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AUSTRALIAN NAVAL CLASSIFICATION RULES

DIVISION 4: SMALL CRAFT RULES

CHAPTER 02: STRUCTURE

PART 1: ANC RULES



This document is issued for use by Defence and Defence Industry personnel and is effective forthwith.

A handwritten signature in black ink, appearing to read 'CN Dagg'.

CN Dagg, CSC
Assistant Secretary
Australian Naval Classification Authority
Department of Defence
CANBERRA ACT 2600
May 2024 Edition

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ANC RULES (DSwP PUB 201)

Division 4: Small Craft Rules, Chapter 02: Structure, Part 1: ANC Rules, May 2024 Edition

Developer:

Australian Naval Classification Authority

¹ <https://www.legislation.gov.au/Series/C1968A00063>

² <https://www.legislation.gov.au/Series/C2004A04868>

³ <https://www.legislation.gov.au/Series/C2004A03712>

⁴ <https://dpeintranet-seg.defence.gov.au/guidance-compliance/security-management/policy-advice/defencesecurity-principles-framework>

AUSTRALIAN NAVAL CLASSIFICATION RULES

First issued	May 2024
Reissue date	N/A
Issued by	CN Dagg, CSC, AS ANCA
Document management	This volume will be reviewed periodically from the date of issue, but sooner if necessitated by business requirements, and to ensure it continues to meet the intent of Defence policy.
Availability	The latest version of this volume is only available from the Defence Australia website. Its currency cannot be guaranteed if sourced from other locations. It is available for public release.
Policy domain	Defence Seaworthiness
Accountable Officer	Australian Naval Classification Authority
Publication Owner	Defence Seaworthiness Authority (DSwA)
Policy contact	anca.communications@defence.gov.au
Structure	see Contents ⁵
Cancellation	N/A
Definitions	Definitions that apply to this volume are located in the Division 1, Part 1 Annex A.

⁵ <https://www.defence.gov.au/business-industry/industry-governance/australian-naval-classification-authority/australian-naval-classification-rules>

AMENDMENTS

Proposals for amendments to the ANC Rules may be sent to:

Australian Naval Classification Authority

Mail to: anca.communications@defence.gov.au

EDITIONS

Edition	Version	Amendment type	Effective
May 2024	1.0	First issued	August 2026

Division 4: Small Craft
Part 1: ANC Rules

Chapter 02: Structure

Contents	
Rule 0.	Goal 2
Rule 1.	General 2
Rule 2.	Not Used 3
Rule 3.	Structural Design and Construction 3
Rule 4.	Materials, Preservation Systems and Disposal 4
Rule 5.	Small Craft in Operation 5
Rule 6.	Hull Marks 6

Australian Naval Classification Rules**Rule 0. Goal**

- 0.1 For the Design Life of the Small Craft, the structure shall be designed, constructed and maintained to:
 - 0.1.1 provide weathertight and watertight integrity
 - 0.1.2 carry all foreseen loads
 - 0.1.3 permit embarked persons to carry out their duties safely
 - 0.1.4 minimise the risk of loss of the Small Craft
 - 0.1.5 protect the embarked persons in the event of foreseeable emergencies and accidents at least until the persons have reached a place of safety or the threat has receded
 - 0.1.6 provide the required post-damage capability.

Rule 1. General**Functional Objective**

- 1.1 The purpose of this Rule is to outline the principles and framework of Chapter 02 *Structure* and its application.

Scope

- 1.2 Chapter 01 *General Requirements* applies to all chapters of this Division, as applicable to the vessel design, and therefore in order to meet the Chapter 02 *Structure* goal, the requirements of both this chapter and Chapter 01 *General Requirements* shall be met.
- 1.3 This Chapter covers the requirements for the materials, design and construction of the Small Craft structure.
- 1.4 The ANC Rules exclude training requirements. Chapter 02 *Structure* assumes all embarked persons shall have an appropriate level of competence for the operation of the Small Craft.

Application

- 1.5 The applicability of each rule of this Chapter shall be determined from the Naval Vessel's OSI.
- 1.6 This Chapter applies to all structures required to meet the Goal of this Chapter, not hull structure alone.
- 1.7 This Chapter equally applies while the Small Craft is afloat, stowed, transferred, launched, recovered, intentionally beached or aground.

General Performance Requirements

- 1.8 The structure shall be inherently safe to carry load, and in addition to strength criteria, may be limited by other criteria such as deflection (e.g. structural misalignment leading to premature buckling).

Rule 2. Not Used**Rule 3. Structural Design and Construction****Functional Objective**

- 3.1 The design and construction of the structure shall provide strength, rigidity, Design Life and margin for the safe operation of the Small Craft, at its service condition, operating sea state and maximum service speed, to withstand the Foreseeable Operating Conditions defined in the OSI.

Performance Requirements

- 3.2 Where defined in the OSI the design and construction of the structure shall provide strength and rigidity through its Design Life to enable the Small Craft to carry all required local and global loads imposed, including:
- 3.2.1 operating in defined sea conditions
 - 3.2.2 anchoring, mooring, towing and other seamanship systems
 - 3.2.3 cradling, docking, launch and recovery, securing or transport
 - 3.2.4 beaching and grounding
 - 3.2.5 embarked persons, cargo, stores, liquids and permanent weights
 - 3.2.6 propulsion machinery, manoeuvring and ride control systems
 - 3.2.7 mission equipment and weapons systems
 - 3.2.8 accidental or extreme threat damage
 - 3.2.9 other Special Functions.
- 3.3 The structure of the Small Craft shall be robust and able to withstand a reasonable level of:
- 3.3.1 intrinsic manufacturing defects
 - 3.3.2 structural degradation
 - 3.3.3 in-service wear and tear
 - 3.3.4 operator error.
- 3.4 The structure shall be stiffened or damped to avoid excessive resonance due to impact loading.
- 3.5 Where required, for compliance with Chapter 03 *Buoyancy and Stability*, the Small Craft's weathertight boundaries shall withstand the loads imposed by green seas and the prevailing environmental conditions for the Foreseeable Operating Conditions.
- 3.6 Where required, for compliance with Chapter 03 *Buoyancy and Stability*, the Small Craft's watertight subdivisions shall withstand the defined head of pressure.

Note: See Division 1 Annex A *Definitions and Abbreviations* for the definitions of Weathertight and

Watertight.

Note: See Chapter 06 *Fire Safety* for the requirements relating to the prevention of structural strength deterioration by heat.

Rule 4. Materials, Preservation Systems and Disposal**Functional Objective**

- 4.1 Structural materials shall be assembled in such a way that the design assumptions made regarding their use and inherent properties can be assured with a reasonable degree of certainty.
- 4.2 The structure of the Small Craft shall be protected from degradation using methods effective to the materials used, environment and functional requirements.

Performance Requirements

- 4.3 The Small Craft shall be constructed of materials or combinations of materials that, in the configuration used, retain their properties in any of the Foreseeable Operating Conditions defined in the OSI.
- 4.4 Structural materials shall not endanger embarked persons in their benign or degraded states.
- 4.5 Structural preservation systems shall be provided, to protect the structure throughout the Design Life, taking into consideration the maintenance philosophy defined in the OSI.
- 4.6 Where coatings are required to be applied to the Small Craft, they shall:
 - 4.6.1 be applied and maintained in accordance with manufacturers' specifications concerning surface preparation, coating selection, application and maintenance
 - 4.6.2 have a specified design coating life for the intended location

Note: The actual coating life may be longer or shorter than the design coating life, depending on the actual conditions and maintenance of the Small Craft.

- 4.6.3 be selected as a function of the intended use of the compartment, materials and application of other corrosion prevention systems

Note: See Chapter 12 *Environmental Protection* for the environmental protection requirements related to protective coatings.

- 4.7 Coatings, linings or uncoated materials for potable water use shall not leach hazardous materials and shall not impart any taste or odour.
- 4.8 Coating systems for specialised or bolt on equipment, such as weapons systems, radomes, and antennas, shall be as specified by the equipment manufacturer, provided the systems have similar long-term performance for the coating durability and environmental conditions specified.
- 4.9 Where Cathodic Protection Systems are fitted, they shall:
 - 4.9.1 be safe and effective for the intended location
 - 4.9.2 be compatible with the coatings and materials of systems within their effective range

- 4.9.3 meet the signature requirements of Chapter 01 *General Requirements Rule 4 Survivability*, where applicable to the OSI.
- 4.10 Structural materials shall be selected, consistent with the safety and operational requirements, to facilitate environmentally acceptable recycling methods in accordance with the disposal philosophy as defined in the OSI.

Rule 5. Small Craft in Operation

Functional Objective

- 5.1 The Small Craft shall be operated in a manner to:
- 5.1.1 meet the Goal of this Chapter consistent with the design and material solutions
- 5.1.2 ensure the material state of the Small Craft continues to meet the Goal of this Chapter.
- 5.2 Information required by the Small Craft's crew pertaining to the structural strength of the Small Craft shall be provided and maintained with the Small Craft to facilitate its' safe operation in all Foreseeable Operating Conditions.

Note: See Division 2 Chapter 01 General Requirements Rule 11 Documentation for related requirements.

Performance Requirements

- 5.3 The survey, maintenance and repair philosophy as defined in the OSI, shall be considered throughout the Small Craft's lifecycle, and any constraints imposed on the design shall be identified.
- 5.4 The Small Craft shall be surveyed, inspected, maintained and repaired in accordance with the schedule requirements of the OSI.

Note: The scope of each successive survey and inspection shall reflect the increased risk of significant structural degradation as the Small Craft ages.

- 5.5 Operational limitations shall be permanently displayed containing the maximum number of persons, cargo/payload weight, environmental and other restrictions.

Note: See Chapter 03 Buoyancy and Stability Rule 5 Operator Guidance for concurrent requirements for operational limitations.

- 5.6 The Small Craft shall be provided with operational information in a format that allows the increased risk and ultimate failure point to be readily understood if the normal operating limits are exceeded.
- 5.7 Where defects arise because of inadequacies in design or construction, action shall be taken to improve the structural capacity.
- 5.8 The same or a demonstrably equivalent standard of assurance to structural work shall be undertaken in the operational phase as it is applied for new construction Small Craft.
- 5.9 The structural arrangement shall enable safe and ready access for the purpose of:
- 5.9.1 inspection and maintenance of the structure
- 5.9.2 installation, operation, maintenance and removal of equipment and systems.
- 5.10 Information and instructions for the safe inspection, repair and maintenance of the structure

and preservation systems shall be provided.

Rule 6. Hull Marks

Functional Objective

- 6.1 Small Craft hulls shall be marked to:
 - 6.1.1 clearly indicate the Small Craft's restrictions and loading conditions
 - 6.1.2 visibly identify the Small Craft.

Performance Requirements

- 6.2 The hull shall be marked to:
 - 6.2.1 where required indicate the Small Craft's limiting draught
 - 6.2.2 where required indicate the Small Craft's Draught

Note: See Chapter 03 *Buoyancy and Stability* Rule 3 *Buoyancy* for requirements relating to Draught Marks.

- 6.2.3 warn of any danger from hull projections and Appendages
- 6.2.4 display the Small Craft's unique identifier.

Note: See Chapter 01 *General Requirements* Rule 4 *Survivability* for the requirements relating to visual signatures which may affect the hull markings.

- 6.3 The location of hull marks shall be permanently identifiable.