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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 2.1 Details to be identified on the tubes/ pipes 1. Purchase order No. 2. Specification No. & grade 3. Melt Number 4. Size (OD x Thickness x Length) 5. Inspector's Seal 6. No. of tubes/ pipes 2.2 Identification on the tubes/pipes shall be as per the following: Unless otherwise mutually agreed upon at the time of submission of technical offers, the following points are applicable for marking of the material: a) <u>Upto & incl. 33.4 OD and thickness <6mm :</u> 1 to 6 points mentioned at 2.1 above shall be stamped or marked on the aluminium metal tag or by any other suitable method and be securely attached to each bundle. b) <u>Above 33.4 and upto & incl. 114.3 OD and thickness <6mm :</u> i. 2, 3, & 4 only mentioned at 2.1 above to be paint stenciled on each tube. ii. 1 to 6 points mentioned at 2.1 above shall be stamped or marked on the aluminium metal tag or by any other suitable method and be securely attached to each bundle. c) <u>Above 114.3 OD and thickness >6mm:</u> 1 to 5 mentioned at point 2.1 above shall be hard punched or stenciled for all the tubes & pipes. d) Whenever the pipes & tubes are supplied according to ASME/ ASTM specifications as applicable to pressure vessel code, the marking on the pipes & tubes shall meet all the additional requirements as given in the corresponding purchase specification. 2.3 Colour Coding: Color coding for all the pipes & tubes shall be done circumferentially or longitudinally If specified on order , the colour code on pipes and tubes shall be as per Annexure – I. 2.4 Marking (Stamping or stencilling) shall be done at about 100 - 300mm from one end of the pipe. In case of hard punching it shall be done with rounded letters. 2.5 Stainless steel tubes/pipes shall be paint stenciled only and the paint shall be free from corrosion promoting agents like sulphur and chlorine.					
Revisions: General revision- Modified Cl. No. 2.0, 3.0 & 4.0		APPROVED: INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC (FCF+HTM)			
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2.6 Marking shall be done in ENGLISH language and shall be legible.

3.0 PRESERVATION

3.1 All painted details shall be protected with one coat of transparent rust preventive. Any other suitable method may be followed with prior written approval by BHEL.

3.2 Other than stainless steel, all tubes and pipes shall be applied with rust preventive coating on the outside surface of tubes/ pipes to provide protection against corrosion for a period of 3 months for outdoor storage in marine / industrial atmospheres. For heat exchanger tubes, rust preventive coating shall be 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/ metal, etc. which should be securely held so that it will not fall off during transit and also shall not allow the ingress of water/ moisture, etc. during transit and storage.

For tubes:

- a) The end cap cylindrical part OD shall match with Tube ID
- b) Conical part shall match with Tube OD
- c) There shall be a small pin hole in conical part (in transverse direction) to facilitate the plug removal.

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

Unless otherwise mutually agreed upon at the time of submission of technical offers, the following points are applicable for packing of the material:

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



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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
NFA49 - 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	-	-