

W1 Material and welding for ships carrying liquefied gases in bulk and ships using gases or other low-flashpoint fuels

(1975)
(Rev.1
1984)
(Rev.2
May 2004)
(Rev.3
Aug 2016)
(Rev.4
Apr 2021)

1 Scope

1.1 This document gives additional requirements to the ones prescribed in the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code) or International Code of Safety for Ships using Gases or other low-flashpoint Fuels (IGF Code).

1.2 The manufacture, testing, inspection and documentation shall be in accordance with the general practice of the Classification Society.

2 Material requirements

In addition to IGC Code Table 6.1 or IGF Code Table 7.1 for design temperature not lower than 0°C, the following applies.

Table 1 Plates, pipes (seamless and welded), sections and forgings for cargo tanks, fuel tanks and process pressure vessels for design temperatures not lower than 0°C.

CHARPY V-NOTCH IMPACT TEST REQUIREMENTS		
TEST TEMPERATURE	Thickness t (mm)	Test temperature (°C)
	40 < t ≤ 50 ⁽¹⁾	-20 ⁽²⁾
	40 < t ≤ 50 ⁽¹⁾	-30 ⁽³⁾

NOTES:

(1) A further set of impact test at mid thickness for products with t>40mm is required except rolled steels specified in UR W11 or W16.

(2) Applies to type C independent tanks and process pressure vessels. In addition, post-weld stress relief heat treatment shall be performed. Exemption to post-weld stress relief heat treatment based on alternative approach (e.g. Engineering Critical Assessment) shall be approved by the Classification Society or shall be to recognized standards.

(3) Applies to cargo tank or fuel tank other than type C.

Note:

- Rev.3 of this UR is to be uniformly implemented by IACS Societies to ships contracted for construction on or after 1 January 2017.
- The “contracted for construction” date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of “contract for construction”, refer to IACS Procedural Requirement (PR) No. 29.
- Rev.4 of this UR is to be uniformly implemented by IACS Societies to ships contracted for construction on or after 1 July 2022.

In addition to IGC Code Table 6.2 or IGF Code Table 7.2, the following applies:

Table 2a Plates, sections and forgings for cargo tanks, fuel tanks, secondary barriers and process pressure vessels for design temperatures below 0°C and strictly down to -10°C

CHARPY V-NOTCH IMPACT TEST REQUIREMENTS		
TEST TEMPERATURE	Thickness t (mm)	Test temperature (°C)
	40 < t ≤ 50 ⁽¹⁾	5°C below design temperature or -20°C, whichever is lower ⁽²⁾
	40 < t ≤ 45 ⁽¹⁾	25 °C below design temperature ⁽³⁾
	45 < t ≤ 50 ⁽¹⁾	30 °C below design temperature ⁽³⁾
NOTES:		
(1) A further set of impact test at mid thickness for products with t>40mm is required except rolled steels specified in UR W11 or W16.		
(2) Applies to type C independent tanks and process pressure vessels. In addition, post-weld stress relief heat treatment shall be performed. Exemption to post-weld stress relief heat treatment based on alternative approach (e.g. Engineering Critical Assessment) shall be approved by the Classification Society or shall be to recognized standards.		
(3) Applies to cargo tank or fuel tank other than type C.		

Table 2b Plates, sections and forgings for cargo tanks, fuel tanks, secondary barriers and process pressure vessels for design temperatures below -10°C and down to -55°C

CHARPY V-NOTCH IMPACT TEST REQUIREMENTS		
TEST TEMPERATURE	Thickness t (mm)	Test temperature (°C)
	40 < t ≤ 50 ⁽¹⁾	5°C below design temperature or -20°C, whichever is lower ⁽²⁾
	40 < t ≤ 45 ⁽¹⁾	25 °C below design temperature ⁽³⁾
	45 < t ≤ 50 ⁽¹⁾	30 °C below design temperature ⁽³⁾
NOTES:		
(1) A further set of impact test at mid thickness for products with t>40mm is required except rolled steels specified in UR W11 or W16.		
(2) IGC code section 6.6.2.2 applies with regards to post-weld stress relief heat treatment. Exemption to post-weld stress relief heat treatment based on alternative approach (e.g. Engineering Critical Assessment) shall be approved by the Classification Society or shall be to recognized standards.		
(3) Applies to cargo tank or fuel tank other than type C.		

In addition to IGC Code Table 6.3 or IGF Code Table 7.3, the following applies:

Table 3 Plates, sections and forgings for cargo tanks, fuel tanks, secondary barriers and process pressure vessels for design temperatures below -55°C and down to -165°C.

CHARPY V-NOTCH IMPACT TEST REQUIREMENTS	
40 < t ≤ 45 mm ⁽¹⁾	25°C below design temperature
45 < t ≤ 50 mm ⁽¹⁾	30°C below design temperature
(1) A further set of impact test at mid thickness for products with t>40mm is required except rolled steels specified in UR W11 or W16.	

End of
Document