

Nordisk Boligsprinkler Standard

NS INSTA 900-1 og prNS INSTA 900-2



FG Brukermøte 2010

John- Erik Holmli

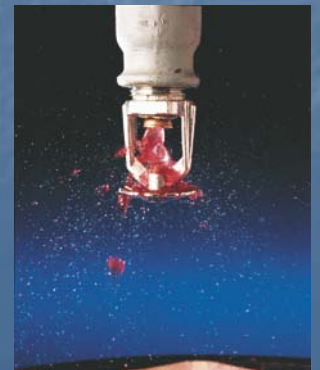


- Svensk/ Norsk initiativ med bakgrunn i behov for revisjon av eksisterende nasjonale retningslinjer for boligsprinkler.

- Møte i København 20. April 2007, Referansegruppe etablert bestående av representanter fra blant annet:
 - Dansk Brandteknisk Institutt (DK)
 - Ministry of Interior (FI)
 - Brunamalastofnun (IS)
 - Statens Byggetekniske Etat (N)
 - Direktoratet for Samfunnssikkerhet og Beredskap (N)
 - Opplysningskontoret for Sprinkler (N)
 - Boverket (S)
 - Räddningsverket (S)
 - SP Träteknik (S)
 - Svenska Brandskyddsforeningen (S)
 - Brannteknisk Forening (N)

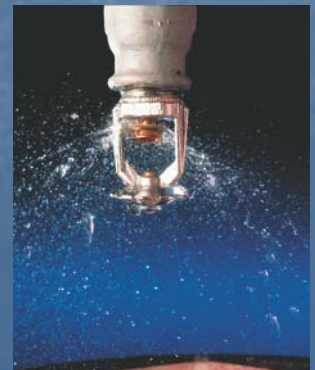


- Working Group 1, Design, Installasjon og Vedlikehold, Sprinkler
- Working Group 2, Teknisk bytte ved benyttelse av sprinklere
- Working Group 1b, Design, Installasjon og Vedlikehold, Vanntåke



Working Group 1, Design, Installasjon og Vedlikehold, Sprinkler:

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 - Henrik Bygberg, DBI
 - Jens Erik Lauritzen, Tyco FIS
- Island:
- Gudmundur Gunnarsson, Brunamalastofnun
 - Astvaldur Eiriksson, Brunamalastofnun
- Norge:
- Tore Aarnes, If Forsikring
 - Per Arne Lindvik, Brannteknisk forening
 - John- Erik Holmli, Brannteknisk forening (Leder)
- Sverige:
- Gøsta Holmstedt, Sprinklerfremjandet
 - Jens Hjort, Svenska Brandskyddsforeningen (Sekretær)
 - Martin Svensson, Sprinkler entreprenørene
- EFSN:
- Nick Groos



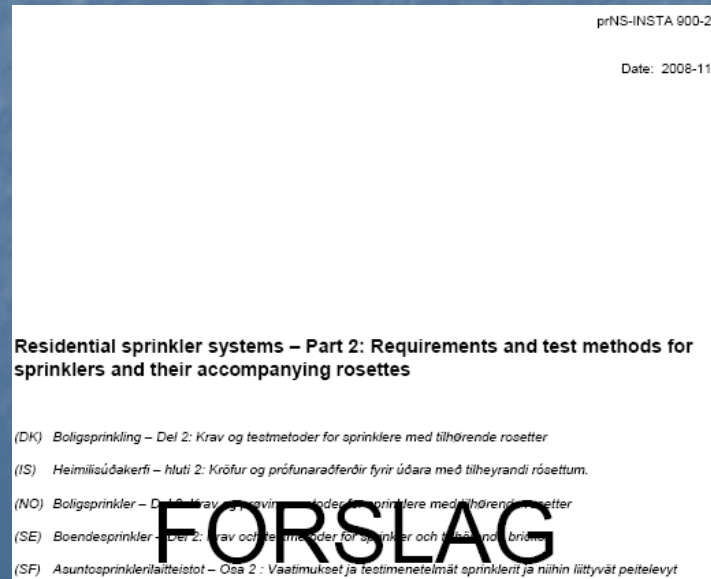
Working Group 1, Design, Installasjon og Vedlikehold, Sprinkler:

- Omfatter ALLE typer bygninger til boligformål fra enebolig til leilighetsbygninger, boligdel av hotell, sykehus, omsorgsbolig osv.
- Mål å gjøre den til nasjonale standarder i hvert enkelt land gjennom Inter Nordisk STANDARD inkludert Finland ,Island (og Estland).



Residential sprinkler systems Part 2: Requirements and test methods for sprinklers and their accompanying rosettes

- Er UL1626 i sin helhet
- Boligsprinklere listet av UL vil tilfredsstillte kravene



Foreword

This INSTA standard has been prepared by a committee representing the Inter Nordic Standardisation Cooperation, named *INSTA 900 Residential sprinklers systems*, the secretariat of which is held by Standards Norway.

This INSTA 900-1 standard shall be given the status of a national standard in Denmark, Norway and Sweden either by publication of an identical text or by endorsement, at the latest by February 2010. INSTA 900 consists of the following parts, under the general title *Residential sprinkler systems*.

Part 1: Design, installation and maintenance

Part 2: Requirements and test methods for sprinklers and their accompanying rosettes

Table 1 — Description of types of residential sprinkler systems

Type of residential sprinkler system	Example of intended use
1	<ul style="list-style-type: none"> - One and two family dwellings; - Row houses having three levels above ground including the attic, and one basement level; or - Residential buildings with not more than four dwelling units up to a maximum of three levels and one basement level
2	Buildings arranged as residential occupancies up to a maximum of eight levels and one basement level, excluding care institutions arranged to permanently house people who need assistance exiting the building
3	<ul style="list-style-type: none"> - Care institutions, or parts of care institutions, arranged to house people who need assistance exiting the building - Buildings of nine levels or more, arranged as residential occupancies.
<p>NOTE For buildings not covered by the descriptions in Table 1, the type of building should be decided by the authority.</p>	

If an area exists within a building as defined in Table 1, and contains a hazard other than that which would typically be found in a residential occupancy, then that area shall be sprinkler protected according to EN 12845.

1 Scope

This standard specifies requirements and gives recommendations for the design, installation and maintenance of fixed residential fire sprinkler systems in buildings, or part of buildings, which contains typical residential occupancies.

Typical residential areas are:

- private homes (one and two family dwellings, row houses, vacation homes etc.);
- apartments, flats;
- manufactured homes.

Dwelling units and the escape routes from those areas for building types such as:

- care institutions (nursing homes, hospitals etc.);
- in hotels, motels etc.;
- student housing, dormitories;
- asylum centres.

Forms of secure accommodations such as correctional or rehabilitation facilities are not covered by this standard.

This standard does not necessarily cover all legislative requirements.

3 Terms and definitions

NS-INSTA 900-1

3.1

authority

an organization or individual responsible for approving sprinkler systems, equipment and procedures, e.g. the fire and building control authorities, the fire insurers, the local water authority, other appropriate public authorities or the owner

3.8

dwelling

building that contains dwelling units intended to be used, rented, leased, let or hired out to be occupied for habitation purposes

3.9

dwelling unit

the area in a building arranged for the purposes of habitation of one or more individuals containing sleeping, living, and normally cooking and sanitary facilities

3.14

manufacturer's specification

a document published by a manufacturer which is accepted by the authorities and intended to supplement this standard with additional technical information with regards to design, installation and maintenance

3.16

network system

a type of multipurpose piping system, applicable for Type 1 buildings only, utilizing a common piping system supplying plumbing fixtures and fire sprinklers where each sprinkler is supplied by a minimum of three separate paths

3 Terms and definitions

3.20

residential compartment

a space completely enclosed by walls and a ceiling. Openings to an adjoining space are allowed, provided the openings have a minimum lintel depth of 210mm from the ceiling. The total width of openings in a single wall shall not exceed 2.4 m. A single opening of 900mm or less in width without a lintel is allowed when there are no other openings to adjoining spaces

3.21

residential sprinkler

a type of sprinkler having a thermal element with an RTI of 50 (meters-seconds)^{1/2} or less that is specifically designed to enhance survivability in the room of fire origin and passed the tests according to prINSTA 900-2

3.27

third party

person or body that is recognized as being independent of the parties involved, as concerns the issues in question

[ISO 14050:2009]

5. 1.1 Permitted exceptions for Type 1 Residential sprinkler system

Sprinkler protection may be omitted in the following cases:

- toilets or bathrooms less than 5 m² with a fire resistance lining of not less than Euroclass C and which are not used to store combustible materials or are not prepared for electrical
- machinery such as washing machines, dryers, etc. or are equipped with any sprinkler component;
- unused attics;
- rooms that are not used for living with a fire resistant separation (see 5.2) that serves as a separate fire compartment, for example garages or boiler rooms;
- outdoor open balconies;
- crawl spaces, floor/ceiling spaces, elevator shafts, and other concealed spaces that are not used or intended for living purposes or storage;
- enclosed vertical shafts (e.g. lifts or service shafts) containing no combustible material and constructed as a fire resistant separation (see 5.2).

5.2 Fire resistant separation

The separation between a sprinkler protected area and a non-protected area shall have a fire resistance as specified by the authority. For Type 2 and 3 Residential sprinkler systems this fire resistance shall not be less than 30 minutes.

Table 1 — Description of types of residential sprinkler systems

Type of residential sprinkler system	Example of intended use
1	<ul style="list-style-type: none"> - One and two family dwellings; - Row houses having three levels above ground including the attic, and one basement level; or - Residential buildings with not more than four dwelling units up to a maximum of three levels and one basement level
2	Buildings arranged as residential occupancies up to a maximum of eight levels and one basement level, excluding care institutions arranged to permanently house people who need assistance exiting the building
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<p>NOTE For buildings not covered by the descriptions in Table 1, the type of building should be decided by the authority.</p>	

Table 2 — Minimum design criteria

Type of residential sprinkler system	Minimum design discharge density (mm/min)	Number of design sprinklers	Minimum duration of water supply (minutes)
1	2,04	1-2 ^a	10
2	2,04	1-4 ^a	30
3	4,08	4	30
^a The number of design sprinklers required is defined in 7.3.			

7 Hydraulic design and pipe layout

Unless otherwise specified in this standard, the requirements for hydraulic design and pipe layout in EN 12845 shall apply.

7.3 Design criteria – Dwelling unit

7.4 Location of the area of operation

7.5 Pipe Layout

8 Water supplies

8.1 Water supply

8.1.1 Continuity

All practical steps shall be taken to ensure the continuity and reliability of water supplies.

8.1.2 Frost protection

The pipe work from the water supply to the control valve set shall be maintained at a minimum temperature of 4 °C.

8.1.3

A common main supply to the building, serving both the sprinklers and domestic use, shall be permitted where the domestic water demand is added to the sprinkler system water demand. The domestic water demand shall be calculated according to the applicable national regulation. The total demand flow shall not exceed the maximum allowable flow of the piping system components.

Exception: Domestic water demand is not required to be added to the calculation where provision is made to prevent flow on the domestic water system upon operation of sprinklers.

Table 4 — Type of test facilities

Type of residential sprinkler system	Type of test facility
1	Discharge test according to installers specifications
2	Discharge test according to installers specifications, unless installed to compensate for other fire protection methods, then test facilities according to 8.4.2 shall be installed
3	According to 8.4.2, 8.4.3 and 8.4.4.

9 Type of water supplies

9.2 Town mains

9.3 Storage tank

9.4 Pressure tanks

10 Pumps

10.6.2.4.1 Exception for Type 1 and 2 Residential sprinkler systems

The pump can be of the self priming type.

11 Installation type and size

Table 5 — Maximum protected area in wet pipe installations

Type of Residential sprinkler system	Maximum protected area per control valve set
1	1 dwelling unit
2 and 3	2500m ² , except for dwelling units that are considered to be occupied on a temporary basis such as hotels, motels, hospitals, student housing etc, this also includes care homes, the maximum area is 12000 m ²

For dry and pre-action systems:

- The hydraulically most remote sprinkler opening and water discharging is less than 15 s

12 Spacing and location of sprinklers

12.1 General

Unless specifically investigated and contained in the manufacturer's specifications, sprinklers shall be installed according to the requirements of this standard.

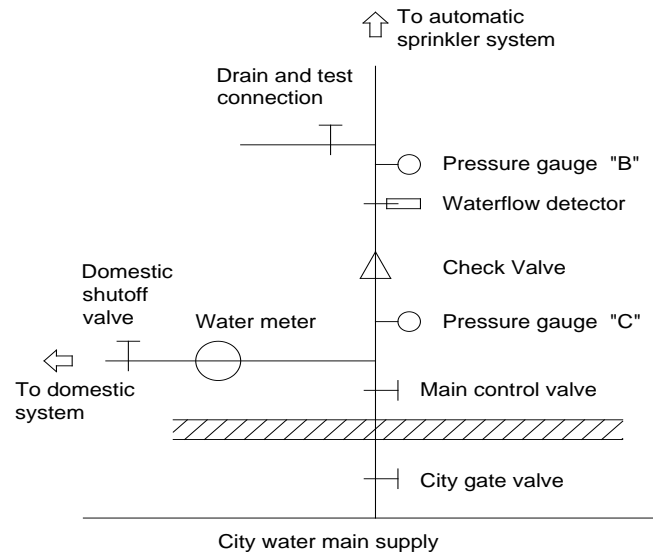
When specifically tested and the test results demonstrate that deviations from clearance requirements to structural members, clearance between sprinklers, ceilings slopes exceeding the maximums in this standard, etc, do not impair the sensitivity or performance of the sprinklers or their ability to control or suppress a fire, their positioning and location in accordance with the test results shall be permitted. Sprinklers shall be located so as not to exceed the maximum protection area per sprinkler according to the manufacturer's specifications.

15 Valves

15.1.1 Control Valve set for Type 1 and Type 2 Residential sprinkler systems

Each installation shall be provided with the means to perform the following functions:

- isolate the system from the supply;
- prevent the backflow;
- provide a signal in the event of water flow;
- device for test the signal;
- draining of the system;
- type "B" and "C" pressure gauge.



15.1.2 Control Valve set for Type 3 Residential sprinkler system

When the residential sprinkler system is a part of a system which also includes installations in accordance with EN 12845, then each installation shall have a control valve set in accordance with EN 12259-2 or EN 12259-3. For pre-action installations the control valve set shall be in accordance with the manufacturer's specification.

When the design criteria for the entire system satisfies Table 2 for a Type 3 Residential sprinkler system, then the control valve set may be in accordance with 15.1.1.

16 Alarms and alarm devices

Evacuation alarm

The need for evacuation alarm is normally covered by national regulation.

17 Pipe work

17.1.2 Pipe work in metal

Pipes and fittings in metal shall be installed according to EN 12845. Pipes shall be installed in accordance with the manufacturer's specifications and shall have sufficient corrosion resistance. For dry and pre-action systems the pipes and fittings shall be hot dipped galvanized, copper or stainless steel.

17.1.3 Pipe work in plastic

Pipes and fittings in plastic shall be installed according to manufacturer's specification.

20 Inspection, testing and maintenance

Type of Residential sprinkler system	Requirements for maintenance
1	Inspections, test and maintenance of the system shall be performed at least once a year and according with manufacturer's specification
	According to 20.3
3	According to EN 12845
<p>^a—In the case the residential sprinkler system is installed to compensate for other fire protection methods, the minimum requirements shall be according to EN 12845.</p>	

Annex A (informative), Zoning

Annex B (normative), Spinkler systems monitoring

Annex C (normative), Transmission of alarms

**Annex D (informative), Precaution and procedures when system
is not fully operational**

Annex E (normative), Inspection of pipes and sprinkler

Annex F (informative), New technology

Annex G (informative), The residential fire sprinkler technology