of just the words in the EN or ANSI standards could result in a wrongful impression that frost protection is not actually required. Only when seen in the broader context of the overarching health and safety legislation can it be seen that it most certainly is in many situations



Industry specific standards

Given that the EN standards are deliberately, it seems, broad and open to different interpretations, some industries have written their own guidelines on shower provision. For example, the Refined Bitumen Association makes several recommendations on safety showers to its members. These include

- An advisory note that foot panel activation should be used
- If the shower is within 6 meters of the bitumen, it should be screened

Both recommendations are above and beyond the EN and ANSI standards and reflect some specific, industry and hazard specific advice. As such, any such industry standards probably represent a better safety guide than the more general ones. We would advise customers to adhere to these standards where they exist.

Conclusions

The emergency showers standards are confusing. The ANSI standard is, on balance, more complete than the EN standards, however, its very completeness may put it in conflict with certain received wisdom in some situations (e.g. when cool water is required). All safety shower provision should be seen within the broader context of a company's general health and safety obligations. The specifications and recommendations within the shower standards are only the starting point and should never be taken as the final and only word on the topic.

SHOWER & EYE WASH STANDARDS GUIDE

Legislative obligations

“Adequate & appropriate first aid equipment must be provided”



Common sense across all standards

- Showers must be visible Consider signs & lighting
- Showers must work when Frost Protection & Maintenance
- Showers must be accessible Positioning of shower
- Showers must be easy to operate Easy activation & manual shut off
- Training must be given Health & safety policy

ANSI Z358.1



Flow rate body shower: 75 l/min
 Flow rate eye wash: 14 l/min
 Water Temperature: 14-35oC
 Height: 2080-2438mm
 Valve: On to off in 1 second

Spray parameters:

508mm at 1524 mm from ground.

Other mandatory factors:

Maximum 10 second walk away
 Non corrosive material required
 Performance must be tested weekly
 Shower must be on same level as hazard



BS/EN 15154



For laboratories

Flow rate body shower: 60 l/min
 Flow rate eye wash: 6 l/min

Production or logistics sites

Flow rate body shower
 Class 1: 30-60 l/min
 Class 2: 60-100 l/min
 Class 3: 100+ l/min
 Flow rate eye wash: 6 l/min

For all types of site

Water Temperature: none specified
 Height: 2100-2300mm
 Valve: Work with under 100N force

Spray parameters:

95% within 800mm at ground level
 50% in a 400mm at 700mm below the shower head

Health & Safety Policy

- Industry specific factors
- Hazard specific factors
- Site specific factors