



Ref No: TDC/ISHOP/DRI/961

TECHNICAL DELIVERY CONDITIONS FOR ALLOY 690 TUBES

Supply of Ni-Cr-Fe alloy steel tubes to specification ASTM SB-163 as per details furnished below:

SL NO	DESCRIPTION	OD	THK	LENGTH	QTY	WT.IN (TON)
1	TUBE	88.9	4.4	14500	15	2.1
					TOTAL	2.1

Delivery Condition :

- 1.1 Material shall be as per ASTM standard mentioned i.e SB-163 (UNS N06690)
- 1.2 All tubes shall be free from injurious defects and shall have workman like finish.
Reconditioning / repair of tubes by welding is not permitted.
- 1.2 Chemical composition is as per standard.
- 1.3 **Tolerances:** As per ASTM SB-163 as specified herein.
- 1.4 **Bend Test :** As per standard specs ASTM SB-163.
- 1.5 **Tensile Test:** As per standard tensile test with sample location.
- 1.6 **Ultrasonic Examination:** As per specification E213-98 or latest for internal soundness.
- 1.7 All other technical requirements shall be as per code of construction.
- 1.8 Chemical composition of Alloy 690 shall be as per following:-

ELEMENT	COMPOSITION (%)
NICKEL	59 min
CHROMIUM	28 to 31
IRON	7 to 11
MANGANESE	0.5 max
CARBON	0.03 max
COPPER	0.5 max
SILICON	0.5 max
SULPHUR	0.015 max
COBALT	0.10 max

2.0 **Inspection details** as follows.

- a. Raw material identification.
- b. Selection of Test Specimens for mechanical testing.
- c. Witnessing of mechanical testing.
- d. Review of manufacturer's Chemical Analysis for product compliance as per specification and our order requirements.
- e. Witnessing of Ultrasonic Examination.
- f. Visual and Dimensional Examination.
- g. Identification Marking.
- h. Issuance of Inspection Certificate along with endorsement of manufacturer's Test Certificates.

Certificates: Manufacturer's test certificates as per standard shall be furnished in 3 sets.

2.1 **Marking:** As per requirements of specs. ASTM SB-163

2.2 **Invoicing:** On theoretical weight basis using density of 8.19 Kg/m³.

2.3 **End Use :** Tubes are required for the fabrication of DRI CONVECTION BUNDLES.

Prepared By :

Cross checked By:

Approved By: