

	BHARATH HEAVY ELECTRICAL LIMITED RAMACHANDRAPURAM HYDRABAD-502032 ANDHRA PRADESH, INDIA	Phones: 3021902,3307353 Telex : 425-6212,6248,6777,6778, Fax : 009-040-0321910,3021954,3020195		0422-240	ENQUIRY
		PURCHASE DEPARTMENT			
SUPPLIER CODE: Name&Address	C70003	Enquiry No. D2095000000339VV1	Enq. Date 11 -JAN-10	No. of. Items 030	DUE DATE OF QUOTATION 04-FEB-10

Enq. Sl.No	Indent (MPR) No.	Material Code	Drawing No. Description& Specification	Unit Code	Unit	Quantity	Delivery Schedule	
							Date	Quantity
001	5000000416 001	HY1071090054	S S SEAMLESS PIPES TO SPECN.,HY 10790 REV:02 AMNDT:00 (ASTM A 269 TP 304) SIZE:12.7 X 2.1 X 6000 MM	72	MTR	30000.000	15-APR-10	30000.000
002	5000000339 001	AA1071055208	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE:21.3 X 2.1 X 6000 MM	72	MTR	3600.000	15-APR-10	3600.000
003	5000000339 002	AA1071055550	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE:88.9 X 5.5 X 6000 MM	72	MTR	4200.000	15-APR-10	4200.000
004	5000000339 003	AA1071155369	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE:168.3 X 7.1 X 6000 MM	72	MTR	2400.000	15-APR-10	2400.000
005	5000000339 004	HY1071055615	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE:21.3 X 2.8 X 6000 MM	72	MTR	12000.000	15-APR-10 31-AUG-10	6000.000 6000.000
006	5000000339 005	HY1071055623	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 21.3 X 3.7 X 6000 MM	72	MTR	7200.000	15-APR-10	7200.000

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007	5000000339 006	HY1071055631	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 26.7 X 2.1 X 6000 MM	72	MTR	3000.000	15-APR-10 3000.000
008	5000000339 007	HY1071055640	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 26.7 X 2.9 X 6000 MM	72	MTR	3000.000	15-APR-10 3000.000
009	5000000339 008	HY1071055658	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 26.7 X 3.9 X 6000 MM	72	MTR	9000.000	15-APR-10 4500.000 31-AUG-10 4500.000
010	5000000339 009	HY1071055674	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 33.4 X 2.8 X 6000 MM	72	MTR	2400.000	15-APR-10 2400.000
011	5000000339 010	HY1071055682	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 33.4 X 3.4 X 6000 MM	72	MTR	15000.000	15-APR-10 7500.000 31-AUG-10 7500.000
012	5000000339 011	HY1071055690	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 33.4 X 4.5 X 6000 MM	72	MTR	7200.000	15-APR-10 7200.000
013	5000000339 012	HY1071055704	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 33.4 X 6.35 X 6000 MM	72	MTR	1800.000	15-APR-10 1800.000
014	5000000339 013	HY1071055712	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 42.2 X 3.6 X 6000 MM	72	MTR	300.000	15-APR-10 300.000
015	5000000339 014	HY1071055720	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321)	72	MTR	9000.000	15-APR-10 4500.000

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			321) SIZE: 48.3 X 3.7 X 6000 MM				31-AUG-10 4500.000
016	5000000339 015	HY1071055747	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 48.3 X 5.1 X 6000 MM	72	MTR	2400.000	15-APR-10 2400.000
017	5000000339 016	HY1071055755	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 60.3 X 2.8 X 6000 MM	72	MTR	3600.000	15-APR-10 3600.000
018	5000000339 017	HY1071055763	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 60.3 X 3.9 X 6000 MM	72	MTR	6000.000	15-APR-10 6000.000
019	5000000339 018	HY1071055771	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 60.3 X 8.74 X 6000 MM	72	MTR	480.000	15-APR-10 480.000
020	5000000339 019	HY1071055810	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 88.9 X 7.6 X 6000 MM	72	MTR	600.000	15-APR-10 600.000
021	5000000339 020	HY1071055844	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 114.3 X 3.05 X 6000 MM	72	MTR	900.000	15-APR-10 900.000
022	5000000339 021	HY1071055852	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 114.3 X 6 X 6000 MM	72	MTR	3600.000	15-APR-10 3600.000
023	5000000339 022	HY10710558690	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321)	72	MTR	18.000	15-APR-10 18.000

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			SIZE: 114.3 X 13.5 X 6000 MM				
024	5000000339 023	HY1071055895	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE:168.3 X 3.4 X 6000 MM	72	MTR	1500.000	15-APR-10 1500.000
025	5000000339 030	HY1071155610	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 6 X 1 X 6000 MM	72	MTR	4200.000	15-APR-10 4200.000
026	5000000339 031	HY1071155628	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 6 X 1.5 X 6000 MM	72	MTR	7200.000	15-APR-10 7200.000
027	5000000339 032	HY1071155644	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 12 X 2 X 6000 MM	72	MTR	2400.000	15-APR-10 2400.000
028	5000000339 033	HY1071155660	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 12.7 X 2.1 X 6000 MM	72	MTR	12000.000	15-APR-10 6000.000 31-AUG-10 6000.000
029	5000000339 034	HY1071155750	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 141.3 X 6.6 X 6000 MM	72	MTR	900.000	15-APR-10 900.000
030	5000000336 010	HY1071055941	S S SEAMLESS PIPES TO SPECN.,AA 10755 REV:-07 AMNDT:00(ASTM A 312 TP 321) SIZE: 219.1 X 8.2 X4000 MM & ABOVE	72	MTR	180.000	15-APR-10 180.000

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		0422-240			PURCHASE DEPARTMENT
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Remarks: 1.THIS IS TWO PART BID. PLEASE SUBMIT PRICE & TECHNICAL BID SEPERATELY. 2.ALL PIPES SHALL BE INSPECTED AND ATTESTED BY LLOYDS/SGS/BV AND THEIR CHARGES SHALL BE INCLUSIVE. 3) BHEL RESERVES THE RIGHT TO GO FOR REVERSE AUCTION INSTGEAD OF OPENING THE SUBMITTED PRICE BID.	TEST CERTIFICATE REQ: YES GUARANTEE RAQ: YES SAMPLE REQ: NO	For and on-behalf of Bharat Heavy Electricals Limited VENKATESWAR V SR MANAGER / GENERAL PURCHASE(CMM)
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PIPES

ENQUIRY NO:D2095000000339VV1 DATE: 11/01/2010 No.of Items : 30
TECHNICAL BID

SL.NO	CONDITION	REQUIREMENT	SUPPLIERS REMARKS (YES / NO)
1.	Technical	Conforming in all respects to specification as per Enquiry. Mills Test Certificate shall be furnished as per BHEL Specification. Specifications are as per annexure B	
2.	Length	The length of each pipe should as per Enquiry. All pipes should confirm to one length only.(BHEL reserves the right to accept or reject alternative length at its discretion)	
3	Minimum order quantity	Minimum order quantity is not acceptable. However on case to case basis, BHEL may consider at its discretion.	
4	Inspection Charges	Inspection charges to be included in the price. Do not mention Inspection charges as "Extra" or actuals. Such offers will be rejected.	
5	Name of Inspection Agency	As per BHEL Specification / Additional requirement as per Enquiry.	
6.	Mill details	Name of mill. Whether IBR approved (If Applicable). Change of mill name not acceptable at the time of supply.	
7	Mills T.C incase of ex-stock supplies	Copies to be furnished. Offers without TCs will be rejected. In case of ex-stock supplies. Original TC should be furnished along supplies. BHEL reserves the right to accept based on its experience with the mill.	
8	Ex- stock	Incase of ex-stock supplies, please confirm availability of entire enquiry quantity. In case the material is being offered from stock the tenderer should furnish complete TCs along with the offer. In the event of placement of order the tenderer should confirm submission of original TCs. The tenderer should be in a position to supply only the particular item for which TCs have been furnished and no change will be entertained. The offer from stockists will be considered only after specific acceptance of above conditions.	

COMMERCIAL BID

SL.NO	CONDITION	REQUIREMENT	SUPPLIERS REMARKS (YES / NO)
1	P & F Charges as per Specification	To be included in Price.	
2	Penalty	Penalty will be levied @ 1/2% per week for the quantity/ value of the undelivered portion of the order subject to a maximum of 10% of undelivered quantity/ value of order. In case of non acceptance of penalty 10% will be loaded on to basic price.	
3	Terms of Delivery	1) FOR - BHEL HYDERABAD (for indigenous Vendors). In case of vendors quote on Ex works basis 5% will be loaded on to the basic price. 2) CFR - Mumbai for imported vendors (the prices quoted should be inclusive of freight charges, inclusive of inspection charges. Do not give break up of prices. Offers not conforming to above will be rejected.	
4	Payment terms	a) 100% payment on receipt and acceptance of material within 90 days from the date of despatch/ invoice (for other than SSI units) only.	
4.1	For Indigenous vendors:-	b) 100% payment on receipt and acceptance of material within 45 days from the date of despatch / invoice (for SSI units) only. In case non acceptance of payment terms @ 18% per annum interest will be loaded.	
4.2	For foreign supplier:-	Letter of Credit will be established 1 month prior to dispatch and valid for 3 months. If LC require along with PO LC charges for more than 3 months will be to supplier A/c.	
5	Validity	The offer should be valid for 30 days from the date of Price Bid opening.	
6	Guarantee	The material shall be guaranteed for a period of 12 months after putting into service or 18 months after despatch, whichever is later.	
7	Delivery	Delivery is the essence of the contract. BHEL reserves the right to reject offers on basis of unsuitable deliveries.	
8	Rejection Replacement	In case of any rejections the supplier will be arranged immediate replacement.	

NOTE:

- BHEL Terms and Conditions of Contract (attached) are applicable.
- BHEL reserves the right to reject incomplete / ambiguous offers without assigning any reason thereof.
- The tenderer should only submit Technical / Commercial Bid and Price Bid only as per this format. Do not submit your offer on any other sheet.
- Offers not meeting our requirement because of long delivery period are liable to be rejected by BHEL at its discretion.
- Offers Indicating "extra" or at actuals" are not acceptable and are liable to be rejected.
- Offers shall be submitted by manufacturers or their marketing agents. In case of offers through agent an authorization letter with suitable validity should be furnished.
- Orders will be finalised on lowest technically suitable offer basis item wise.
- Price should be firm till completion of supplies.
- Tenderers who would like to register with BHEL as approved may fill up the questionnaire available in www.bhel.com and furnish separately.
- Stockists / Traders shall indicate manufacturing mill name and their details from where pipes shall be supplied and mill name should not be changed in place of order.
- BHEL reserves right to go for a Reverse Auction instead of opening the submitted Price Bid.

Signature & Seal of tenderer

PRICE BID

ENQUIRY NO. _____

DATE: _____

Enq Item No.	Material Specification	Description (Size,OD,Tk,Lg)	Qty (in Mtrs)	Rate / Mtr	Rate In words	Remarks (Plese mention extra taxes) applicable, if any

Signature & Seal of tenderer
Date.



PLANT PURCHASING SPECIFICATION

HY 10790

REV. No: 02

PAGE 1 OF 3

SEAMLESS AUSTENITIC STAINLESS STEEL TUBES

(Gr. TP 304)

(ORDERING DESCRIPTION)

1. GENERAL :

The tubes shall comply with the latest version of ASTM:A 269, TP 304 and with the following additional requirements.

2.0 APPLICATION :

For use as impulse pipes in instrumentation for compression fittings.

3.0 DIMENSIONS & TOLERANCES :

The tubes shall be supplied to the dimensions (OD x Thickness) specified in the order. The length of the tube shall be 6 metres unless otherwise specified.

4.0 MANUFACTURE :

- a) Shall be made by the seamless process.
- b) Either hot finished or cold drawn.

5.0 FINISH :

Finished tubes shall be reasonably straight and have smooth ends free from burns. They shall be free from injurious defects and shall have a workman like finish. Minor defects may be removed by grinding, provided the wall thicknesses are not decreased to less than that permitted tolerances.

6.0 HYDROSTATIC OR NON-DESTRUCTIVE ELECTRIC TEST :

Each tube shall be subjected to hydrostatic test as per ASTM: A 450. As an alternative to the Hydrostatic test, each length of the tube having wall thickness of 3.6 mm including and 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 AA0850144. Norms of acceptance shall be as specified in the respective standards mentioned above.

Revisions:

Revised in line with
latest ASTM A 269

ISSUED :

**STANDARDS ENGINEERING
DEPARTMENT**

Rev.No. 02

Amd.No.

Reaffirmed

Prepared:

Approved:

Dt. of 1st issue

Dt. APR.99

Dt.

Year:

MATLS. ENGG.

Specialist
Testing & TSD

SEP.86

**PLANT PURCHASING
SPECIFICATION****7.0 FLARING TEST :**

One test shall be made on specimens from one end of one tube from each lot of finished tubes as per ASTM: A 450

8.0 HARDNESS :

Two Nos. of tubes per lot shall be hardness tested and the values shall be as given in ASTM A 269.

9.0 INSPECTION OF 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.

10.0 TEST CERTIFICATE :

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

- a) BHEL Order No.
- b) BHEL Specification No. HY 10790 Rev.02
- c) ASTM: A 269, TP 304
- d) Melt No.'
- e) Size
- f) Heat treatment details and batch No.
- g) Results of Melt analysis.
- h) Results of Hardness test.
- i) Results of Hydrostatic test / NDT.
- j) Results of Flaring test.

11.0 PACKING AND MARKING :**11.1 Marking :** The following details shall be marked on each tube.

- a) BHEL Order No.
- b) BHEL Specification No. HY 10790 Rev.02
- c) ASTM: A 269, TP 304-Seamless
- d) Size (OD x Thickness x Length)
- e) Melt/Heat No.
- f) Supplier's Name



PLANT PURCHASING SPECIFICATION

HY 10790

REV. NO.02

PAGE 3 OF 3

11.2 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.

12.0 REJECTION AND REPLACEMENT :

In the event of any material proving defective during the course of further processing or testing, such material shall be rejected and the supplier shall make immediate arrangements to replace the same free of cost.



CORPORATE PURCHASING SPECIFICATION

AA 107 55

Rev. No. 07

PAGE 1 OF 2

SEAMLESS STAINLESS STEEL PIPES (AUSTENITIC, Ti STABILIZED) (ASTM A 312, TP 321)

ORDERING DESCRIPTION FOR ASTM A 312, TP 321

1.0 GENERAL:

The pipes shall conform to the latest version for ASTM A 312, TP 321 and comply with the following additional requirements.

2.0 APPLICATION

For corrosion resistant applications.

3.0 DIMENSIONS AND TOLERANCES:

3.1 Sizes:

Pipe outside diameter and wall thickness shall be as specified in BHEL order. Unless otherwise specified, pipes shall be supplied in lengths of not less than 4.5 metres.

3.2 TOLERANCES:

As per ASTM A 999.

4.0 MANUFACTURE:

Either hot finished or cold drawn.

5.0 CHEMICAL COMPOSITION:

As per ASTM A 312, TP 321.

6.0 MECHANICAL PROPERTIES:

As per ASTM A 312 TP 321.

7.0 HYDROSTATIC TEST / NDT:

Each length of pipe shall be subjected to Hydrostatic test as per ASME SA 530.

As an alternative to the Hydrostatic test, each length of pipe shall be subjected to NDT as given below:

a) For thickness upto 3.6mm, inclusive, Eddy current test as per ASME SE 309 or for thickness upto 12mm, inclusive, Flux leakage test as per ASME SE 570.

or

b) Ultrasonic test as per ASME SE 213.

Norms of acceptance shall be as specified in the respective standards mentioned above.

Revisions :

CI 27.6.27 of MOM of MRC-S&GPS

APPROVED :

INTERPLANT MATERIAL
RATIONALISATION COMMITTEE-MRC (S&GPS)

Rev. No. 07

Amd.No.

Reaffirmed

Prepared

Issued

Dt. of 1st Issue

Dt: 15.06.2005

Dt :

Year :

HYDERABAD

Corp. R&D

JUNE, 1978

**8.0 INSPECTION AT SUPPLIER'S WORKS:**

BHEL's representative shall have free access at all times to all parts of the manufacture's works, until the work on the contract of BHEL is being performed. The manufacturer shall offer BHEL's representative all reasonable facilities, without charge, to satisfy the latter that the material is being furnished in accordance with the specification.

9.0 REPAIRS:

9.1 Repair involving fusion welding is prohibited.

9.2 When defects are repaired by mechanical means, the wall thickness requirements shall be satisfactorily met with and the surfaces shall be smoothly dressed up without any sharp edges.

10.0 CERTIFICATION:

Test certificate shall be as per ASTM A 999.

11.0 PACKING AND MARKING:

As per BHEL Standard AA 049 00 01.

12.0 REJECTION AND REPLACEMENT:

If each length of pipe does not comply with the requirements of this specification during receipt inspection at BHEL or if any defect is found during further processing of pipes BHEL reserves the right to reject the whole consignment and the supplier shall replace the material free of cost. The rejected material shall be taken back by the supplier after fulfilling the commercial terms and conditions.

FOR INFORMATION ONLY**CHEMICAL COMPOSITION**

C	Si	Mn	Ni	Cr	S	P	Ti	N
≤ 0.08	≤ 1.0	≤ 2.0	9.0-12.0	17.0-19.0	≤ 0.030	≤ 0.045	5XC - 0.70	≤ 0.10

MECHANICAL PROPERTIES

Wall Thickness	0.2% PS min N/mm ²	UTS min N/mm ²	% El min	
			Longitudinal	Transverse
≤ 9.52 cm	205	515	35	25
> 9.52 cm	170	415	35	25



CORPORATE STANDARD

AA 049 00 01

Rev. No. 04

PAGE 1 OF 3

PROCEDURE FOR MARKING AND PACKING OF SEAMLESS STEEL TUBES & PIPES

1.0 SCOPE

This standard specifies the requirements for marking and packing of seamless steel tubes and pipes.

2.0 MARKING

Sl. No.	Particulars	Upto & incl. 33.4 OD and thickness < 6 mm	Above 33.4 and up to & incl. 114.3 OD and thickness < 6 mm	Other sizes and thickness not covered in columns. (3) & (4)
(1)	(2)	(3)	(4)	(5)

I. DETAILS TO BE IDENTIFIED

1.	Purchase order No.	1 to 7 to be stamped	2,3,4 & 5 only to	3, 4, & 7 to be hard
2.	Marker's emblem	on aluminium metal	be paint stenciled	stamped on the
3.	Specn.No.& grade	tag and securely	on each tube.	body of pipes 2, 5
4.	Melt Number	attached to each	1 to 7 to be stamped	and 7 to be paint
5.	Size (OD X TK X length)	bundle	on aluminium metal	stenciled on the
6.	No. of tubes/pipes		tag and securely	pipes. (Alternatively
7.	Inspector's seal		attached to each	paint stenciled is
			bundle.	permitted on mutual
				agreement for 3, 4
				& 7 only)

II COLOUR CODING:	Circumferentially/ Longitudinally	Circumferentially/ Longitudinally	Circumferentially/ Longitudinally
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Note: If specified on order, the colour code on pipes and tubes shall be as per Annexure - I

- 2.1** Stamping shall be done at about 100mm from the ends of the pipe with rounded letters and depth of stamping shall not exceed 0.5 mm.
- 2.2** Stainless steel tubes/pipes shall be paint stenciled only and the paint shall be free from corrosion promoting agents like sulphur and chlorine.
- 2.3** Marking shall be legibly done in ENGLISH language only, preferably with a stencil of 20 mm.

Revisions :

Cl. 27.6.2 of MRC – FCF+HTM

APPROVED :

**INTERPLANT RATIONALIZATION
COMMITTEE-MRC (FCF+HTM)**

Rev. No. 04

Amd.No.

Reaffirmed

Prepared
HYDERABAD


Issued
Corp. R&D

Dt. of 1st Issue
JUNE, 1978

Dt: 15.11.2002

Dt :

Year :

AA 049 00 01	CORPORATE STANDARD	
Rev. No. 04		
PAGE 2 OF 3		

3.0 PRESERVATION

3.1

All painted details shall be protected with one coat of transparent rust preventive.

3.2

Other than stainless steel, all tubes and pipes shall be applied with rust preventive coating on the outside and either with a rust preventive coating or rust inhibitor on the inside **to provide protection against corrosion for a period of 3 months for out door storage in marine / industrial atmospheres.** For heat exchanger tubes, rust preventive coating shall given dry or wet type as specified in BHEL order.

3.3

The ends of the tubes/pipes shall be closed with end caps made of PVC /plastic which should be securely held so that it will not fall off during transit.

Note:

The supplier must specify the type of rust preventive at the time of supply and also the method of its easy removal.

4.0 PACKING

4.1

a)

Tubes and pipes upto and including 33.4 mm OD and smaller shall be supplied in bundles.

b)

Tubes and pipes above 33.4 to 114.3 OD shall also be supplied in bundles, whenever the wall thickness is less than 6.0 mm.

c)

Tubes and pipes of OD above 33.4 mm and wall thickness above 6.0 mm shall be supplied loose.

4.2

a)

Weight of each bundle shall not exceed 1 metric ton.

b)

No wooden pellets should be used to cover the tubes.

c)

The bundle must be fastened by using galvanized wire / metal straps.

d)

Two straps must be fastened one at each end of the bundle at one metre from the ends. For the balance length, there shall be a wire bundling at reasonable intervals.

4.3

All the tubes of wall thickness 3.2 mm and below shall be properly packed in wooden crates to avoid any dent formation and other transit damages to the tubes.

4.4

A packing list, sealed in a thick polythene cover, shall be sent along with each consignment with the following details:

1.

BHEL order number:

2.

Number of bundles (including serial number also):

3.

Material specification No. and grade:

4.

Size of tube/pipe

5.

Customer's Name



CORPORATE STANDARD

AA 049 00 01

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COLOUR CODES FOR TUBES AND PIPES

ANNEXURE - I

Specification	Colour - 1	Colour - 2	Colour - 3
13 x 1 MF	RED	YELLOW	-
13 Cr Mo 44	ALUMINIUM	BLACK	-
A 200 Gr. T5	ALUMINIUM	RED	YELLOW
A 200 Gr. T9	ALUMINIUM	GREEN	YELLOW
AISI 602	WHITE	YELLOW	-
API 5L Gr. B	ALUMINIUM	-	-
BS 3059 PART2 CDS /HFS 360	ALUMINIUM	BLACK	BROWN
BS 3602 PART 1 CDS 360	ALUMINIUM	BLACK	BLUE
NFA 49 - 213 42 C	ALUMINIUM	BLUE	BROWN
NFA49 - 213 TU 10 CD 9.10	ALUMINIUM	BLUE	RED
NFA49 - 213 TU 15 CD 2.05	ALUMINIUM	BLUE	GREEN
NFA49 - 213 TU Z10 CD 9	ALUMINIUM	BLUE	YELLOW
NFA49 - 213 TU Z10C VNSB 09.01	ALUMINIUM	GREEN	RED
SA 106 Gr. B	RED	-	-
SA 106 Gr. C	BLUE	-	-
SA 179	BLACK	BLUE	GREEN
SA 192	WHITE	-	-
SA 199 T5	BLUE	BROWN	RED
SA 209 Gr. T1	ALUMINIUM	RED	-
SA 210 Gr. A1	YELLOW	-	-
SA 210 Gr. C	BLUE	GREEN	-
SA 213 Gr. T11	ALUMINIUM	YELLOW	-
SA 213 Gr. T12	BROWN	YELLOW	-
SA 213 Gr. T2	BROWN	GREEN	-
SA 213 Gr. T22	GREEN	RED	-
SA 213 Gr. T5	BLACK	BROWN	GREEN
SA 213 Gr. T9	BROWN	WHITE	-
SA 213 Gr. T91	GREEN	YELLOW	-
SA 213 Gr. TP 304	BLUE	GREEN	YELLOW
SA 213 Gr. TP 304 H	BLACK	BLUE	YELLOW
SA 213 Gr. TP 304 L	BLUE	WHITE	YELLOW
SA 213 Gr. TP 304 M	BLACK	BROWN	YELLOW
SA 213 Gr. TP 316	BROWN	-	-
SA 213 Gr. TP 316 Ti	BLACK	BLUE	-
SA 213 Gr. TP 316L	BLUE	BROWN	YELLOW
SA 213 Gr. TP 321	BLUE	WHITE	-
SA 213 Gr. TP 321H	BLACK	WHITE	-
SA 213 Gr. TP 347H	BLACK	YELLOW	-
SA 268 Gr. TP 405	ALUMINIUM	GREEN	-
SA 268 Gr. TP 410	BROWN	RED	YELLOW
SA 268 Gr. TP 443	BLUE	GREEN	WHITE
SA 269 TP 315	GREEN	RED	YELLOW
SA 312 Gr. TP 304	BLUE	YELLOW	-
SA 312 Gr. TP 304L	BLUE	RED	YELLOW
SA 312 Gr. TP 316	BLACK	GREEN	-
SA 312 Gr. TP 304L	BLACK	BLUE	BROWN
SA 312 Gr. TP 321	BLUE	BROWN	-
SA 312 Gr. TP 3347	BLUE	RED	WHITE
SA 333 Gr. 1	BLACK	BROWN	RED
SA 333 Gr. 3	BLACK	GREEN	RED
SA 333 Gr. 6	BLUE	GREEN	RED
SA 334 Gr. 1	BROWN	GREEN	RED
SA 334 Gr. 3	BLACK	RED	YELLOW
SA 334 Gr. 6	BLACK	BLUE	RED
SA 335 Gr. P1	BROWN	GREEN	YELLOW
SA 335 Gr. P11	GREEN	WHITE	-
SA 335 Gr. P12	BLACK	RED	-
SA 335 Gr. P2	BLUE	BROWN	GREEN
SA 335 Gr. P22	BLUE	RED	-
SA 335 Gr. P5	BLACK	BROWN	-
SA 335 Gr. P29	ALUMINIUM	BROWN	-
SA 335 Gr. P291	BROWN	RED	-
SB 163 Incono1	BLACK	GREEN	YELLOW
ST 35.4	ALUMINIUM	BLUE	-
STEEL 20	GREEN	-	-
Structural Tubes & Pipes	BLUE	BROWN	WHITE
X20 Cr Mo V 121	BLACK	-	-