

Rules for the Type Approval of Adhesive Bonded Fasteners for the Installation of Equipment on Board Ships

Effective from 1 January 2021

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 authorised 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 certification 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 authorisation 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 FIELD OF APPLICATION

These Rules apply for the Type Approval of adhesive bonded fasteners, used on board of ships for the installation of equipment in lieu of conventional mechanical joints.

These Rules provide the requirements relevant to testing, approval and field of application of adhesive bonded fasteners.

Deviations from these Rules may be considered on a case by case basis at the discretion of Tasneef.

2 DEFINITIONS

- **Adhesive Bonded Fastener:** in the following called “fastener”, is a support glued to the ship structure or panels, using certified adhesives, to which equipment are fixed by means of conventional mechanical joints.
- **Applicant:** a party who applies for the certification. It may be a Manufacturer, a Representative, an Importer, etc.
- **Set of specimens:** a set of ten identical specimens, representative of a single faster size.
- **Equipment:** is the object installed on board by means of the fastener.
- **FTP Code:** Fire Test Procedures Code 2010, as amended.
- **L_{max} :** maximum horizontal distance of M_{max} centre of gravity, from the vertical wall.
- **M_{max} :** maximum applicable mass on each fastener in [kg].
- **Open deck:** a deck completely exposed to the weather from above and at least two sides.
- **Underdeck:** a deck not open.

3 APPROVAL

The Applicant applies for the Type Approval submitting the “TAO-APP” application form and the documentation listed in [4].

For each of the proposed fasteners and associated adhesives a set of specimens is to be prepared for testing.

Each specimen is to be glued on a surface used as support according to the manufacturer instructions.

On the basis of the results of tests in [5], each fastener is approved for a maximum applicable mass M_{max} (in kg) for the corresponding L_{max} (in mm) declared by the Applicant.

4 DOCUMENTATION

The request for Type Approval is to be submitted to Tasneef by the Applicant and is to include at least the following documents:

- technical specifications of the adhesive bonded fasteners, including the declared L_{max} ;
- technical specification of the adhesive;
- adhesives certification according to [5.2.1] (if available);
- drawings containing detailed dimensions, material and shape of the fasteners;
- the “Manufacturer Installation Procedures Manual”, including the Quality Plan;
- the Training Manual for personnel in charge of the installation on board.

5 TESTING

5.1 Safety factors

The following safety factors apply to determine admissible stress according to [5.3] and [5.4].

- a) S_{Ft} = safety factor for tension stress, to be assumed as $S_{Ft} = 3$;
- b) S_{Fs} = safety factor for shear stress, to be assumed as $S_{Fs} = 3$.

5.2 Testing program

A set of specimens as defined in [2] is to be prepared as per installation on board and subject to the testing program according to these Rules.

Each specimen consists of a single fastener glued on a specific substrate or core material as foreseen in practice, and using a single adhesive.

The L_{max} value as defined in [2] is declared by the Applicant.

5.2.1 Adhesives

Adhesives are to be certified according to Part 5 “Surface flammability” of the FTP Code.

Their use on board, in respect to the surface where the adhesive is applied, is subject to the provisions of Part 5 Paragraph 1.3 of the FTP Code.

Where an adhesive is approved testing a specimen applied on a non-combustible and non-metallic substrate, such an adhesive shall be approved for application to any non-combustible and non-metallic substrate with similar or higher density (similar density may be defined as a density ≥ 0.75 times the density used during testing) or with a greater thickness, if the density is more than 400 kg/m^3 .

Where an adhesive is approved based on a test of a specimen applied on a metallic substrate (e.g., thin film of paints or plastic films on steel plates), such an adhesive shall be approved for application to any metallic base of similar or higher thickness (similar thickness is obtained as a thickness equal to or

greater than 0.75 times the thickness of metallic substrate used during testing).

5.2.2 Fasteners

Specimens prepared as per [5.2] are to be tested in sequence according to the following standards:

- a) salty spray corrosion test in fog chamber for 7 days according to UNI EN ISO 9227:2012;
- b) climatic chamber test (30 days at 75°C with a relative humidity of 90%) according to UNI EN ISO 9142. In case the fasteners are expected to be used in low temperature environment, the climatic chamber test is to be carried out as follows:
 - 1) for use underdeck (e.g. refrigerated stores): -25 °C/+75 °C;
 - 2) for use on open deck areas in cold climate (e.g. Polar Code): -40 °C/+75 °C;
- c) for use on open decks the exposure to the UV rays in accordance with UNI EN ISO 4892-3 is also required.

Following the completion of the tests in [5.2.2] (a) and [5.2.2] (b):

- d) five specimens are to be subject to tensile test to determine the admissible detachment tensile strength according to [5.3];
- e) five specimens are to be subject to shear test to determine the admissible detachment shear strength according to [5.4].

In case of use on open deck, an additional set of tests is to be carried out according to [5.2.2] (a), [5.2.2] (b) and [5.2.2] (c); following the completion of such tests:

- f) five specimens are to be subject to tensile test to determine the admissible detachment tensile strength according to [5.3];
- g) five specimens are to be subject to shear test to determine the admissible detachment shear strength according to [5.4].

5.3 Tensile test

The tensile test is performed to determine the admissible stress when an axial force is applied.

The following test procedure applies:

- a) the working surface in mm² of each specimen is to be recorded;
- b) an increasing axial force is applied to each specimen and, when rupture occurs, the force applied (N) is recorded for each specimen;
- c) the axial force is increased using a translation speed value of the testing machine of 2 mm/min;

- d) the lower value of recorded forces is to be used to determine the fracture strength;
- e) detachment strength is calculated (σ_f in N/mm²);
- f) a safety factor equal to SF_t defined in [5.1] applies to calculate the admissible axial stress (σ_a in N/mm²)

$$\sigma_a = \sigma_f / SF_t$$

5.4 Shear test

The shear test is performed to establish the detachment stress when a shear force is applied.

The following test procedure applies:

- a) the working surface (mm²) of each specimen is to be recorded;
- b) an increasing shear force is applied to each specimen and, when rupture occurs, the force applied (N) is recorded for each specimen;
- c) the shear force is increased using a translation speed value of the testing machine of 2 mm/min;
- d) the lower value of recorded force is to be used to determine the fracture strength;
- e) detachment strength is calculated (T_f in N/mm²);
- f) a safety factor equal to SF_s defined in [5.1] applies to calculate the admissible stress (T_a in N/mm²):

$$T_a = T_f / SF_s$$

5.5 Fire test

In case of application on fire-resisting boundaries or panels, a fire test is to be carried out with the only aim to verify that the fire integrity of the boundary, or panel, is not impaired with the development of surface flame.

5.6 Dynamic test

In order to evaluate the effects of vibrations on fasteners during the life of the ship, a test is to be carried out in accordance with Standard IEC 60068-2-6:2007. Other Standards may be proposed by the Applicant and considered by Tasneef at the initial stage of the examination.

6 MAXIMUM APPLICABLE MASS

On the basis of the results of tests in [5.3] and [5.4], the maximum applicable mass (M_{max}) for wall joints (joints on vertical surface) is to be calculated for the set of specimens as follows:

$$M_{max} = \min [T_a A_s / g; (\sigma_a * W) / (g * L_{max})]$$

where

- M_{max} = mass in kg

- A_s = shear area in mm^2

A_s	
Rectangular joints (height H, width B)	Circular joints (diameter D)
$2/3 B \times H$	$3/4 \pi D^2 / 4$

- W = bonded area sectional modulus in mm^3

W	
Rectangular joints (height H, width B)	Circular joints (diameter D)
$(H^2 \times B) / 6$	$\pi D^3 / 32$

For the installation of equipment subject to operational loads other than gravity (e.g. switches and sockets), the maximum applicable mass shall be $M_{\max}/3$.

7 INSTALLATION RESTRICTIONS

Fasteners tested and approved according to these Rules, are intended for the installation of equipment on open deck and underdeck, unless included in the following list, on the basis of the satisfactory results of the relevant tests with the limitations stated in the Type Approval certificate.

The use of fasteners approved according to these Rules is not permitted for the installation on board of the following equipment:

- equipment having a total weight exceeding 60 kg
- equipment in the following spaces:
 - corridors and stairways along escape routes; and
 - spaces used as assembly or muster stations
 except for:
 - switches for lightings;
 - switches for elevators;
 - placards, signs and labels in general;
 - junction boxes for electrical cables; and
 - equipment installed behind panel.
- equipment, installed overhead and on bulkheads at a height exceeding 2 m, except for:
 - single cable or multi-cable sheaths installations not exceeding 30 mm in diameter (cable trays are excluded);

- junction boxes for electrical cables (not exceeding 0,5 kg in weight).
- d) handrails installed along escape routes;
- e) fire insulation installation on fire rated bulkheads and decks;
- f) A and B-Class panels constituting fire rated divisions;
- g) equipment installed in refrigerated chamber having a minimum service temperature lower than 0°C , unless tested in accordance with [5.2.2] b) 1);
- h) catwalks gratings;
- i) grids for ventilation louvres;
- j) safety equipment to be used in case of emergency such as:
 - EEBD's
 - emergency lighting
 - fire-extinguishers (other than those fixed behind panels)
 - fire doors magnet holder
 - fire doors closure switch
 - manual call points
 - fire detectors
 - public address system speakers
 - switchboards for safety equipment (low location lighting, public address, fire detection system, fire pumps, etc.).

8 TEST REPORT

The test report is to contain at least the following technical information:

- Date of the test
- Name of the manufacturer
- Name of the Applicant
- Commercial name of the adhesive systems and relevant identification code, depending on their dimensions and characteristics
- Materials of construction
- Material on which the fastener has been fixed
- Climatic chamber test results
- Salty spray corrosion test results
- Tensile and shear stress recordings and results
- Calculated value of M_{\max}
- L_{\max} declared by the applicant

9 CERTIFICATE

The type approval certificate is to contain the following technical information:

- Commercial name and type approval certificate number of the adhesive/adhesives used.
- Commercial name of the fasteners and relevant identification code, identifying their dimensions and characteristics.
- For each type/model/size of fastener, the maximum applicable load M_{max} (in kg) and corresponding L_{max} (in mm).
- Type of material on which the fasteners may be fixed.
- Detailed list of installation restrictions according to [7].

The Type Approval Certificate has a validity of 5 (five) years.

In order to renew the Type Approval Certificate, the Applicant is to submit to Tasneef documentation showing any modifications in respect of the approved fastener.

On the basis of such documentation, Tasneef will establish the checks and tests to be carried out in order to renew the Type Approval Certificate.

10 QUALIFICATION OF PERSONNEL CARRYING OUT THE INSTALLATION

The installation of the fasteners is to be carried out by qualified personnel.

Qualified personnel is personnel having successfully attended the training course foreseen by the *“Manufacturer Installation Procedures Manual”* and the *“Training Manual for personnel in charge of the installation on board”* submitted in the type approval documentation.