第 MSC.523(106)号决议
(2022 年 11 月 10 日通过)

《国际散装运输液化气体船舶构造和设备规则》
(《国际气体规则》)修正案

海上安全委员会，

忆及《国际海事组织公约》关于本委员会职能的第 28(b)条，

注意到以第 MSC.5(48)号决议通过的《国际散装运输液化气体船舶构造和设备规则》(“《国际气体规则》”)，根据《1974 年国际海上人命安全公约》(“本公约”)第 VII 章已成为强制性规则，

还注意到关于《国际气体规则》修正程序的本公约第 VIII(b)条和第 VII/11.1 条，

在其第 106 届会议上，**审议了**按本公约第 VIII(b)(i)条提出和分发的《国际气体规则》修正案，

1 按本公约第 VIII(b)(iv)条，**通过**《国际气体规则》修正案，其文本载于本决议附件；

2 按本公约第 VIII(b)(vi)(2)(bb)条，**决定**该修正案应于 2025 年 7 月 1 日被视为获得接受，除非在此日期之前，有三分之一以上的本公约缔约国政府或拥有商船合计吨位数不少于世界商船总吨数 50%的缔约国政府已通知秘书长其反对该修正案；

3 **提请**本公约各缔约国政府注意，按本公约第 VIII(b)(vii)(2)条，该修正案在按上述第 2 段获得接受后，应于 2026 年 1 月 1 日生效；

4 **要求**秘书长，按本公约第 VIII(b)(v)条，将本决议及其附件中所载修正案文本的核正无误副本送交本公约所有缔约国政府；

5 **还要求**秘书长将本决议及其附件的副本分发给非本公约缔约国政府的本组织各会员。

附 件

《国际散装运输液化气体船舶构造和设备规则》
(《国际气体规则》)修正案

第 6 章
构造材料和质量控制

6.4 对金属材料的要求

6.4.1 对金属材料的一般要求

整个表 6.3 由以下替换：

“表 6.3

设计温度低于-55°C 至-165°C [见注 2] 的液货舱， 次屏壁和处理用受压容器所用板材、型材和锻件[见注 1] 最大厚度为 25mm [见注 3 和 4]		
最低设计温度 (°C)	化学成分[见注 5]和热处理	冲击试验温度 (°C)
-60	1.5%镍钢－正火或正火加回火或淬火加回火或 TMCP，见注 6	-65
-65	2.25%镍钢－正火或正火加回火或淬火加回火或 TMCP，见注 6 和 7	-70
-90	3.5%镍钢－正火或正火加回火或淬火加回火或 TMCP，见注 6 和 7	-95
-105	5%镍钢－正火或正火加回火或淬火加回火，见注 6、7 和 8	-110
-165	9%镍钢－二次正火加回火或淬火加回火，见注 6	-196
-165	奥氏体钢，如 304、304L、316、316L、321 和 347 等，固溶处理，见注 9	-196
-165	高锰奥氏体钢－热轧加控制冷却，见注 10 和 11	-196
-165	铝合金，如 5083，退火	不要求
-165	奥氏体铁－镍合金(含 36%Ni)，按经同意的热处理方法	不要求
抗拉和韧性(冲击)试验要求		
取样频率		
◆ 板材	按“件”试验	
◆ 型材和锻件	按“批”试验	
韧性(夏比 V 型缺口冲击试验)		
◆ 板材	横向试样，最小平均冲击能量值(KV)为 27J	
◆ 型材和锻件	纵向试样，最小平均冲击能量值(KV)为 41J	

注：

1 用于临界条件的锻件所要求的冲击试验，须提交主管机关特别考虑。

2 设计温度低于-165°C 时的要求，须经主管机关特别同意。

3 含 1.5%Ni、2.25%Ni、3.5%Ni 和 5%Ni 且厚度超过 25mm 的材料，须按下述要求进行冲击试验：

材料厚度(mm)	试验温度(°C)
25 < t ≤ 30	比设计温度低 10°C
30 < t ≤ 35	比设计温度低 15°C
35 < t ≤ 40	比设计温度低 20°C

冲击能量值须按所用试样种类符合表列的要求，对厚度超过 40mm 的材料，夏比 V 型缺口冲击能量值须予以特别考虑。

4 可采用厚度超过 25mm 的 9% Ni 钢、奥氏体不锈钢、高锰奥氏体钢和铝合金。

5 化学成分的范围须符合公认标准。

6 TMCP 镍钢须经主管机关接受。

7 淬火加回火的钢材，可与主管机关商定较低的最低设计温度。

8 经特殊热处理的 5%镍钢，例如经三级热处理的 5%镍钢，可用于低至-165°C，但要在-196°C 下对其进行冲击试验。

9 经主管机关同意，可免除冲击试验。

10 使用的材料须满足本组织制定的《导则》中规定的必要条件。

11 高锰奥氏体钢的冲击试验不可免除。

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RESOLUTION MSC.523(106)
(adopted on 10 November 2022)

AMENDMENTS TO THE INTERNATIONAL CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING LIQUEFIED GASES IN BULK (IGC CODE)

THE MARITIME SAFETY COMMITTEE,

RECALLING Article 28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

NOTING resolution MSC.5(48), by which it adopted the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk ("the IGC Code"), which has become mandatory under chapter VII of the International Convention for the Safety of Life at Sea, 1974 ("the Convention"),

NOTING ALSO article VIII(b) and regulation VII/11.1 of the Convention concerning the procedure for amending the IGC Code,

HAVING CONSIDERED, at its 106th session, amendments to the IGC Code proposed and circulated in accordance with article VIII(b)(i) of the Convention,

1 ADOPTS, in accordance with article VIII(b)(iv) of the Convention, amendments to the IGC Code, the text of which is set out in the annex to the present resolution;

2 DETERMINES, in accordance with article VIII(b)(vi)(2)(bb) of the Convention, that the said amendments shall be deemed to have been accepted on 1 July 2025, unless, prior to that date, more than one-third of the Contracting Governments to the Convention or Contracting Governments the combined merchant fleets of which constitute not less than 50% of the gross tonnage of the world’s merchant fleet have notified their objections to the amendments;

3 INVITES Contracting Governments to the Convention to note that, in accordance with article VIII(b)(vii)(2) of the Convention, the amendments shall enter into force on 1 January 2026, upon their acceptance in accordance with paragraph 2 above;

4 REQUESTS the Secretary-General, for the purposes of article VIII(b)(v) of the Convention, to transmit certified copies of the present resolution and the text of the amendments contained in the annex to all Contracting Governments to the Convention;

5 ALSO REQUESTS the Secretary-General to transmit copies of this resolution and its annex to Members of the Organization which are not Contracting Governments to the Convention.

ANNEX

AMENDMENTS TO THE INTERNATIONAL CODE FOR THE CONSTRUCTION AND EQUIPMENT OF SHIPS CARRYING LIQUEFIED GASES IN BULK (IGC CODE)

CHAPTER 6
MATERIALS OF CONSTRUCTION AND QUALITY CONTROL

6.4 Requirements for metallic materials

6.4.1 General requirements for metallic materials

Table 6.3 is replaced in its entirety by the following:

"**Table 6.3**

PLATES, SECTIONS AND FORGINGS See note 1 FOR CARGO TANKS, SECONDARY BARRIERS AND PROCESS PRESSURE VESSELS FOR DESIGN TEMPERATURES BELOW -55°C AND DOWN TO -165°C See note 2 Maximum thickness 25 mm See notes 3 and 4		
Minimum design temperature (°C)	Chemical composition See note 5 and heat treatment	Impact test temperature (°C)
-60	1.5% nickel steel – normalized or normalized and tempered or quenched and tempered or TMCP See note 6	-65
-65	2.25% nickel steel – normalized or normalized and tempered or quenched and tempered or TMCP See notes 6 and 7	-70
-90	3.5% nickel steel – normalized or normalized and tempered or quenched and tempered or TMCP. See notes 6 and 7	-95
-105	5% nickel steel – normalized or normalized and tempered or quenched and tempered See notes 6, 7 and 8	-110
-165	9% nickel steel – double normalized and tempered or quenched and tempered See note 6	-196
-165	Austenitic steels, such as types 304, 304L, 316, 316L, 321 and 347 solution treated See note 9	-196
-165	High manganese austenitic steel – hot rolling and controlled cooling See notes 10 and 11	-196
-165	Aluminium alloys, such as type 5083 annealed	Not required
-165	Austenitic Fe-Ni alloy (36% nickel). Heat treatment as agreed	Not required
TENSILE AND TOUGHNESS (IMPACT) TEST REQUIREMENTS		
Sampling frequency		
◆ Plates	Each "piece" to be tested	
◆ Sections and forgings	Each "batch" to be tested	
Toughness (Charpy V-notch test)		
◆ Plates	Transverse test pieces. Minimum average energy value (KV) 27J	
◆ Sections and forgings	Longitudinal test pieces. Minimum average energy (KV) 41J	

Notes

1 The impact test required for forgings used in critical applications shall be subject to special consideration by the Administration.

2 The requirements for design temperatures below -165°C shall be specially agreed with the Administration.

3 For materials 1.5% Ni, 2.25% Ni, 3.5% Ni and 5% Ni, with thicknesses greater than 25 mm, the impact tests shall be conducted as follows:

Material thickness (mm)	Test temperature (°C)
25 < t ≤ 30	10°C below design temperature
30 < t ≤ 35	15°C below design temperature
35 < t ≤ 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.

4 For 9% Ni steels, austenitic stainless steels, high manganese austenitic steels 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, provided that the impact tests are carried out at -196°C.

9 The 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 the Organization.

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