



CHINA CLASSIFICATION SOCIETY

**RULES FOR CONSTRUCTION AND  
EQUIPMENT OF SHIPS CARRYING  
LIQUEFIED GASES IN BULK**

CCS RULE CHANGE NOTICE

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**Beijing**

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## Brief Introduction

According to CCS decision on the implementation of IMO resolutions and IACS requirements which released recently, the contents of the IMO resolution MSC.492(104) and MSC.523(106), IMO Circular MSC.1/Circ.1315/Rev.1, IACS unified requirement UR G5, IACS unified interpretation UI GC 38 are included in this change notice. The underline indicates new contents and the ~~strikeout~~ indicates deleted contents.

This change notice is effective from 1<sup>st</sup> January 2024.

# **PART THREE THE INTERNATIONAL CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING LIQUEFIED GASES IN BULK**

## **CHAPTER 2 SHIP SURVIVAL CAPABILITY AND LOCATION OF CARGO TANKS**

### **2.7 Survival requirements**

#### 2.7.1 In any stage of flooding:

- .1 the waterline, taking into account sinkage, heel and trim, shall be below the lower edge of any opening through which progressive flooding or downflooding may take place. Such openings shall include air pipes and openings that are closed by means of weathertight doors or hatch covers and may exclude those openings closed by means of watertight manhole covers and watertight flush scuttles, small watertight cargo tank hatch covers that maintain the high integrity of the deck, remotely operated watertight sliding doors, hinged watertight access doors with open/closed indication locally and at the navigation bridge, of the quick-acting or single-action type that are normally closed at sea, hinged watertight doors that are permanently closed at sea, and sidescuttles of the non-opening type;
- .2 the maximum angle of heel due to unsymmetrical flooding shall not exceed 30°; and
- .3 the residual stability during intermediate stages of flooding shall not be less than that required by 2.7.2.1.

# CHAPTER 6 MATERIALS OF CONSTRUCTION AND QUALITY CONTROL

## 6.4 Requirements for metallic materials

Table 6.3 is replaced as follows, which will enter into force on 1 January 2026.

**Table 6.3**

<b><u>PLATES, SECTIONS AND FORGINGS</u></b> <small>See note 1</small> <b>FOR CARGO TANKS, SECONDARY BARRIERS AND PROCESS PRESSURE VESSELS FOR DESIGN TEMPERATURES BELOW -55°C AND DOWN TO -165°C</b> <small>See note 2</small> <b><u>Maximum thickness 25 mm</u></b> <small>See notes 3 and 4</small>		
<u>Minimum design temperature (°C)</u>	<u>Chemical composition</u> <small>See note 5</small> <u>and heat treatment</u>	<u>Impact test temperature (°C)</u>
-60	<u>1.5% nickel steel – normalized or normalized and tempered or quenched and tempered or TMCP</u> <small>See note 6</small>	-65
-65	<u>2.25% nickel steel – normalized or normalized and tempered or quenched and tempered or TMCP</u> <small>See notes 6 and 7</small>	-70
-90	<u>3.5% nickel steel – normalized or normalized and tempered or quenched and tempered or TMCP</u> <small>See notes 6 and 7</small>	-95
-105	<u>5% nickel steel – normalized or normalized and tempered or quenched and tempered</u> <small>See notes 6, 7 and 8</small>	-110
-165	<u>9% nickel steel – double normalized and tempered or quenched and tempered</u> <small>See note 6</small>	-196
-165	<u>Austenitic steels, such as types 304, 304L, 316, 316L, 321 and 347 solution treated</u> <small>See note 9</small>	-196
-165	<u>High manganese austenitic steel – hot rolling and controlled cooling</u> <small>See notes 10 and 11</small>	-196
-165	<u>Aluminium alloys; such as type 5083 annealed</u>	<u>Not required</u>
-165	<u>Austenitic Fe-Ni alloy (36% nickel). Heat treatment as agreed</u>	<u>Not required</u>
<b><u>TENSILE AND TOUGHNESS (IMPACT) TEST REQUIREMENTS</u></b>		
<b><u>Sampling frequency</u></b>		
◆ <u>Plates</u>	<u>Each “piece” to be tested</u>	
◆ <u>Sections and forgings</u>	<u>Each “batch” to be tested</u>	
<b><u>Toughness (Charpy V-notch impact test)</u></b>		
◆ <u>Plates</u>	<u>Transverse test pieces. Minimum average energy value (KV) 27J</u>	
◆ <u>Sections and forgings</u>	<u>Longitudinal test pieces. Minimum average energy (KV) 41J</u>	
<b><u>Notes</u></b>		
1 <u>The Charpy V-notch impact test required for forgings used in critical applications shall be subject to special consideration by the Administration.</u>		
2 <u>The requirements for design temperatures below -165°C shall be subject to special agreement with the Administration.</u>		
3 <u>For materials 1.5% Ni, 2.25% Ni, 3.5% Ni and 5% Ni, with thicknesses greater than 25 mm, the Charpy V-notch impact tests shall be conducted as follows:</u>		
<u>Material Thickness(mm)</u>	<u>Test Temperature (°C)</u>	

$25 < t \leq 30$	10°C below design temperature
$30 < t \leq 35$	15°C below design temperature
$35 < t \leq 40$	20°C below design temperature

The energy value shall be in accordance with the table for the applicable type of test specimen. For material thickness of more than 40 mm, the Charpy V-notch values shall be specially considered.(see CCS②)

4 For 9% Ni steels, austenitic stainless steels (see CCS①) and aluminium alloys, thickness greater than 25 mm may be used.

5 The chemical composition limits shall be in accordance with recognized standards.

6 TMCP nickel steels will be subject to acceptance by the Administration.

7 A lower minimum design temperature for quenched and tempered steels may be specially agreed with the Administration.

8 A specially heat treated 5% nickel steel, for example triple heat treated 5% nickel steel, may be used down to -165°C, but the Charpy V-notch impact test is to be carried out in -196°C.

9 The Charpy V-notch impact test may be omitted, subject to agreement with the Administration.

10 The use of the material shall be subject to the required conditions specified by the Administration based on the Guidelines developed by IMO\*.

11 The impact test may not be omitted for high manganese austenitic steel.

CCS① Austenitic steels may be used as per CCS requirements.

CCS② Charpy v-notch impact tests for materials of 40 mm  $< t \leq 50$  mm shall be carried out in accordance with the following requirements:

<i>CHARPY V-NOTCH IMPACT TEST REQUIREMENTS</i>	
<i>Thickness t (mm)</i>	<i>Test temperature (°C)</i>
$40 < t \leq 45^{(1)}$	25 °C below design temperature
$45 < t \leq 50^{(1)}$	30°C below design temperature

(1) A further set of impact test at mid thickness for products with  $t > 40$ mm is required except rolled steels specified in Sections 2 and 3, Chapter 3, PART ONE of CCS Rules for Materials and Welding.

\* Refer to the Revised guidelines on the application of high manganese austenitic steel for cryogenic service (MSC.1/Circ.1599/Rev.2).

## CHAPTER 11 FIRE PROTECTION AND EXTINCTION

### 11.3 Water-spray system

11.3.6 All pipes, valves, nozzles and other fittings in the water-spray system shall be resistant to corrosion by seawater. Piping, fittings and related components within the cargo area (except gaskets) shall be designed to withstand 925°C. The water-spray system shall be arranged with in-line filters to prevent blockage of pipes and nozzles. In addition, means shall be provided to back-flush the system with fresh water.

*CCS11.3.6 Where 'F.O. tanks' are installed at the after end of the aftermost hold space or at the forward end of the forwardmost hold space instead of cofferdams as allowed for in paragraphs 3.1.2 and 3.1.3 of PART THREE, the weather deck area above these tanks shall be regarded as a 'cargo area' for the purpose of applying paragraph 11.3.6.*

### 11.4 Dry chemical powder fire-extinguishing systems

11.4.1 Ships in which the carriage of flammable products is intended shall be fitted with fixed dry chemical powder fire-extinguishing systems, approved by the Administration based on the guidelines developed by the Organization<sup>①</sup>, for the purpose of firefighting on the deck in the cargo area, including any cargo liquid and vapour discharge and loading connections on deck and bow or stern cargo handling areas, as applicable.

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① Refer to the *Revised Guidelines for the approval of fixed dry chemical powder fire-extinguishing systems for the protection of ships carrying liquefied gases in bulk* (MSC.1/Circ.1315/[Rev.1](#)).

## CHAPTER 18 OPERATING REQUIREMENTS

### 18.10 Cargo emergency shutdown (ESD) system

#### 18.10.2 ESD valve requirements

##### 18.10.2.1 General

18.10.2.1.5 When ESD valve is actuated by hydraulic or pneumatic system, the following shall be complied with:

.1 Audible and visible alarm shall be given in the event of loss of pressure that causes activation of fail-close action. The alarm shall be provided in a normally manned control station (e.g. Cargo Control Room and/or the navigation bridge, etc.);

.2 The following conditions shall also be complied to ensure the fail-close action:

.1 Failure of hydraulic or pneumatic system shall not lead to loss of fail-close functionality (i.e. activated by spring or weight); or

.2 Hydraulic or pneumatic system for fail-close action shall be arranged with stored power and separated from normal valve operation.