



Standard Practice for Establishing Shipbuilding Quality Requirements for Hull Structure, Outfitting, and Coatings¹

This standard is issued under the fixed designation F2016; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice consists of three annexes: hull structure, outfitting, and coating. The subject of these annexes was selected for several reasons. Other commercial shipbuilding nations already have in place widely recognized standards of expectations in these areas. These constitute the most significant areas where workmanship is a critical factor in customer satisfaction. The cost associated with the labor involved in these three areas is a significant factor in construction man-hours and overall schedules.

1.2 The standard criteria provided in this practice are intended to apply to conventional, commercial ship construction. In many cases, specialized, nonconventional vessels using nonstandard materials or built-to-serve sole requirements may require unique acceptance criteria that are beyond those provided in this practice.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

D4417 Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel

E337 Test Method for Measuring Humidity with a Psychrometer (the Measurement of Wet- and Dry-Bulb Temperatures)

2.2 ISO Standards:³

ISO 8502–3 Assessment of Dust on Steel Surfaces Prepared for Painting (Pressure-Sensitive Tape Method)

ISO 8502–6 Extraction of Water Soluble Contaminants for Analysis—Bresle Method

2.3 AMPP Standards:⁴

NACE No. 5/SSPC-12 Inspection and Interpretation Using Joint Standard NACE No. 5/SSPC-SP 12

SSPC-AB 1 Mineral and Slag Abrasives

SSPC-AB 2 Cleanliness of Recycled Ferrous Metallic Abrasives

SSPC-PA 2 Determining Conformance to Dry Coating Requirements

SSPC-SP 1 Solvent Cleaning

SSPC-SP 2 Hand Tool Cleaning

SSPC-SP 3 Power Tool Cleaning

SSPC-SP 7/NACE No. 4 Brush-Off Blast Cleaning

SSPC-SP 10/NACE No. 2 Near-White Metal Wet Abrasive Blast Cleaning

SSPC-SP 11 Power Tool Cleaning to Bare Metal

SSPC-VIS 1 Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning

SSPC-VIS 3 Guide and Reference Photographs for Steel Surfaces Prepared by Power- and Hand-Tool Cleaning

SSPC-VIS/NACE No. 7 Guide and Reference Photographs for Steel Surfaces Prepared by Water jetting

2.4 NSRP Documents:⁵

National Shipbuilding Research Project 6–97–1 “American Shipbuilding Quality Standards,” dated May 28, 1999

¹ This practice is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.01 on Structures.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard’s Document Summary page on the ASTM website.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

⁴ Available from Association for Materials Protection and Performance (AMPP), 15835 Park Ten Pl., Houston, TX 77084, <http://www.amp.org>.

⁵ Available from The Librarian, Documentation Center, Marine Systems Division, University of Michigan Transportation Research Institute, 2901 Baxter Rd., Ann Arbor, MI 48109–2150.

criteria covers three primary phases of ship construction, that is, hull structure, outfitting, and coatings. Specific criteria to be selected from this standard should be as contractually agreed between the ship owner and shipbuilder.

4. Significance and Use

4.1 To achieve success in ship construction, it is necessary for the ship owner and the ship builder to agree on the level of quality in the final product. Classification rules, regulatory requirements, and ship specifications all help to define an acceptable level of construction quality; however, this guidance alone is not sufficient. It is up to the shipbuilder, therefore, to describe the level of workmanship sufficiently that will be reflected in the delivered ship, and for the ship owner to communicate their expectations effectively for the final product.

4.2 It is the intent of this document to contribute to these objectives in the following ways:

4.2.1 To describe a reasonable acceptable level of workmanship for commercial vessels built in the United States.

4.2.2 To provide a baseline from which individual shipyards can begin to develop their own product and process standards in accordance with generally accepted practice in the commercial marine industry.

4.2.3 To provide a foundation for negotiations between the shipbuilder and the ship owner in reaching a common expectation of construction quality.

4.3 The acceptance criteria herein are based on currently practiced levels of quality generally achieved by leading international commercial shipbuilders. These criteria are not intended to be a hard standard with which all U.S. shipyards must comply. Rather, they are intended to provide guidance and recommendations in the key areas that play a major role in customer satisfaction and cost-effective ship construction.

5. Keywords

5.1 coatings; hull structure; outfitting; quality; shipbuilding; workmanship

ANNEXES

(Mandatory Information)

A1. HULL STRUCTURE

I . HULL STRUCTURE			SHIPBUILDING QUALITY STANDARDS		
Division		Marking			
		UNIT: mm			
Section	Sub-section	Item	Standard Range	Tolerance Limits	Remarks
Cutting line and fitting line compared with correct ones	General members	Size and shape compared with correct ones.	±2	±3	
			±1.5	±2.5	Especially for the depth of floors and girders of double bottom.
		Corner angle compared with correct ones	±1.5	±2	
		Curvature	±1	±1.5	
		Location of member & mark for fitting compared with correct ones.	±2	±3	
		Block marking (Panel block) compared with correct ones.	±2.5	±3.5	
		Location of member for fitting compared with correct ones.	±2.5	±3.5	

FIG. A1.1 Hull Structure

I . HULL STRUCTURE					SHIPBUILDING QUALITY STANDARDS		
Division		Gas Cutting			UNIT: mm		
Section	Sub-section	Item	Standard Range	Tolerance Limits	Standard Range	Tolerance Limits	Remarks
Roughness	Free edge	Strength Shop member Field	100μ (2nd cl) 150μ (3rd cl)	200μ (3rd cl) 300μ (Out cl)	The class denoted in parentheses is in accordance with following definition. Less Than 50μ 1st class 50μ ~ 100μ 2nd class 100μ ~ 200μ 3rd class More than 200μ out of class – Special precautions are required in case where grinding or other treatments are requested. – For angle cutting the same as the case in field.		
		Other Shop Field	100μ (2nd cl) 500μ (Out cl)	200μ (3rd cl) 150μ (Out cl)			
	Weld groove	Strength Shop member Field	100μ (2nd cl) 400μ (Out cl)	200μ (3rd cl) 800μ (Out cl)			
		Other Shop Field	100μ (2nd cl) 800μ (Out cl)	1500μ (Out cl) 1500μ (Out cl)			

FIG. A1.2 Hull Structure