



## 1.0 MATERIAL

All codes, standards, specifications, etc referred in this TDC shall be of latest revision as on the date of Enquiry/Purchase Order, whichever is earlier, unless specified otherwise.

Material Specification : ASME Sec IIA- SA333Gr6 (Seamless Pipe)

Additional Requirements: As listed below (Supplementary to the above material specifications)

Size and Quantity : As per Purchase Order (PO)

## 2.0 CHEMICAL COMPOSITION & PROCESS

a) All pipes shall be of Fully Killed steel.

b) Material shall be melted to fine grain melting practice & Vacuum Degassed. The grain size shall be of  $\geq 5$  at 100X magnification

## 3.0 SUPPLY CONDITION (DELIVERY CONDITION):

Pipes shall be supplied in Normalized Condition.

## 4.0 MECHANICAL TEST:

Extent of Test: 1/each size/Heat/HTB. All mandatory mechanical tests as per material specification. Additionally, Impact test shall be carried out at 0°C as per ASME Sec -III NF:2300

## 5.0 NON DESTRUCTIVE TEST

5.1 Ultrasonic Examination of each Pipe shall be performed in the final size (Outer Diameter & Thickness) and Heat treatment condition.

5.2 For Pipes of all sizes, Sensitivity & Acceptance (Reference Notch Size) shall be as per ASTM E213.

5.3 Other general & reporting requirements as per ASTM E-213 & Article-5 ASME Section V.

## 6.0 DIMENSIONAL CHECKS

All dimensions shall be as per P.O & Tolerances shall be as per ASME Sec IIA-SA 999.

## 7.0 REPAIRS AND FINISH

Inside and outside surfaces shall be free from scales and defects like seams, folds, cracks, pitting etc. Repair by welding is prohibited. Surface defects can be removed mechanically, ensuring smooth curved surface and maintaining specified minimum thickness without affecting the workmanship finish.

## 8.0 MARKING

All mandatory marking shall be done as per material specification.

Specification, grade, Melt number, Size, SI No, Schedule Number, "LT0", forming Route (eg: Hot finished, cold drawn, seamless etc), Maker's emblem/code are to be stamped with round edged stamp on each pipe at 100 mm from an end.

## 9.0 DOCUMENTATION

### 9.1 Reports

Certification shall be as per ASME Sec IIA- SA999 and Test certificate shall contain following also.

- Chemical analysis (Ladle and Product analysis)
- Mechanical tests including impact values
- Non-destructive examination report.
- Supply condition.
- Visual and dimensional inspection report.

## 10.0 PACKING AND SHIPMENT

Before shipment, suitable easily removable rust preventive coating shall be applied on the entire surface of the product.

N.R.  
21/01/2020





BHEL, Tiruchirappalli – 14.  
Quality Assurance  
Technical Delivery Conditions

Doc No: TDCAT:6 Rev 00

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**Specification for Seamless SA333Gr6 Pipes for Structural Applications**

(W.O: D157 - D160 :700MWe SG)

NPCIL Project: GHAVP-1&2

(NPCIL PO No: CMM/FTP/10-33-1-1158/e-PO/22549 dated 08/03/2018)

| Rev No | Date       | Prepared        | Reviewed       |                        | Approved           |
|--------|------------|-----------------|----------------|------------------------|--------------------|
|        |            | QA              | QA             | Engg. & MP/ATP         | QA                 |
| 00     | 25.09.2020 | <br>Nithin.O.R. | <br>S. Lakshmi | <br>R. Ananthakrishnan | <br>JV Aruna Kumar |

Rev 00: First Issue

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| जाँचकर्ता /<br>CHECKED BY                                                                                                                                                                                                                                                      | समीक्षाकर्ता /<br>REVIEWED BY | अनुमोदन कर्ता /<br>APPROVED BY |
| <br>15/10/20                                                                                                                                                                                                                                                                   | <br>15/10/20                  | <br>15/10/20                   |
| किए जानेवाले कार्य का अनुमोदन आपूर्तिकर्ता संबंधीकरण को विनिर्देशनों के अनुसार आपूर्ति करने के उत्तरदायित्व से मुक्त नहीं करता है। (Rw/ptz)<br>This approval of the work to be done does not relieve the supplier of the responsibility of supply according to specifications. |                               |                                |