

1.0 MATERIAL Specification: ASME {Latest on date of Purchase Order (PO)}:

OHTARON (Modified ASTM A182-F430)

Additional Requirement: As listed below (supplementary to Specification)

Size and Qty.: As per Purchase order & Drawing.

2.0 CHEMICAL COMPOSITION & PROCESS

Melting: Fully killed. Hot finished. Product analysis per heat (%):

Carbon	0.13 - 0.18
Silicon	0.50 max.
Manganese	0.50 max.
Phosphorus	0.03 max.
Sulphur	0.03 max.
Nickel	1.00 - 2.00
Chromium	15.00 - 17.00
Molybdenum	0.30 - 0.50

3.0 DIMENSIONS AND TOLERANCES

Dimensional Tolerances: as per SA 484.

4.0 HEAT TREATMENT(HT)

Quenched at 990 +/- 10 deg.C, Quenched in oil.

Tempered at 580 - 650 deg.C, Soaking 1 hr / inch dia. Oil or Water quenched (Actual tempering temperature shall be selected based on the bar diameter / chemistry of the steel to achieve required mechanical properties).

5.0 MECHANICAL TESTS

As per ASTM A370, Extent of test: for each size/heat/HT batch. Additional requirements of tests:

Tensile strength: 85 Kg/sq.mm min., Yield strength: 65 Kg/sq.mm min.

% Elongation: 15 min., % Reduction in area: 40 min.

Hardness: 241 - 321 BHN (minimum 3 values)

Charpy impact test (with 2mm U-notch): Strength for each of 3 specimens: 6 Kg/sq.cm min.

6.0 NON DESTRUCTIVE TEST

Extent of test: for each product. Stage of test : After heat treatment.

UT: Dia => 50mm.: 100% : SA 388. Acceptance: AM 203.2, ASME Sec.VIII Div. 2.

7.0 WORKMANSHIP AND FINISH

Items to be free from scales & defects like laps, seams, folds, cracks, etc.

Workmanship as per ASTM A484.

8.0 REPAIR

Repairs by fusion welding are prohibited. Surface defects can be removed by mechanical means and defective areas smoothly dressed up with the adjacent surface. Minimum dimension after repair to meet drawing / Specification.

9.0 MARKING AND PACKING

Details of stamping on each item with low stress stamps and bordered by paint:

Heat number, Specification, grade(OTR-1), Size, Maker's emblem/code & Inspection Authority's seal

Bars to be supplied in bundles < 1 ton, secured suitably for rough handling. Metal tags with details of specification, melt number and maker's emblem to be secured to the bundles.

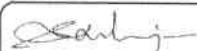
10.0 INSPECTION AND CERTIFICATION

Test certificate in English language with following details shall accompany the product.

1. Purchase Order No.(BHEL),TDC No. & Test certificate number
2. Specification, grade, class, applicable year of code, Heat Number, Quantity & Size
3. Melting & forging/rolling process, Chemistry including incidental elements - Heat wise.
4. Heat treatment details of the material and test bars.
5. Mechanical test results, NDE test results with reference & acceptance standard.
6. Certified copy of TC for starting material if applicable.

11.0 END USE

These bars are for use in non-IBR Valves as spindles for high pressure applications.



Selvarajan.S
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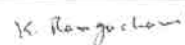


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