



Rules for the Certification of Coating Systems

Effective from 1 January 2016

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GENERAL CONDITIONS

Definitions:

"Administration" means the Government of the State whose flag the Ship is entitled to fly or under whose authority the Ship is authorized to operate in the specific case.

"IACS" means the International Association of Classification Societies.

"Interested Party" means the party, other than the Society, having an interest in or responsibility for the Ship, product, plant or system subject to classification or certification (such as the owner of the Ship and his representatives, the ship builder, the engine builder or the supplier of parts to be tested) who requests the Services or on whose behalf the Services are requested.

"Owner" means the registered owner, the ship owner, the manager or any other party with the responsibility, legally or contractually, to keep the ship seaworthy or in service, having particular regard to the provisions relating to the maintenance of class laid down in Part A, Chapter 2 of the Rules for the Classification of Ships or in the corresponding rules indicated in the specific Rules.

"Rules" in these General Conditions means the documents below issued by the Society:

- (i) Rules for the Classification of Ships or other special units;
- (ii) Complementary Rules containing the requirements for product, plant, system and other certification or containing the requirements for the assignment of additional class notations;
- (iii) Rules for the application of statutory rules, containing the rules to perform the duties delegated by Administrations;
- (iv) Guides to carry out particular activities connected with Services;
- (v) Any other technical document, as for example rule variations or interpretations.

"Services" means the activities described in Article 1 below, rendered by the Society upon request made by or on behalf of the Interested Party.

"Ship" means ships, boats, craft and other special units, as for example offshore structures, floating units and underwater craft.

"Society" or "TASNEEF" means Tasneef and/or all the companies in the Tasneef Group which provide the Services.

"Surveyor" means technical staff acting on behalf of the Society in performing the Services.

Article 1

1.1. The purpose of the Society is, among others, the classification and certification of ships and the certification of their parts and components. In particular, the Society:

- (i) sets forth and develops Rules;
- (ii) publishes the Register of Ships;
- (iii) issues certificates, statements and reports based on its survey activities.

1.2. The Society also takes part in the implementation of national and international rules and standards as delegated by various Governments.

1.3. The Society carries out technical assistance activities on request and provides special services outside the scope of classification, which are regulated by these general conditions, unless expressly excluded in the particular contract.

Article 2

2.1. The Rules developed by the Society reflect the level of its technical knowledge at the time they are published. Therefore, the Society, although committed also through its research and development services to continuous updating of the Rules, does not guarantee the Rules meet state-of-the-art science and technology at the time of publication or that they meet the Society's or others' subsequent technical developments.

2.2. The Interested Party is required to know the Rules on the basis of which the Services are provided. With particular reference to Classification Services, special attention is to be given to the Rules concerning class suspension, withdrawal and reinstatement. In case of doubt or inaccuracy, the Interested Party is to promptly contact the Society for clarification. The Rules for Classification of Ships are published on the Society's website: www.tasneef.ae.

2.3. The Society exercises due care and skill:

- (i) in the selection of its Surveyors
- (ii) in the performance of its Services, taking into account the level of its technical knowledge at the time the Services are performed.

2.4. Surveys conducted by the Society include, but are not limited to, visual inspection and non-destructive testing. Unless otherwise required, surveys are conducted through sampling techniques and do not consist of comprehensive verification or monitoring of the Ship or of the items subject to certification. The surveys and checks made by the Society on board ship do not necessarily require the constant and continuous presence of the Surveyor. The Society may also commission laboratory testing, underwater inspection and other checks carried out by and under the responsibility of qualified service suppliers. Survey practices and procedures are selected by the Society based on its experience and knowledge and according to generally accepted technical standards in the sector.

Article 3

3.1. The class assigned to a Ship, like the reports, statements, certificates or any other document or information issued by the Society, reflects the opinion of the Society concerning compliance, at the time the Service is provided, of the Ship or product subject to certification, with the applicable Rules (given the intended use and within the relevant time frame).

The Society is under no obligation to make statements or provide information about elements or facts which are not part of the specific scope of the Service requested by the Interested Party or on its behalf.

3.2. No report, statement, notation on a plan, review, Certificate of Classification, document or information issued or given as part of the Services provided by the Society shall have any legal effect or implication other than a representation that, on the basis of the checks made by the Society, the Ship, structure, materials, equipment, machinery or any other item covered by such document or information meet the Rules. Any such document is issued solely for the use of the Society, its committees and clients or other duly authorised bodies and for no other purpose. Therefore, the Society cannot be held liable for any act made or document issued by other parties on the basis of the statements or information given by the Society. The validity, application, meaning and interpretation of a Certificate of Classification, or any other document or information issued by the Society in connection with its Services, is governed by the Rules of the Society, which is the sole subject entitled to make such interpretation. Any disagreement on technical matters between the Interested Party and the Surveyor in the carrying out of his functions shall be raised in writing as soon as possible with the Society, which will settle any divergence of opinion or dispute.

3.3. The classification of a Ship, or the issuance of a certificate or other document connected with classification or certificate on and in general with the performance of Services by the Society shall have the validity conferred upon it by the Rules of the Society at the time of the assignment of class or issuance of the certificate; in no case shall it amount to a statement or warranty of seaworthiness,

structural integrity, quality or fitness for a particular purpose or service of any Ship, structure, material, equipment or machinery inspected or tested by the Society.

- 3.4. Any document issued by the Society in relation to its activities reflects the condition of the Ship or the subject of certification or other activity at the time of the check.
- 3.5. The Rules, surveys and activities performed by the Society, reports, certificates and other documents issued by the Society are in no way intended to replace the duties and responsibilities of other parties such as Governments, designers, ship builders, manufacturers, repairers, suppliers, contractors or sub-contractors, Owners, operators, charterers, underwriters, sellers or intended buyers of a Ship or other product or system surveyed.

These documents and activities do not relieve such parties from any fulfilment, warranty, responsibility, duty or obligation (also of a contractual nature) expressed or implied or in any case incumbent on them, nor do they confer on such parties any right, claim or cause of action against the Society. With particular regard to the duties of the ship Owner, the Services undertaken by the Society do not relieve the Owner of his duty to ensure proper maintenance of the Ship and ensure seaworthiness at all times. Likewise, the Rules, surveys performed, reports, certificates and other documents issued by the Society are intended neither to guarantee the buyers of the Ship, its components or any other surveyed or certified item, nor to relieve the seller of the duties arising out of the law or the contract, regarding the quality, commercial value or characteristics of the item which is the subject of transaction.

In no case, therefore, shall the Society assume the obligations incumbent upon the above-mentioned parties, even when it is consulted in connection with matters not covered by its Rules or other documents.

In consideration of the above, the Interested Party undertakes to relieve and hold harmless the Society from any third party claim, as well as from any liability in relation to the latter concerning the Services rendered.

Insofar as they are not expressly provided for in these General Conditions, the duties and responsibilities of the Owner and Interested Parties with respect to the services rendered by the Society are described in the Rules applicable to the specific Service rendered.

Article 4

- 4.1. Any request for the Society's Services shall be submitted in writing and signed by or on behalf of the Interested Party. Such a request will be considered irrevocable as soon as received by the Society and shall entail acceptance by the applicant of all relevant requirements of the Rules, including these General Conditions. Upon acceptance of the written request by the Society, a contract between the Society and the Interested Party is entered into, which is regulated by the present General Conditions.

- 4.2. In consideration of the Services rendered by the Society, the Interested Party and the person requesting the service shall be jointly liable for the payment of the relevant fees, even if the service is not concluded for any cause not pertaining to the Society. In the latter case, the Society shall not be held liable for non-fulfilment or partial fulfilment of the Services requested. In the event of late payment, interest at the legal current rate increased by 1.5% may be demanded.

- 4.3. The contract for the classification of a Ship or for other Services may be terminated and any certificates revoked at the request of one of the parties, subject to at least 30 days' notice to be given in writing. Failure to pay, even in part, the fees due for Services carried out by the Society will entitle the Society to immediately terminate the contract and suspend the Services.

For every termination of the contract, the fees for the activities performed until the time of the termination shall be owed to the Society as well as the expenses incurred in view of activities already programmed; this is without prejudice to the right to compensation due to the Society as a consequence of the termination.

With particular reference to Ship classification and certification, unless decided otherwise by the Society, termination of the contract implies that the assignment of class to a Ship is withheld or, if already assigned, that it is suspended or withdrawn; any statutory certificates issued by the Society will be withdrawn in those cases where provided for by agreements between the Society and the flag State.

Article 5

- 5.1. In providing the Services, as well as other correlated information or advice, the Society, its Surveyors, servants or agents operate with due diligence for the proper execution of the activity. However, considering the nature of the activities performed (see art. 2.4), it is not possible to guarantee absolute accuracy, correctness and completeness of any information or advice supplied. Express and implied warranties are specifically disclaimed.

Therefore, except as provided for in paragraph 5.2 below, and also in the case of activities carried out by delegation of Governments, neither the Society nor any of its Surveyors will be liable for any loss, damage or expense of whatever nature sustained by any person, in tort or in contract, derived from carrying out the Services.

- 5.2. Notwithstanding the provisions in paragraph 5.1 above, should any user of the Society's Services prove that he has suffered a loss or damage due to any negligent act or omission of the Society, its Surveyors, servants or agents, then the Society will pay compensation to such person for his proved loss, up to, but not exceeding, five times the amount of the fees charged for the specific services, information or opinions from which the loss or damage derives or, if no fee has been charged, a maximum of AED5,000 (Arab Emirates Dirhams Five Thousand only). Where the fees charged are related to a number of Services, the amount of the fees will be apportioned for the purpose of the calculation of the maximum compensation, by reference to the estimated time involved in the performance of the Service from which the damage or loss derives. Any liability for indirect or consequential loss, damage or expense is specifically excluded. In any case, irrespective of the amount of the fees charged, the maximum damages payable by the Society will not be more than AED5,000,000 (Arab Emirates Dirhams Five Millions only). Payment of compensation under this paragraph will not entail any admission of responsibility and/or liability by the Society and will be made without prejudice to the disclaimer clause contained in paragraph 5.1 above.

- 5.3. Any claim for loss or damage of whatever nature by virtue of the provisions set forth herein shall be made to the Society in writing, within the shorter of the following periods: (i) THREE (3) MONTHS from the date on which the Services were performed, or (ii) THREE (3) MONTHS from the date on which the damage was discovered. Failure to comply with the above deadline will constitute an absolute bar to the pursuit of such a claim against the Society.

Article 6

- 6.1. These General Conditions shall be governed by and construed in accordance with United Arab Emirates (UAE) law, and any dispute arising from or in connection with the Rules or with the Services of the Society, including any issues concerning responsibility, liability or limitations of liability of the Society, shall be determined in accordance with UAE law. The courts of the Dubai International Financial Centre (DIFC) shall have exclusive jurisdiction in relation to any claim or dispute which may arise out of or in connection with the Rules or with the Services of the Society.

- 6.2. However,

- (i) In cases where neither the claim nor any counterclaim exceeds the sum of AED300,000 (Arab Emirates Dirhams Three Hundred Thousand) the dispute shall be referred to the jurisdiction of the DIFC Small Claims Tribunal; and
- (ii) for disputes concerning non-payment of the fees and/or expenses due to the Society for services, the Society shall have the

right to submit any claim to the jurisdiction of the Courts of the place where the registered or operating office of the Interested Party or of the applicant who requested the Service is located.

In the case of actions taken against the Society by a third party before a public Court, the Society shall also have the right to summon the Interested Party or the subject who requested the Service before that Court, in order to be relieved and held harmless according to art. 3.5 above.

Article 7

- 7.1.** All plans, specifications, documents and information provided by, issued by, or made known to the Society, in connection with the performance of its Services, will be treated as confidential and will not be made available to any other party other than the Owner without authorization of the Interested Party, except as provided for or required by any applicable international, European or domestic legislation, Charter or other IACS resolutions, or order from a competent authority. Information about the status and validity of class and statutory certificates, including transfers, changes, suspensions, withdrawals of class, recommendations/conditions of class, operating conditions or restrictions issued against classed ships and other related information, as may be required, may be published on the website or released by other means, without the prior consent of the Interested Party. Information about the status and validity of other certificates and statements may also be published on the website or released by other means, without the prior consent of the Interested Party.
- 7.2.** Notwithstanding the general duty of confidentiality owed by the Society to its clients in clause 7.1 above, the Society's clients hereby accept that the Society may participate in the IACS Early Warning System which requires each Classification Society to provide other involved Classification Societies with relevant technical information on serious hull structural and engineering systems failures, as defined in the IACS Early Warning System (but not including any drawings relating to the ship which may be the specific property of another party), to enable such useful information to be shared and used to facilitate the proper working of the IACS Early Warning System. The Society will provide its clients with written details of such information sent to the involved Classification Societies.
- 7.3.** In the event of transfer of class, addition of a second class or withdrawal from a double/dual class, the Interested Party undertakes to provide or to permit the Society to provide the other Classification Society with all building plans and drawings, certificates, documents and information relevant to the classed unit, including its history file, as the other Classification Society may require for the purpose of classification in compliance with the applicable legislation and relative IACS Procedure. It is the Owner's duty to ensure that, whenever required, the consent of the builder is obtained with regard to the provision of plans and drawings to the new Society, either by way of appropriate stipulation in the building contract or by other agreement.
- In the event that the ownership of the ship, product or system subject to certification is transferred to a new subject, the latter shall have the right to access all pertinent drawings, specifications, documents or information issued by the Society or which has come to the knowledge of the Society while carrying out its Services, even if related to a period prior to transfer of ownership.

Article 8

- 8.1.** Should any part of these General Conditions be declared invalid, this will not affect the validity of the remaining provisions.

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1. GENERAL

1.1 Field of application

These Rules apply to the certification of coating systems in accordance with the requirements of IMO Resolution MSC.215(82) [hereinafter referred to as PSPC] and IACS Procedural Requirement No. 34 [hereinafter referred to as PR34].

These Rules apply to both the main coating Manufacturer and the shop primer Manufacturer where both coatings form part of the total system.

1.2 Definitions

Coating system means a number of coats separately applied, in a predetermined order, at suitable intervals to allow for drying and curing, resulting in a completed job.

2. CERTIFICATION SCHEME

The certification process of Coating Systems consists of the following two steps:

- a. type approval
- b. production control.

2.1 Type approval

The coating system is to be tested in compliance with the test procedure defined in [4.2].

2.2 Production control

Tasneef is to verify, by means of an initial audit, that the quality assurance system adopted by the Manufacturer and applied for production, inspection and testing during fabrication and on finished products is able to guarantee the required characteristics for the type approved coating system.

3. DOCUMENTATION TO BE SUBMITTED

For certification, the Manufacturer is to submit an application to Tasneef, specifying the trade name of the coating systems and enclosing:

1. outline of the Manufacturer's company, e.g. organisation and management structure, staff employed, etc.
2. organisation of the quality control department
3. qualification of the personnel involved in activities related to the quality of the product
4. description of the manufacturing facilities, including:
 - flowchart of the manufacturing process
 - origin, inspection and storage of raw materials
 - storage of finished products
 - detection and treatment of defective products
 - production control procedures and related equipment
5. details of inspection and quality control activities
 - a. the quality control plans relative to the coating system to be certified
 - b. details of system used for identification and traceability of materials at the different stages of manufacturing

- c. equipment for testing and relevant calibration procedures
- d. quality control procedures

6. copy of the ISO 9001 certificate, if any
7. approval certificates already granted by other IACS (International Association of Classification Societies) Societies or recognised third party organisations and relevant documentation inclusive of the approval tests performed, if any.

4. ASSESSMENT

4.1 General

Upon completion of the examination of the documentation listed in [3], both type approval tests and production control activities are arranged.

4.2 Type approval tests

Type approval tests are carried out according to the procedures described in Annex 1 of this document (ref. IMO Resolution MSC.215(82) - annex 1).

Alternative test procedures which are proposed by the Manufacturer are evaluated by Tasneef on a case-by-case basis.

All tests are to be carried out by test laboratories recognised by Tasneef which meet the requirements set out in the "Rules for the certification of service suppliers" or those given in the "Rules for recognition of test laboratories".

Reduced testing or no testing at all may be accepted, at Tasneef discretion, in the case of:

- a. Type Approval Certificates already granted by other IACS Classification Societies or by other recognised third party organisations: in such case, the documentation of the approval tests performed is to be supplied for review;
- b. documented field exposure for 5 years with a final coating condition of not less than "GOOD". Tasneef is to review all the related Manufacturer's records. Reference is made to PR 34 "Method B" items 1.4 to 1.12;
- c. Epoxy coating systems with existing Marintek test reports minimum level B1, including relevant infrared (IR) identification and specific gravity (SG), issued before 8 December 2006. Reference is made to PR 34 "Method C" items 1.13 to 1.17.

4.3 Test reports

Test reports are to comply with the requirements given in Appendix 1, [4] of Annex 1.

4.4 Production control

A first assessment audit is to be performed at the Manufacturer's production site in order to assess the quality assurance system adopted by the Manufacturer with reference to the production line(s) of the product(s) to be certified.

The assessment is to be carried out in accordance with PR 34 "Method D" items 1.18 to 1.20.

The audit is to be scheduled so that it takes place during the actual manufacture of the product(s) to be certified.

Within the framework of the audit, particular attention is to be paid to the following documentation relative to the product(s) to be certified:

- quality management system documentation
- inspection reports
- raw material supply and coating batch traceability
- reports of tests performed on finished products.
- testing equipment calibration data
- qualification of the personnel concerned.

In the course of the audit, as far as possible, the Surveyor is to witness the tests carried out by the Manufacturer during the various stages of manufacturing and for the final acceptance of the product(s) in order to verify compliance with the applicable requirements.

Upon completion of the audit, the Tasneef Surveyors draw up the relevant report and provide the Manufacturer with a copy.

5. ISSUE AND VALIDITY OF THE CERTIFICATE

5.1 Type Approval Certificate

Subject to the satisfactory outcome of the required tests, Tasneef issues to the Manufacturer the "Type Approval Certificate" valid for the coating system of the same type as that subjected to type tests.

The Type Approval Certificate is valid for five years from the date of issue.

The certificate is renewed at the end of its validity period. In general, the repetition of the type test is not requested for the renewal of the certificate. However, Tasneef reserves the right to request the repetition of all or part of the type tests, whenever this is provided for by the reference standards or dictated by case-by-case considerations.

The Manufacturer's quality control system will ensure that all current production is the same as that supplied for the Type Approval Certificate.

The Manufacturer is to inform Tasneef of any modification to the approved coating system.

Tasneef will assess whether testing and reassessment of the coating system are required for the issue of a new certificate.

5.2 Production Control Certificate

Subject to the satisfactory outcome of the first assessment audit, Tasneef issues to the Manufacturer the "Production Control Certificate".

The Production Control Certificate is valid for three years from the date of the audit.

The certificate is to be renewed by a renewal audit, similar to the first assessment, for verification that the quality assurance system adopted by the Manufacturer, with particular reference to the production line(s) of the product(s) certified, is maintained over time.

The renewal audit is to be performed before the expiry date of the certificate.

During the validity period of the certificate, Tasneef reserves the right to perform unscheduled surveys at the Manufacturer's facilities, taking a number of samples at

random from the production line to be tested in order to confirm that the quality system is functioning correctly and that the requirements of the standards used in attaining the Type Approval Certificate are maintained (i.e. check of infrared identification, specific gravity, viscosity – ref. annex 1, appendix 1, par. 2.1 of this document).

Tasneef reserves the right to perform unscheduled intermediate audits of the quality assurance system in the event of shortcomings detected in service attributed to the certified coating system.

Should the audit be considered unsatisfactory, Tasneef will notify the Manufacturer of the findings detected and the reasons for which the certificate cannot be issued.

The applicant may not submit a further application for certification until he has made all those modifications to the quality system and/or to the production line(s) of the product(s) to be certified which are necessary to meet the applicable requirements.

5.3 Suspension and/or withdrawal of the certificates

Tasneef may suspend and/or withdraw the Type Approval and/or Production Control Certificates in the event of serious non-compliance on the part of the Manufacturer, for example:

- significant non-conformities of the coating system or in the manufacturing process, with respect to the technical documentation submitted to Tasneef and to the audited quality assurance system.
- serious shortcomings detected in service
- significant changes made to the coating system or to the manufacturing process without notifying Tasneef.

Certification may also be withdrawn in the event of changes to the applicable standards and/or requirements which the Manufacturer is, or deems he is, unable to comply with.

Should the annual inspection not be completed, the Production Control Certificate is to be withdrawn.

The certificate will be considered valid again once the causes of the non-conformities/shortcomings have been removed, the corrective actions taken have proved to be effective and the changes to the coating system/manufacturing process have been satisfactorily assessed.

ANNEX 1 - EXTRACT FROM IMO RESOLUTION MSC.215(82)

Extract from:

IMO RESOLUTION MSC.215(82)

PERFORMANCE STANDARD FOR PROTECTIVE COATINGS FOR DEDICATED SEAWATER BALLAST TANKS IN ALL TYPES OF SHIPS AND DOUBLE-SIDE SKIN SPACES OF BULK CARRIERS

ANNEX 1

**TEST PROCEDURES FOR COATING QUALIFICATION
FOR DEDICATED SEAWATER BALLAST TANKS OF ALL TYPES OF SHIPS AND
DOUBLE-SIDE SKIN SPACES OF BULK CARRIERS**

1 Scope

These Procedures provide details of the test procedure referred to in 5 and 8.3 of this Standard [Resolution MSC.215(82)].

2 Definitions

Coating specification means the specification of coating systems which includes the type of coating system, steel preparation, surface preparation, surface cleanliness, environmental conditions, application procedure, acceptance criteria and inspection.

3 Testing

Coating specification is to be verified by the following tests. The test procedures are to comply with appendix 1 (Test on simulated ballast tank conditions) and appendix 2 (Condensation chamber tests) to this annex as follows:

1. for protective coatings for dedicated seawater ballast tanks, appendix 1 and appendix 2 apply; and
2. for protective coatings for double-side spaces of bulk carriers of 150 m in length and upwards other than dedicated seawater ballast tanks, appendix 2 applies.

APPENDIX 1

TEST ON SIMULATED BALLAST TANK CONDITIONS

1. Test condition

The test on simulated ballast tank conditions is to satisfy each of the following conditions:

1. The test is to be carried out for 180 days.
2. There are to be 5 test panels.
3. The size of each test panel is 200 mm x 400 mm x 3 mm. Two of the panels (Panel 3 and 4 below) have a U-bar welded. The U-bar is welded to the panel 120 mm from one of the short sides and 80 mm from each of the long sides.



The panels are to be treated according to this Standard, table 1.1, 1.2 and 1.3, and the coating system applied according to table 1, paragraphs 1.4 and 1.5. Shop primer is to be weathered for at least 2 months and cleaned by low pressure washing or other mild method. Blast sweep or high pressure washing or other primer removal methods are not to be used. Weathering method and extent are to take into consideration that the primer is to be the foundation for a 15-year target useful life system. To facilitate innovation, alternative preparation, coating systems and dry film thicknesses may be used when clearly defined.

4. The reverse side of the test piece is to be painted appropriately, in order not to affect the test results.

ANNEX 1 - EXTRACT FROM IMO RESOLUTION MSC.215(82)

5. As simulating the condition of the actual ballast tank, the test cycle runs for two weeks with natural or artificial seawater and one week empty. The temperature of the seawater is to be kept at about 35°C.
6. Test panel 1: This panel is to be heated for 12 h at 50°C and cooled for 12 h at 20°C in order to simulate the upper deck condition. The test panel is cyclically splashed with natural or artificial seawater in order to simulate a ship's pitching and rolling motion. The interval of splashing is 3 s or shorter. The panel has a scribe line down to bare steel across the width.
7. Test panel 2: This panel has a fixed sacrificial zinc anode in order to evaluate the effect of cathodic protection. A circular 8 mm artificial holiday down to bare steel is introduced on the test panel 100 mm from the anode in order to evaluate the effect of the cathodic protection. The test panel is cyclically immersed with natural or artificial seawater.
8. Test panel 3: This panel is to be cooled on the reverse side, in order to give a temperature gradient to simulate a cooled bulkhead in a ballast wing tank, and splashed with natural or artificial seawater in order to simulate a ship's pitching and rolling motion. The gradient of temperature is approximately 20°C, and the interval of splashing is 3 s or shorter. The panel has a scribe line down to bare steel across the width.
9. Test panel 4: This panel is to be cyclically splashed with natural or artificial seawater in order to simulate a ship's pitching and rolling motion. The interval of splashing is 3 s or shorter. The panel has a scribe line down to bare steel across the width.
10. Test panel 5: This panel is to be exposed to dry heat for 180 days at 70°C to simulate boundary plating between the heated bunker tank and ballast tank in the double bottom.

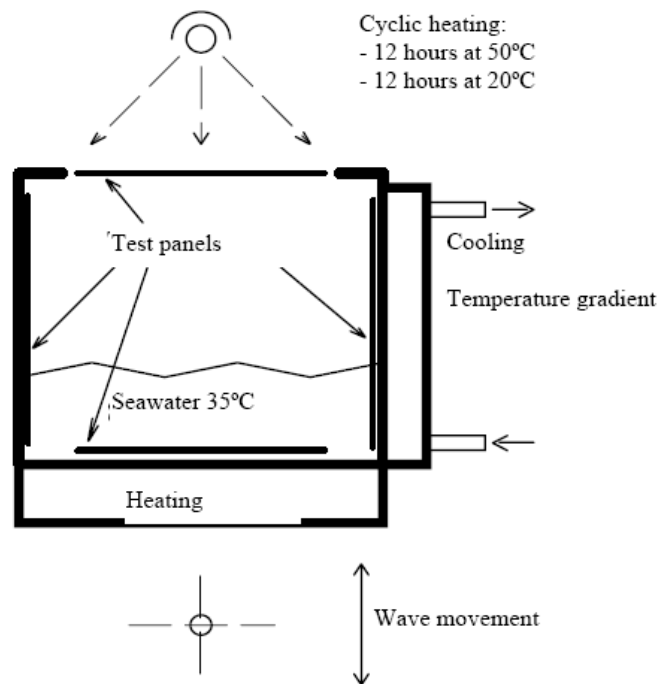


Figure 1
Wave tank for testing of ballast tank coatings

2. Test results

- 2.1 Prior to the testing, the following measured data of the coating system are to be reported:
 1. infrared (IR) identification of the base and hardener components of the coating;
 2. specific gravity¹ of the base and hardener components of the paint; and
 3. number of pinholes, low voltage detector at 90 V.
- 2.2 After the testing, the following measured data are to be reported:

¹ Reference standard: ISO 2811-1/4:1997. Paints and varnishes. Determination of density.

ANNEX 1 - EXTRACT FROM IMO RESOLUTION MSC.215(82)

1. blisters and rust;²
2. dry film thickness (DFT) (use of a template);³
3. adhesion value;⁴
4. flexibility⁵ modified according to panel thickness (3 mm steel, 300 µm coating, 150 mm cylindrical mandrel gives 2% elongation) for information only;
5. cathodic protection weight loss/current demand/disbondment from artificial holiday; and
6. undercutting from scribe. The undercutting along both sides of the scribe is measured and the maximum undercutting determined on each panel. The average of the three maximum records is used for the acceptance.

3. Acceptance criteria

3.1 The test results based on section 2 are to satisfy the following criteria:

Item	Acceptance criteria for epoxy-based systems applied according to table 1 of this Standard	Acceptance criteria for alternative systems
Blisters on panel	No blisters	No blisters
Rust on panel	Ri 0 (0%)	Ri 0 (0%)
Number of pinholes	0	0
Adhesive failure	> 3.5 MPa Adhesive failure between substrate and coating or between coats for 60% or more of the areas.	> 5 MPa Adhesive failure between substrate and coating or between coats for 60% or more of the areas.
Cohesive failure	> 3 MPa Cohesive failure in coating for 40% or more of the area.	> 5 MPa Cohesive failure in coating for 40% or more of the area.
Cathodic protection current demand calculated from weight loss	< 5 mA/m ²	< 5 mA/m ²
Cathodic protection; disbondment from artificial holiday	< 8 mm	< 5 mm
Undercutting from scribe	< 8 mm	< 5 mm
U-bar	Any defects, cracking or detachment at the angle or weld will lead to system being failed.	Any defects, cracking or detachment at the angle or weld will lead to system being failed.

- 3.2 Epoxy-based systems tested prior to the date of entry into force of this Standard are to satisfy only the criteria for blistering and rust in the table above.
- 3.3 Epoxy-based systems tested when applied according to table 1 of this Standard are to satisfy the criteria for epoxy-based systems as indicated in the table above.
- 3.4 Alternative systems not necessarily epoxy-based and/or not necessarily applied according to table 1 of this Standard are to satisfy the criteria for alternative systems as indicated in the table above.

4. Test report

The test report is to include the following information:

² Reference standards: ISO 4628/2:2003. Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of defects, and of intensity of uniform changes in appearance – Part 2. ISO 4628:2003. Paints and varnishes – Evaluation of degradation of coatings – Designation of quantity and size of common types of defect – Part 3: Designation of degree of rusting.

³ Nine equally distributed measuring points are used on panel size 150 mm x 150 mm or 15 equally distributed measuring points on panel size 200 mm x 400 mm.

⁴ Reference standard: ISO 4624:2002. Pull-off test for adhesion.

⁵ Reference standards: ASTM D4145:1983. Standard Test Method for Coating Flexibility of Pre-painted Sheet.

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1. name of the Manufacturer;
2. date of tests;
3. product name/identification of both paint and primer;
4. batch number;
5. data of surface preparation on steel panels, including the following:
 - 5.1. surface treatment;
 - 5.2. water soluble salts limit;
 - 5.3. dust; and
 - 5.4. abrasive inclusions;
6. application data of coating system, including the following:
 - 6.1. shop primer;
 - 6.2. number of coats;
 - 6.3. recoat interval;⁶
 - 6.4. dry film thickness (DFT) prior to testing;⁶
 - 6.5. thinner;⁶
 - 6.6. humidity;⁶
 - 6.7. air temperature;⁶ and
 - 6.8. steel temperature;
7. test results according to section 2; and
8. judgment according to section 3.

APPENDIX 2

CONDENSATION CHAMBER TEST

1 Test condition

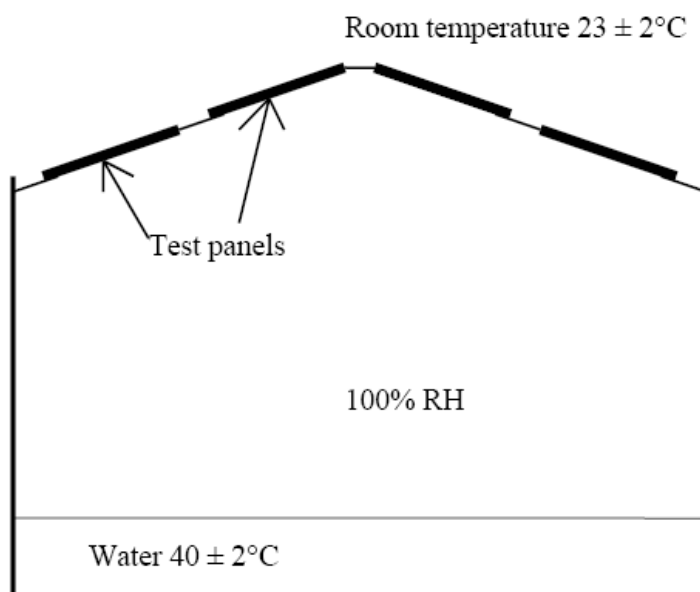
The condensation chamber test is to be conducted in accordance with applicable standards.⁷

1. The exposure time is 180 days.
2. There are to be 2 test panels.
3. The size of each test panel is 150 mm x 150 mm x 3 mm. The panels are to be treated according to the Performance Standard, table 1, paragraphs 1, 2 and 3 and the coating system applied according to table 1, paragraphs 1.4 and 1.5. Shop primer is to be weathered for at least 2 months and cleaned by low pressure washing or other mild method. Blast sweep or high pressure washing or other primer removal methods are not to be used. Weathering method and extent are to take into consideration that the primer is to be the foundation for a 15-year target life system. To facilitate innovation, alternative preparation coating systems and dry film thicknesses may be used when clearly defined.
4. The reverse side of the test piece is to be painted appropriately, in order not to affect the test results.

⁶ Both actual specimen data and the Manufacturer's requirement/recommendation.

⁷ Reference standard: ISO 6270-1:1998 Paints and varnishes – Determination of resistance to humidity – Part 1: Continuous condensation.

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**Figure 2
Condensation chamber**

2. Test results

According to section 2 (except for 2.2.5 and 2.2.6) of appendix 1.

3. Acceptance criteria

3.1 The test results based on section 2 are to satisfy the following criteria:

Item	Acceptance criteria for epoxy-based systems applied according to table 1 of this Standard	Acceptance criteria for alternative systems
Blisters on panel	No blisters	No blisters
Rust on panel	Ri 0 (0%)	Ri 0 (0%)
Number of pinholes	0	0
Adhesive failure	> 3.5 MPa Adhesive failure between substrate and coating or between coats for 60% or more of the areas.	> 5 MPa Adhesive failure between substrate and coating or between coats for 60% or more of the areas.
Cohesive failure	> 3 MPa Cohesive failure in coating for 40% or more of the area.	> 5 MPa Cohesive failure in coating for 40% or more of the area.

3.2 Epoxy-based systems tested prior to the date of entry into force of this Standard are to satisfy only the criteria for blistering and rust in the table above.

3.3 Epoxy-based systems tested when applied according to table 1 of this Standard are to satisfy the criteria for epoxy-based systems as indicated in the table above.

3.4 Alternative systems not necessarily epoxy-based and/or not necessarily applied according to table 1 of this Standard are to satisfy the criteria for alternative systems as indicated in the table above.

4. Test report

According to section 4 of appendix 1.