

**RULES
FOR THE CLASSIFICATION OF
SHIPS**

*Part 25 – METALLIC MATERIALS
July 2021*

Amendments No. 2
January 2023

CROATIAN REGISTER OF SHIPPING

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By the decision of the General Committee of Croatian Register of Shipping,

Amendments No. 2 to the
RULES FOR THE CLASSIFICATION OF SHIPS
Part 25 – METALLIC MATERIALS

have been adopted on 19th December 2022 and shall enter into force on 1st January 2023

GENERAL TERMS AND CONDITIONS

(March 2022)

Article 1 GENERAL

1.1 CROATIAN REGISTER OF SHIPPING (hereinafter: the *Register*) shall at all times remain an independent contractor and neither the *Register* nor any of its officers, surveyors, auditors, inspectors, agents, appointers, officers or managers shall act as an employee, servant or agent of any other party in the performance of the Services rendered by the *Register*.

1.2 The *Register* acts as a service provider. The Services provided by the *Register* cannot be construed as a commitment by the *Register* to achieve any result or as a warranty.

1.3 The provision of Services is subject to these General Terms and Conditions. No other terms and conditions shall apply, either expressly or by implication, unless expressly agreed in writing between the Parties.

1.4 These General Terms and Conditions shall be incorporated into, or referred to in any Contract and shall prevail over and exclude any other terms and conditions that the Client may wish to impose.

Any amendments to and/or deviations from these General Terms and Conditions, as well as any additional terms and conditions of the Client, shall be binding or valid only if set forth in writing and duly signed by the authorised representatives of both Parties.

1.5 The invalidity of one or more provisions of these General Terms and Conditions shall not affect the remaining provisions.

1.6 The Client acknowledges that the latest version of these General terms and Conditions and the latest version of applicable Rules apply to the Services provided by the *Register*.

1.7 Definitions in these General Terms and Conditions take precedence over other definitions that may appear in other documents issued by the *Register*.

1.8 The Client should at all times be aware of the provisions of these General Terms and Conditions, as they may be further amended, with their latest up to date version available on the web site of the *Register*.

Article 2 DEFINITIONS

2.1 **Certificate** means either a class certificate or statutory certificate, statement, attestation, statement of compliance, and a report following the Services provided by the *Register*.

2.2 **Certification** means the activity of certification in application of international and national standards and international industry practice provided by the *Register*.

Certification is an appraisal given by the *Register* to the Client and cannot be construed as an implied or express warranty of safety, fitness for purpose, seaworthiness of the vessel or its value for sale, insurance or chartering.

The purpose of Certification is to provide classification and statutory services and assistance to the maritime industry, Flag State Administrations, and regulatory authorities relating to maritime safety and pollution prevention.

2.3 **Classification** includes all activities and Services provided by the *Register* in accordance with the Rules. Classification may or may not be accompanied by the issuance of a Certificate of class with reference to the Rules.

Certificate of class is valid only if issued by the *Register*.

However, Certificate of class should not be construed as a guarantee of the safety, fitness for purpose or seaworthiness of the vessel. It is merely an attestation that the vessel complies with the Rules developed and published by the *Register*.

In addition, the *Register* is not a guarantee of the safety of life or property at sea or the seaworthiness of a vessel because, although the classification of a vessel is based on the assumption that the vessel will be properly loaded, operated, and maintained by competent and qualified personnel, the *Register* has no control over how a vessel is operated and maintained between the periodic surveys it conducts.

2.4 **Statutory certification** means certification made by the *Register* on behalf of the Flag State Administrations when and to the extent that the *Register* has been authorised to do so by the respective Flag State.

Statutory certification and services include the assessment of vessels registered by the Flag State and/or ship management companies to determine whether such ships/companies comply with the applicable requirements of international conventions, codes and national legislation, and the issuance of, or assistance in the issuance of, the appropriate certificates and documents.

Statutory certification includes, but is not limited to, certification, survey, and issuance of statutory certificates on behalf of the Flag State.

In cases where the *Register* acts on behalf of Flag State Administrations, the *Register* shall follow guidance issued by IMO (Resolutions, Circulars, etc.) or by IACS through Unified Interpretations (UI), unless otherwise directed by the Flag State.

2.5 **Client** means the shipowner, company, shipyard and/or party requesting Services or taking ownership of a classed vessel. In cases where shipowners have authorized another party to operate the vessel on their behalf, that party shall be considered as the company.

In addition to the above the Client means the person and/or entity that has requested Services from the *Register* and that has entered into a Contract or an agreement for Services with the *Register*.

2.6 **Parties** means the *Register* and Client together.

2.7 **Party** means the *Register* or the Client.

2.8 **Contract** means the contract in the form of a written agreement between the Client and the *Register* requesting Services, including these General Terms and Conditions and the Rules.

The provisions related to the Contract in these General Terms and Conditions shall apply even if there is no written agreement between the Client and the *Register*.

The Client may request the *Register* in writing to make a change to the contracted Services. However, the *Register* shall not be obligated to accept or execute any such change until a written agreement has been signed with the Client regarding the compensation and the possible impact of the change on the schedule as an addendum to the originally contracted Services.

2.9 **Services** shall mean the services specified in 2.2, 2.3 and 2.4, but also other services related to certification, classification and statutory certification, such as, but not limited to: ISM Code certification, ISPS Code, MLC 2006 certification, fuel oil consumption reporting, IHM certification, approval of manufacturers and service providers, certification of materials and products, training activities, conformity assessment, and any other relevant activities such as third party inspections, testing, shore and shipboard trials.

The Services provided by the *Register* are performed on a random basis and in no case include a full inspection of all items.

The *Register* shall provide the Services in accordance with related Contract(s), the provisions of these General Terms and Conditions, Rules, the international and national standards, the international conventions, the EU Regulations, the Flag State requirements and the industry practices applicable to the particular Service and always assuming that the Client is aware of these standards and the industry practices.

When providing Services, the *Register* does not guarantee the accuracy of the information or advice provided.

In providing Services, the *Register* does not assess compliance with standards other than the Rules, international and national standards, international conventions, EU regulations, Flag State requirements and industry practice, to the extent agreed in writing or specified in the Contract.

2.10 The *Register* means the Croatian Register of Shipping, an entity organized and existing under Croatian law, which, according to the Law on the Croatian Register of Shipping (Official Gazette No. 1996/81, 2013/76 and 2020/62) and the Charter of the *Register*, is an independent, not-for-profit, but public welfare oriented, public foundation that performs tasks:

- classification of sea-going ships,
- statutory certification of sea-going ships on behalf of the Flag State Administrations,
- classification of inland navigation vessels,
- statutory certification of inland navigation vessels,
- statutory certification of recreational crafts,
- certification of materials and products,
- conformity assessment of recreational crafts,
- conformity assessment of marine equipment,
- conformity assessment of pressure vessels,
- certification/registration of quality management systems.

2.11 **Vessel** means a ship, vessel, unit or offshore structure of any kind, whether or not connected to the shore or sea/river bed, located at sea or in inland waters and intended for transportation or special operations on the water, as decided by the *Register*.

2.12 **Rules** means the Rules for the classification, guidelines, instructions, or other documented evidence of the *Register* related to the Services provided.

The competent interpretation of the requirements specified in the Rules or other regulations published by the *Register* shall be the exclusive responsibility of the *Register's* Head Office, notwithstanding any possible different interpretations by other parties.

In cases where the Rules do not contain detailed requirements, the specific approval by the *Register* shall be based on the principles of the Rules and shall ensure a safety standard equivalent to that of the Rules.

Article 3 RESPONSIBILITIES

3.1 It is the Client's responsibility to ensure that all surveys required for vessel's class maintenance are conducted in a timely manner and in accordance with the Rules.

3.2 The *Register* may suspend or withdraw the vessel's existing Certificate of class in the event of serious deficiencies and replace it with a new Certificate of class with a shortened period of validity during which the deficiencies are to be rectified.

In addition, the *Register* shall suspend or withdraw a vessel's Certificate of class if the deficiencies are of such a magnitude as to endanger the class of the vessel, its safety and integrity, the safety of the crew, passengers, or the marine environment, and shall require that the vessel is to be inspected at the first port of call where the necessary repairs are to be carried out.

3.3 The Client should inform the *Register*:

- (i) in the event of a change in the intended use of a vessel, a conversion and alteration of the hull, machinery installations and other equipment affecting the Class of the vessel assigned by the *Register*. Conversions and alterations must be made under the supervision of the *Register* and must comply with the requirements of the Rules and/or additional requirements of the *Register*,
- (ii) in cases where the vessel has been damaged to such an extent that the Class of the vessel is likely to be affected and the safety and integrity of the vessel is likely to be compromised. In such cases, the vessel must be surveyed at the first port of call or as further directed by the *Register*. The survey shall be to the extent deemed necessary by the *Register*, by taking into account the extent of the damage.
- (iii) in cases where class-related deficiencies and/or defects are found as a result of a Flag State inspection or Port State Control. Should the Client fail to notify the *Register* of the detention of the vessel by Port State Authorities due to class related deficiencies, the *Register* reserves the right to suspend or withdraw the Certificate of class.

3.4 The *Register* shall have full control over Certificates issued and may suspend or withdraw a Certificate at any time in its sole discretion if the Client fails to comply with the following requirements set forth in the *Rules for the Classification of Ships, Part 1 - General Requirements, Chapter 1 - General Information*, as applicable:

- (i) para. 5.3 - *Maintenance of the validity of Certificate of Class*,
- (ii) para. 5.4 - *Period of Validity*,
- (iii) para. 5.5 - *Extension of the Period of Validity*,
- (iv) para. 5.6 - *Suspension and Reinstatement of Class in the Case of Overdue Surveys*, and
- (v) para. 5.7 - *Withdrawal of Class*.

3.5 The *Register* may suspend or withdraw a Certificate at any time in its sole discretion if the Client fails to comply with the following requirements set forth in the *Rules for the Classification of Inland Navigation Vessels, Part 1 - Classification and Surveys, Chapter 1 - Principles of Classification*, as applicable:

- (i) para. 2.8 - *Maintenance of the Validity of the Certificate of Class*,
- (ii) para. 2.9 - *Extension of validity of the Certificate of Class*, and following requirements set forth in the *Rules for the Classification of Inland Navigation Vessels, Part 1 - Classification and Surveys, Chapter II - Classification*, as applicable:
- (iii) para. 2.1 - *Suspension of Class*,
- (iv) para. 2.2 - *Withdrawal of Class*.

3.6 In addition to clauses 3.2, 3.4 and 3.5 of this Article, the *Register* reserves the right to terminate the Services and related Contract in the event of a breach of the provisions of these General Terms and Conditions.

3.7 If the Client fails to provide the *Register* with the required access or information at the agreed times or fails to prepare for the Service in a timely manner, the *Register* may suspend the provision of the Service until it receives the Client's instructions for access and/or the required information.

The *Register* shall not be liable for the consequences of such suspension, and the Client shall be responsible for the *Register's* additional fees and other unnecessary costs and expenses incurred by the *Register*.

3.8 The Client is obliged to perform timely payments of the invoices for provided Services. However, the *Register* may retain or withhold any Service or Certificate to the Client in the case of outstanding payments, whether mutually related or not, arising out of the entire business relationship with the Client.

Article 4 HEALTH, SAFETY AND ENVIRONMENT

4.1 Both the *Register* and the Client shall apply reasonable standards to promote safety, health, and environmental protection and to provide a safe working environment for their personnel.

4.2 The Client shall provide the *Register* with all access and information necessary for the safe and efficient performance of the requested Services as required by the Rules.

4.3 During the survey, personnel of the *Register* should have secure access to all work that directly or indirectly affects the Service.

4.4 The *Register* has the right to refuse to conduct an activity or visit an area or site if the *Register* in its sole discretion, believes that relevant risks are unacceptable or are not adequately addressed, contained, or otherwise mitigated.

Such a decision shall suspend the obligations of both Parties under the Contract without incurring any liability or penalty until the Parties agree on how to proceed.

Article 5 THIRD PARTIES AND SUBCONTRACTORS

5.1 Each specific Contract, including any Certificates issued, relates specifically to the Client, and no rights, obligations, interests, claims, benefits or Certificates issued shall extend to any third party without the prior written consent of the *Register*.

5.2 The Client shall not be entitled to grant any right to use the Certificates to any third party without the prior written consent of the *Register*.

5.3 The Client shall not without *Register's* consent, cede, assign, transfer, subcontract or deal in any manner with all or any of its rights or obligations under any Service and related Contract.

5.4 With regard to third party rights to access information and Certificates under confidentiality clause reference is to be made to Article 9.

Article 6 TAXES

6.1 Each Party shall be responsible for and shall bear all taxes, duties or similar governmental charges levied or imposed on any activity of that Party.

6.2 Prices, fees, rates, or remuneration are exclusive of any form of sales tax, value added tax, administrative fees and services tax and/or other similar taxes, including any surcharges. If any such indirect tax is or becomes applicable to the Services provided under the Contract, the Client shall be responsible for the payment of such indirect taxes.

Article 7 PAYMENT OF INVOICES

7.1 The provision of Services by the *Register*, whether complete or not, shall include payment of fees thirty (30) days after issuance of the invoice for the portion of the Services performed.

7.2 In the event that the Client fails to meet the requirements for payment in accordance with the instalments and terms of payment contained herein, the *Register* reserves the right to charge the Client with the interest rate in accordance with the applicable laws of the Republic of Croatia.

7.3 If the Client disputes an invoice or part of an invoice, the Client shall notify *Register* thereof in writing without undue delay. If no notification is received by the due date, Client shall be deemed to have accepted the invoice in full. If only part of an invoice is disputed, the undisputed amount must be paid by the due date.

Consequently, no disputes arising between the *Register* and the Client shall interfere with prompt payment of invoices by the Client. Any rights of lien or retention in favour of the Client or otherwise, are hereby excluded.

7.4 In the event of cancellation of all or part of the Services prior to their final completion, the Client shall pay all costs incurred by the *Register* on pro-rata basis for the portion of the Services provided to date. In such event, the *Register* will not claim the Client for loss of profit or reduced income. All reasonable costs directly attributable to the early termination and all amounts due to the *Register* at that time shall become immediately due and payable.

7.5 In the event of termination of the Service and related Contract, the *Register* shall be entitled to retain any payments, deposits or prepayments of fees made by the Client prior to the date of termination up to the amount to which the *Register* is entitled.

Article 8 TERMINATION

8.1 The Parties shall have the right to terminate the Services and the related Contract(s) by written notice to the other Party, and without prejudice to Article 7, in the following cases:

- (i) if the other Party commits a material breach of these General Terms and Conditions and/or the Contract and fails to rectify such breach in accordance with clause 8.4 of this Article,
- (ii) if the other Party becomes insolvent, is unable to pay its debts as they become due, or becomes subject to bankruptcy proceedings, administration, receivership, dissolution, liquidation, winding up or otherwise ceases to carry on its business; or
- (iii) for convenience, after giving the other Party thirty (30) days' prior written notice of termination.

8.2 The Classification issued for the relevant vessel and the Certificates previously issued shall remain valid until the effective date of termination or, in the event of such termination, immediately, subject to compliance with Article 3 and Article 7.

8.3 If, in the reasonable opinion of the *Register*, the Client breaches or is suspected of breaching Article 14 or Article 15, the *Register* shall have the right to terminate the Service and related Contract with immediate effect.

8.4 Notwithstanding the provisions of clause 8.1 of this Article, the Party intending to terminate Services for non-compliance or breach of the provisions of these General Terms and Conditions shall notify the other Party of the non-compliance or violation of the provisions of these General Terms and Conditions and set a reasonable deadline of 15 (fifteen) days for the other Party to remedy the breaches of the provisions of these General Terms and Conditions.

If the Party fails to remedy the breaches of the provisions of these General Terms and Conditions within the aforementioned period, the other Party shall have the right to terminate Services without further notice.

8.5 Termination of the Service and related Contract pursuant to the provisions of these General Terms and Conditions shall not give either Party the right to claim any additional compensation, indemnity or reimbursement from the other Party as a result of such termination, but such termination shall not affect any rights or remedies available to a Party at the time the termination becomes effective or any obligations or liabilities incurred by a Party.

Article 9 CONFIDENTIALITY

9.1 The Parties agree to keep confidential all facts, data, information, etc. related to the other Party's business that they have learned in the course of providing Services. Such information and data shall not be disclosed by the Parties to any third party and shall not be used or misused to the detriment of the other Party.

9.2 The *Register* will keep confidential any data, plans or other technical information received from the Client and will not disclose it to any third party outside the *Register*, unless authorised by the Client. This obligation shall continue to apply after termination of the Services. This obligation shall not apply to any data, plans or other technical information that was in the possession of the *Register* prior to being disclosed to the *Register* by or on behalf of the Client, or that becomes publicly available through no fault of the *Register*, or is otherwise provided to the *Register* by an independent source that is under no obligation of confidentiality to the *Register*.

9.3 Certificates issued by the *Register* to the Client as a result of the Services provided shall not be covered by the confidentiality Article.

Notwithstanding the foregoing, the Client shall be entitled to disclose any data to its affiliates involved in the transactions related to the Services or the Client's core activities.

9.4 Notwithstanding clause 9.1 and clause 9.2 of this Article, the *Register* shall have the right to disclose the Confidential Information to the following parties if required by regulations of:

- (i) authorised representatives of the Flag State Administration,
- (ii) authorised audit teams (i.e., accreditation body or EC auditors),
- (iii) the International Association of Classification Societies (IACS),
- (iv) a court of competent jurisdiction, government agency, or other relevant public authority, in accordance with applicable law, court order, or other public regulation.

9.5 The Client acknowledges that the *Register* is required to provide access to information to the EU Commission or any person acting on its behalf in accordance with applicable EU requirements and that the Client shall give the EU Commission with unrestricted access to the vessels for the purpose of inspection.

9.6 The obligations in this Article shall survive the conclusion of the Service or the termination of related Contract and shall continue for as long as the relevant information remains confidential.

Article 10 INTELLECTUAL PROPERTY

10.1 Each Party shall be the sole owner of all rights to its Intellectual Property created before or after the effective date of these General Terms and Conditions, whether or not associated with any Contract between the Parties.

10.2 The Intellectual Property developed by the *Register* for the provision of the Services, including but not limited to drawings, calculations and reports, shall remain the exclusive property of the *Register*.

Article 11 PROFESSIONAL ETHICS

11.1 Each of the Parties warrants that, with respect to the matters contemplated herein, neither it nor its affiliates has made or will make, directly or indirectly, any offer, payment, gift or authorization of money to any government official or employee, political party, public official or candidate for the benefit or advantage thereof.

11.2 In providing the Services, the *Register* shall strictly adhere to the requirements of its Code of Ethics relating to business activities.

Article 12 FORCE MAJEURE

12.1 For the purposes of these General Terms and Conditions, the term "Force Majeure" includes any event that directly or indirectly prevents the Parties from fulfilling their obligations due to events beyond their control, such as: strikes, wars, riots, piracy, civil commotion, malicious damage, pandemic, compliance with laws or government orders, rules, regulations or directives, sanctions and embargoes, accidents, defects of plants or machinery, seizures, fires, floods, storms and the like.

12.2 If either Party is prevented or delayed from performing its obligations by Force Majeure, such Party shall promptly notify the other Party in writing of the circumstances of the Force Majeure and its influence and, after such notification, shall not be liable for performance of any obligations prevented by the influence of the Force Majeure during its duration. Upon termination of the influence of the Force Majeure, the same Party should proceed with the planned activities in order to fulfil its obligations.

12.3 If one of the Parties is prevented by Force Majeure in its activities and fulfilment of its obligations and this event lasts continuously for three (3) months, the other Party shall be entitled to terminate the Service and related Contract without liability.

12.4 Neither of the Parties shall be liable for non-compliance with these General Terms and Conditions due to Force Majeure. If one of the Parties is prevented from fulfilling its obligations under these General Terms and Conditions due to Force Majeure, it shall immediately notify the other Party in writing within a reasonable period of time, stating the reasons for the Force Majeure and providing relevant evidence, if any.

Article 13 INDEMNIFICATIONS

13.1 Each Party shall indemnify the other Party against all claims arising out of the performance of the Services in respect of bodily injury, illness or death of any of its employees or other representatives and in respect of loss of or damage to the Party's property.

This provision shall apply whether or not the damage is caused or contributed to by the negligence of the other Party. Both Parties are obliged to take out separate insurances for these liabilities.

13.2 The Client shall indemnify the *Register* from and against all claims arising from the Client's violation of the provisions of these General Terms and Conditions and from the misuse of the Certificates issued by the *Register*.

13.3 The Client shall indemnify the *Register* against any financial responsibility or amounts arising from non-payment, late payment or payment of withholding taxes to the non-relevant tax authority or any other relevant governmental body.

13.4 Each Party shall notify the other Party without undue delay as soon as it becomes aware of any incident that could give rise to a claim against the other Party in respect of the Service provided and related Contract.

Article 14 ANTI-CORRUPTION

14.1 Each Party agrees that in performing its obligations under any Service, it will ensure that its affiliates, employees and/or agents, subsidiaries, subcontractors, consultants, and any other persons providing Services will:

- (i) comply with all applicable anti-bribery and anti-corruption laws (collectively, Anti-Bribery Laws) and, in particular, do not, directly or indirectly, offer, promise, grant, authorise the payment of, or confer any financial or other benefit on any public or government official:
 - to a public or governmental official to obtain or retain business with the intent to influence such official in his or her capacity as an official, if such official is not permitted or required by written law to be influenced by the offer, promise or gift; or
 - to another person with the intent to induce or reward the improper performance of a function or activity or for any other illegal purpose,
- (ii) maintain adequate systems and procedures designed to prevent activities, practises, or conduct in connection with services that would constitute an offence under an anticorruption law; and
- (iii) take reasonable steps to prevent similar acts by customers, contractors, subcontractors, agents and other third parties, persons under its control or influence.

14.2 Any failure by a Party to comply with or ensure compliance with its obligations under this Article shall, notwithstanding anything to the contrary in these General Terms and Conditions, be deemed a breach of these General Terms and Conditions which shall entitle the other Party to suspend and/or terminate the Services by notice in writing with immediate effect without further liability to the other Party except for any liability which may have arisen prior to the date of termination or suspension (as the case may be).

14.3 If a Party elects to suspend the provision of Services under these General Terms and Conditions pursuant to this Article, it shall have the sole and absolute discretion to determine:

- (i) when it will resume performance (if at all); and
- (ii) extend the period for performance of its obligations under the Services in its sole discretion.

Article 15 SANCTIONS

15.1 Each Party shall conduct all activities in compliance with all laws, statutes, rules, economic and trade sanctions (including, but not limited to, U.S. sanctions and EU sanctions) and regulations applicable to such Party, including, but not limited to: child labour, forced labour, collective bargaining, discrimination, abuse, working hours and minimum wages, anti-bribery, anti-corruption, copyright and trademark protection, personal data protection.

15.2 Each Party hereby represents and warrants that it is not or will not be subject to any economic or trade sanctions ("Sanctions") imposed by the United States of America, the European Union, the United Kingdom, any EU Member State, or the United Nations with respect to any country and/or by any sanction giver with respect to any company/individual.

15.3 Each Party represents and warrants that it will strictly comply with all Sanctions.

15.4 Nothing in these General Terms and Conditions shall be construed as causing or obligating either Party to act or refrain from acting in a manner inconsistent with, punishable by, or prohibited by any Sanctions.

15.5 Neither Party shall be obligated to perform any obligation arising under these Terms and Conditions (including, without limitation, the obligation to):

- (i) perform, deliver, accept, sell, purchase, pay or receive any funds to, from or through any person or entity; or
- (ii) engage in any other action whatsoever, if doing so violates or is inconsistent with sanctions and/or recommendations of international (intergovernmental) organisations to combat the financing of terrorism and other criminal activities and/or money laundering or exposes such Party to investigation or penalties.

15.6 In the event that a Party breaches any Sanctions or the Party's Business and/or Transactions arising out of or in connection with these General Terms and Conditions breach any Sanctions or otherwise violate the recommendations of one or more international (intergovernmental) organisations for combating the financing of terrorism and other criminal activities and/or money laundering, the other Party shall be entitled to terminate these General Terms and Conditions by written notice with immediate effect without incurring any liability to the other Party, except for liabilities (if any) incurred prior to the date of termination.

Article 16 LIABILITY

16.1 The *Register* is not, and cannot be considered as, an underwriter, consulting engineer, naval architect, shipbuilder, shipowner, or ship management company, nor can it assume the obligations and responsibilities associated with such functions, although the *Register's* experience may enable it to respond to inquiries about matters not covered by its Rules, policies, instructions, or other documented evidence.

16.2 The practices and procedures of the *Register* shall be selected by the *Register* in its sole and absolute discretion based on its experience and knowledge and in accordance with generally accepted professional standards in the relevant field of classification societies.

16.3 Nothing herein contained shall release any designer, naval architect or engineer, shipbuilder or manufacturer, shipyard, vendor, supplier, contractor or subcontractor, repairer or owner, from any information, report, certificate or similar document issued in connection with the provision of Services by the *Register*, operator, manager or other person or entity from any express or implied warranty or other contractual obligation or responsibility, or from any negligent act, error or omission of any kind whatsoever, nor shall they create any right, claim or benefit for any third party.

16.4 The *Register* shall exercise due care in the selection or appointment of its surveyors and all other employees whose presence and work is necessary for the provision of the Services.

16.5 If any person or entity using the Services of the *Register* suffers any loss, damage or expense that is or is shown to have been caused by a negligent act, omission or error of the *Register's* officers, surveyors, auditors, inspectors, agents, appointers, officers or managers, or those purporting to act in the name of and on behalf of the *Register*, or a negligent inaccuracy, advice, report or evidence given by or in the name of or/and on behalf of the *Register*, then the liability of the *Register* is limited in respect of any direct or indirect claim shall be limited to an amount not exceeding five times the fee charged or to be charged by the *Register* for the relevant Service.

16.6 Any liability for consequential damages is expressly excluded.

For purposes of this clause, consequential damages include, without limitation:

- (i) indirect or consequential damages,

- (ii) loss and/or delay of production, loss of products, loss of use, loss of bargain, loss of revenue, loss of profit or anticipated profit, loss of business and business interruption, in each case directly or indirectly.

16.7 The Parties are not entitled to assign the performance of obligations under these General Terms and Conditions or parts thereof to third parties without the prior written consent of the other Party.

16.8 If during the term of the Contract, there is a transfer of function due to change of status (merger, acquisition, division, etc.), all obligations and rights under these General Terms and Conditions and associated Contract will be transferred to the legal successor of the Party concerned.

Article 17 GOVERNING LAW AND RESOLVING OF DISPUTES

17.1 These General Terms and Conditions and any dispute or claim between the Parties arising from or in connection with it, or the Services provided hereunder, will be governed and interpreted in accordance with the English law.

17.2 The Parties shall use their reasonable efforts to resolve any claim or dispute arising in relation to rendered Service by negotiations within a reasonable time.

17.3 Should the Parties fail to resolve any claim or dispute by negotiations, the dispute shall be exclusively subject to the jurisdiction of the Permanent Arbitration Court with the Croatian Chamber of Economy in Zagreb, Republic of Croatia.

17.4 The Parties agree to keep the any arbitration proceedings confidential.

17.5 Notwithstanding the above, any claim not presented within three (3) months of the completion of the particular Services, or within three (3) months of from the date when the events which are relied on were first discovered by the Client, shall be deemed waived and absolutely time barred.

17.6 Any objections against the line adopted by any of the *Register's* servants in fulfilling their duties or against the conclusions reached are to be raised to the *Register* by the Party as soon as possible.

If the Party is not satisfied with the final conclusions and interpretations by the *Register* the arbitration lays upon the Commission for appeal for Classification and Statutory certification of ships, which is to be formed according to the Regulation 39 of the Charter of the *Register*.

INTRODUCTORY NOTES

These amendments shall be read together with the requirements in the Rules for the Classification of Ships, Part 25 – Metallic materials, edition July 2021, as amended by Amendments No. 1, edition January 2022.

Table 1 contains review of amendments, where items changed or added in relating to previous edition are given, with short description of each modification or addition. All major changes throughout the text are shaded.

This Part of the Rules includes the requirements of the following international Organisations:

International Association of Classification Societies (IACS)

Unified Requirements (UR): W2 (Rev.3, Sep 2021), W7 (Rev.3, 2004), W8 (Rev.2, 2004), W9 (Rev.2, 2004), W10 (Rev.2, 2004), W11 (Rev.9, 2017), W13 (Rev.7, Sep 2021), W14 (Rev.3, Sep 2021), W16 (Rev 3, 2016), W18 (Rev. 6, Sep 2021), W24 (Rev. 4, July 2020), W25 (Rev. 6, Sep 2021), W27 (Rev. 2, July 2020, corr. 1, Sep 2020), W29 (2005), W30 (2013), W31 (rev. 2, 2019), S33 (Rev. 3, Feb 2020)

Recommendations (Rec.): Rec. 139 (2015), Rec. 69 (Rev. 2, Oct 2020), Rec.68 (Rev.1, Apr 2021), Rec.169 (Sep 2021)

TABLE 1 – REVIEW OF AMENDMENTS

This review comprises amendments in relation to the Rules for the Classification of Ships, Part 25 – Metallic materials, edition July 2021, as amended by Amendments No. 1, edition January 2022.

<i>ITEM</i>	<i>DESCRIPTION OF THE AMENDMENTS</i>
SECTION 2 - TEST SPECIMENS AND MECHANICAL TESTING PROCEDURES FOR MATERIALS	
Head 2.3	Item 2.3.1 is partly changed to align with UR W2, Rev.3, Sep 2021
Head 2.4	Items 2.4.2.1 and 2.4.2.10 are partly changed to align with UR W2, Rev.3, Sep 2021
Head 2.5	Item 2.5.4 is partly changed to align with UR W2, Rev.3, Sep 2021
Head 2.7	Items 2.7.3 and 2.7.4 are partly changed to align with UR W2, Rev.3, Sep 2021
Head 2.8	Items 2.8.1, 2.8.2, 2.8.3, 2.8.4 and 2.8.5 are partly changed to align with UR W2, Rev.3, Sep 2021
SECTION 3 - STEEL AND IRON MATERIALS	
Head 3.2.9	Item 3.2.9.1 is partly changed to align with UR W13, Rev.7, Sep 2021
Head 3.9	Item 3.9.5 is partly changed to align with UR W14, Rev.3, Sep 2021
SECTION 5 - ALUMINIUM ALLOYS	
Head 5.1	Items 5.1.1.4 and 5.1.8.5 are partly changed to align with UR W25, Rev.6, Sep 2021
SECTION 7 - ANCHOR CHAIN CABLES AND ACCESSORIES	
Head 7.3	Items 7.3.1 and 7.3.2 are partly changed to align with UR W18, Rev.6, Sep 2021

2 TEST SPECIMENS AND MECHANICAL TESTING PROCEDURES FOR MATERIALS

■ Section 2 TEST SPECIMENS AND MECHANICAL TESTING PROCEDURES FOR MATERIALS is partly changed and should be read as follows:

2.1 SCOPE

2.1.1 This chapter gives the requirements for test specimens when testing ferrous and non-ferrous metals.

2.1.2 The corresponding testing procedures, generally, are to follow established practice as laid down in international and national standards. Some testing procedures are given in this document.

2.1.3 Alternative specimens, such as those complying with recognised national standards, may be accepted subject to special approval by the *Register*. The same applies to the given testing procedures.

2.2 GENERAL

2.2.1 Test samples from which test specimens are cut are to have undergone the same treatment as the material from which they have been taken (e.g. heat treatment).

2.2.2 If test samples are cut from material by flame cutting or shearing, a reasonable margin is required to enable sufficient material to be removed from the cut edges during final machining.

2.2.3 The preparation of test specimens is to be done in such a manner that test specimens are not subject to any significant straining or heating.

2.2.4 Any of the test specimen referred to as "alternative" may be used except as otherwise stated or agreed.

2.3 TESTING MACHINES

2.3.1 All tests are to be carried out by competent personnel. Testing machines are to be maintained in a satisfactory and accurate condition and are to be recalibrated at approximately annual intervals. This calibration is to be traced to a nationally recognised authority and is to be to the satisfaction of the *Register*.

Impact testing machines are to be calibrated in accordance with ISO 148-2:2016 or other recognised standard.

The accuracy of tensile test machines is to be within \pm one percent.

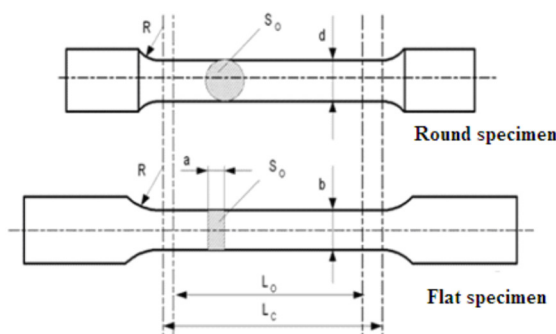
Tension/compression testing machines are to be calibrated in accordance with ISO 7500-1:2018 or other recognised standard.

2.4 TENSILE TEST SPECIMENS

2.4.1 Designations

The following designations are used:

- d = diameter
- a = thickness
- b = width
- L_o = original gauge length
- L_c = parallel test length
- S_o = original cross-sectional area
- R = transition radius
- D = external tube diameter
- t = thickness of product



2.4.2 Dimensions

2.4.2.1 General

Proportional test specimens with a gauge length $L_o = 5,65 \sqrt{S_o}$ or $= 5d$ should preferably be used as the minimum percentage elongation values specified in the Rules refer to this gauge length, L_o should preferably be greater than 20 mm. The gauge length may be rounded off to the nearest 5 mm provided that the difference between this length and L_o is less than 10% of L_o .

2.4.2.2 Plates, strips and sections

Flat specimens are usually to be used with dimensions as specified below.

a) Proportional flat specimen

$$a = t$$

$$b = 25 \text{ mm}$$

$$L_o = 5,65 \sqrt{S_o}$$

$$L_c = L_o + 2 \sqrt{S_o}$$

$$R = 25 \text{ mm}$$

b) Non-proportional flat specimen

$$a = t$$

$$b = 25 \text{ mm}$$

$$L_o = 200 \text{ mm}$$

$$L_c \geq 212,5 \text{ mm}$$

$$R = 25 \text{ mm}$$

When the capacity of the available testing machine is insufficient to allow the use of test specimen of full thickness, this may be reduced by machining one of the rolled surfaces.

Alternatively, for materials over about 40 mm thick, proportional round test specimens with dimensions as specified below, may be used.

c) Round specimen

$$d \geq 10 \text{ mm to } 20 \text{ mm, preferably } 14 \text{ mm}$$

$$L_o = 5d$$

$$L_c \geq L_o + \frac{d}{2}$$

$$R = 10 \text{ mm (for nodular cast iron and materials with a specified elongation less than 10%, } R \geq 1,5 d).$$

The axes of the round test specimens are to be located at approximately one quarter of the thickness from one the rolled surfaces.

2.4.2.3 Aluminium alloys

Flat tensile test specimens shall be used for specified thicknesses up to and including 12,5 mm. The tensile test specimen shall be prepared so that both rolled surfaces are maintained. For thicknesses exceeding 12,5 mm, round tensile test specimens will be used. For thicknesses up to and including 40 mm, the longitudinal axis of the round tensile test specimen shall be located at a distance from one of the surfaces equal to half of the thickness. For thicknesses over 40 mm, the longitudinal axis of the round tensile test specimen shall be located at a distance from one of the surfaces equal to one quarter of the thickness.

2.4.2.4 Forgings, casting (excluding grey cast iron)

Proportional round test specimens with dimensions as specified above in 2.4.2.2 c) are usually to be used.

For small size bars and similar products the test specimens may consist of a suitable length of bar or other product tested in the full cross-section.

2.4.2.5 Tubes

The test specimen shall conform with the following:

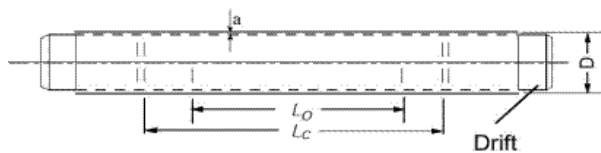
a) full cross-section specimen with plugged ends:

$$L_o = 5,65 \sqrt{S_o}$$

$$L_c \geq 5,65 \sqrt{S_o} + \frac{D}{2} \text{ where } L_c \text{ is the distance between the grips or the plugs, whichever is the smallest.}$$

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b) Strips cut longitudinally

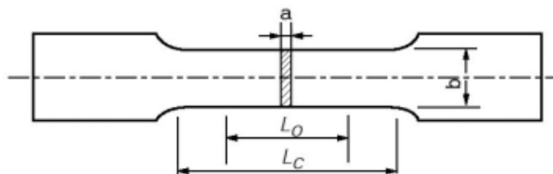
$$a = t$$

$$b \geq 12 \text{ mm}$$

$$L_0 = 5,65 \sqrt{S_0}$$

$$L_c = L_0 + 2b$$

The parallel test length is not to be flattened, but the enlarged ends may be flattened for gripping in the testing machine.



Round test specimens may also be used provided that the wall thickness is sufficient to allow the machining of such specimens to the dimensions given in 2.4.2.2.c), with their axes located at the mid-wall thickness.

2.4.2.6 Wires

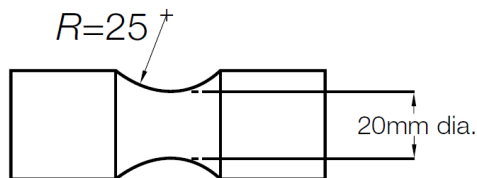
Full cross-section test specimen with the following dimension is to be used:

$$L_0 = 200 \text{ mm}$$

$$L_c = L_0 + 50 \text{ mm}$$

2.4.2.7 Grey cast iron

Round non-cylindrical machined test specimen as shown below is to be used.



2.4.2.8 Weldments

a) Deposited metal tensile test

Round specimen with the following dimensions is to be used:

$$d = 10 \text{ mm}$$

$$L_0 = 50 \text{ mm}$$

$$L_c \geq 55 \text{ mm}$$

$$R \geq 10 \text{ mm}$$

For specially small or large dimensions other specimens may be used after agreement with the *Register*, provided they conform with the geometrical relationship given in 2.4.2.2.c).

b) Butt weld tensile test

Flat specimen, the weld to be machined (or ground) flush with the surface of plate, with the following dimensions is to be used:

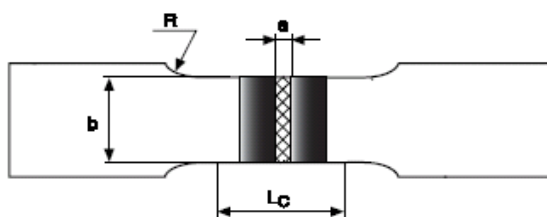
$$a = t$$

$$b = 12 \text{ for } t \leq 2$$

$$b = 25 \text{ for } t > 2$$

$$L_c = \text{width of weld} + 60 \text{ mm}$$

$$R > 25 \text{ mm}$$



2.4.2.9 Through thickness tensile test specimen

Round test specimens including built-up type by welding are to be prepared, in accordance with a recognised standard.

2.4.2.10 Tolerances

The tolerances on specimen dimensions are to be in accordance with ISO 6892:2019, ISO 6892-2:2018 or other recognised standards, as appropriate.

2.5 TENSILE PROPERTIES AT AMBIENT TEMPERATURE

2.5.1 Yield stress (yield point)

The value of stress measured at the commencement of plastic deformation at yield, or the value of stress measured at the first peak obtained during yielding even when that peak is equal to or less than any subsequent peaks observed during plastic deformation at yield. The test is to be carried out with an elastic stress, within the following limits:

Modulus of Elasticity of the material (E) N/mm ²	Rate of stressing N/mm ² s ⁻¹	
	Min.	Max.
< 150 000	2	20
≥ 150 000	6	60

2.5.2 Proof stress (yield strength)

When no well defined yield phenomenon exists, the 0.2% proof stress ($R_{p0.2}$) is to be determined according to the applicable specification. For austenitic and duplex stainless steel products, the 1% proof stress (R_{p1}) may be determined in addition to $R_{p0.2}$.

The rate of loading shall be as stated in 2.5.1 above.

2.5.3 Tensile strength (R_m)

After reaching the yield or proof load, for ductile material the machine speed during the tensile test is not to exceed that corresponding to a strain rate of 0,008s⁻¹. For brittle materials, such as cast iron, the elastic stress rate is not to exceed 10 N/mm² per second.

2.5.4 Fracture elongation (A)

The elongation value is, in principle, valid only if the distance between the fracture and the nearest gauge mark is not less than one third of the original gauge length. However the result is valid irrespective of the location of the fracture, if the percentage elongation after fracture is equal to or greater than the expected value.

The elongation generally means elongation A_5 determined on a proportional gauge length $5.65 \sqrt{S_o} = 5d$ but may also be given for other specified gauge lengths.

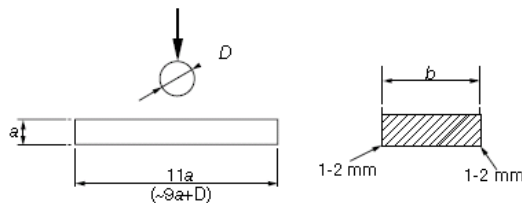
If the material is a ferritic steel of low or medium strength and not cold worked and the elongation as measured on a non-proportional gauge length, the required elongation A_o on that gauge length L_o may after agreement be calculated from the following formula:

$$A_o = 2A_5 \left(\sqrt{\frac{S_o}{L_o}} \right)^{0.40}$$

For tables and graphs see ISO 2566-1:1984; ISO 2566-2:1984.

2.6 BEND TEST SPECIMEN

2.6.1 Flat bend test specimen, as given in the following, is to be used. Edges on tension side to be rounded to a radius of 1 to 2 mm.



2.6.2 Forgings, castings and semi-finished products

$$a = 20 \text{ mm}$$

$$b = 25 \text{ mm}$$

2.6.3 Plates, structural sections, sheets:

$$a = t$$

$$b = 30 \text{ mm}$$

2.6.4 Butt welds, transverse specimen

a) face and root bend

$$a = t$$

$$b = 30 \text{ mm}$$

If the as rolled thickness t is greater than 25 mm, it may be reduced to 25 mm by machining on the compression side of the bend specimen.

The surfaces of the weld are to be machined (ground) flush with the surface of the plate.

b) side bend

$$a = 10 \text{ mm}$$

$$b = t$$

If $t \geq 40$ mm, the side-bend specimen may be subdivided, each part being at least 20 mm wide.

2.6.5 Butt weld, longitudinal specimens

The test specimens, for longitudinal face and root test, are to be in accordance with an appropriate recognised standard.

2.7 TOUGHNESS TESTING

2.7.1 Charpy V-notch impact specimens

The test specimens shall comply with the following dimensions:

Dimensions	Nominal	Tolerances
Length	55 mm	$\pm 0,60$ mm
Width - standard specimen	10 mm	$\pm 0,11$ mm
- subsize specimen	7,5 mm	$\pm 0,11$ mm
- subsize specimen	5 mm	$\pm 0,06$ mm
Angle of notch	45°	$\pm 2^\circ$
Thickness	10 mm	$\pm 0,06$ mm
Dept below notch	8 mm	$\pm 0,06$ mm
Root radius	0,25 mm	$\pm 0,025$ mm
Distance of notch from end of test specimen	27,5 mm	$\pm 0,42$ mm

Dimensions	Nominal	Tolerances
Angle between plane of symmetry of notch and longitudinal axis of test specimen	90°	± 2°

2.7.2 Sub size Charpy requirements

When required, the testing and requirements for specimens smaller than 5.0 mm in size are to be in accordance with the recognized standards. Minimum average values for subsized specimens are as follows:

Charpy V-notch specimen size	Minimum energy, average of 3 specimens
10 mm x 10 mm	E
10 mm x 7,5	5E/6
10 mm x 5,0 mm	2E/3

E = the values of energy specified for full thickness 10 mm x 10 mm specimens

All other dimensions and tolerances are to be as specified in 2.7.1.

Only one individual value may be below the specified average value, provided it is not less than 70% of that value.

In all cases, the largest size Charpy specimens possible for the material thickness, shall be machined.

2.7.3 Testing machines and temperature control in Charpy V-notch impact testing

All impact tests are to be carried out on Charpy machines complying with the requirements of ISO 148-2:2016 or other national and international recognised standards, and having a striking energy of not less than 150 J.

Where the test temperature is other than ambient the temperature of the test specimen at the moment of breaking shall be the specified temperature within ± 2°.

2.7.4 Dropweight specimens

Dropweight specimens for determination of no-break performance according to ASTM E-208:2019 are to comply with this ASTM standard and have one of the following dimensions (mm):

Type P-1: 25 by 90 by 360

Type P-2: 19 by 50 by 130

Type P-3: 16 by 50 by 130

The following is to be noted if not otherwise specified:

- the specimen sides shall be saw-cut or machined (minimum 25 mm to flame-cut surface),
- the machining of the plate to prescribed specimen thickness shall be on one side only,
- the specimens may be of any orientation, but the orientation shall be the same for all specimens.

2.8 DUCTILITY TESTS FOR PIPES AND TUBES

2.8.1 Flattening test specimens

Length is to be from 10 mm to 100 mm. Plain and smoothed ends cut perpendicular to the tube axis. Reference is made to ISO 8492:2013.

2.8.2 Drift expanding test

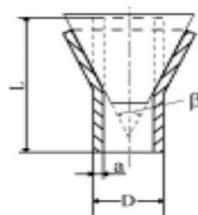
The lengths L of the drift expanding test specimens are to be as follows. Reference is made to ISO 8493:1998.

Metallic tubes: L equal to twice the external diameter D of the tube if the angle of the drift β is 30°, and L equal to 1.5D if the angle of the drift is 45° or 60°. The test piece may be shorter provided that after testing the remaining cylindrical portion is not less than 0.5D.

The rate of penetration of the mandrel shall not exceed 50 m/min.

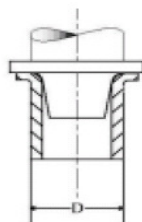
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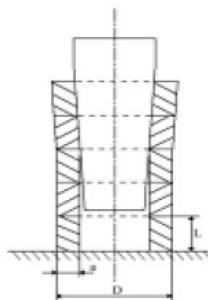
**2.8.3 Flanging test**

The flanging test specimen is to be of length L equal to approximately $1,5D$. The test piece may be shorter provided that after testing the remaining cylindrical portion is not less than $0,5D$.

The rate of penetration of forming tool shall not exceed 50 mm/min. Reference is made to ISO 8494:2013.

**2.8.4 Ring expanding test**

The test piece consist of a ring having a length of between 10 and 16 mm. The rate of penetration of the mandrel shall not exceed 30 mm/s. Reference is made to ISO 8495:2013.

**2.8.5 Ring tensile test**

The ring shall have a length of about 15 mm with plain and smoothed ends cut perpendicular to the tube axis.

The ring is to be drawn to fracture by means of two mandrels placed inside the ring and pulled in tensile testing machine. The rate shall not exceed 5 mm/s. Reference is made to ISO 8496:2013.

2.9 RE-TESTING**2.9.1 General**

2.9.1.1 If the test sections or specimens specified for a test are not properly taken and prepared, the test results obtained with them shall be invalid. The tests shall then be repeated on properly prepared test specimens.

2.9.1.2 If, in a properly performed test, the requirements are not met, then, before the corresponding unit test quantities are rejected, re-testing may be carried out subject to conditions stated below. Re-testing is not allowed if it is suspected that the wrong material is concerned.

2.9.1.3 If the unsatisfactory result of a test is due to obvious defects in the execution of the test or to a narrowly defined fault in the test specimen, the result shall be disregarded and the test in question shall be repeated on a test specimen of the same type which shall be taken from the same test section. This also applies to tensile specimens which, when tested, fractured outside the valid measuring length.

2.9.1.4 If the unsatisfactory result of a test is attributable to improper heat treatment of the products, they may be re-subjected to heat treatment. Subsequently, the entire test shall be repeated and the original test result shall be disregarded.

2.9.1.5 The manufacturer may also follow the procedure described in 2.9.1.4 in the case of those products which, according to the specifications, may be supplied without heat treatment but which have failed to meet the requirements in this condition.

2.9.1.6 If, under test, a large proportion of the products fail because of constantly recurring manufacturing defects, the entire delivery may be rejected.

2.9.2 Unsatisfactory tensile test specimens (excluding pipes)

2.9.2.1 Individual tests

When the tensile test fails to meet the requirements, two further tests may be made from the same piece. If both of these additional tests are satisfactory, the item and/or batch (as applicable) is acceptable. If one or both of these tests fail, the item and/or batch is to be rejected.

The additional tests detailed above are to be taken, preferably from material taken adjacent to the original tests, but alternatively from another test position or sample representative of the item/batch.

2.9.2.2 Testing by heats or batches

The manufacturer shall have the option of separating the sample which has yielded unsatisfactory results or of continuing to treat it as part of the unit test quantity.

If the sample in question is separated, then, for each unsatisfactory tensile specimen, two substitute specimens shall be tested which shall be taken from different samples of the unit test quantity.

If the sample in question continues to be treated as part of the unit test quantity, one of the retests shall be performed on this sample and the other on a different sample.

Both of retests must satisfy the requirements.

2.9.3 Unsatisfactory impact test specimens (excluding pipes)

2.9.3.1 Individual tests

Where specified the following Charpy re-test procedure will apply:

When the average value of three initial Charpy V-notch impact specimens fails to meet the stated requirement, or the value for more than one specimen is below the required average value, or when the value of any one specimen is below 70% of the specified average value, three additional specimens from the same material may be tested and the results added to those previously obtained to form a new average. If this new average complies with the requirements and if not more than two individual results are lower than the required average and of these, not more than one result is below 70% of the specified average value the piece or batch (as specified for each product) may be accepted.

2.9.3.2 Testing by heats or batches

If the average value of 3 impact test specimens fails to satisfy the requirements or if a single value is less than 70% of the stipulated average value, then the procedure described in 2.9.3.1 shall be applied initially.

If re-testing also produces an unsatisfactory result, the sample tested shall be rejected and two further samples, of the same or the next smaller thickness, from the same unit test quantity shall be tested.

If, again, one of the samples fails to satisfy the requirements, then the entire unit test quantity shall be rejected. With the consent of the Surveyor, the remaining sample quantities in the unit test quantity may, however, be subjected to individual testing.

2.9.4 Unsatisfactory drop weight specimens

2.9.4.1 Individual tests

If one or both of the two test specimens fail(s), two similar substitute specimens may be taken from the same sample and tested. Both substitute specimens shall satisfy the requirements. If they fail to do so, the relevant sample shall be rejected.

2.9.4.2 Testing by heats

If one or both of the two test specimens to be taken from the thickest sample of the heat fail(s), then, from the same sample and from a different sample of the same thickness (or, if not available, from the next smaller thickness) two specimens of the same type each shall be taken and tested. All four specimens shall satisfy the requirements. If they fail to do so, then the relevant heat shall be rejected.

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With the consent of the Surveyor, the remaining sample quantities in the rejected heat may, however, be subjected to individual testing.

2.9.5 Unsatisfactory results in the testing of pipes**2.9.5.1 Testing by batches**

If, when subjected to the tensile test, the ring test or notched bar impact test, pipes fail to satisfy the requirements, the test which has produced unsatisfactory results shall be repeated on the same end of the pipe selected for the test. If the new test fails to satisfy the requirements, the pipe in question shall be discarded. In its place two further pipes shall be taken from the batch concerned and shall be subjected to the full range of tests. If, during testing, one of the requirements is not met, then the entire batch shall be deemed unacceptable.

However, with the consent of the Surveyor, the characteristic which failed to meet the requirements may be checked on each individual pipe.

2.9.6 Retesting specified in standards

Where a national or international standard specifies a wider scope for the performance of repeat tests, this shall take precedence over retests described in 2.9.5.1.

3 STEEL AND IRON MATERIALS

■ **Head 3.2.9 THICKNESS TOLERANCES**, item 3.2.9.1 is partly changed, and should be read as:

3.2.9.1 Scope

3.2.9.1.1 These requirements apply to the tolerance on thickness of steel plates and wide flats with widths of 600 mm or greater (hereinafter referred to as: product or products) with thicknesses of 5 mm and over, covering the following steel grades:

- a) Normal and higher strength hull structural steels according to 3.2.
- b) High strength steels for welded structure according to 3.4.
- c) Steels for machinery structures in accordance with the Rules of the Register.

The thickness tolerances for products below 5 mm are to be in accordance with a national or international standard, e.g. Class B of ISO 7452:2013. However, the minus tolerance shall not exceed 0,3mm.

Note:

Tolerances for length, width, flatness and over thickness may be taken from national or international standards.

3.2.9.1.2 These requirements do not apply to products intended for the construction of lifting appliances which are subject to decision by the Register.

3.2.9.1.3 These requirements do not apply to products intended for the construction of boilers, pressure vessels and independent tanks, e.g. for the transportation of liquefied gases or chemicals.

3.2.9.1.4 Class C of ISO 7452:2013 or equivalent according to national or international standards may be applied in lieu of 3.2.9.3, in which case the requirements in 3.2.9.4 and 3.2.9.5 need not be applied.

Additionally, if Class C of ISO 7452:2013 is applied, it is required that the steel mill demonstrates to the satisfaction of the *Register* that the number of measurements and measurement distribution is appropriate to establish that the mother plates produced are at or above the specified nominal thickness.

■ **Head 3.9 STEEL PLATES AND WIDE FLATS WITH SPECIFIED MINIMUM THROUGH THICKNESS PROPERTIES ("Z" QUALITY)**, item 3.9.5 is partly changed, and should be read as:

3.9.5 Ultrasonic tests

Ultrasonic testing is required and is to be performed in accordance with either EN 10160:1999 Level S1/E1 or ASTM A 578:2017 Level C.

Ultrasonic testing should be carried out on each piece in the final supply condition and with a probe frequency of 4MHz.

■ **Head 7.3 DESIGN AND MANUFACTURE OF CHAIN CABLES AND ACCESORIES**, items 7.3.1 and 7.3.2 are partly changed, and should be read as:

7.3.1 Design

Chain cables must be designed according to a recognized standard, such as ISO 1704:2008. A length of chain cable must comprise an odd number of links. Where designs do not comply with this and where accessories are of welded construction, drawings giving full details of the design, the manufacturing process and the heat treatment are to be submitted to the *Register* for approval.

7.3.2 Dimensions and dimensional tolerances

7.3.2.1 The shape and proportions of links and accessories must conform to a recognized standard, such as ISO 1704:2008 or the designs specially approved.

7.3.2.2 The following tolerances are applicable to links:

- a) Diameter measured at the crown (Two measurements are to be taken at the same location: one in the plane of the link (see d_p in Figure 7.3.2.2), and one perpendicular to the plane of the link):

up to 40mm nominal diameter	: - 1 mm
over 40 up to 84 mm nominal diameter	: - 2 mm
over 84 up to 122 mm nominal diameter	: - 3 mm
over 122mm nominal diameter	: - 4 mm

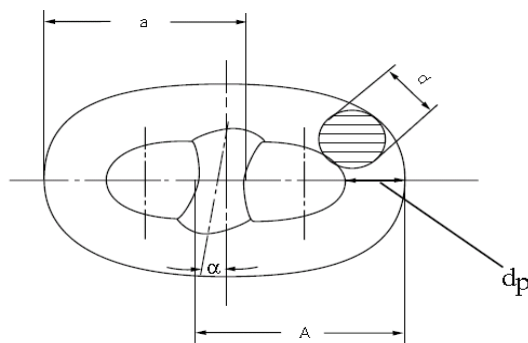
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The plus tolerance may be up to 5% of the nominal diameter. The cross sectional area of the crown must have no negative tolerance.

- b) Diameter measured at locations other than the crown:
The diameter is to have no negative tolerance. The plus tolerance may be up to 5% of the nominal diameter. The approved manufacturer's specification is applicable to the plus tolerance of the diameter at the flush-butt weld.
- c) The maximum allowable tolerance on assembly measured over a length of 5 links may equal +2.5%, but may not be negative (measured with the chain under tension after proof load test).
- d) All other dimensions are subject to a manufacturing tolerance of $\pm 2.5\%$, provided always that all of the final link parts of the chain cable fit together properly.
- e) Studs must be located in the links centrally and at right angles to the sides of the link, although the studs at each end of any length may also be located off-centre to facilitate the insertion of the joining shackle. The following tolerances are regarded as being inherent in the method of manufacture and will not be objected to, provided that the stud fits snugly and its ends lie practically flush against the inside of the link.
 Maximum off-centre distance "X" : 10% of the nominal diameter d
 Maximum deviation " α " from the 90° - position : 4°

The tolerances are to be measured in accordance with Figure 7.3.2.2.



$$\text{Off-centre distance: } x = \frac{A - a}{2}$$

Figure 7.3.2.2
Manufacturing tolerances

7.3.2.3 The following tolerances are applicable to accessories:

- nominal diameter: +5%, -0%
- other dimensions: $\pm 2.5\%$

5 ALUMINIUM ALLOYS

■ **Head 5.1 ALUMINIUM WROUGHT ALLOYS**, items 5.1.1.4 and 5.1.8.5 are partly changed, and should be read as:

5.1.1.4 Temper conditions (delivery heat treatment) are defined in the European Standard EN 515:2017, or ANSI H35.1:2017.

5.1.8.5 Corrosion testing

5.1.8.5.1 Rolled 5xxx-alloys of type 5083, 5383, 5059, 5086 and 5456 in the H116 and H321 tempers intended for use in marine hull construction or in marine applications where frequent direct contact with seawater is expected are to be corrosion tested with respect to exfoliation and intergranular corrosion resistance.

5.1.8.5.2 The manufacturers shall establish the relationship between microstructure and resistance to corrosion when the above alloys are approved. A reference photomicrograph taken at 500x, under the conditions specified in ASTM B928:2015, Section 9.4.1, shall be established for each of the alloy-tempers and thickness ranges relevant. The reference photographs shall be taken from samples which have exhibited no evidence of exfoliation corrosion and a pitting rating of PB or better, when subjected to the test described in ASTM G66:2018 (ASSET). The samples shall also have exhibited resistance to intergranular corrosion at a mass loss no greater than 15 mg/cm², when subjected to the test described in ASTM G67:2018 (NAMLT). Upon satisfactory establishment of the relationship between microstructure and resistance to corrosion, the master photomicrographs and the results of the corrosion tests are to be approved by the *Register*. Production practices shall not be changed after approval of the reference micrographs.

Other test methods may also be accepted at the discretion of the *Register*.

5.1.8.5.3 For batch acceptance of 5xxx-alloys in the H116 and H321 tempers, metallographic examination of one sample selected from mid width at one end of a coil or random sheet or plate is to be carried out. The microstructure of the sample is to be compared to the reference photomicrograph of acceptable material in the presence of the Surveyor. A longitudinal section perpendicular to the rolled surface shall be prepared for metallographic examination, under the conditions specified in ASTM B928:2015, Section 9.6.1. If the microstructure shows evidence of continuous grain boundary network of aluminium-magnesium precipitate in excess of the reference photomicrographs of acceptable material, the batch is either to be rejected or tested for exfoliation-corrosion resistance and intergranular corrosion resistance subject to the agreement of the Surveyor. The corrosion tests are to be in accordance with ASTM G66:2018 and ASTM G67:2018 or equivalent standards. Acceptance criteria are that the sample shall exhibit no evidence of exfoliation corrosion and a pitting rating of PB or better when test subjected to ASTM G66:2018 ASSET test, and the sample shall exhibit resistance to intergranular corrosion at a mass loss no greater than 15 mg/cm² when subjected to ASTM G67:2018 NAMLT test. If the results from testing satisfy the acceptance criteria stated in paragraph 5.1.8.5.2 the batch is accepted, else it is to be rejected.

As an alternative to metallographic examination, each batch may be tested for exfoliation-corrosion resistance and intergranular corrosion resistance, in accordance with ASTM G66:2018 and ASTM G67:2018 under the conditions specified in ASTM B928:2015, or equivalent standards. If this alternative is used, then the results of the test must satisfy the acceptance criteria stated in paragraph 5.1.8.5.3.

7 ANCHOR CHAIN CABLES AND ACCESSORIES

7.3.1 Design

Chain cables must be designed according to a recognized standard, such as ISO 1704:2008. A length of chain cable must comprise an odd number of links. Where designs do not comply with this and where accessories are of welded construction, drawings giving full details of the design, the manufacturing process and the heat treatment are to be submitted to the *Register* for approval.

7.3.2 Dimensions and dimensional tolerances

7.3.2.1 The shape and proportions of links and accessories must conform to a recognized standard, such as ISO 1704:2008 or the designs specially approved.

7.3.2.2 The following tolerances are applicable to links:

- a) Diameter measured at the crown (Two measurements are to be taken at the same location: one in the plane of the link (see d_p in Figure 7.3.2.2), and one perpendicular to the plane of the link):
 - up to 40 mm nominal diameter: - 1 mm
 - over 40 up to 84 mm nominal diameter: - 2 mm
 - over 84 up to 122 mm nominal diameter: - 3 mm
 - over 122 mm nominal diameter: - 4mm

The plus tolerance may be up to 5% of the nominal diameter. The cross sectional area of the crown must have no negative tolerance.
- b) Diameter measured at locations other than the crown:

The diameter is to have no negative tolerance. The plus tolerance may be up to 5% of the nominal diameter. The approved manufacturer's specification is applicable to the plus tolerance of the diameter at the flush-butt weld.
- c) The maximum allowable tolerance on assembly measured over a length of 5 links may equal +2.5%, but may not be negative (measured with the chain under tension after proof load test).
- d) All other dimensions are subject to a manufacturing tolerance of $\pm 2.5\%$, provided always that all of the final link parts of the chain cable fit together properly.
- e) Studs must be located in the links centrally and at right angles to the sides of the link, although the studs at each end of any length may also be located off-centre to facilitate the insertion of the joining shackle. The following tolerances are regarded as being inherent in the method of manufacture and will not be objected to, provided that the stud fits snugly and its ends lie practically flush against the inside of the link.

Maximum off-centre distance "X": 10% of the nominal diameter d

Maximum deviation " α " from the 90° - position: 4°

The tolerances are to be measured in accordance with Figure 7.3.2.2.

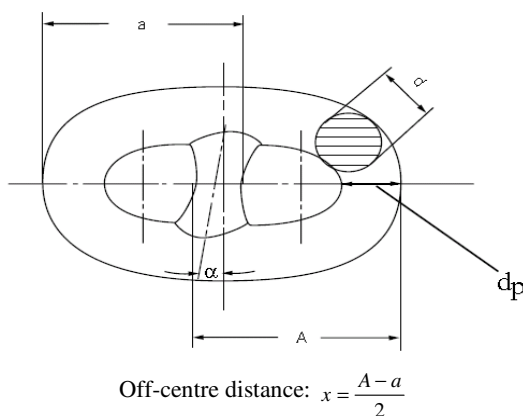


Figure 7.3.2.2
Manufacturing tolerances

7.3.2.3 The following tolerances are applicable to accessories:

- nominal diameter: +5%, -0%
- other dimensions: $\pm 2.5\%$