

RESOLUTION A.755(18) adopted on 4 November 1993  
GUIDELINES FOR APPROVAL OF SPRINKLER SYSTEMS EQUIVALENT TO THAT REFERRED  
TO IN SOLAS REGULATION II-2/12

INTERNATIONAL MARITIME  
ORGANIZATION



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ASSEMBLY - 18th session  
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THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

NOTING the significance of the performance and reliability of the sprinkler systems approved under the provisions of regulation II-2/12 of the International Convention for the Safety of Life at Sea (SOLAS), 1974,

DESIROUS of keeping abreast of the advancement of sprinkler technology and further improving fire protection on board ships,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its sixty-first session,

1. ADOPTS the Guidelines for Approval of Sprinkler Systems Equivalent to That Referred to in SOLAS Regulation II-2/12, set out in the Annex to the present resolution;
2. INVITES Governments to apply the Guidelines when approving equivalent sprinkler systems;
3. REQUESTS the Maritime Safety Committee:
  - (a) to keep the Guidelines under review and, in particular, to develop test procedures for approval of equivalent sprinkler systems for incorporation in the Guidelines; and
  - (b) to consider developing relevant amendments to the 1974 SOLAS Convention.

W/0323a

ANNEX

GUIDELINES FOR APPROVAL OF SPRINKLER SYSTEMS EQUIVALENT  
TO THAT REFERRED TO IN SOLAS REGULATION II-2/12

1 General

Equivalent sprinkler systems must have the same characteristics which have been identified as significant to the performance and reliability of automatic sprinkler systems approved under the requirements of regulation II-2/12 of SOLAS.

2 Definitions

- .1 Wet Pipe System. A sprinkler system employing automatic sprinklers attached to a piping system containing water and connected to a water supply so that water discharges immediately from sprinklers opened by heat from a fire.
- .2 Dry Pipe System. A sprinkler system employing automatic sprinklers attached to a piping system containing air or nitrogen under pressure, the release of which (as from the opening of a sprinkler) permits the water pressure to open a valve known as a dry pipe valve. The water then flows into the piping system and out of the opened sprinklers.
- .3 Preaction System. A sprinkler system employing automatic sprinklers attached to a piping system containing air that may or may not be under pressure, with a supplemental detection system installed in the same area as the sprinklers. Actuation of the detection system opens a valve that permits water to flow into the sprinkler piping system and to be discharged from any sprinklers that may be open.
- .4 Deluge System. A sprinkler employing open sprinklers attached to a piping system connected to a water supply through a valve that is opened by the operation of a detection system installed in the same areas as the sprinklers. When this valve opens, water flows into the piping system and discharges from all sprinklers attached thereto.
- .5 Antifreeze System. A wet pipe sprinkler system employing automatic sprinklers attached to a piping system containing an antifreeze solution and connected to a water supply. The antifreeze solution is discharged, followed by water, immediately upon operation of sprinklers opened by heat from a fire.
- .6 Water Based Extinguishing Medium is fresh water or sea water with or without additives mixed to enhance fire extinguishing capability.

3 Principal requirements for the system

- .1 The system should be automatic in operation, with no human action necessary to set it in operation.

- .2 The system should be capable of both detecting the fire and acting to control or suppress the fire with a water-based extinguishing medium.
- .3 The sprinkler system should be capable of continuously supplying the water-based extinguishing medium for a minimum of 30 min.
- .4 The system should be of the wet pipe type but small exposed sections may be of the dry pipe, preaction, deluge, antifreeze or other type to the satisfaction of the Administration where this is necessary.
- .5 The system should be capable of fire control or suppression under a wide variety of fire loading, fuel arrangement, room geometry and ventilation conditions.
- .6 The system and equipment should be suitably designed to withstand ambient temperature changes, vibration, humidity, shock, impact, clogging and corrosion normally encountered in ships.
- .7 The system and its components should be designed and installed in accordance with international standards acceptable to the Organization\*, and manufactured and tested to the satisfaction of the Administration.
- .8 The system should be provided with both main and emergency sources of power.
- .9 The system should be provided with a redundant means of pumping or otherwise supplying a water based extinguishing medium to the sprinkler system.
- .10 The system should be capable of operation using seawater.
- .11 The piping system should be sized in accordance with an hydraulic calculation technique.\*\*

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\* Pending the development of international standards acceptable to the Organization, national standards as prescribed by the Administration should be applied.

\*\* Where the Hazen-Williams Method is used, the following values of the friction factor "C" for different pipe types which may be considered should apply:

| <u>Pipe type</u>               | <u>C</u> |
|--------------------------------|----------|
| Black or galvanized mild steel | 120      |
| Copper and copper alloys       | 150      |
| Stainless steel                | 150      |
| Plastic                        | 150      |

- .12 Sprinklers should be grouped into separate sections. Any section should not serve more than two decks of one main vertical zone.
- .13 Each section of sprinklers should be capable of being isolated by one stop valve only. The stop valve in each section should be readily accessible and its location should be clearly and permanently indicated. Means should be provided to prevent the operation of the stop valves by an unauthorized person.
- .14 Sprinkler piping should not be used for any other purpose.
- .15 The sprinkler system supply components should be outside Category A machinery spaces.
- .16 A means for testing the automatic operation of the system for assuring the required pressure and flow should be provided.
- .17 Each sprinkler section should be provided with a means for giving a visual and audible alarm at a continuously manned central control station within one minute of flow from one or more sprinklers, a check valve, pressure gauge, and a test connection with a means of drainage.
- .18 A sprinkler control plan should be displayed at each centrally manned control station.
- .19 Installation plans and operating manuals should be supplied to the ship and be readily available on board. A list or plan should be displayed showing the spaces covered and the location of the zone in respect of each section. Instructions for testing and maintenance should also be available on board.
- .20 Sprinklers should have fast response characteristics as defined in ISO Standard 6182/1.
- .21 In accommodation and service spaces the sprinklers should have a nominal temperature rating of 57°C to 77°C, except that in locations such as drying rooms, where high ambient temperatures might be expected, the nominal temperature may be increased by not more than 30°C above the maximum deckhead temperature.
- .22 Pumps and alternative supply components should be sized so as to be capable of maintaining the required flow to the hydraulically most demanding area of not less than 280 m<sup>2</sup>. For application to a small ship with a total protected area of less than 280 m<sup>2</sup>, the Administration may specify the appropriate area for sizing of pumps and alternative supply components.

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