

SC 299 (July 2023)

Watertight testing after fire testing of penetrations in watertight divisions in passenger ships

Interpretation of SOLAS Chapter II-1, regulation 13.2.3 and the related explanatory notes contained in resolution MSC.429(98)/Rev.2

SOLAS Regulation II-1/13.2.3 reads as follows:

Regulation 13 - Openings in watertight bulkheads below the bulkhead deck in passenger ships

2.3 Lead or other heat-sensitive materials shall not be used in systems which penetrate watertight bulkheads, where deterioration of such systems in the event of fire would impair the watertight integrity of the bulkheads.

The Explanatory Notes to SOLAS Regulation II-1/13.2.3 (as contained in resolution MSC.429(98)/Rev.2) read as follows:

3 Materials used in systems which penetrate watertight bulkheads should be of sufficient strength after exposure to heat or be considered as part of an open piping system. Closing devices using intumescent material (swelling when exposed to heat) for open piping systems should not be considered equivalent to the fitting of a valve, since the fire might be located too far from the device to create a watertight seal.

4 Approval of pipe penetrations fitted to ensure the watertight integrity of a bulkhead or deck where heat-sensitive materials are used should include a prototype test of watertightness after having undergone the standard fire test appropriate for the location in which the penetrations are to be installed.*

4.1 The fire tested pipe penetration should then be tested to a test pressure of not less than 1.5 times the design pressure as defined in regulation 2.18. The pressure should be applied to the same side of the division as the fire test.

4.2 The fire tested pipe penetration should be tested for a period of at least 30 minutes under hydraulic pressure equal to the test pressure, but minimum 1.0 bar. There should be no leakage during this test.

4.3 The fire tested pipe penetration should continue to be tested for a further 30 minutes with the test pressure. The quantity of water leakage is not to exceed a total of 1 litre.

Note:

1. This Unified Interpretation is to be uniformly implemented by IACS Members on ships contracted for construction on or after 1 July 2024.
2. The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.

4.4 *The prototype test should be considered valid only for the pipe typology (e.g. thermoplastic and multilayer), pressure classes, the maximum/minimum dimensions tested, and the type and fire rating of the division tested.*

** Refer to the requirements for A-class division set out in part 3 of annex 1 to the 2010 FTP Code*

5 *The pressure test need not be carried out on the hot penetration arrangement. Ample time may be given to prepare for the pressure test, i.e. dismantling the fire testing equipment and rigging the pressure test equipment.*

5.1 *The pressure test should be carried out with the pipe section used in the fire test still in place.*

5.2 *Any pipe insulation fitted for the purpose of the fire test may be removed before the pressure test.*

5.3 *Prototype testing need not be carried out if the pipe penetration is made of steel or equivalent material having a thickness of 3 mm or greater and a length of not less than 900 mm (preferably 450 mm on each side of the division), and there are no openings. Such penetrations shall be suitably insulated by extension of the insulation at the same level of the division. See also regulation II-2/9.3.1 with respect to piping. However, the penetration must still comply with the watertight integrity requirement in regulation 2.17.*

Interpretation

1 Any penetration used for the passage of heat-sensitive piping systems through a watertight bulkhead or deck on a passenger ship under SOLAS regulation II-1/13.2.3 shall be tested with the heat-sensitive piping and shall be type approved for watertight integrity as per paragraphs 4 and 5 of the explanatory notes to regulation II-1/13.2.3 contained in the annex of resolution MSC.429(98)/ Rev.2, as applicable, after the fire test.

2 SOLAS regulation II-1/13.2.3 shall be applicable to heat-sensitive piping systems and shall not be applied to cable penetrations in watertight bulkheads and decks.

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