

**ANNEX 12**

**RESOLUTION MSC.226(82)**

**(adopted on 8 December 2006)**

**ADOPTION OF AMENDMENTS TO THE REVISED RECOMMENDATION  
ON TESTING OF LIFE-SAVING APPLIANCES, AS AMENDED**

THE MARITIME SAFETY COMMITTEE,

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

RECALLING ALSO resolution A.689(17) on Testing of life-saving appliances, by which the Assembly, at its seventeenth session, adopted the Recommendation on testing of life-saving appliances,

RECALLING FURTHER that the Assembly, when adopting resolution A.689(17), authorized the Committee to keep the Recommendation on testing of life-saving appliances under review and to adopt, when appropriate, amendments thereto,

NOTING resolution MSC.81(70), by which, at its seventieth session, it adopted the Revised recommendation on testing of life-saving appliances, recognizing the need to introduce more precise provisions for the testing of life-saving appliances based on the requirements of the International Life-Saving Appliances (LSA) Code,

BEING DESIROUS to appropriately address inconsistencies which have been identified between the LSA Code and the Revised recommendation on testing of life-saving appliances,

HAVING CONSIDERED, at its eighty-second session, amendments to the Revised recommendation on testing of life-saving appliances, prepared by the Sub-Committee on Fire Protection, at its fiftieth session,

1. ADOPTS amendments to the Revised recommendation on testing of life-saving appliances, as amended, the text of which is set out in the Annex to the present resolution;
2. RECOMMENDS Governments to apply the annexed amendments when testing life-saving appliances;
3. DETERMINES that the above-said amendments should become effective on 1 July 2008.

## ANNEX

### AMENDMENTS TO THE REVISED RECOMMENDATION ON TESTING OF LIFE-SAVING APPLIANCES, AS AMENDED

#### INTRODUCTION

- 1 In the paragraph, change the year “1999” by “2010”.

#### PART 1 PROTOTYPE TESTS FOR LIFE-SAVING APPLIANCES

##### 1 LIFEBUOYS

- 2 Paragraph 1.3 is replaced by the following:

##### “1.3 Drop test

Each lifebuoy should be suspended from its upper edge via a release device so that the lower edge of the lifebuoy is at the height at which it is intended to be stowed on ships in their lightest seagoing condition, or 30 m, whichever is the greater, and dropped into the water without suffering damage. In addition, one lifebuoy should be suspended from its upper edge via a release device so that the lower edge of the lifebuoy is at a height of 2 m, and dropped three times onto a concrete floor, without suffering damage.”

##### 2 LIFEJACKETS

- 3 The following words are added at the end of paragraph 2.10.1.1:

“Each lifejacket should then be subjected to the tests in paragraphs 2.2, 2.3 and 2.5. A lifejacket that has been inflated automatically with one compartment uninflated should be subjected to the test in paragraph 2.2 and the test repeated until each compartment has been tested in the uninflated condition. For the fire test in paragraph 2.3, one lifejacket should be inflated and one uninflated.”

- 4 In paragraph 2.10.4.6.2, the term “1°” is replaced by the term “5°”.

- 5 In paragraph 2.10.4.7.2, the word “sprays” is replaced by the words “spray nozzles”; and the words “a pressure of 0.3 kPa – 0.4 kPa,” are deleted.

##### 3 IMMERSION SUITS, ANTI-EXPOSURE SUITS AND THERMAL PROTECTIVE AIDS

- 6 In paragraph 3.1.3, in the second sentence, the words “inflate any orally inflated chambers if fitted, and don” are inserted between the words “clothing,” and “and a lifejacket”; and the word “and” before the words “a lifejacket” is deleted.

- 7 In paragraph 3.1.4, in the first sentence, the words “a reasonable time” are replaced by “5 min”.

8 In paragraph 3.1.7, the following new sentence is inserted between the existing first and second sentences:

“For a buoyant insulated immersion suit worn without a lifejacket, an auxiliary means of buoyancy such as an orally inflated bladder behind the wearer’s head may be used to obtain this freeboard, provided that the freeboard obtained without the auxiliary means of buoyancy is at least 50 mm.”

9 In paragraph 3.3.2, the word “conductivity” is replaced by the word “conductance”; and the term “0.25 W/(m K)” is replaced by the term “7,800 W/(m<sup>2</sup> K)”.

#### **4 PYROTECHNICS – ROCKET PARACHUTE FLARES, HAND FLARES AND BUOYANT SMOKE SIGNALS**

10 In paragraphs 4.2.2 and 4.2.3, the words “at that temperature” are replaced by the words “immediately upon removal from the cold chamber” and “immediately upon removal from the hot chamber” respectively.

11 Paragraph 4.6.2 is replaced by the following:

“4.6.2 Laboratory testing of the flare material should establish that it will burn uniformly with an average luminous intensity of not less than 30,000 cd and that the colour of the flame is a vivid red with CIE co-ordinates  $x = 0.61$  to  $0.69$  and  $y = 0.3$  to  $0.39$ , or computed from these co-ordinates: a wavelength of  $608 \pm 11$  nm.”

12 Paragraph 4.7.2 is replaced by the following:

“4.7.2 Laboratory testing of the flare material should establish that it will burn with an average luminous intensity of at least 15,000 cd and that the colour of the flame is vivid red with CIE co-ordinates  $x = 0.61$  to  $0.69$  and  $y = 0.3$  to  $0.39$ , or computed from these co-ordinates: a wavelength of  $608 \pm 11$  nm.”

13 Paragraph 4.8.3 is replaced by the following and the existing footnote is deleted:

“4.8.3 The smoke density and colour of the smoke signal should be determined by laboratory testing conducted at a water temperature of +20°C to +25°C as follows:

- .1 The smoke should be blown through an apparatus consisting of a 190 mm diameter duct with a fan capable of producing an entrance air flow of 18.4 m<sup>3</sup>/min. By means of a light source with at least 10 cd on one side of the tunnel and a photoelectric cell on the other side the density of the passing smoke should be recorded. If the photocell picks up the total emitted light from the light source, then the smoke density is zero percent which means that no smoke is passing through the tunnel. The smoke density is then considered to be 100% when the photocell is not able to pick up any light of the light source through the passing smoke in the tunnel. From the amount of light which the photocell is able to pick up the smoke density should be calculated. Before each measurement, the light intensity of the 100% value should be checked. Each measurement should be recorded.

- .2 The colour of the orange smoke should be evaluated by means of visual comparison, in daylight, to a colour comparison chart containing the range of acceptable orange colours. The colour comparison chart should have a gloss or matte finish, and consist of a series of at least five orange colour chips, covering the range from reddish orange (Munsell notation 8.75 YR 6/14) to yellowish orange (Munsell notation 5 YR MAX) in gradual steps of hue, chroma, and lightness. The colour chips should be secured adjacent to one another, in order of progression from reddish orange to yellowish orange, and extend on at least one side to the edge of the chart. Each colour chip should be at least 50 mm x 100 mm in size.

**Note:** A typical acceptable progression would be 8.75 YR 6/14; 10 R 6/14; 1.25 YR 6/14; 3.75 YR MAX; 5 YR MAX.

**Note:** ASTM D1535-97 specifies a method to convert between Munsell notation and CIE co-ordinates.”

## **5 LIFERAFTS – RIGID AND INFLATABLE**

- 14 In paragraph 5.12, the third sentence is replaced by the following:

“The accumulation of water inside the liferaft should not exceed 4 l.”

- 15 Paragraph 5.17.8 is replaced by the following:

“5.17.8 The measurement of pressure drop due to leakage can be started when it has been assumed that compartment material has completed stretching due to the inflation pressure and achieved equilibrium.”

- 16 In paragraph 5.17.13.2.2.10.1, the words “100 g weight should not be lifted” are replaced by the words “fabric should exhibit no blocking”.

- 17 In paragraph 5.17.13.2.2.10.2, the words “the temperature of test should be 70°± 2°C and” are deleted.

## **6 LIFEBOATS**

- 18 In paragraph 6.4.3, the words “remainder of the” are inserted between the words “The” and “weights” in the second sentence; and the following new sentence is inserted between the existing first and second sentences:

“Included in this loading should be a weight of 100 kg loaded in one of each type of seat installed in the lifeboat.”

- 19 Paragraph 6.8.2 is replaced by the following:

“6.8.2 Weights representing persons who would be in the water when the lifeboat is flooded (water level more than 500 mm above the seat pan) may be omitted. Weights representing persons who would not be in the water when the lifeboat is flooded (water level less than 500 mm above seat pan) should be placed in the normal seating positions

of such persons with their centre of gravity approximately 300 mm above the seat pan. Weights representing persons who would be partly submerged in the water when the lifeboat is flooded (water level between 0 and 500 mm above the seat pan) should additionally have an approximate density of 1 kg/dm<sup>3</sup> (for example water ballast containers) to represent a volume similar to a human body.”

20 Subparagraph .1 of paragraph 6.9.4 is replaced by the following:

“.1 a force equal to 25% of the safe working load of the hook should be applied to the hook in the lengthwise direction of the boat at an angle of 45° to the vertical. This test should be conducted in the aftward as well as the forward direction;”

21 Subparagraph .3 of paragraph 6.9.4 is replaced by the following:

“.3 a force equal to the safe working load of the hook should be applied to the hook in a direction half-way between the positions of tests 1 and 2 (i.e. 45° to the longitudinal axis of the boat in plan view) at an angle of 33° to the vertical. This test should be conducted in four positions.

There should be no damage to the hook as a result of this test, and in the case of a waterborne test, there should be no damage to the lifeboat or its equipment.”

22 Paragraph 6.10.1 is replaced by the following:

“6.10.1 The lifeboat should be loaded with weights equal to the mass of its equipment and the number of persons for which the lifeboat is to be approved. The engine should be started and the lifeboat manoeuvred for a period of at least 4 h to demonstrate satisfactory operation. The lifeboat should be run at a speed of not less than 6 knots for a period which is sufficient to ascertain the fuel consumption and to establish that the fuel tank has the required capacity. The maximum towing force of the lifeboat should be determined. This information should be used to determine the largest fully loaded liferaft the lifeboat can tow at 2 knots. The fitting designated for towing other craft should be secured to a stationary object by a tow rope. The engine should be operated ahead at full speed for a period of at least 2 min, and the towing force measured and recorded. There should be no damage to the towing fitting or its supporting structure. The maximum towing force of the lifeboat should be recorded on the type approval certificate.”

23 Paragraph 6.15 is replaced by the following:

**“6.15 Air supply test for lifeboats with a self-contained air support system**

All entrances and openings of the lifeboat should be closed, and the air supply to the inside of the lifeboat turned on to the design air pressure. The engine should then be run at revolutions necessary to achieve full speed with the fully loaded boat including all persons and with the sprinkler system in use for a period of 5 min, stopped for 30 s, then restarted for a total running time of 10 min. During this time the atmospheric pressure within the enclosure should be continuously monitored to ascertain that a small positive air pressure is maintained within the lifeboat and to confirm that noxious gases cannot enter. The internal air pressure should never fall below the outside atmospheric pressure, nor should it exceed outside atmospheric pressure by more than 20 hPa during the test. It

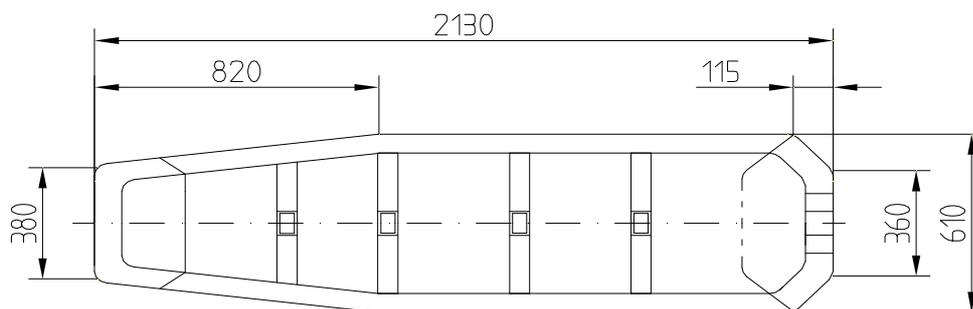
should be ascertained, by starting the engine with air supply turned off, that when the air supply is depleted, automatic means are activated to prevent a dangerous underpressure of more than 20 hPa being developed within the lifeboat.”

## 7 RESCUE BOATS AND FAST RESCUE BOATS

24 Paragraph 7.1.2 is replaced by the following:

“7.1.2 The maximum towing force of the rescue boat should be determined. This information should be used to determine the largest fully loaded liferaft the rescue boat can tow at two knots. The fitting designated for towing other craft should be secured to a stationary object by a tow rope. The engine should be operated ahead at full speed for a period of at least 2 min, and the towing force measured and recorded. There should be no damage to the towing fitting or its supporting structure. The maximum towing force of the rescue boat should be recorded on the type approval certificate.”

25 In paragraph 7.1.3, in the second sentence, the words “on a stretcher of similar dimensions to those shown in figure 4” are inserted between the words “lie down” and “and the others” and the following figure is inserted after the paragraph:



**Figure 4 – Stretcher dimensions (mm)**

26 In paragraph 7.1.7, the word “rigid” in the first sentence is deleted and the following text is added at the end of the paragraph:

“In the case of fast rescue boats which are not self-righting, the engine should be running in neutral position and, after stopping automatically or by the helmsman’s emergency release switch when inverted, it should be easily restarted and run for 30 min after the rescue boat has returned to the upright position. For rescue boats with inboard engines, the test without engine and fuel is not applicable.”

27 In the chapeau of paragraph 7.2.14, the words “to the satisfaction of the Administration” are replaced by the following:

“and comply with the requirements of an international standard acceptable to the Organization\*.”

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\* Refer to the recommendations of the International Organization for Standardization, in particular publication ISO 15372 *Ships and marine technology – Inflatable rescue boats – Coated fabrics for inflatable chambers*.

28 The following text is added at the end of paragraph 7.4.1:

“In the case of open fast rescue boats, the self-righting test should only be done in the light condition, and 6.14.1.1, 6.14.3, 6.14.4, and 6.14.5 are not applicable. With regard to 6.14.2, a boat fitted with a helmsman’s emergency release switch should be considered to be arranged to stop automatically when inverted.”

29 The following new paragraph 7.7.11 is added after existing paragraph 7.7.10:

*“Engine inversion test (for engines destined for fast rescue boats only)”*

7.7.11 The engine and its fuel tank should be mounted on a frame that is arranged to rotate about an axis equivalent to the longitudinal axis of the boat at the height of the boat transom. The propeller should be in a water basin to the height of the cavitation plate. The engine should then be subjected to the test procedure specified in paragraphs 6.14.7.1 through 6.14.7.13, and then dismantled for examination. With regard to 6.14.7.9, the engine should be stopped automatically or by the helmsman’s emergency release switch when inverted. During these tests, the engine should not overheat or fail to operate or leak more than 250 ml of oil during any one inversion. When examined after being dismantled the engine, should show no evidence of overheating or excessive wear.”

## **8 LAUNCHING AND EMBARKATION APPLIANCES**

30 In paragraph 8.1.1, the following new sentence is inserted between the existing fifth and sixth sentences:

“The launching ramp and its connection to the release mechanism should be subjected to a static proof load of 2.2 times the maximum working load.”

## **10 POSITION-INDICATING LIGHTS FOR LIFE-SAVING APPLIANCES**

31 In the first sentence of paragraph 10.1.2, the word “sea-activated” is replaced by the words “seawater cell”.

32 In the first sentence of paragraph 10.1.3, the word “dry-activated” is replaced by the words “dry cell” and the last sentence is replaced by the following:

“The interior lights should provide an arithmetic mean luminous intensity of not less than 0.5 cd when measured over the entire upper hemisphere to permit reading of survival instructions and equipment instructions for a period of not less than 12 h.”

33 Paragraph 10.3.3 is replaced by the following:

“10.3.3 One light attached to a lifejacket should be subjected to a drop test from 4.5 m as prescribed in 2.8.8. The light should not suffer damage, should not be dislodged from the lifejacket and should be switched on and seen to be illuminated and conspicuous whilst the test subject is still in the water.”

34 In paragraph 10.4.7, the words “IEC 945: 3rd edition (Nov.1996)” are replaced by the words “IEC 60945:2002” in the two places they appear.

## **11 HYDROSTATIC RELEASE UNITS**

35 The following new subparagraph .6 is added after paragraph 11.2.5:

### *“.6 Solar radiation test*

One unit should be subjected to a solar radiation test to paragraph 8.10 of IEC 60945:2002.

**Note:** The solar radiation test may be waived where the manufacturer is able to produce evidence that the materials employed will satisfy the test, i.e., UV stabilized.”

## **PART 2 PRODUCTION AND INSTALLATION TESTS**

### **5 SURVIVAL CRAFT**

36 The following new paragraph 5.3.4 is added after existing paragraph 5.3.3:

“5.3.4 The connection of each release gear which is fixed to the boat should be subjected to a load equal to the weight of the boat with its full complement of persons and equipment (or two times the weight of the boat in the case of single fall systems). There should be no damage to the release gear or its connection to the boat.”

### **6 LAUNCHING AND STOWAGE ARRANGEMENTS**

37 In paragraph 6.1.1, the following new sentence is inserted between the existing first and second sentences:

“For a free-fall lifeboat launching appliance, each launching ramp and its connection to the release mechanism should be tested with a static load of 2.2 times the working load.”

38 The heading “Installation tests” is inserted after paragraph 6.1.1.

39 The last sentence of paragraph 6.1.3 is replaced by the following:

“A person should then board the survival craft or rescue boat and perform a test of the launching operation from within the boat.”

**APPENDIX 1**  
**ADULT REFERENCE TEST DEVICE (RTD) DESIGN AND CONSTRUCTION**

40 In paragraph 2.1.3, the figure “155.6” is replaced by the figure “149”.

41 In the appendix of Appendix 1, in the second row of table 1, the figures “103.5”, “46.5” and “150” are replaced by the figures “103”, “46” and “149” respectively.

42 In the appendix of Appendix 1, in the second row of table 2, the figures “17.75”, “51.75” and “18.5” are replaced by the figures “17.5”, “51.5” and “18” respectively, in all places they appear.

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