154012#

TECHNICAL REQUIREMENTS FOR THE SUPPLY OF STEEL PLATES FOR OIL STORAGE TANK

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1. General

1.1 PEI Reconstruct distillates oil product and crude oil tanks, plates are needed for bottom and roof plates.

1.2 This specification covers technical requirements for the supply of hot-rolled steel plates.

1.3 Fabrication processes to be used are, rolling, cold or hot forming and fusion welding. Improved qualities such as forming, malleability and weld ability are considered essential.

1.4 Steel qualities: as specified in ASTM, according to the specific and according to material designation. Vendor can also supply by specifications: CSA, ISO EN as mentioned in app. A.

1.5 Plating material shall satisfy the relevant latest edition of the ASTM standard or the ASME II part A. Equivalent steel qualities, having suitable chemical and mechanical properties, will be considered adequate substitutes. Equivalents shall have prior client's approval. No equivalent steel quality is allowed.
All steels ordered shall be produced in accordance with the latest edition and addenda or the relevant standard/spec.

1.6 If no otherwise stated, the steel making practice and heat treatment, shall suit the relevant standard requirements. The chemical composition and mechanical properties shall be within the limits indicated by the relevant standard and the supplementary requirements.
If not otherwise stated the conformance to the approved ASME/ASTM shall be met and shall include the following:
Steel making practice, heat treatment, chemical composition, metallurgical structure, surface and edge qualities, mechanical properties including impact testing at the specified temperatures, testing, marking and documentation.

1.7 The general conditions of delivery, such as. Mechanical testing and tolerances for gauge, flatness, length and width of this specification are related to ASTM A-20 and its applicable documents, and are considered as part of the relevant standard.
Flatness tolerances per table 4 of SA-20.
Thickness tolerances per table A1.1of SA-20.

1.8 As a rule, the mechanical properties such as yield strength, tensile strength, elongation and reduction of area, charpy V – notch and hardness are required and shall be represented by test specimen coupons removed from plating in the final heat treatment condition.
No variation from project specifications and this specification are permitted unless approved in writing by client.

1.9 Plates will be according to API 650 / 2013 PART No. 4.2

1.10 Plate me be ordered on an edge-thickness basis. The edge thickness ordered shall not be less than the computed design thickness or the minimum permitted thickness.

1.11 All plates shall be manufactured by the open hearth, electric-furnace, or basic oxygen process. Steels produced by the thermo-mechanical control process (TMCP)

may be used, provided that the combination of chemical composition and integrated controls of the steel manufacturing is mutually acceptable to the Purchaser achieved. Copper bearing steel shall be used be used if specified by the Purchaser.

1.12 Mill plant will have ISO certification.

2. SUPPLEMENTARY REQUIREMENTS

2.1 The maximum carbon content shall not exceed 0.23 percent. If the relevant standard specifies lower carbon content, the lower value shall be adopted.

2.2 Equivalent (Ce) shall not exceed 0.43 and shall be calculated with the following formula:

Carbon Equivalent (Ce) = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 Higher carbon contents or Ce values will not be accepted without prior client approval.

2.3 The plates will be according ASTM (former A283) or European (former RST -37-Gr 2) or S235JR.

3. CERTIFICATES

3.1 Manufacturer's certificate for compliance with the relevant standard and the client supplementary requirements showing test results data are required.

3.2 Test results referred to above shall be reported on Mill certificates.

3.3 If an outside inspection authority is not specified in the purchase order, the manufacturer will furnish three (3) copies of mill certificates approved by his own quality control department.

3.4 Mill test reports (mill certificates) shell be of type 3.1 of EN 10204 and as a minimum shall include the followings:

- Steel producer details
- Steel producer marl as die stamped on the plates
- Heat no., slab or test no.
- Nominal thickness.
- Year (edition & addenda) of the spec. to which the plates are produced.
- Original gage length of tensile specimens.
- Heat treatments details.
- All mechanical test results including impact values and temperatures, bend tests.
- Statement per clause 19.5 of A/SA-20 (ED 2007).

4. MARKING

Marking shall be carried out as stated in ASTM A-20 & A-435 and shall as a minimum include the following die stampings:

- ASME/ASTM designation (spec. no. & grade & class)
- MT for heat treatment
- Heat no. and test or slab no.
- Steel producer marking
- The required marking shall be applied in two locations for each plate at least 300 mm from the edges of the plates.
- Order no.
- Dimensions
- Item no.
- UT test details and results

5. PACKING

5.1 Plates 8 mm and over in thickness to be shipped loose.
5.2 Plates to be protected against mechanical damage.
5.3 Plates to be wrapped with plastic sheet to protect from sea water and/or sea atmosphere.

APPENDIX "A"

A.1 ASTM SPECIFICATIONS

Plates that conform to the following ASTM specifications are acceptable as long as the plates are within the stated limitations.

a) ASTM A36M/A36 for plates to a maximum thickness of 40 mm (1.5 in).
b) ASTM A131M/A131, Grade A, for plates to a maximum thickness of 13 mm (0.5 in).
c) ASTM A283/A283, Grade C, for plates to a maximum thickness of 25 mm.
d) ASTM A285/A285, Grade C, for plates to a maximum thickness of 25 mm.

Plate furnished to CSA, G40.21 in Grades 260w/(38w), 300W(44W), and 350W/(50W) is acceptable within the limitations stated below.

A.2 CSA SPECIFICATIONS

The W grades may be semi killed or fully killed.
Fully killed steel made to fine grain practice must be specified when required.
Plates shall have tensile strengths that are not more than 140 MPa (20 ksi) above the minimum specified for the grade.
Grades 260W/*38W) and 300W(44W) are acceptable for plate to a maximum thickness of 25 mm (1 in).

A.3 ISO SPECIFICATIONS

Plate furnished to ISO 630 in Grades E275 and E355 is acceptable within the following limitations:

Grade E275 in Qualities C and D for plate to a maximum thickness of 40 mm (1.5 in).

A.4 EN SPECIFICATIONS

Plate furnished to EN 100025 in Grades S275 and S355 is acceptable within the following limitations:

Grade S275 in Qualities J0 and J2 for plate to a maximum thickness of 40 mm (1.5 in).