

国际海事组织

A. 754(18)

关于“A”、“B”和“F”级分隔耐火 试验程序的建议案

RECOMMENDATION ON FIRE RESISTANCE
TESTS FOR “A”、“B”
AND “F” CLASS DIVISIONS

人民交通出版社

INTERNATIONAL MARITIME ORGANIZATION

RESOLUTION A. 754(18)

(adopted on 4 November 1993)

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AND “F” CLASS DIVISIONS**

by

People's Communications Publishing House

(京)新登字 091 号

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(中英文合订本)

中华人民共和国船舶检验局译

人民交通出版社出版

本社发行

(100013 北京和平里东街 10 号)

江苏省武进县第三印刷厂印刷

开本: $850 \times 1168 \frac{1}{32}$ 印张: 4.0 字数: 96 千

1994 年 12 月 第 1 版

1994 年 12 月 第 1 版 第 1 次印刷

印数: 0001—2000 册 定价: 12.00 元

ISBN 7-114-02026-0

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RESOLUTION A.754(18)

(adopted on 4 November 1993)

RECOMMENDATION ON FIRE RESISTANCE TESTS FOR "A", "B" AND "F" CLASS DIVISIONS

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,

RECALLING ALSO the Recommendation on Fire Test Procedures for "A", "B" and "F" Class Divisions, adopted by resolution A.517(13),

RECOGNIZING the need to improve test procedures for determining insulating values in compliance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended, as well as the Torremolinos Protocol of 1993 relating to the Torremolinos International convention for the Safety of Fishing Vessels, 1977,

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

1. ADOPTS the Recommendation on Fire Resistance Tests for "A", "B" and "F" Class Divisions, set out in the Annex to the present resolution;

2. INVITES Governements to apply the Recommendation in compliance with relevant definitions in the International Convention for the Safety of Life at Sea, 1974, as amended, and the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977;

3. REVOKES resolution A. 517(13).

FIRE RESISTANCE TESTS FOR "A", "B" AND "F" CLASS DIVISIONS^①

1 GENERAL

1.1 Under the provisions of the International Convention for the Safety of Life at Sea, 1974, and subsequent amendments thereto, and the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977, constructions for use in passenger ships, cargo ships, and fishing vessels should have a 'fire insulation' to the satisfaction of, and be approved by, the Administration. In this context 'fire insulation' is the ability of the construction to insulate/protect an area from the influences of a fire in an adjoining area by having separating performance during fire. Such constructions are "A" class bulkheads and decks, "A" class doors, "B" class bulkheads, decks, ceilings and linings and "F" class doors.

The approval will be given by the Administration based on results of tests carried out on the construction and material in question. Tests should be conducted at a testing laboratory recognized by the Administration. The applicant for the test, i.e., the manufacturer or agent, should if required submit test specimens and information to the testing laboratory as prescribed in this document.

1.2 Approval of constructions will be restricted to the orientation in which they have been tested; therefore bulkheads, linings and doors should be tested vertically mounted and decks and ceilings should be tested horizontally mounted. It is only necessary to test

^① As defined in the International Convention for the Safety of Life at Sea, 1974, chapter II-2, part A and the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977, chapter V except that "F" class divisions are defined only in the latter Convention.

decks with the underside exposed to the heating conditions, and "B" and "F" class ceilings and linings are required only to be tested from the side incorporating the ceiling or the lining.

For "A" class bulkheads and doors for "general application", i. e. for use of the insulation material on either side of the structural core, and also for "B" class bulkheads and doors, approval usually requires that the construction has been tested from each side separately, using two separate specimens, unless the Administration considers that only a single test to one side, that being the side expected to provide a performance inferior to the other side, is appropriate.

In tests for "A" class bulkheads for "general application" is may be possible for approval to be granted on the basis of single test only, provided that the bulkhead has been tested in the most onerous manner which is considered to be with the insulation on the unexposed face and the stiffeners also on that side.

In tests for "A" class bulkheads for "restricted application", i. e. where the fire hazard has been identified as being from the insulated side only, the bulkhead can be tested with the insulation on the exposed face and with the stiffeners also on that side.

If approval of an "A" class bulkhead is being sought involving the use of "double-sided application" of the insulation, the thickness of the insulation being equal on both sides of the structural core, it should be tested with the stiffeners on the unexposed side of the bulkhead, otherwise it should be tested with the side with the thinnest thickness of insulation on the exposed face.

If insulation of an "A" class division is to be provided by membrane protection, i. e. by a "B" class ceiling to a structural steel core or a "B" class lining to a structural steel core, the distance

between the membrane, i. e. the ceiling or the lining, and the structural core should be the minimum for which approval is being sought. For "A" class bulkheads, the division is required to be tested both from the structural core side, and from the "B" class lining side. For both ceilings and linings which may form part of such deck or bulkhead constructions, they should satisfy at least B — 0 classification.

When the insulation of an "A" class division is provided by membrane protection, the stiffeners of the structural core should be positioned in the cavity between the steel plate of the structural core and the membrane protection. For an "A" class bulkhead the Administration may accept or require the stiffeners to be on the opposite side of the steel plate of the structural core to enable the distance between the membrane protection and the structural core to be reduced to a minimum.

1. 3 The dimensions of the structural cores of the test specimens given in section 2 are intended for structural cores of stiffened flat plates of steel or aluminium alloy. The Administration may require tests to be carried out on specimens having structural cores of materials other than steel or aluminium alloy if such materials are more representative of the construction to be used on board ships.

1. 4 "A" class divisions which consist of an uninsulated steel bulkhead or deck of suitable scantlings and without openings can be deemed to satisfy the requirements for class A — 0 divisions, i. e. to satisfy the requirements for the passage of smoke and flame, without the need for testing. All other divisions, including class A — 0 divisions with a structural core of aluminium, are required to be tested.

1. 5 Results obtained on an insulating material used in conjunction with an "A" class division may be applied to constructions incorpo-

rating heavier scantlings than those tested and providing the orientation of the construction is the same, i. e. results from bulkhead tests should not be applied to decks and vice versa.

1. 6 The construction to be tested should be, as far as possible, representative of that to be used on board ships, including the materials and method of assembly.

The design of the specimens proposed in this resolution are considered to reflect the worst case situations in order to provide maximum usefulness of the classifications to end use applications. However, the Administration may accept or request special test arrangements which provide additional information required for approval, especially of those types of constructions which do not utilize the conventional components of horizontal and vertical divisions, e. g where cabins may be of a modular type construction involving continuous connections between bulkheads, decks and ceilings.

1. 7 Constructions should be tested without paint or other superimposed finish, provided that where they are only produced with a superimposed finish, and subject to the agreement of the Administration, they may be tested as produced. Such constructions may be required to be tested with a superimposed finish if such a finish is considered by the Administration to have a detrimental effect on the performance of the construction in the test.

2 NATURE OF TEST SPECIMENS

2. 1 "A" class bulkheads

2. 1. 1 Dimensions

The minimum overall dimensions for the test specimen are

given in SOLAS regulation II-2/3.2, but the recommended dimensions of the test specimen, including the perimeter details at the top, bottom and vertical edges, are 2,440 mm width and 2,500 mm height.

The overall dimensions of the structural core should be 20 mm less in both the width and the height than the overall dimensions of the specimen, and the other dimensions of the structural core should be as follows:

- | | |
|-------------------------------|---|
| — thickness of plating; steel | 4.5 ± 0.5 mm |
| aluminium | 6.0 ± 0.5 mm |
| — stiffeners spaced ; steel | $65 \pm 5 \times 65 \pm 5 \times 6 \pm 1$ mm |
| at 600 mm aluminium | $100 \pm 5 \times 75 \pm 5 \times 9 \pm 1$ mm |

The width of the structural core may be greater than the specified dimensions providing that the additional width is in increments of 600 mm to maintain the stiffener centres and the relationship between the stiffeners and the perimeter detail.

Any joints in the plating should be full welded, at least from one side.

The construction of a structural steel core having the recommended dimensions is shown in figure 1; the thickness of the plating and dimensions of the stiffeners shown are nominal dimensions. Irrespective of the dimensions of the structural core and the material of manufacture, the details around the perimeter should be as illustrated in figure 3.

2.1.2 Design

Where insulation is provided by panels (e. g. a "B" class lining), then the test specimen should be designed such that at

least one of the panels is of full width and this, or these, should be positioned such that both its/their longitudinal edges are jointed to an adjacent panel and are not secured to the restraint frame. The overall dimensions of the panel insulation system, including the perimeter details at all the edges, should be 20 mm greater in each direction than the equivalent dimensions of the structural core.

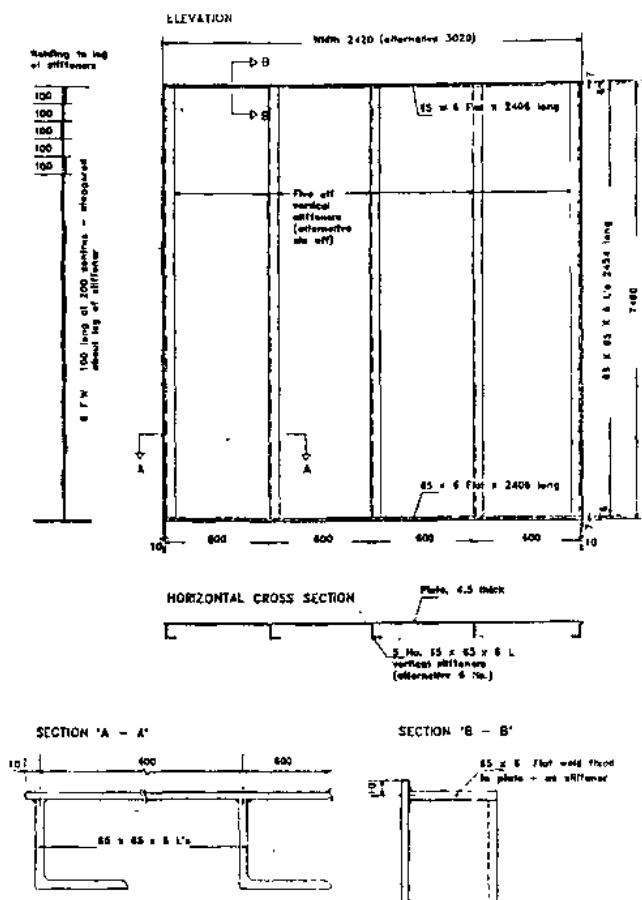


Fig. 1

If the insulation system is a lining which may incorporate electrical fittings, e. g. light fittings and/or ventilation units, it is necessary

ssary that initially a test is performed on a specimen of the lining itself, without the incorporation of these units, to establish the basic performance. A separate test(s) may be performed on a specimen(s) with the units incorporated to ascertain their influence on the performance of the lining.

2. 1. 3 Description

The applicant should provide full constructional details of the test specimen in the form of drawings (including a detailed schedule of components) and method of assembly, such that the laboratory is able to confirm agreement between the actual specimen and the drawings and specifications prior to the test. The drawings should include dimensions and details of the thicknesses of insulation used in way of the plating and the stiffeners, the method of securing the insulation system and details of the components used for this purpose, details of joints, connections, air gaps and all other details.

2. 2 "A" class decks

2. 2. 1 Dimensions

The minimum overall dimensions for the test specimen are given in SOLAS regulation II - 2/3. 2, but the recommended dimensions of the test specimen, including the perimeter details at all edges, are 2,440 mm width and 3,040 mm length.

The overall dimensions of the structural core should be 20 mm less in both the width and length than the overall dimensions of the specimen, and the other dimensions of the structural core should be as follows:

- thickness of plating: steel 4.5 ± 0.5 mm
 aluminium 6.0 ± 0.5 mm

- stiffeners spaced ; steel $100 \pm 5 \times 70 \pm 5 \times 8 \pm 1$ mm
at 600 mm aluminium $150 \pm 5 \times 100 \pm 5 \times 9 \pm 1$ mm

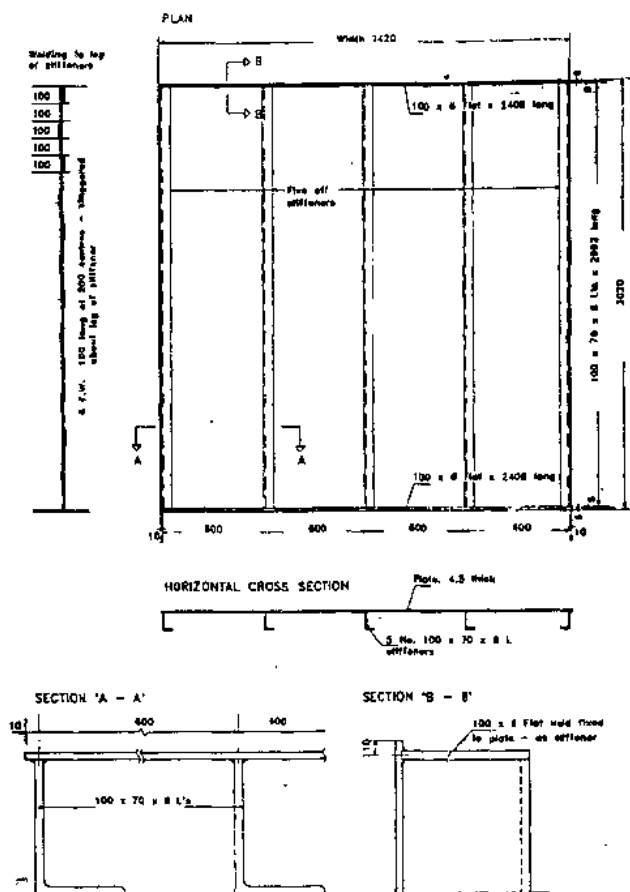


Fig. 2

The width of the structural core may be greater than the specified dimensions providing that the additional width is in increments of 600 mm to maintain the stiffener centres and the relationship between the stiffeners and the perimeter detail.

Any joints in the plating should be full welded, at least from one side.

The construction of a structural steel core having the recommended dimensions is shown in figure 2; the thickness of the plating and dimensions of the stiffeners shown are nominal dimensions. Irrespective of the dimensions of the structural core and the material of manufacture, the details around the perimeter should be as illustrated in figure 3.

2.2.2 Design

Where insulation is provided by panels (e. g. a "B" class ceiling), then the test specimen should be designed such that at least one of the panels is of full width and this, or these, should be positioned such that both its/their longitudinal edges are jointed to an adjacent panel and are not secured to the restraint frame. The perimeter details at all the edges, should be 20 mm greater in each direction than the equivalent dimensions of the structural core.

If the ceiling incorporates panels, the specimen should include examples of both the lateral and longitudinal joints between the panels. If the specimen is to simulate a ceiling where the maximum length of the panels is greater than the length of the specimen, then a joint should be positioned at a distance of approximately 600 mm from one of the shorter ends of the test specimen.

If the insulation system is a ceiling which may incorporate electrical fittings, e. g. light fittings and/or ventilation units, it is necessary that initially a test is performed on a specimen of the ceiling itself, without the incorporation of these units, to establish the basic performance. a separate test(s) may be performed on a specimen(s) with the units incorporated to ascertain their influence on