GUIDANCE FOR THE APPROVAL AND TYPE APPROVAL OF MATERIALS AND EQUIPMENT FOR MARINE USE

Guidance for the Approval and Type Approval of Materials and Equipment for Marine Use 2010 AMENDMENT NO.1

Notice No.53 15th April 2010
Resolved by Technical Committee on 5th February 2010

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NIPPON KAIJI KYOKAI

Notice No.53 15th April 2010
AMENDMENT TO THE GUIDANCE FOR THE APPROVAL AND TYPE APPROVAL OF MATERIALS AND EQUIPMNET FOR MARINE USE

"Guidance for the approval and type approval of materials and equipment for marine use" has been partly amended as follows:

Amendment 1-1

Part 1 METALLIC MATERIALS

Chapter 1 APPROVAL OF MANUFACTURING PROCESS OF ROLLED STEELS

1.4 Approval Test

1.4.3 Details of Test

Sub-paragraph -1 has been amended as follows.

1 Approval tests for each of rolled steels are to be performed for each test item indicated with a ○ mark in **Table 1.1-2** and the test procedure and judgement standard are to be accordance with **Table 1.1-3**. However, when deemed necessary by the Society, Society may request the increase of test piece, addition of test item (except the test item indicated in **Table 1.1-2** which is included the test related to hot workability, fatigue test, weld cracking test, CTOD tests of welded joints etc.) and submission of proper technical information.

Table 1.1-2 has been amended as follows.

Table 1.1-2 Approval Test Items for Rolled Steels

Rolled steels			Kind of test (See Note[(1)])																					
			(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)	(v)
Rolled steels for hull	*KA*		○	○			○	○		○	○		○											○
	KB		○	○			○	○		○	○		○	○										○
	KD		○	○			○	○		○	○		○	○										○
	KE		○	○			○	○		○	○		○	○		○	○	○	○	○	○			○
	*KA*32, *KA*36, *KA*40		○	○			○	○		○	○		○	○				⊖	○	○	○			○
	*KD*32, *KD*36, *KD*40		○	○			○	○		○	○		○	○				⊖	○	○	○			○
	*KE*32, *KE*36, *KE*40		○	○			○	○		○	○		○	○		○	○	○	○	○	○			○
	*KF*32, *KF*36, *KF*40		○	○			○	○		○	○		○	○		○	○	○	○	○	○			○
Rolled steels for boilers	*KP*42 ~ *KPA*56		○	○			○	○		○	○		○								○			○
Rolled steels for pressure vessels	*KPV*24~*KPV*50		○	○			○	○		○	○		○	○				○			○			○
Rolled steels for low temperature service	*KL*24*A*~*KL*9*N*60		○	○			○	○		○	○		○	○			○	○	○	○	○			○
Rolled stainless steels	*KSUS*304~*KSUS*347		○	○			○	○		○	○		○									○		○
Round bars for chains	*KSBC*31~*KSBC*70		○	○			○	○		○	○		○								○			○
	*KSBCR*3, *KSBCR*3*S*, *KSBCR*4, *KSBCR*4*S*, *KSBCR*5		○	○			○	○		○	○		○	○	○	○	○				○		○	○
Rolled steel bars for boiler	*KPS*42*B*~*KPS*46*B*		○	○			○	○		○	○		○											○
Rolled carbon steel bars	*KSFR*41~*KSFR*78		○	○			○	○		○	○		○											○
Rolled low alloy steel bars	*KSFAR*60~*KSFAR*110		○	○			○	○		○	○		○											○
Quenched and tempered HT steels	*KA*420~*KF*690*N*		○	○			○	○		○	○		○	○		○	○	○	○	○	○			○
Stainless clad steels	Base metal	*KA*~*KF*40																						
	Cladding metal	*KSUS*304~*KSUS*347	○	○	○	○	○	○	○	○	○	○	○									○	○	○

Note :

(1) Kind of Test

Base metal test

(a) Chemical analysis
(b) Sulphur print
(c) Macro-structure
(d) Micro-structure
(e) Austenite grain size
(f) Ferrite grain size
(g) Hardness test
(h) Tensile test
(i) Bend test
(j) Shearing strength test
(k) Charpy impact test
(l) Strain aging Charpy impact test
(m) Hydrogen embrittlement test

Brittle fracture test
(n) *CTOD* test (Crack Tip Opening Displacement test)
(o) Large scale brittle fracture test
(p) *NRL* drop weight test
Weldability test
(q) Butt welding tensile test
(r) Butt welding impact test
(s) Welding hardness test
Corrosion resistance test
(t) Corrosion test
Non-destructive test
(u) Ultrasonic test
Dimensional measurement
(v) Dimensional measurement

(2) Approval test items for semi-finished products are to be chemical analysis, sulphur print and macro-structure.

(3) For the rolled steel which is applied *TMCP* heat treatment may be requested *SR* tensile test in addition to those tests given in the table.

(4) For steel materials with through thickness properties as specified in **3.11**, **Part K of the Rules**, the thickness directional tensile test, microscope examination for non-metallic inclusions, ultrasonic test are required in addition to those tests given in the table.

(5) For steel materials with brittle crack arrest properties as specified in **3.12**, **Part K of the Rules**, temperature gradient *ESSO* tests or double tension tests are required.

(6) For kind of product other than steel plates, the strain aging Charpy impact test, *NRL* drop weight test, *CTOD* test and large scale brittle fracture test are not required, unless otherwise specified. However, where cast piece from the continuous casting method is used, each test item of the macro-structure of the cast piece and its sulpher print may need to be added.

(7) The *CTOD* test, the strain aging Charpy impact test are required by the Table for round of offshore chains, these tests may be omitted in case appropriate records prepared by the manufacture are available. In this case, such records and documents on heat treatment sensitivity, resistant to strain aging, temper embrittlement are to be submitted to the Society.

(8) The *CTOD* test and large scale brittle fracture test are, in principle, to be conducted in cases where thickness is more than 50*mm*.

(~~8~~9) The *CTOD* test and large scale brittle fracture test (double tension test, *ESSO* test, deep notch test etc.) as specified in the table are performed for the purpose of evaluating low temperature toughness, and these tests may be omitted in case appropriate records prepared by the manufacturer are available or in case the Society deems the tests unnecessary.

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 15 April 2010.

2. Notwithstanding the amendments to the Guidance, the current requirements may apply to materials other than those for which the application for approval of manufacturing process is submitted to the Society on or after the effective date.

Amendment 1-2

Part 4 NON-METALLIC MATERIALS AND COATING MATERIALS FOR HULL

Chapter 1 APPROVAL OF FIRE PROTECTION MATERIALS

1.13 Test Procedures

Paragraph 1.13.3 has been amended as follows.

1.13.3 Test for "*A*" and "*B*" Class Divisions

Test procedures of the test for "*A*" and "*B*" class divisions are in accordance with the requirements of Part 3 (except Appendix 2), Annex 1 of *FTP* Code. However, the approval of fire doors of marginally larger dimensions than the standard specimen size (2,440*mm* width and 2,500*mm* height) specified in Part 3, Annex 1 of the *FTP* Code is to be in accordance with *MSC*.1/*Circ*.1319 "*Recommendation for the Evaluation of Fire Performance and Approval of Large Fire Doors*" and IACS Unified Interpretation FTP3.

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 15 April 2010.

2. Notwithstanding the amendments to the Guidance, the current requirements may apply to fire door other than those for which the application for approval is submitted to the Society on or after the effective date.

Amendment 1-3

Part 4 NON-METALLIC MATERIALS AND COATING MATERIALS FOR HULL

Chapter 4 APPROVAL OF COATING SYSTEM

4.4 Approval Test

Paragraph 4.4.2 has been amended as follows.

4.4.2 Test Procedure and Acceptance Criteria

1 The coating system is to be in accordance with the following requirements. Epoxy based systems tested prior to 1 July 2008 need satisfy only the criteria for blistering and rust from the following requirements. Where deemed appropriate by the Society, these requirements may be omitted.

(1) For protective coatings for dedicated seawater ballast tanks, **Annex 4.1** and **Annex 4.2** apply.

(2) For protective coatings for double-side spaces of bulk carriers of 150*m* in length and upwards other than dedicated seawater ballast tanks, **Annex 4.2** applies.

2 The Society may accept an equivalent test as a substitute for the tests specified in **-1** subject to Administration acceptance. Any equivalent test is to be in accordance with the following:

(1) The test procedure is to be based on recognized international or national standards, well established with proven experience.

(2) The test procedure is to adequately address the technical intent of the tests required in **Annex 4.1** or **Annex 4.2**.

(3) Test results are, wherever possible, to be compared against the acceptance criteria of **Annex 4.1** or **Annex 4.2**. In cases where this is not possible due to the parameters of the equivalent test used, the acceptance criteria of the equivalent test are to be selected so that they provide the closest equivalent to those in **Annex 4.1** or **Annex 4.2**.

(4) Epoxy based systems approved by such an equivalent test are to be applied in accordance with all of the surface preparation and application requirements specified in *"PERFORMANCE STANDARD FOR PROTECTIVE COATINGS FOR DEDICATED SEAWATER BALLAST TANKS IN ALL TYPE OF SHIPS AND DOUBLE-SIDE SKIN SPACES OF BULK CARRIERS"* (*IMO Performance Standard for Protective Coatings / IMO* resolution *MSC*.215(82) as may be amended).

EFFECTIVE DATE AND APPLICATION (Amendment 1-3)

1. The effective date of the amendments is 15 April 2010.

2. Notwithstanding the amendments to the Guidance, the current requirements may apply to coating system other than those for which the application for approval is submitted to the Society on or after the effective date.

Amendment 1-4

Part 2 EQUIPMENT

Chapter 3 APPROVAL OF MANUFACTURING PROCESS OF CHAIN ACCESSORIES

3.4 Approval Test

Paragraph 3.4.3 has been amended as follows.

3.4.3 Omission of Approval Test

(1) (omitted)
(2) (omitted)
(3) (omitted)
(4) When the test for ~~anchor shackle~~ end shackle has been passed, the approval test for manufacturing process of the connecting shackle of the same diameter thereof or less may be omitted.
(5) When the test either for connecting shackle of ~~anchor shackle~~ end shackle has been passed, the approval test for manufacturing process of the enlarged link and end link of the same diameter thereof or less may be omitted.
(6) (omitted)

Part 7 CONTROL AND INSTRUMENTATION EQUIPMENT AND ELECTRICAL INSTALLATIONS

Chapter 6 APPROVAL OF USE OF CRANKCASE OIL MIST DETECTION ARRANGEMENTS

6.3 Approval Tests

Paragraph 6.3.2 has been amended as follows.

6.3.2 Environmental Test

Environmental tests specified in **(1)** and **(2)** below are to be carried out with a satisfactory result. However, in the case of ships which do not apply the **Rules for Automatic and Remote Control Systems**, except for monitoring panels, ~~T~~the test condition and method and the criteria are to be in accordance with the requirements specified in **1.3.1** of this part.

(1) For alarm/monitoring panel:
- (a) Electrical power supply failure test
- (b) Electrical power supply fluctuation test
- (c) Dry heat test
- (d) Damp heat test
- (e) Vibration test
- (f) Insulation resistance test
- (g) High voltage test
- (h) Inclination test (to be applied to equipment with moving parts)
- (i) Electrostatic discharge immunity test (to be applied to electronic devices)
- (j) Radiated radio frequency immunity test (to be applied to electronic devices)
- (k) Conducted low frequency immunity test (to be applied to electronic devices)
- (l) Conducted high frequency immunity test (to be applied to electronic devices)
- (m) Burst/Fast transient immunity test (to be applied to electronic devices)
- (n) Surge immunity test (to be applied to electronic devices)
- (o) Radiated emission test (to be applied to electronic devices that emit the electromagnetic wave)
- (p) Conducted emission test (to be applied to electronic devices that emit the electromagnetic wave)

(The rest is omitted)

EFFECTIVE DATE AND APPLICATION (Amendment 1-4)

1. The effective date of the amendments is 15 April 2010.

Amendment 1-5

Annex 1 PROCEDURES FOR PROTOTYPE TESTS FOR TYPE APPROVAL AND PRODUCTION TESTS OF LIFEBOATS

Chapter 1 PROCEDURES FOR PROTOTYPE TESTS FOR TYPE APPROVAL OF LIFEBOATS

1.2 Strength and Performance Tests

Paragraph 1.2.1 has been amended as follows.

1.2.1 General [6.1]

1 Except as specified otherwise, ~~T~~the mass of an average person as used herein is to be taken to be 75*kg* for a lifeboat intended for a passenger ship or 82.5*kg* for a lifeboat intended for a cargo ship.

2 When weights are placed to represent the persons in the lifeboat, the centre of gravity of the weight in each seat is to be placed 300*mm* above the seatpan along the seat back.

Paragraph 1.2.2 has been amended as follows.

1.2.2 Lifeboat Overload Test [6.3]

(Sub-paragraph -1 is omitted)

2 Free-fall Lifeboats [6.3.7～6.3.9]

(1) It is to be demonstrated that the lifeboat has sufficient strength to withstand the forces acting upon it when loaded with a distributed mass equal to the mass of the number of persons for which it is to be approved and its equipment when free-fall launched from a height of 1.3 times the height for which it is to be approved. If the lifeboat is normally ramp-launched, and a ramp is not available, this test may be conducted by dropping the lifeboat vertically with the keel at the same angle that normally occurs during water entry.

(2) After this test the lifeboat is to be unloaded, cleaned and carefully examined to detect the position and extent of damage that may have occurred as a result of this test. An operational test is then to be conducted in accordance with **1.2.9-1**. After this test the lifeboat is again to be unloaded, cleaned, and inspected for possible damage.

(3) This test is to be considered successful if the lifeboat passes the operational test to the satisfaction of the Society; no damage has been sustained that would affect the lifeboat's efficient functioning; and any deflections of the hull or canopy as measured during the test would not cause injury to lifeboat occupants. ~~is satisfactory and there is no significant damage to it.~~

Paragraph 1.2.6 has been amended as follows.

1.2.6 Lifeboat Seating Space Test [6.7]

1 Boarding and Seating Test [6.7.1]

The lifeboat is to be fitted with its engine and its equipment. The number of persons for which the lifeboat is to be approved having an average mass of 75*kg* for a lifeboat intended for a passenger ship or 82.5*kg* for a lifeboat intended for a cargo ship, and wearing a lifejacket and any other

essential equipment is to be able to board the lifeboat and be properly seated within a period of 3 *min* in the case of a lifeboat intended for a cargo ship and as rapidly as possible in the case of a lifeboat intended for a passenger ship. The lifeboat is then to be manoeuvred and all equipment on board tested by an individual to demonstrate that the equipment can be operated without difficulty and without interference with the occupants.

2 Non-skid Finish Inspection [6.7.2]

The surfaces on which persons might walk are to be visually examined to determine that they have a non-skid finish.

Paragraph 1.2.13 has been amended as follows.

1.2.13 Additional Tests for Totally Enclosed Lifeboat [6.14]

1 Self-righting test

A suitable means are to be provided to rotate the lifeboat about a longitudinal axis to any angle of heel and then release it. The lifeboat, in the enclosed condition, is to be incrementally rotated to angles of heel up to and including 180 ° and is to be released. After release, the lifeboat is always to return to the upright position without the assistance of the occupants. These tests are to be conducted in the following conditions of load.

(1) When the lifeboat with its engine is loaded in the normal position with properly secured weights representing the fully equipped lifeboat with a full complement of persons on board. The weight used to represent each person, assumed to have an average mass specified in **1.2.1-1**~~of 75 *kg*~~, is to be secured at each seat location and have its centre of gravity approximately 300*mm* above the seatpan so as to have the same effect on stability as when the lifeboat is loaded with the number of persons for which it is to be approved.

(2) When the lifeboat is in the light condition.

(Sub-paragraphs -2 and -3 are omitted)

Annex 2 PROCEDURES FOR PROTOTYPE TESTS FOR TYPE APPROVAL AND PRODUCTION TESTS FOR RESCUE BOATS

Chapter 1 PROCEDURES FOR PROTOTYPE TESTS FOR TYPE APPROVAL OF RESCUE BOATS

1.2 Strength and Performance Tests

Paragraph 1.2.1 has been amended as follows.

1.2.1 Rigid Rescue Boats [7.1]

1 Overload Test [7.1.4]

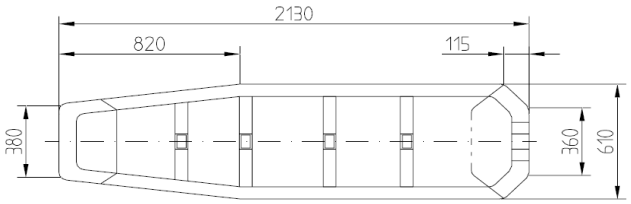
The boat is to be loaded with properly distributed load of four times the weights to represent the equipment and full complement of persons each weighing 82.5*kg* for which it is to be approved and suspended for five minutes from its bridle or hooks. The weights are to be distributed in proportion to the loading of the boat in its service condition, but the weights used to represent the persons need not be placed 300*mm* above the seat pan. The boat and bridle or hook and fastening device is to be examined after the test has been conducted and is not to show any signs of damage. Testing by filling the boat with water should not be accepted. This method of loading does not give the proper distribution of weight. Machinery may be removed in order to avoid damage, in which case weights are to be added to the boat to compensate for the removal of such machinery.

(Sub-paragraphs -2 and -3 are omitted)

4 Seating Space Test [7.1.3]

The rigid rescue boat is to be fitted with its engine and all its equipment. The number of persons for which the rescue boat is to be approved, having an average mass of at least ~~75~~82.5*kg* and all wearing lifejackets and immersion suits and any other essential equipment required, are then to board; one person is to lie down on a stretcher of similar dimensions to those shown in **Fig. 1** and the others are to be properly seated in the rescue boat. The rigid rescue boat is to be manoeuvred and all equipment on board tested to demonstrate that it can be operated without difficulty or interference with the occupants.

Fig.1 Strecher



(Sub-paragraphs -5 to -14 are omitted)

1.2.2 Inflated Rescue Boats [7.2]

Sub-paragraph -7 has been amended as follows.

7 Loading Test (Freeboard Measurement) [7.2.4, 7.2.5]

(1) The freeboard of the inflated rescue boat is to be taken in the various loading conditions as follows:
   (a) rescue boat with all its equipment;
   (b) rescue boat with all its equipment, engine and fuel, or an equivalent mass positioned to represent engine and fuel;
   (c) rescue boat with all its equipment and the number of persons for which it is to be approved having an average mass of ~~75~~82.5*kg* so arranged that a uniform freeboard is achieved at the side buoyancy tubes; and
   (d) rescue boat with the number of persons for which it is to be approved and all its equipment, engine and fuel or an equivalent mass to represent engine and fuel and the rescue boat being retrimmed as necessary.

(2) With the rescue boat in any of the conditions prescribed in **(1)**, the minimum freeboard is to be not less than 300*mm* at the buoyancy tubes and not less than 250*mm* from the lowest part of the transom.

Sub-paragraph -10 has been amended as follows.

10 Swamp Test [7.2.14]

It is to be demonstrated that the rescue boat, when fully swamped, is capable of supporting its full equipment, the number of persons each weighing 82.5*kg* for which it is to be approved and a mass equivalent to its engine and full tank. It is also to be demonstrated that the rescue boat does not seriously deform in this condition.

Annex 4 PROCEDURES FOR PROTOTYPE TESTS FOR TYPE APPROVAL AND PRODUCTION TESTS OF LAUNCHING APPLIANCES OF LIFEBOATS, RESCUE BOATS AND LIFERAFTS

Chapter 1 PROCEDURES FOR PROTOTYPE TESTS FOR TYPE APPROVAL OF LAUNCHING APPLIANCES

1.1 Strength and Performance Tests

Paragraph 1.1.1 has been amended as follows.

1.1.1 Terminology

The terminologies used in **1.1** and **2.1** of this **Annex 4** are as follows:

(1) The maximum working load (L_{max}) of a launching appliance means the maximum load by the total mass of the following with regard to the lifeboat, rescue boat and liferaft hoisted and lowered by the launching appliance:
   (a) mass of the fully equipped lifeboat, rescue boat or liferaft;
   (b) mass of pulleys, ropes, etc.;
   (c) mass of the number of persons (75*kg* <u>for a lifeboat intended for a passenger ship and a liferaft or 82.5*kg* for a lifeboat intended for a cargo ship and rescue boat</u> per person) for which the lifeboat, rescue boat or liferaft is to be approved.

(2) The minimum working load (L_{min}) of a launching appliance means the minimum load by the mass of **(1)(a)** above for the lifeboat, rescue boat or liferaft hoisted and lowered by the launching appliance.

(3) The maximum hoisting load (L_{lift}) of a launching appliance means the maximum load by the mass of **(1)(a)** and **(b)** above with the following for the lifeboat, rescue boat or liferaft hoisted and lowered by the launching appliance. For the lifeboat or liferaft, the mass of two lifeboat or liferaft crew (75*kg* <u>for a lifeboat intended for a passenger ship and a liferaft or 82.5*kg* for a lifeboat intended for a cargo ship</u> per person) is to be added for hoisting the lifeboat or liferaft. For the rescue boat, the mass of six rescue boat crew <u>(82.5*kg* per person)</u>is to be added for hoisting the rescue boat.

(4) The maximum working load (W_{max}) of a winch means the maximum tension of the hanging rope at the winch drum when loads are being hoisted, lowered or held. For evaluation of this, friction resistance of pulleys is to be taken into account. In the case of davit launching appliances, the loads when the davits are in the maximum swing out position are also to be taken into account.

EFFECTIVE DATE AND APPLICATION (Amendment 1-5)

1. The effective date of the amendments is 1 July 2010.