

ANNEX 28

**RESOLUTION MSC.45(65)
(adopted on 11 May 1995)**

TEST PROCEDURES FOR FIRE-RESISTING DIVISIONS OF HIGH SPEED CRAFT

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO that the Recommendation on Fire Test Procedures for "A", "B" and "F" Class Divisions, adopted by resolution A.754(18) should be applied to fire tests referred to under the relevant provisions of the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, and the Torremolinos Protocol of 1993 relating to the Torremolinos International Convention for the Safety of Fishing Vessels, 1977,

NOTING that, by resolution MSC.36(63), it adopted the International Code of Safety for High Speed Craft (HSC Code),

NOTING FURTHER that the Conference of Contracting Governments to the 1974 SOLAS Convention adopted on 24 May 1994 amendments to the Convention which, *inter alia*, include chapter X on Safety measures for high speed craft, to make the provisions of the HSC Code mandatory under that Convention for such craft constructed on or after 1 January 1996,

RECOGNIZING the need for high speed craft to be constructed with materials possessing fire-resisting properties,

RECOGNIZING ALSO that the HSC Code contains a definition of the fire-resisting division which needs related test procedures,

HAVING CONSIDERED the recommendations made by the Sub-Committee on Fire Protection at its thirty-ninth session and the Sub-Committee on Ship Design and Equipment at its thirty-eighth session,

1. ADOPTS the Test Procedures for Fire-Resisting Divisions of High Speed Craft set out in the Annex to the present resolution;
2. INVITES Governments to apply the Test Procedures when approving fire resisting properties of the constructions for use in high speed craft;
3. AGREES to keep the Test Procedures under review and to amend them as necessary.

ANNEX

TEST PROCEDURES FOR FIRE-RESISTING DIVISIONS OF HIGH SPEED CRAFT

1 GENERAL

1.1 Under the provisions of the International Code of Safety for High Speed Craft (HSC Code) (resolution MSC.36(63)), constructions for use in craft should have fire-resisting properties to the satisfaction of, and be approved by, the Administration. In this context "fire-resisting property" is the ability of the construction to insulate/protect an area from the influence of a fire in an adjoining area by having separating performance during a fire. Such constructions are fire-resisting bulkheads, decks, ceilings, linings and doors.

1.1.1 Fire-resisting divisions for moderate fire hazard are classified as "fire-resisting divisions 30".

1.1.2 Fire-resisting divisions for major fire hazard are classified as "fire-resisting divisions 60".

1.2 The classification should be expressed in the form of, for example, "Load bearing fire-resisting deck 60" and "Non-load bearing fire-resisting bulkhead 30", i.e. including the qualification on orientation of the division together with a statement if the division in question is evaluated as load bearing or as non-load bearing.

1.3 Testing of fire-resisting divisions and reporting should generally be in accordance with the requirements given in resolution A.754(18). Where additional interpretation, adaption and/or supplementary requirements may be necessary, these are detailed in this resolution.

1.4 The test should continue for a minimum of 30 min for fire-resisting divisions 30, or 60 min for fire-resisting divisions 60, or for an intermediate fire protection time when allowed in accordance with paragraph 7.4.1.1 of the HSC Code.

1.5 The following performance criteria for insulation and integrity should be fulfilled within the classification period (see 1.4):

.1 Insulation

.1.1 the average unexposed face temperature rise should not be more than 140°C, and the temperature rise recorded by any of the individual unexposed face thermocouple should not be more than 180°C; and

.2 Integrity

.2.1 there should be no flaming on the unexposed face;

.2.2 there should be no ignition, i.e. flaming or glowing, of the cotton wool pad; and

.2.3 it should not be possible to enter the gap gauges into any opening in the specimen.

1.6 In this resolution, testing of fire-resisting divisions is described in three separate parts:

- non-load bearing fire-resisting divisions;
- load bearing fire-resisting divisions having a structural metal core as presupposed in resolution A.754(18) for "a" class divisions; and
- other load bearing fire-resisting divisions.

2 NON-LOAD BEARING FIRE-RESISTING DIVISIONS

The approach adopted for testing of fire-resisting divisions which are non-load bearing should follow the requirements for testing "B" class divisions in resolution A.754(18) where relevant and appropriate.

3 LOAD BEARING FIRE-RESISTING DIVISIONS HAVING A STRUCTURAL METAL CORE AS PRESUPPOSED IN RESOLUTION A.754 (18) FOR "A" CLASS DIVISIONS

3.1 The approach adopted for testing of load-bearing fire-resisting divisions having a structural metal core (steel or aluminium) should follow the requirements for testing "A" class divisions in resolution A.754(18) where relevant and appropriate.

3.2 If the structural core is of aluminium, the average temperature of the structural core should not rise more than 200°C above its initial temperature at any time within the classification period (see 1.4).

4 OTHER LOAD BEARING FIRE-RESISTING DIVISIONS

4.1 The approach adopted for testing of other load bearing fire-resisting divisions should follow the requirements for testing "B" class divisions in resolution A.754(18) where relevant and appropriate.

4.2 In addition, such load bearing divisions should be tested with the prescribed static load and they should maintain their load bearing ability within the classification period (see 1.4).

4.3 NATURE OF TEST SPECIMEN

4.3.1 The construction, erection and stiffening of the test specimen should be typical of the use in practice.

4.3.2 For vertical divisions (bulkheads), the minimum overall dimensions for the exposed part of the test specimen are 2,440 mm width and 2,500 mm height, or full height if the height is smaller.

4.3.3 For horizontal divisions (decks), the minimum overall dimensions for the exposed part of the test specimen are 2,440 mm width and 3,040 mm length (span), or full length if the length is smaller.

4.4 MOUNTING OF TEST SPECIMENS

4.4.1 A vertical test specimen should be simply supported at the top and the bottom and should not be supported along its vertical edges.

4.4.2 A horizontal test specimen should be simply supported at the two ends and should not be supported along its edges parallel to the span.

4.5 STATIC LOAD

4.5.1 The following levels of loading should be applied uniformly, as far as practicable, along the top edge of the vertical specimen or surface of the horizontal specimen:

- bulkheads: 7.0 kN/m of the width,
- decks: 3.5 kN/m² of the area.

The load may be applied hydraulically, mechanically or by the use of weights.

4.5.2 The loading equipment should be able to simulate the conditions of loading, as appropriate, for the test construction. The loading equipment should also be capable of maintaining the test load at a constant value (to within $\pm 5\%$ of the required value) without changing its distribution for the duration of the load-bearing capacity period; it should not significantly influence the heat transfer through the specimen nor impede the use of the thermocouple insulating pads; it should not interfere with the measurement of surface temperature and/or deformation and should permit general observation of the unexposed face.

4.5.3 The total area of the contact points between the loading equipment and the test specimen surface should not exceed 10% of the total area of the surface of a horizontal test specimen. The equipment should be capable of following the maximum deformation and the rate of deformation of the test specimen.

4.5.4 The test load should be applied at least 15 min before the commencement of the heating period.

4.6 DEFORMATION

4.6.1 Deformation measurements should be made using equipment employing mechanical, optical or electrical techniques. Instrumentation for the measurement of deflection of the test specimen should be located so as to provide data in terms of the amount and rate of deflection during the fire test.

4.6.2 The deformation data should be recorded to an accuracy of ± 2 mm during the testing period.

4.6.3 For a bulkhead, measurement should be made of the axial contraction and of the horizontal deflection.

4.6.4 For a deck, measurement should be made of the vertical deflection.

4.7 PERFORMANCE CRITERIA FOR LOAD BEARING ABILITY

The test specimen should be deemed to have failed if it is no longer able to support the test load. Support of the test load is determined by both the amount and the rate of deflection. Since relatively rapid deflections can occur until stable conditions are reached, the rate of deflection criteria of decks is not applied until a deflection of $L/30$ has been exceeded. For the purposes of this resolution, the following criteria apply:

.1 Bulkheads

1.1 limiting axial contraction of $h/100$ m; and

1.2 limiting rate of axial contraction of $3 h/1000$ mm/min,

where:

h = the initial height (mm), and

.2 Decks

.2.1 Limiting deflecting of $L^2/400 d$ mm; and

.2.2 Limiting rate of deflection of $L^2/9000 d$ mm/min,

where:

L = the clear span of the specimen (mm)

d = the distance from the extreme fibre of the design compression zone to the extreme fibre of the design tension zone of the structural section (mm).
