INTERNATIONAL MARITIME ORGANIZATION

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SAFETY OF SMALL FISHING VESSELS

Report of the Correspondence Group (Part 2)

Consolidated text of the draft Safety Recommendations for decked fishing vessels of less than 12 metres in length and undecked fishing vessels

Submitted by South Africa

SUMMARY	
Executive summary:	This document provides annex V to the consolidated text of the draft Safety Recommendations for decked fishing vessels of less than 12 metres in length and undecked fishing vessels
Strategic direction:	5.2
High-level action:	5.2.1
Planned output:	5.2.1.2
Action to be taken:	Paragraph 2
Related document:	SLF 52/4/2

1 This document provides annex V to the consolidated text of the draft Safety Recommendations for decked fishing vessels of less than 12 metres in length and undecked fishing vessels (SLF 52/4/2), prepared by the Correspondence Group established at SLF 51.

Action requested of the Sub-Committee

2 The Sub-Committee is invited to consider the above information and take action as appropriate.

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ANNEX V

RECOMMENDED CONSTRUCTION STANDARDS FOR ALUMINIUM FISHING VESSELS

PART 1 – GENERAL

1 Scope

1.1 Construction standards apply to single hull, aluminium vessels of conventional shape operating at moderate speed; that is up to a maximum of 15 knots. Vessels of unusual design or shape and those operating at higher speeds will require special consideration by the Competent Authority.

2 Design categories

2.1 These construction standards are based on the division of vessels into appropriate design categories, the categories indicate sea and wind conditions for which a vessel is considered to be suitable, provided that the vessel is correctly operated and at a speed appropriate to the prevailing sea state. Design categories are defined in 1.2.14.

3 Construction standards

3.1 The appropriate standards of construction for aluminium vessels shall be determined as set out in the table below:

Design category	Part 1	Part 2	Part 3
A	□	□	
B	□	□	
C	□		□
D	□		

3.2 Vessels fitted with sails should be considered to operate in design categories C and D only unless given special consideration by the Competent Authority.

4 Construction standards for aluminium vessels of all design categories

4.1 General

4.1.1 Vessels may be built in accordance with this section providing that:

.1 the speed of the vessel is not greater than 15 knots; and

.2 all structural elements are accessible for inspection and measurement.

4.2 Materials

4.2.1 During construction, documents should be kept to indicate that the materials used are seawater-resistant aluminium, have certificates issued by a recognized organization or a Competent Authority and have at least the following properties:

σ_2 = 170 N/mm^2.

4.2.2 Plates, profiles and other aluminium materials should be stored horizontally so that the materials are not damaged or deformed.

4.2.3 The material used shall be straight and undamaged and have the required scantlings.

4.2.4 Storage premises for welding equipment and electrodes shall be kept dry and clean.

4.2.5 Aluminium materials shall not be stored together with other metallic materials.

4.2.6 Plates which shall be used for the hull shall be seawater-resistant and shall normally have the following material composition:

.1 Cu max 0.2%

.2 Fe max 0.5%

.3 Mg max 2.0%.

The following materials fulfil these requirements:

.1 ASTM: 5052, 5083, 5086, 5154, 5454

.2 DIN 1725: AlMg2.5, AlMg4.5Mn, AlMg4Mn, AlMg3, AlMg2.7Mn

4.2.7 Stiffeners and profiles shall normally have the following material composition:

.1 Cu max 0.4%

.2 Fe max 0.5%.

The following examples fulfil these requirements:

.1 ASTM: 6005, 6063, 6351

.2 DIN 1725: AlMgSi0.7, AlMgSiO,5, AlMgSil.

4.3 Shaping of materials

4.3.1 Hardened aluminium materials shall normally not be shaped with heat added and cold shaping shall only be used when there is a low tension in the material. Aluminium materials shall normally be straight or shaped by rolling.

4.3.2 Shaping of plates shall normally be made by rolling. Bending to 90 degrees shall not be made unless the inner bending radius (R) is at least:

$$R = f * t$$

Where: f is the bending factor according to the table below
t is the thickness of the material.

Alloy	**Condition**	**Bending factor for material thickness (t) in mm**					
		1.0	**1.5**	**3.0**	**4.5**	**6.0**	**9.0**
AlMg2.5	02	0	0	0	1	1	1.5
	14	0	1	1.5	2	3	3
	08	2	3	4	5	6	7
AlMg4.5Mn	02	-	0.5	1	1	1.5	2
	32	-	1.5	3	3	3.5	

4.3.3 The cutting of materials shall be done so that the edges become straight and without burns or other damages.

4.4 Welding

4.4.1 Welding shall not be carried out at a lower temperature than + 5 degrees Celsius.

4.4.2 Welding of hull and deck shall be carried out only by persons suitably qualified for the materials and equipment used.

4.4.3 Normally welding electrodes of AlMg4.5Mn or AlMg6 should be used unless it is documented that another electrode will give a better result.

4.4.4 All welding shall have full burning through and a smooth surface without burrs or edge burns.

4.4.5 All plates and fastening of watertight bulkheads shall be welded with continuous welding.

4.4.6 If intermittent welding is used, the length of weld shall be at least as long as the spacing and always end with a continuous weld.

4.4.7 The welding shall comply with the dimensions approved in beforehand.

4.4.8 The weld at representative places shall be tested with penetrating liquids. Surface cracks should not be accepted.

4.5 Manufacturing premises

4.5.1 Work up and welding of aluminium shall be carried out at a dry place under roof and screened off from weather and wind.

4.5.2 The workplace shall be kept clean and free of work on other metallic materials.

4.5.3 If temperatures lower than 0 degrees Celsius can occur, the manufacturing premises shall be so arranged that it can be heated.

4.6 Inspection and testing

4.6.1 The scantlings table (where applicable), material documentation and workmanship for each vessel should be subject to inspections at key stages of its construction.

4.6.2 The testing of welded joints by x-ray or similar method may be carried out in cases where considered necessary.

PART 2 – RECOMMENDED CONSTRUCTION STANDARDS FOR ALUMINIUM VESSELS OF DESIGN CATEGORIES A AND B

1 Introduction

1.1 The construction standard described here should be applied to all decked vessels in design categories A and B.

2 Construction

2.1 In general the requirements of **Part 1** should be complied with in addition to the requirements below.

2.2 The strength and construction of the hull, deck and other structures should be built to withstand all foreseeable conditions of the intended service.

2.3 All vessels should meet requirements that are compatible with a recognized aluminium vessel construction standard* or an equivalent standard and be built to the satisfaction of the Competent Authority.

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* The standards include:
.1 the Nordic Boat Standard;
.2 the construction rules of the United Kingdom Sea Fish Industry Authority (Seafish); and
.3 construction rules of recognized organizations.

PART 3 – RECOMMENDED CONSTRUCTION STANDARDS FOR ALUMINIUM VESSELS OF DESIGN CATEGORY C

1 Introduction

1.1 The construction standard described here should be applied to all decked and undecked vessels in design category C.

1.2 The construction standard described here should **always** be read in conjunction with Part 1.

2 Scantlings*, **

2.1 Minimum scantlings should be in accordance with the table below. Figures may be based on interpolation for vessels with a length overall between 8 and 15 metres.

LOA (m)	**8**	**9**	**10**	**11**	**12**	**15**	**Remarks**
Frame Spacing (mm)	Max 300	300	300	300	300	300	
Bar keel							
Sectional Area (cm^2)	18	19	20	21	22	24	Where bar keel is omitted keelplate = 2.5 x t bottom.
Min. Thickness (mm)	17	18	18	19	20	21	Total breadth 30 x LOA mm
Centre keel							
Sectional Area (cm^2)	18	19	20	21	22	24	Required only where the bar keel is omitted
Min. Thickness (mm)	6.5	6.5	7.5	7.5	8.5	8.5	
Floor							
Height (mm)	200	210	215	225	230	250	Required only at every third frame on the other frames skeleton floors
Thickness (mm)	5.5	5.5	5.5	6.5	6.5	6.5	
Flange (mm)	50 x 5.5	50 x 5.5	50 x 5.5	50 x 5.5	50 x 6.5	50 x 6.5	May be emitted where cement is inserted up to the top of the floors
Keelson	UPN 100	UPN 100	UPN 100	UPN 100	UPN 120	UPN 120	(Channel) Required only where centre keel is omitted
Frames							
Web (mm)	90 x 8.5	90 x 8.5	90 x 8.5	95 x 8.5	95 x 8.5	100 x 8.5	
Section Mod (cm^3)	23 cm^3	24 cm^3	25 cm^3	25.2 cm^3	26.3 cm^3	28.4 cm^3	
Bottom plates (mm)	5	5.5	6	6.5	6.5	7.5	Keel plates and stem plates to be increased by 1 mm
Shell plates (mm)	4.5	5	5.5	5.5	6	6.5	
Bulkheads							

* The scantlings are based on the Simplified Strength Requirements for Aluminium Boats from the Nordic Boat Standard.

** The scantlings are corrected by the factors applicable to fishing vessels set out in the Nordic Boat Standard.

LOA (m)	**8**	**9**	**10**	**11**	**12**	**15**	**Remarks**
Plates (mm)	5	5.5	5.5	6	6	6.5	
Stiffener web (mm)	50 x 6.5	50 x 6.5	50 x 7.5	50 x 7.5	50 x 8.5	50 x 8.5	Max. spacing 500
Stiffener sec mod (cm^3)	6.3	6.3	7.4	7.4	8.4	8.4	
Deck							
Plates (mm)	4.5	5	6	6	7	7	
Beam web (mm)	90 x 9	90 x 9	90 x 9	90 x 9	90 x 9	90 x 9	Max. spacing 300 mm. Max. span 3.5 m
Beam sec mod (cm^3)	31	31	31	31	31	31	
Bulwark (mm)	4.5	4.5	4.5	5	6	6	Stiffener 50 x 6 mm. Max. spacing 600 mm
Superstructure/ deckhouse (mm)	3.5	3.5	4.5	4.5	5	6	Stiffener 50 x 6 mm. Max. spacing 300 mm