

# Amendments to the “Rules for the Approval of Manufacturers of Materials”

RFP/002/AMN/01

*Effective from 1/7/2021*

*Reasons of the amendments:*

| Chapter/Section/Paragraph amended         | Reason   |
|---|--|
| Ch.4, Sec 2, [2.1.1], [2.2.1], [2.4](new) | to introduce <b>IACS UR W24</b> (Rev 4 - July 2020) "Cast Copper Alloy Propellers"                 |
| Ch.4, Sec 2, [3](new)                     | to introduce <b>IACS UR W27</b> (Rev 2 - July 2020 and Corr 1 - Sept.2020) "Cast Steel Propellers" |

## SECTION 2

## VARIOUS FINISHED PRODUCTS

### 1 Pressure bottles

#### 1.1 Application

##### 1.1.1

Provision is made in this Article [1] for the approval of manufacturing processes of:

- seamless bottles for CO<sub>2</sub> or compressed gases (air, N<sub>2</sub>) in general having capacity less than 150 litres
- welded bottles for portable fire extinguishers.

The following manufacturing processes are considered:

- seamless bottles
  - backwards hot extrusion of billets
  - spinning of seamless pipes
  - backwards cold extrusion and drawing of plates
- welded bottles for portable fire extinguishers
  - circumferential welding of pipe sections and pressed caps; pipe sections may be made from welded pipe generally produced by induction welding or directly from plate by bending and longitudinal welding
  - circumferential welding of two extruded caps.

#### 1.2 Information to be submitted for approval

**1.2.1** The Manufacturer is to submit to Tasneef, together with the letter of application, a detailed description of the manufacturing process adopted, the type and capacity of the pressure bottles to be approved and the relevant constructional drawings in four copies.

**1.2.2** The description of the manufacturing process is to include:

- production facilities
- quality control routines in the current production (inspection points, non-destructive examinations)
- laboratory facilities and equipment for inspection and testing).

Documentation relevant to approvals already granted by other IACS (International Association of Classification Societies) Classification Societies will be considered in order to reduce the extension of the type tests required.

#### 1.3 Approval program and sampling for tests

**1.3.1** Subject to the approval of the plans submitted and on the basis of the information under [1.2], the approval program is prepared and communicated to the Manufacturer.

The approval program will include for each type of bottle:

- visual examination, non-destructive examination and dimensional checks of cylinders taken from production or from stock as deemed necessary to verify the reliability of the process
- burst test on one cylinder with determination of the type and dimension of the fracture
- mechanical tests: one tensile test, two bend tests to be performed in the circumferential direction, 1 set of Charpy V-notch impact tests at -20 °C on bottles having thickness greater than 5 mm, hardness tests
- qualification of welding procedure, if applicable, with:
  - radiographic testing and macro examination
  - 2 tensile tests transverse to the weld
  - 2 face and 2 root bends transverse to the weld
- in the case of bottles for portable fire extinguishers, flattening tests and burst tests are to be in accordance with EN 3 standard.

#### 1.4 Tests and results

##### 1.4.1 General

The tests are generally to be witnessed by the Surveyor during the visit to be paid to the factory for approval.

##### 1.4.2 Results

- The dimensional check is to show compliance with the approved drawing; the visual examination is to show no evidence of harmful defects
- The burst pressure of seamless bottles is to be higher than the value given by the following formula:

$$P = \frac{2 \cdot t \cdot R_m}{D_e - t}$$

where: P burst pressure (MPa); R<sub>m</sub>: nominal tensile strength (N/mm<sup>2</sup>); D<sub>e</sub>: outside diameter (mm); t: thickness (mm)

- The fracture is to be ductile and in accordance with Fig 1; during the burst test it will be verified that no plastic deformation occurred at a pressure equal to twice the working pressure; the verification may be performed by measuring the volume of water added after the pressure has been released (water jacked method) or by plotting the diagram of the increasing pressure.
- The burst pressure of welded bottles for portable fire extinguishers is to be not lower than 2,7 times the service pressure at 60 °C with minimum of 5,5 MPa
- Mechanical tests are to comply with the requirements foreseen for acceptance tests in Part D, Ch 4, Sec 2, [2.3] of the Rules.

## 2 Copper castings for propellers

### 2.1 Application

#### 2.1.1 (1/7/2021)

The provisions of item [2] apply to the ~~manufacturing~~ approval of foundries of copper castings for propellers, manufactured and tested in accordance with the requirements~~as required~~ in Part D of Tasneef Rules.

### 2.2 Specific information to be submitted for approval

#### 2.2.1 (1/7/2021)

The following specific information and applicable documentation are to be submitted together with the request for approval and the general information specified in Ch 1, Sec 1, [1.5.1] as applicable:

- a) copper alloy material specifications
- b) manufacturing, repair and NDT procedures
- c) delivery condition
- d) mechanical properties guaranteed for the various delivery conditions
- e) production capacity, product size (dimensions) and weight range
- f) description of production and laboratory facilities-
- g) runner and feeder arrangements.

### 2.3 Approval test program

**2.3.1** For each alloy type, two samples representative of the type of castings to be approved and taken from two different casts are to be tested.

The following tests are generally to be performed on each sample. The position of the samples and specimens is to be agreed with Tasneef.

- a) chemical analysis
- b) tensile test
- c) metallographic examination.

All the results, which are in any case to comply with the requirements of Part D, Ch 4, Sec 2 of the Rules, are evaluated for approval.

### 2.4 Foundry approval

#### 2.4.1 Application for Approval (1/7/2021)

It is the manufacturer's responsibility to assure that effective quality, process and production controls during manufacturing are adhered to within the manufacturing specification.

The manufacturing specification is to be submitted to the Society at the time of initial approval, and is to at least include the particulars in [2.2.1].

#### 2.4.2 Scope of the approval test (1/7/2021)

The scope of the approval test is to be agreed with the Society. This should include the presentation of cast test coupons of the propeller materials in question for approval testing in order to verify that the chemical composition and the mechanical properties of these materials comply with the requirements in Part D of Tasneef Rules.

#### 2.4.3 Inspection facilities (1/7/2021)

The foundry is to have an adequately equipped laboratory, manned by experienced personnel, for the testing of moulding materials chemical analyses, mechanical testing, microstructural testing of metallic materials and non-destructive testing.

Where testing activities are assigned to other companies or other laboratory, they are to be recognised by the Society..

### **3 Steel castings for propellers**

#### **3.1 Application**

##### **3.1.1 (1/7/2021)**

The provisions of this Article apply to the approval of foundries of steel castings for propellers, manufactured and tested in accordance with the requirements in Part D of Tasneef Rules.

#### **3.2 Specific information to be submitted for approval**

##### **3.2.1 (1/7/2021)**

The following specific information and applicable documentation are to be submitted together with the request for approval and the general information specified in Ch 1, Sec 1, [1.5.1] as applicable:

- a) steel material specifications
- b) manufacturing, repair and NDT procedures
- c) delivery condition
- d) mechanical properties guaranteed for the various delivery conditions
- e) production capacity, product size (dimensions) and weight range
- f) description of production and laboratory facilities
- g) runner and feeder arrangements.

#### **3.3 Approval test program**

##### **3.3.1 (1/7/2021)**

For each alloy type, two samples representative of the type of castings to be approved and taken from two different casts are to be tested.

The following tests are generally to be performed on each sample. The position of the samples and specimens is to be agreed with Tasneef.

- a) chemical analysis
- b) tensile test
- c) metallographic examination
- d) Charpy V-notch test at specified temperature.

All the results, which are in any case to comply with the requirements of Part D, Ch 4, Sec 2 of the Rules, are evaluated for approval.

#### **3.4 Foundry approval**

##### **3.4.1 Application for Approval (1/7/2021)**

It is the manufacturer's responsibility to assure that effective quality, process and production controls during manufacturing are adhered to within the manufacturing specification.

The manufacturing specification is to be submitted to the Society at the time of initial approval, and is to at least include the particulars in [3.2.1].

##### **3.4.2 Scope of the approval test (1/7/2021)**

The scope of the approval test is to be agreed with the Society. This should include the presentation of cast test coupons of the propeller materials in question for approval testing in order to verify that the chemical composition and the mechanical properties of these materials comply with the requirements in Part D of Tasneef Rules.

##### **3.4.3 Inspection facilities (1/7/2021)**

The foundry is to have an adequately equipped laboratory, manned by experienced personnel, for the testing of moulding materials chemical analyses, mechanical testing, micro-structural testing of metallic materials and non-destructive testing.

Where testing activities are assigned to other companies or other laboratory, they are to be recognised by the Society.