



PLANT PURCHASING SPECIFICATION

HY 10793

REV. No: 01

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SEAMLESS STAINLESS STEEL TUBES (AUSTENITIC, 304 L GRADE)

1. GENERAL :

This specification governs the quality of Seamless Stainless Steel Tubes (Austenitic, 304 L Grade).

2.0 APPLICATION :

For general corrosion resistant applications.

3.0 CONDITION OF DELIVERY :

Seamless and heat treated.

4.0 COMPLIANCE WITH NATIONAL STANDARDS :

The material shall comply with the requirements of :

ASTM A269-1996
Gr. TP 304 L
seamless

Seamless and Welded Austenitic Stainless
Steel Tubing for General Service.

5.0 DIMENSIONS AND TOLERANCES :

5.1 Sizes : Our order shall clearly state outside diameter and wall thickness of the tube.

Tubes shall be supplied in lengths of not less than 4.5 metres unless exact lengths are called for in the order.

5.2 Tolerances : Tubes shall comply with the dimensional tolerances as specified in ASTM A 269

5.3 MANUFACTURE :

The steel shall be made by the electric or such other process as may be agreed to between the purchaser and supplier.

Tubes shall be made by the seamless process. Tubes may be either hot finished or cold finished.

Revisions:

Brought in line with latest ASTM
Standard.

ISSUED :

**STANDARDS ENGINEERING
DEPARTMENT**

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Sufficient discard shall be made from each ingot to ensure freedom from piping and undue segregation.

Joints are not permitted.

7.0 FREEDOM FROM DEFECTS :

The finished tubes shall be straight and free from injurious defects and shall have a workman like finish.

8.0 HEAT TREATMENT :

The tubes shall be supplied in heat treated condition. The heat treatment procedure shall consist of heating the tube to a minimum temperature of 1,040⁰C and quenching in water or rapidly cooling by other means.

9.0 CHEMICAL COMPOSITION :

The analysis of the material shall be as follows :

Element	Percent	
	Min.	Max.
Carbon	-	0.035
Silicon	-	0.75
Manganese	-	2.00
Nickel	8.00	13.00
Chromium	18.00	20.00
Sulphur	-	0.03
Phosphorus	-	0.04

10.0 TEST SAMPLES :

10.1 For Chemical Analysis : One sample shall be selected from each heat.

10.2 For Hardness Test : Two nos. of tubes per lot shall be hardness tested as per A 269.

10.3 Flaring Test : One test shall be made on specimens from one end of one tube from each lot of finished tubes.

10.4 For Hydro Test / Non-destructive Test: Each length of finished tube shall be subjected to Hydro test or Non-destructive test.



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11.0 MECHANICAL PROPERTIES :

11.1 Hardness : Hardness shall not be more than 192HB or 90 HRB.

11.2 Flaring Test : Shall be conducted as specified in ASTM A 450 and shall meet the requirements specified therein.

12.0 HYDROSTATIC OR NON-DESTRUCTIVE ELECTRIC TEST :

Hydrostatic test shall be conducted as specified in ASTM A 450 and shall meet the requirements specified therein. Minimum hydrostatic test pressure shall be 1500 PSI even for the size under 25.4 mm (1 inch).

As an alternative to the Hydrostatic test, each length of the tube having wall thickness of 3.6 mm including & below shall be subjected to Eddy current test and tubes having wall thickness of more than 3.6 mm shall be subjected to Ultrasonic test as per BHEL Standard AA 0850144. Norms of acceptance shall be specified in the respective standards mentioned above.

13.0 INSPECTION AT SUPPLIER'S WORKS :

The representative of BHEL shall have free access to the supplier's works at all times during the execution of the order, to satisfy himself that the material is produced as per the quality requirements of this specification. All reasonable facilities shall be extended to him, free of charge. He may also witness the sampling, testing and marking called for in this specification.

14.0 TEST CERTIFICATE :

Five copies of the test certificate giving the following details shall be furnished.

- a. BHEL Order No.
- b. BHEL Specification No. HY 10793 Rev.01
- c. ASTM A 269, TP 304L
- d. Melt / Heat No.
- e. Size
- f. Heat treatment details and batch No.
- g. Results of Heat & Product analysis.
- h. Results of Hardness test.
- i. Results of Mechanical tests.
- j. Results of Hydrostatic test.
- k. Results of Eddy current / Ultrasonic test.

15.0 PACKING AND MARKING :

15.1 Marking : The following details shall be marked on each tube.

- a. BHEL Order No.
- b. BHEL Specification No. HY 10793 Rev.01
- c. ASTM A 269, TP 304L
- d. Size (OD x Thickness x Length)
- e. Melt / Heat No.
- f. Supplier's Name

15.2 Packing : Tubes of same size shall be wrapped with a polyethylene sheet to avoid movements and rubbing and packed in wooden boxes. The ends shall be covered with suitable plastic end covers.

Each box shall be of convenient weight for easy handling. The weight of each case shall not exceed 1000 Kg. (gross). Special lifting tackles, such as I beams shall be provided with each case and sufficient stiffening shall be provided at the slinging locations. The bottom of the case shall be rigid to enable the tubes to maintain straightness. The method of packing and details of lifting tackles, if any, shall be submitted to BHEL for approval.