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Deborah Stead

Head of Committee Services and International Secretariat



BSI Standards Publication

Emergency safety showers

Part 5: Water overhead body showers for sites other than laboratories

National foreword

This British Standard is the UK implementation of EN 15154-5:2019.

The UK participation in its preparation was entrusted to Technical Committee LBI/1/1, Laboratory furniture and fittings.

A list of organizations represented on this committee can be obtained on request to its secretary.

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EN 15154-5

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2019

ICS 71.040.10

English Version

Emergency safety showers - Part 5: Water overhead body showers for sites other than laboratories

Douches de sécurité - Partie 5: Douches à eau verticales pour le corps utilisées ailleurs que dans les laboratoires

Sicherheitsnotduschen - Teil 5: Körperduschen über Kopf mit Wasser für andere Standorte als Laboratorien

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European foreword

This document (EN 15154-5:2019) has been prepared by Technical Committee CEN/TC 332 “Laboratory equipment”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2020, and conflicting national standards shall be withdrawn at the latest by April 2020.

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EN 15154 consists of the following parts under the general title *Emergency safety showers*

- *Part 1: Plumbed-in body showers for laboratories*
- *Part 2: Plumbed-in eye wash units*
- *Part 3: Non-plumbed-in body showers*
- *Part 4: Non-plumbed-in eyewash units*
- *Part 5: Water overhead body showers for sites other than laboratories*
- *Part 6: Plumbed-in multiple nozzle body showers for sites other than laboratories*

This document, EN 15154-5, is part of a series of standards on emergency safety showers, which it rounds off by dealing with body showers and combinations with eye showers and hand-held showers used on sites other than laboratories (see Table 1).

Table 1 — Subject areas covered under the EN 15154 series of standards

Part of EN 15154	Type	Laboratories	Sites - other than Laboratories	Non plumbed-in	Plumbed-in
1	Body shower	Xc	-	-	X
2	Eye-wash unit	X	X	-	X
3	Body shower	Xa	Xa	Xa	-
4	Eyewash unit	X	X	X	-
5	Body shower	-	Xc	Xb	X
6	Body shower	-	X	-	X
a	Non plumbed-in body showers affected by EN 15154-3 are fixed, transportable or portable.				
b	Non plumbed-in body showers affected by EN 15154-5 are tank showers or Trailer-mounted.				
c	In possible combination with eye wash units.				

NOTE Attention is drawn to national regulations in some European countries, e.g. Germany, which can request to connect emergency safety showers to a water supply where available.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

Emergency safety body showers for sites other than laboratories are designed and intended to be installed in close range of persons working in a potentially hazardous area exposed to the risks of burning/burns and/or hazardous chemical substances getting splashed onto all or part of the body.

The main purpose of these devices is to deliver immediately a flushing fluid in a volume sufficient to extinguish flames and/or to flush the body following exposure to injurious substances or heat.

Once this is accomplished, the injured person can proceed to medical care.

1 Scope

This document is a product specification, giving performance requirements for water overhead emergency safety body showers installed on industrial and logistic sites, (in combination with safety eyewashes and hand-held showers as well),

- a) which are permanently connected to a water supply; or
- b) which are equipped with a store tank and optionally connected to an uninterrupted or a temporary water supply.

Emergency safety body showers using fluid other than water are not considered in this document.

This document also specifies requirements in respect of installation, adjustment and marking of the showers as well as operation and maintenance instructions to be given by the manufacturer.

NOTE 1 Plumbed-in body showers designed for laboratory facilities are dealt with in EN 15154-1.

NOTE 2 Water multiple nozzle body showers for sites other than laboratories are dealt with in EN 15154-6¹.

NOTE 3 Attention is drawn to national regulations which can apply in respect of the installation and use of emergency safety showers

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 420, *Protective gloves — General requirements and test methods*

EN 1991 (all parts), *Eurocodes 1 — Actions on structures*

EN 1991-1-3, *Eurocode 1 — Actions on structures — Part 1-3: General actions — Snow loads*

EN 1991-1-4, *Eurocode 1: Actions on structures — Part 1-4: General actions — Wind actions*

EN 15154-1, *Emergency safety showers — Part 1: Plumbed-in body showers for laboratories*

EN 15154-2, *Emergency safety showers — Part 2: Plumbed-in eye wash units*

ISO 3864-1, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs and safety markings*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1

emergency safety shower

device specially designed and intended to deliver a flushing fluid to extinguish flames and to sufficiently wash away contaminants or to dilute them, rendering them harmless

¹ Under preparation. Stage at the time of the publication: prEN 15154-6

[SOURCE: EN 15154-1:2006, 3.1]

3.2

plumbed-in emergency safety body shower

emergency safety shower that is permanently connected to a continuous water supply and designed to deliver water sufficient to wash the whole body

3.3

body shower with storage tank tank shower

emergency safety shower that is self-sufficient and filled by a temporary water supply or which can be optionally connected to a continuous water supply

3.4

additional hand-held shower

manually-operated spray head fitted to the end of a flexible hose and that can be hand-directed to spray-wash any part of the body

3.5

safety combination shower

emergency safety shower equipped with an emergency safety eye wash unit as defined in 3.7 and/or an additional hand-held shower

3.6

overhead body shower

emergency safety shower delivering water down over the head via one or more spray heads

3.7

emergency safety eye wash unit

device specially designed and intended to deliver a flushing fluid to irrigate and flush the eyes and to sufficiently wash away contaminants or to dilute them, rendering them harmless

[SOURCE: EN 15154-2:2006, 3.1]

4 Performance

4.1 Classification

Body showers for production and logistic sites shall comply with one of the three classes given in Table 2. The overhead volume flowrate defines the body shower classification.

Table 2 — Classification

Class	Volume flow rate L/min
I	30 to 60
II	> 60 to 100
III	> 100

NOTE National risk assessment guidelines can be applied to determine the class of the body shower to be used.

4.2 Wash-off time

The shower shall be able to deliver water at a constant manufacturer-specified pressure, and continued for at least 15 min.

NOTE An intervention time of less than 10 s and speedy removal of clothing can help effective decontamination.

4.3 Flow rate of water

4.3.1 Overhead body showers

The water supplied by overhead body showers shall be of a constant flow rate discharged in accordance with one of the three classes given in Table 2 at a flow pressure to be specified by the manufacturer.

At the type test (see 4.4.1), the flow pressure shall be measured with fully opened valve at the point where the shower is connected to the water supply. The measured value shall be indicated in the manufacturer's handbook.

4.3.2 Body shower with storage tank (tank showers)

The water that is discharged by the tank shower shall have an overhead water volume flow rate equivalent to one of the three classes according to Table 2.

Flow pressure, maximum deviation of water volume flow rate and duration of water flow shall be specified by the manufacturer and shall be declared in the manufacturer's handbook (see Clause 9).

4.3.3 Safety combination showers

For combination showers the respective specified water volume flow rates shall be maintained at both the overhead body shower and the eye wash unit and/or the additional hand-held shower even when activated simultaneously.

The emergency safety eye wash unit shall comply with EN 15154-2.

4.4 Water distribution

4.4.1 Type test

The water distribution of overhead emergency safety body showers shall be measured by the following type test procedure.

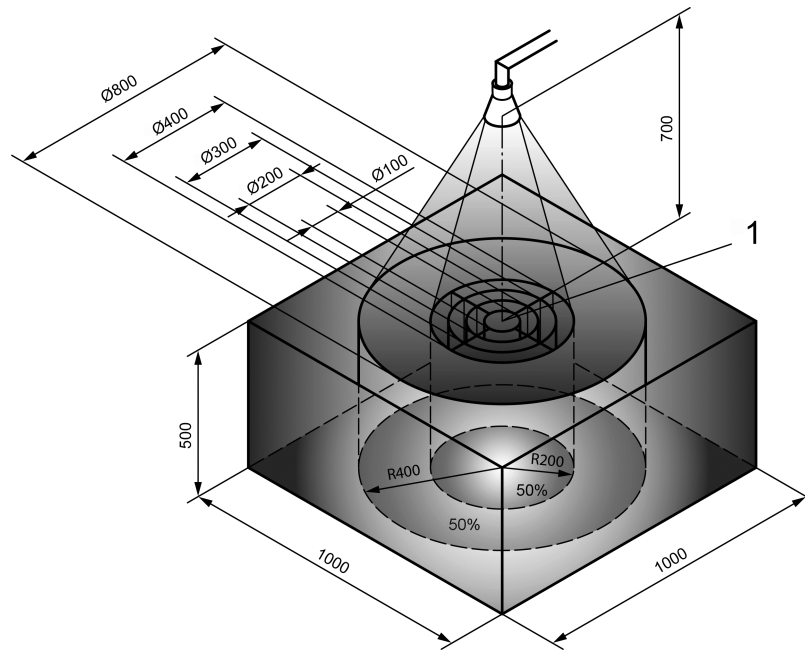
4.4.2 Overhead body showers of classes I and II

At a distance of 700 mm below the shower head, (50 ± 10) % of the volume of water delivered shall fall in a circle with a radius of 200 mm (see Figure 1); the water level in the individual compartments in this circle shall not deviate by more than 30 % from the mean value.

At this measuring level, the area reached by a minimum of 95 % of the water shall be limited to a circle with a radius of 400 mm.

The velocity of the water spray shall be low enough to be non-injurious to the user.

All details of this type test procedure are in accordance with the test procedure defined in EN 15154-1.



Key

- 1 cylinder with 4 compartments

Figure 1 — Type testing of water distribution

4.4.3 Overhead body showers of Class III and body showers with storage tank

At a distance 700 mm below the shower head, (50 ± 10) % of the volume of water delivered shall fall in a circle with a radius of 200 mm.

At this measuring level, the area reached by a minimum of 70 % of the water shall be limited to a circle with a radius of 400 mm.

For overhead body showers with additional spray nozzles, the water distribution of the overhead spray shall be the same as given in Figure 1. The additional nozzles shall be concentrated on the centre axis of the user and their water volume flow rate shall not dominate the volume flow rate of the overhead spray.

The velocity of the water spray shall be low enough to be non-injurious to the user.

4.5 Time to rated flow

The shower shall be designed to reach its rated flow within 3 s after activation.

4.6 Combination showers equipped with a hand-held shower

The hand-held shower shall be designed to keep water jet outlet pressure from the shower head limited to be non-injurious to the user. Its flow shall be at least 10 l/min.

4.7 Water quality and water temperature

Materials used in the construction of the shower shall not affect the water quality or contaminate the water supply (see Note 1).

Potable water or water of a similar quality is required for body showers.

NOTE 1 Water of a similar quality can be determined by reviewing the relevant European or national standards

NOTE 2 Guidance on water temperature is given in A.1.

5 Design requirements for the installation

5.1 General

Depending on the work carried out at the site and the location of the installation, attention shall be given to the avoidance of overheating through radiant heat or danger through freezing so as to be non-injurious to the user i.e. preventing scalding or hypothermia.

5.2 Clearance

The shower shall be designed so that the clearance between the central axis of the shower head and the closest obstacle (wall, water line up-pipe, or other) shall form a cylinder with a minimum radius of 400 mm and the height between the underside of the shower head and the floor level of the shower basin shall be 2 200 (± 100) mm.

The activator and/or eye wash unit and/or the additional hand-held shower shall be the only fittings allowed to ingress this space. They shall not ingress by more than 200 mm. This clearance space shall be kept free of any other components whatsoever.

On combination showers the integrated eye wash unit shall conform to the installation height according to EN 15154-2.

5.3 Entry to the shower

The width of the entrance to the shower shall be at least 800 mm.

5.4 Materials and geometry

The shower built should use materials that inherently minimize limescale deposits and parts designed with clean, uncluttered geometries that will not allow any water to collect and stagnate.

6 Activation system

6.1 General

The shower activation system shall be capable of being activated to full flow by a single unassisted individual.

6.2 Valves

For manual operation, each valve shall be opened by turning or moving a valve actuator to maximum 90° or maximum 200 mm stroke. The maximum force for the operation shall be 100 N or the maximum torque 7 Nm. By using this force/torque, the valve shall be fully open within 1 s.

The valve shall not close automatically once it has been opened. The direction of operating the valve actuator shall be clearly visible and unmistakable.

The valve actuator shall be large enough to be easily located and operated by the user even when wearing protective gloves, with a maximum size in accordance with EN 420. The valve actuator shall be positioned between floor level and a maximum of 1 750 mm above that level.

Other means of release shall be designed to achieve the above requirements for activation.

NOTE Attention is drawn to national regulations in some European countries, e.g. Sweden, which can request the actuator to be operable at floor level.

6.3 Automatic release

6.3.1 General

For automatic release, the valve shall be fully open within 1s.

The valve shall not be able to close automatically once it has been opened except if an occupant weight-sensed release has a shower basin floor of minimum 800 mm x 800 mm.

6.3.2 Occupant weight-sensed release

If the shower activation system is designed to be released by the user's body on the shower basin floor, then the minimum load to activate the shower shall be between 20 kg and 35 kg at the centre of basin floor. The shower basin floor shall be capable of bearing the weight of an individual with a body mass of up to 200 kg.

The shower basin floor shall have a minimum size of 500 mm x 500 mm and shall be placed axially to the height of fall of the shower head.

6.3.3 Other automatic release mechanisms

If the emergency safety shower is activated by an automatic shower occupancy system (optical sensors, for instance), then the water line shall open within 1 s after the user enters the shower.

7 Shower head

It shall only be possible to make adjustments with a tool to the direction of spray or the water distribution of a shower head.

The shower head shall be self-draining between the valve and the outlet.

It shall be impossible to remove the shower head without using a tool.

8 Mechanical stability of body showers with storage tank

Body showers with storage tank shall be built according to constructional calculations given in EN 1991 to ensure the constructional stability. Where appropriate, wind loads according to EN 1991-1-4 and snow loads according to EN 1991-1-3 shall be considered.

9 Information for marking, installation, service use and maintenance

9.1 Marking and labelling

The shower shall be stamped with a permanent and clearly-visible ID marking. The marking shall indicate:

- the name or trade-name and registered address of the manufacturer;
- model of the shower;
- the class of the shower;
- the performance requirements on minimum flow rate, as specified under Clause 4 of this document.

In addition, each emergency safety shower shall be delivered with a safety sign, complying with ISO 3864-1, displayable near the shower to signal the position of the emergency safety shower.

For body showers with storage tank, the manufacturer shall give full particulars for a suitable protection against microbial contamination and recommendations for the rate of water exchange.

9.2 Instruction handbook

An instruction handbook shall be provided by the manufacturer. As a minimum requirement, it shall contain:

- the pipework connection instructions to be followed in order to maintain the requisite water distribution conditions;
- the information needed for the shower installation to produce the minimum flow rate (a flowrate–pressure curve, for instance);
- pointers on where to position the unit — especially in terms of visibility, accessibility, and proximity to the hazard zone (see A.2);
- guidelines to recommended installation (see A.2) and on operation, cleaning and maintenance work;
- especially the procedure ensuring that the system stays operational in an emergency (see A.3 for guidelines on cleaning), the guideline should give an advice to prevent water hammer while activating and deactivating;
- the method and frequency of routine testing (see A.4 for guidelines on testing).

Annex A (informative)

General guidance

A.1 Water temperature

Water temperature should be regulated to minimize the risk of hypothermia and at the same time curb the proliferation of bacteria like *Legionella*.

Water temperature should be held at between 15 °C and 37 °C (and ideally between 20 °C and 25 °C).

A.2 Guidelines to recommended installation

Emergency safety shower installations should adhere to the following recommendations:

- distance from chemical hazard to shower of less than 20 m without stairs or ramps or any obstacles between, or time of less than 10 s to get to the shower;
- shower located in a clearly visible and easily identifiable place, and as far as possible on a regularly-taken path, inside the area exposed to the risk, without en-route hindrance by potential obstacles (partitions, doors, steps, corridors, etc.);
- showers sheltered from contamination sources and well away from electricity sources;
- marking of the way to the shower according to national regulations (see ISO 3864-1).

The integration of the emergency safety body shower in the overall plumbing installation requires a specific study in terms of water flow and the capacity to provide a correct flow for each equipment.

A.3 Cleaning

All the emergency safety shower components and fittings should be user-cleanable to help prevent limescale build-up and mitigate the risks of microbiological contamination.

A.4 Testing

Emergency safety showers should be tested at least every month or more according to national regulations if required.

The following parameter needs to be tested: flow rate by measuring, spray pattern visual test, water quality visual test.

The test needs to be documented.

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- [2] EN 15154-3, *Emergency safety showers — Part 3: Non plumbed-in body showers*
- [3] EN 15154-4, *Emergency safety showers — Part 4: Non plumbed-in eyewash units*
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- [6] INRS, 2006, ND 2248, *Etude de la tenue mécanique des équipements de protection individuelle aux jets d'eau à très haute pression*
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- [9] Council Directive 92/58/EEC of 24 June 1992, *Provision of safety and/or health signs at work and its amendments*

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