



Deep Sprinkler Water Shields

Requirements and Test Methods

Publisher and publishing house: VdS Schadenverhütung GmbH

Amsterdamer Str. 174

50735 Köln, Germany

Phone: +49 221 77 66-0, Fax: +49 221 77 66-341

Copyright by VdS Schadenverhütung GmbH. All rights reserved.

VdS Guidelines for Water Extinguishing Systems

Deep Sprinkler Water Shields

Requirements and Test Methods

Content

1	Scope	4
2	Normative references	4
3	Definitions	4
4	Requirements	5
4.1	Technical documentation	5
4.2	Marking	5
4.3	Design features and installation conditions	5
4.4	Performance characteristics	5
5	Tests	6
5.1	Test conditions and test specimens	6
5.2	Compliance inspection	6
5.3	Check of installation	6
5.4	Water distribution test	6
5.5	Test of wetting by adjacent sprinklers	7
5.6	Other tests	7

1 Scope

These guidelines specify requirements and test methods for deep sprinkler water shields for the use in sprinkler systems according to VdS CEA 4001.

These guidelines are applicable to deep sprinkler water shields for pendent sprinklers.

Note: Deep sprinkler water shields shall protect the release element against wetting by higher placed sprinklers and adjacent sprinklers. Deep sprinkler water shields shall not have a negative effect on the water distribution.

2 Normative references

These guidelines incorporate, by dated or undated references, provisions from other publications (e.g. European Standards EN or International Standards IEC), which are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to these guidelines only when incorporated in them by amendment or revision. For undated references the latest edition of the publication referred to applies.

DIN EN 12259-1 Fixed firefighting systems – Components for sprinkler and water spray systems – Part 1: Sprinklers

VdS CEA 4001 VdS CEA Guidelines for sprinkler systems – Planning and installation

3 Definitions

For the use of these guidelines the following definitions apply:

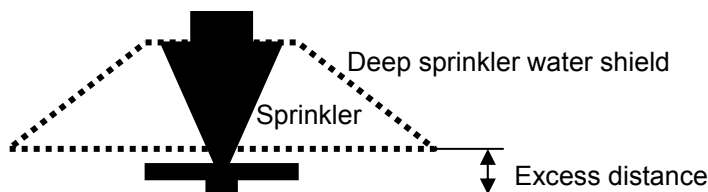
Deep sprinkler water shield: Metal sheet formed like a cap to prevent direct wetting of the release element by higher placed sprinklers and adjacent sprinklers.

Flat sprinkler water shield: Flat metal sheet formed like a plate, only provided with a drip border to prevent direct wetting of the release element by higher placed sprinklers.

Excess distance: Space between bottom edge of the deep sprinkler water shield and the deflector of sprinkler (see figure below). The excess distance of adjustable shields can be adjusted in a specified range during installation. The excess distance of not adjustable shields arises from the design.

Note: The reference point on the sprinkler deflector does not have to correspond with the figure, but it shall be clearly specified.

Anmerkung: Der Bezugspunkt am Sprühteller muss nicht genau der Darstellung entsprechen, er muss aber eindeutig angegeben sein.



4 Requirements

4.1 Technical documentation

The following documents are necessary:

- a) manufacturing documents of the deep sprinkler water shield;
- b) user documentation (e.g. data sheet, mounting instructions) including:
 - list of sprinklers which can be equipped with the deep sprinkler water shield;
 - information on mounting including description of admissible installation dimensions (including excess distance), in case of adjustable shields with specification of the permitted range.
 - distance to adjacent sprinklers, from which **no** lateral cooling/wetting occurs.

Note: The information shall cover the pressure range up to 10 bar.

4.2 Marking

4.2.1 All markings shall be non-detachable, non-flammable and permanent.

4.2.2 Deep sprinkler water shields shall be marked with the following details:

- name or code of manufacturer/supplier;
- "VdS" logo;
- type designation of the component.

4.3 Design features and installation conditions

4.3.1 The deep sprinkler water shield including all mounting parts shall be made of corrosion-resistant steel or steel protected against corrosion.

Note: Additional parts e.g. for sealing or fixing may be made of other materials, provided that influence of heat/fire on these parts cannot cause a significant impact on the performance of the shield or the sprinkler.

4.3.2 The design and installation of the deep sprinkler water shield shall ensure that no water can enter the sprinkler shield from the top.

4.3.3 During installation according to the user documentation the mounting dimensions specified by the manufacturer (including specified excess distance) shall either arise from the design or – in case of adjustable shields – be easily adjustable.

4.3.4 After installation according to the user documentation the deep sprinkler water shield shall be fixed tightly. When tested according to DIN EN 12259-1, Annex F.2, the shield shall withstand a force of 70 N without permanent deformation and without inadmissible change of the mounting position.

4.4 Performance characteristics

4.4.1 Water distribution

All sprinklers equipped with the deep sprinkler water shield shall meet the requirements according to EN 12259-1 during the water distribution test according to EN 12259-1.

The test schedule will stipulate whether several tests are carried out with different excess distances.

Note: Hereby fabrication tolerances and in case of adjustable shields the permitted adjustment range can be taken into account. A test with the smallest excess distance is always necessary.

4.4.2 Wetting by adjacent sprinkler

All sprinklers equipped with the deep sprinkler water shield shall be tested according to section 5.5 and fulfil the requirements stipulated therein.

The test schedule will stipulate if several tests are carried out with different excess distances.

Note: Hereby fabrication tolerances and in case of adjustable shields the permitted adjustment range can be taken into account. A test with the biggest excess distance is always necessary.

5 Tests

5.1 Test conditions and test specimens

5.1.1 Test conditions

The tests are carried out at a temperature of $(25 \pm 10)^\circ\text{C}$, unless otherwise specified for a certain test

The tolerance for all test parameters is $\pm 5\%$, unless otherwise specified.

5.1.2 Test specimens

A test schedule is set up for all combinations of deep sprinkler water shield and sprinkler.

5.2 Compliance inspection

In a visual and dimensional check it is determined whether the test specimens correspond to the description in the technical documentation and comply with the requirements of these guidelines as can thus be checked (see 4.2.1, 4.2.2, 4.3.1).

5.3 Check of installation

The sprinkler water shield is connected to a tee-fitting, an elbow and a welding sleeve with all sprinklers that can be equipped with the deep shield according to the user documentation.

During and after installation it is checked whether all requirements of 4.3.2 to 4.3.4 are met.

5.4 Water distribution test

see section 4.4.1 (test according to EN 12259-1).

5.5 Test of wetting by adjacent sprinklers

Note: The test is in experimental stage regarding procedure and evaluation method.

An open sprinkler and a closed sprinkler (target sprinkler) are mounted to a branch pipe. The distance corresponds to the distance to adjacent sprinklers specified by the manufacturer, from which **no** lateral cooling/wetting occurs. The distance to the ceiling is between 2.5 m and 3 m.

The target sprinkler is wrapped into absorbent paper (approx. 32 cm long, 2,5 cm to 3 cm wide, wrapped around the sprinkler arms).

The open sprinkler is flowed for 15 s, thereof at least 5 s at 10 bar.

Note: A time span of 10 s is taken into account for adjusting the pressure.

Afterwards the paper is removed from the target sprinkler. It is examined how much of the paper is moist.

Maximum 50 % of the paper wrapped around the target sprinkler may become moist during all tests.

5.6 Other tests

If special construction or new manufacturing processes make it necessary, additional tests will be agreed with the manufacturer.