

FIGURE 5
Pitting Intensity Diagrams (1 July 2013)

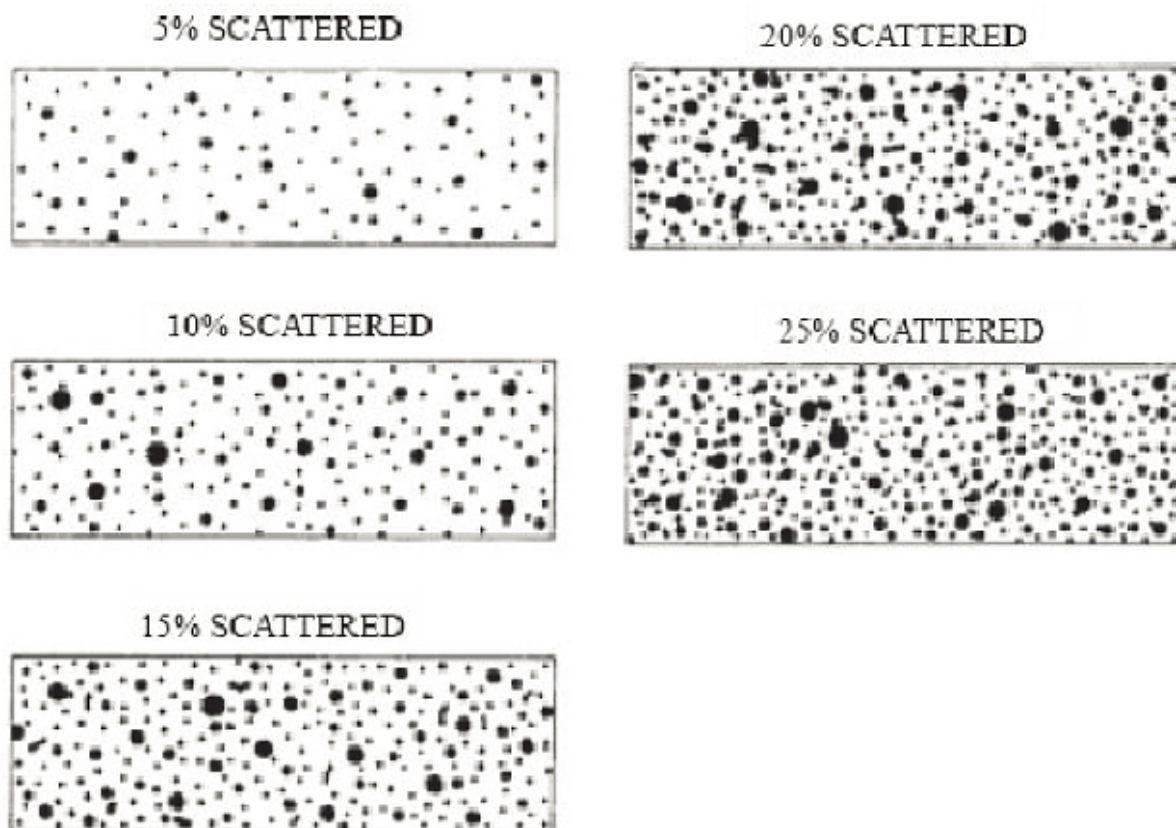


TABLE 1A
Individual Wastage Allowances, Non-CSR Tankers
90 M and Over Built to ABS Class (1 July 2021)

(See Notes 1 through 7)

<i>Ordinary and High Strength Steel</i>	<i>CONTRACT 2005 OR LATER</i>	<i>CONTRACT BETWEEN 1962 AND 2004</i>	<i>CONTRACT 1962 OR LATER</i>
	<i>Double Bottom Tankers</i>	<i>Double Bottom Tankers</i>	<i>Single Bottom Tankers</i>
Strength Deck Plating	20%	20%	20%
Forecastle, Poop and Bridge Deck Plates; Superstructure End Bulkheads	30%	30%	30%
Sheer Strake Plates	20%	20%	20%
Side Shell Plates	20%	25%	25%
Bilge Strake Plates	20%	25%	20%
Bottom Plates	20%	25%	20%
Keel Plates (See Note 8)			
Outermost Strake of Inner Bottom	20%	20%	-----

<i>Ordinary and High Strength Steel</i>	<i>CONTRACT 2005 OR LATER</i>	<i>CONTRACT BETWEEN 1962 AND 2004</i>	<i>CONTRACT 1962 OR LATER</i>
	<i>Double Bottom Tankers</i>	<i>Double Bottom Tankers</i>	<i>Single Bottom Tankers</i>
Other Plates of Inner Bottom	20%	25%	-----
Top Strake of Longitudinal Bulkheads and Top Strake of Topside Tank Sloping Plating	20%	20%	20%
Bottom Strake of Longitudinal Bulkheads	20%	25%	20%
Other Plates of Longitudinal Bulkheads, Topside Tank Sloping Plating, Hopper Tank Sloping Plating and Transverse Bulkheads	20%	25%	25%
Internals including Longitudinals, Girders, Transverses, Struts, Bulkhead Webs and Stringers, and Brackets	20%	25%	25%
Plates in way of Top of Tanks	25%	30%	30%

Notes:

- 1 Internals included in longitudinal strength must be continuous or be effectively developed at ends, throughout amidships 0.4L.
- 2 Structure must meet individual member thickness and average wastage.
- 3 If design was originally approved on basis of engineering analysis (such as car carriers and other specialized vessels), or if owner specially request, the wastage may be assessed on engineering basis (i.e., acceptable stress levels and structural stability).
- 4 The individual wastage allowances are acceptable, provided the SM is not less than 90% of the greater SM required: a) at the time of new construction or b) by 3-2-1/3.7.1(b).
- 5 For tankers 130 m in length and above and over 10 years of age, sectional area calculations are to be carried out by an ABS Technical Office.
- 6 For vessels built to other society rules, the Technical Office carrying out the initial plan review is to be contacted for wastage allowances.
- 7 (2018) For CSR vessels type, the individual wastage allowance is defined in accordance with Part 5A/B, Part 1 for double hull oil tankers and for bulk carriers.
- 8 Keel plates are to be renewed when they reach the minimum allowed thickness for adjacent bottom plating.

TABLE 1B
Individual Wastage Allowances, Liquefied Gas Carriers
90 M and Over Built to ABS Class (1 July 2021)

(See Notes 1 through 5)

<i>Ordinary and High Strength Steel</i>	<i>CONTRACT 2008 OR LATER</i>	<i>CONTRACT BETWEEN 1962 AND 2007</i>	<i>CONTRACT 2021 OR LATER</i>	<i>CONTRACT BETWEEN 1962 AND 2020</i>
	<i>Membrane LNG Carriers</i>	<i>Membrane LNG Carriers</i>	<i>Liquefied Gas Carriers with Independent Tanks</i>	<i>Liquefied Gas Carriers with Independent Tanks</i>
Strength Deck Plating	20%	20%	20%	20%
Forecastle, Poop and Bridge Deck Plates; Superstructure End Bulkheads	30%	30%	30%	30%
Sheer Strake Plates	20%	20%	20%	20%
Side Shell Plates	20%	25%	20%	25%
Bilge Strake Plates	20%	25%	20%	25%
Bottom Plates	20%	25%	20%	25%
Keel Plates (See Note 6)				
Outermost Strake of Inner Bottom	20%	20%	20%	20%
Other Plates of Inner Bottom	20%	25%	20%	25%
Top Strake of Longitudinal Bulkheads and Top Strake of Topside Tank Sloping Plating	20%	20%	20%	20%
Bottom Strake of Longitudinal Bulkheads	20%	25%	20%	25%
Other Plates of Longitudinal Bulkheads, Topside Tank Sloping Plating, Hopper Tank Sloping Plating and Transverse Bulkheads	20%	25%	20%	25%
Internals including Longitudinals, Girders, Transverses, Struts, Bulkhead Webs and Stringers and Brackets	20%	25%	20%	25%
Plates in way of Top of Tanks	25%	30%	25%	30%
Box Girders (Long'l or Transverse)	20%	20%	20%	20%

Notes:

- Internals included in longitudinal strength must be continuous or be effectively developed at ends, throughout amidships $0.4L$.
- Structure must meet individual member thickness and average wastage.
- If design was originally approved on basis of engineering analysis (such as car carriers and other specialized vessels), or if owner specially request, the wastage may be assessed on engineering basis (i.e., acceptable stress levels and structural stability).
- The individual wastage allowances are acceptable, provided the SM is not less than 90% of the greater SM required: a) at the time of new construction or b) by 3-2-1/3.7.1(b).
- For vessels built to other society rules, the Technical Office carrying out the initial plan review is to be contacted for wastage allowances.
- Keel plates are to be renewed when they reach the minimum allowed thickness for adjacent bottom plating.

TABLE 1C
Individual Wastage Allowances, Other Conventional Vessels 90 M and Over
Built to ABS Class (1 July 2021)

(See Notes 1 through 6)

<i>Ordinary and High Strength Steel</i>	<i>CONTRACT 2018 OR LATER</i>	<i>CONTRACT BETWEEN 1962 AND 2017</i>	<i>CONTRACT 2021 OR LATER</i>	<i>CONTRACT BETWEEN 1962 AND 2020</i>	<i>Long'ly framed vessels built prior to 1962.</i>	<i>Vessels of all ages with a combination of transverse and longitudinal framing.</i>
	<i>Non-CSR Bulkers, Ore Carriers and OBOs</i>	<i>Non-CSR Bulkers, Ore Carriers and OBOs</i>	<i>Containerships</i>	<i>Containerships</i>	<i>Transv'ly framed vessels of all ages Dry cargo barges 90 meters and over. Tank barges 90 to 122 meters (295-400 ft) (See Note 11).</i>	
Strength Deck Plating	20%	20%	20%	20%	25%	20%
Continuous Long'l Hatch Coamings & Above Deck Box-Girders	20%	20%	20%	20%	25%	20%
Deck Plates within Line of Hatches and at Ends.	30%	30%	30%	30%	30%	30%
Forecastle, Poop and Bridge Deck Plates; Superstructure End Bulkheads	30%	30%	30%	30%	30%	30%
Tween Deck Plates	-----	-----	-----	-----	30%	-----
Sheer Strake Plates	20%	20%	20%	20%	25%	20%
Side Shell Plates	20%	25%	20%	25%	25%	25%
Bilge Strake Plates	20%	25%	20%	25%	25%	25%
Bottom Plates	20%	25%	20%	25%	25%	25%
Keel Plates (See Note 7)						
Outermost Strake of Inner Bottom	25%	30%	20%	20%	30%	30%
Other Plates of Inner Bottom	25%	30%	20%	25%	30%	30%
Top Strake of Longitudinal Bulkheads and Top Strake of Topside Tank Sloping Plating	20%	20%	20%	20%	25%	25%

<i>Ordinary and High Strength Steel</i>	<i>CONTRACT 2018 OR LATER</i>	<i>CONTRACT BETWEEN 1962 AND 2017</i>	<i>CONTRACT 2021 OR LATER</i>	<i>CONTRACT BETWEEN 1962 AND 2020</i>	<i>Long'ly framed vessels built prior to 1962.</i>	<i>Vessels of all ages with a combination of transverse and longitudinal framing.</i>
	<i>Non-CSR Bulkers, Ore Carriers and OBOs</i>	<i>Non-CSR Bulkers, Ore Carriers and OBOs</i>	<i>Containerships</i>	<i>Containerships</i>	<i>Transv'ly framed vessels of all ages Dry cargo barges 90 meters and over. Tank barges 90 to 122 meters (295-400 ft) (See Note 11).</i>	
Bottom Strake of Longitudinal Bulkheads	20%	25%	20%	25%	25%	25%
Other Plates of Longitudinal Bulkheads, Topside Tank Sloping Plating, Hopper Tank Sloping Plating and Transverse Bulkheads (See Notes 8 and 9)	20%	25%	20%	25%	25%	25%
Internals including Longitudinals, Girders, Transverses, Struts, Bulkhead Webs and Stringers, Brackets and Hatch Side Girders	20%	25%	20%	25%	25%	25%
Plates in way of Top of Tanks	25%	30%	25%	30%	30%	30%
Underdeck Box Girders (Long'l or Transverse)	20%	20%	20%	20%	20%	20%
Hatch Covers (See Note 10). Hatch coamings and brackets	30%	30%	30%	30%	30%	30%

Notes:

- Internals included in longitudinal strength must be continuous or be effectively developed at ends, throughout amidships 0.4L.
- Structure must meet individual member thickness and average wastage.
- If design was originally approved on basis of engineering analysis (such as car carriers and other specialized vessels), or if owner specially request, the wastage may be assessed on engineering basis (i.e., acceptable stress levels and structural stability).
- The individual wastage allowances are acceptable, provided the hull girder SM is not less than 90% of the greater SM required: a) at the time of new construction or b) by 3-2-1/3.7.1(b).
- For vessels built to other society rules, the Technical Office carrying out the initial plan review is to be contacted for wastage allowances.
- For CSR vessels type, the individual wastage allowance is defined in accordance with Part 5A/B, Part 1 for double hull oil tankers and for bulk carriers.
- Keel plates are to be renewed when they reach the minimum allowed thickness for adjacent bottom plating.

- 8 Bulk Carriers for which IACS UR S19 applies to the corrugated transverse watertight bulkhead between cargo holds 1 and 2 are to be assessed in accordance with S19 for initial compliance and subsequent continued compliance at each Intermediate Survey and Special Periodical Survey – Hull.
- 9 Bulk carriers for which UR S18 applies to the corrugated transverse W.T. bulkheads are to comply with the steel renewal provisions of S18.
- 10 The hatch covers of bulk carriers to which IACS UR S21 applies are to comply with the steel renewal provisions of S21.6.
- 11 Wastage allowances in columns 1, 2 or 3 of 7-A1-4/35.3 TABLE 1A, depending on the barge's construction, apply to tank barges over 122 meters (400 ft.) in length.

TABLE 2
Individual Wastage Allowances, Conventional Vessels
Under 90 Meters (295 Feet) (2016)

Main Deck Plating	25%
Bottom Plating	25%
Keel Plating	25%
Sheer Strake	25%
Bilge Strake	25%
Side Shell Plating	30%
Forecastle	30%
Internals and Bulkheads	30%

For vessels built to other society rules, the Technical Office carrying out the initial plan review is to be contacted for wastage allowances.

Notes:

- 1 Internals included in longitudinal strength must be continuous or be effectively developed at ends, throughout amidships $0.4L$.
- 2 The values shown in the table are the minimum requirements for individual members and plates.
- 3 In addition to satisfying the individual member and plate requirements, it should be verified that the hull girder section modulus is not less than 90% of the greater Hull Girder Section Modulus required either:
 - a) At the time of new construction
 - b) Per 3-2-1/3.1 of the *ABS Rules for Building and Classing Marine Vessels*
- 4 For vessels less than 61 M (200 feet) only, maximum loss of deck or bottom area is 20 percent of Rule required area.
- 5 For vessels built to other society rules, wastage allowance based on the previous society requirements may apply.

TABLE 3
Aluminum Wastage Allowances, Conventional Vessels
Under 90 M (295 Feet) built to ABS Class

Main Deck Plating	15%
Bottom Plating	15%
Keel Plating	15%

Sheer Strake	15%
Bilge Strake	15%
Side Shell Plating	20%
Forecastle	20%
Internals and Bulkheads	20%

For vessels built to other society rules, the Technical Office carrying out the initial plan review is to be contacted for wastage allowances.

TABLE 4
Wastage Allowances, Steel or Aluminum Yachts
24 m (79 ft) – 61 m (200 ft) in Length ⁽¹⁾

Longitudinally Framed Shell and Decks	15% ⁽²⁾
Transversely Framed Shell and Decks	10% ⁽³⁾
Other Internal Structure and External Structure Providing Weathertight Integrity to the Hull	15%

Notes:

- 1 Sometimes fairing filler is applied on the outside of the hull and deckhouse to cosmetically hide plating deformations. Ultrasonic measurement equipment may not be able to distinguish between the metal and the filler material. Prior to ultrasonic testing the Surveyor is to determine if fairing filler has been applied and by testing to determine if the ultrasonic equipment can distinguish between Fairing filler and base metal structure. If the Design Review Engineer has knowledge of fairing filler material being used it should be noted on the MTT Table to aid the Surveyor.
- 2 The permanent set of strength deck plating must be less than or equal to $s/100$, and no deformation of any frames, longitudinals or beams found, where s equals stiffener spacing. If deformation of the strength deck plating is greater than $s/100$, or if deformation of frames, longitudinals or beams is found, then contact a technical office for guidance.
- 3 The permanent set of strength deck plating must be less than or equal to $s/150$, and no deformation of any frames, longitudinals or beams found, where s equals frame spacing. If deformation of the strength deck plating is greater than $s/150$, or if deformation of frames, longitudinals or beams is found, then contact a technical office for guidance.
- 4 For vessels built to other societies' rules, the Technical Office carrying out the initial plan review is to be contacted for wastage allowances.