



# CORPORATE PURCHASING SPECIFICATION

AA 121 30

Rev. No. 06

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## SEAMLESS CUPRO NICKEL TUBES, C70600

### (ORDERING DESCRIPTION)

#### 1.0 GENERAL:

This specification is applicable for ordering Seamless Cupro Nickel Tubes of alloy C 70600 as per latest ASME SB-111 with the following additional requirements.

#### 2.0 APPLICATION:

For use in condensers and heat exchangers.

#### 3.0 CONDITION OF DELIVERY:

The tubes shall be in annealed (O) temper condition and shall be cut square, cleaned and deburred.

The tubes shall be temper annealed through out their lengths and must be suitable for expansion and bell mouching at both ends.

#### 4.0 DIMENSIONS AND TOLERANCES:

##### 4.1 Sizes:

The tubes shall be supplied to the nominal wall thickness and dimensions specified in BHEL order.

##### 4.2 Tolerances:

The tolerances on outside diameter, wall thickness and length shall be as per Tables 9, 10, 11 and 12 of ASME SB-111.

##### 4.3 Straightness:

The deflection of the tubes shall not exceed 2mm/metre.

#### 5.0 TEST METHODS:

All the properties and chemical composition enumerated in ASME SB-111 for alloy C 70600 shall be determined in accordance with clause 19 (Test methods) of ASME SB-111.

#### 6.0 NON-DESTRUCTIVE TESTS:

6.1 Each tube shall be subjected to eddy current test as per clause 13.1.1 of ASME SB-111.

6.2 Each tube shall be subjected to either Hydro test as per clause 13.1.2 or Pneumatic test as per clause 13.1.3 of ASME SB-111.

#### Revisions:

Cl. 24.1 of MOM of MRC (NFCW+HE)

#### APPROVED:

INTERPLANT MATERIAL RATIONALISATION  
COMMITTEE-MRC (NFCW+HE)

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### 7.0 QUALITY ASSURANCE REQUIREMENT:

The manufacturer shall conduct all the test required to ensure that the tubes offered confirm to the requirements of the applicable codes and standards. Manufacturer shall submit a detailed quality plan with their offer as per the standard format which should include all the tests / checks to be carried out by them at the various stages of manufacturing the item. This quality plan shall be reviewed by BHEL and BHEL reserves the right to ask for any more checks, details if required at the time of quality plan finalization. The manufacturer shall manufacture the item as per quality plan duly approved by BHEL.

### 8.0 DOCUMENTS TO BE SUBMITTED:

Following documents shall be furnished along with the offer:

1. A process chart clearly indicating the sequence of manufacturing.
2. Heat treatment details
3. Packing box drawing.
4. Quality plan.

### 9.0 CHECK LIST:

Supplier shall fill the enclosed check list as per Annexure-A.

### 10.0 TEST CERTIFICATE:

Three copies of mill test certificates shall be supplied.

In addition the supplier shall ensure to enclose one copy of test certificate alongwith their despatch documents to facilitate quick clearance of material.

The test certificate shall bear the following information:

#### **BHEL References:**

BHEL order No.

AA 121 30, Rev.No. 06: Seamless Cupro Nickel Tubes, C 70600

#### **Supplier's References:**

Manufacturer's Name

Test certificate No.

Heat or Cast No.

Size & Quantity

Process of manufacture

Identification Marks

Heat treatment & Batch No.

#### **Results of Tests:**

Results of all other tests as per ASME SB-111, Alloy C 70600.

If specified in BHEL order, the test certificate shall be attested by BHEL representative/third party inspection agency approved by BHEL.

### 11.0 PACKING AND MARKING:

Shall be as per BHEL standard AA 0490 00 02: PRESERVATION, PACKING AND MARKING OF HEAT EXCHANGER TUBES.

### 12.0 REFERRED STANDARDS (Latest Publications Including Amendments):

1. AA 049 00 02
2. ASME SB-111



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### ANNEXURE - A (Clause 9.0)

#### CHECK LIST FOR AA 121 30: SEAMLESS CUPRO NICKEL TUBES, C 70600 (To be filled by Supplier)

- A. Name of Principal Supplier : \_\_\_\_\_
- B. Name of Indian Agent : \_\_\_\_\_
1. Grade of material as per specification : Yes/No
2. Tolerance on diameter, length and thickness as per specification and drawing : Yes/No
3. Straightness as per specification : Yes/No
4. Surface finish as per specification : Yes/No
5. Chemical composition as per specification : Yes/No
6. Mechanical properties as per specification : Yes/No
7. Tests: (i) Expansion test : Yes/No  
(ii) Flattening test : Yes/No
8. NDT tests offered :  
(i) Eddy current test : Yes/No  
(ii) Pneumatic /Hydro test : Yes/No
9. Micro structural examination : Yes/No
10. Quality plan : Yes/No
11. Details of previous experience enclosed : Yes/No.  
(For New suppliers only)
12. Lifting beam offered : Yes/No
13. Packing box drawing enclosed : Yes/No
14. End guides included (Both ends) : Yes/No
- C. Deviations taken (Please specify clearly, if any ) : Yes/No.  
1  
2  
3

Date:

Place:

Signature  
and  
Seal of Supplier