

	BHEL –IVP-Goindwal Quality Department Technical Delivery Conditions	DOC NO TDC:WOODENBOX: Rev:06 Rev date: 18.08.2018
Product: : Assembled Wooden boxes and loose wooden planks		

1. General:

This TDC lays down instructions for supply of assembled wooden boxes and loose wooden planks at industrial valves plant for transportation of the valves/wall blowers/Loose Components & other finished products.

2. Wood Species:

The following wood species can be used for Wooden boxes/planks:

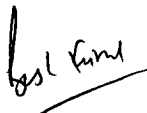
Coniferous Wood:

Trade Name	Botanical Name
Fir	Abies pindrow
Deodar	Cedrus deodara
Chir	Pinus roxburghil
Kali	Pinus wallichians
Khasi Pine	Pinus khasya
Spruce	Picea smithiana boiss

Non Coniferous Wood:

Trade Name	Botanical Name
Rubber wood	Hevea brasiliensis
Salai	Boswellia serrata
Bahera	Terminalia bellirica
Jaman	Syzygium cumini
Lendi	Lagerstroemia parviflora
Mango	Hangifera indica
Machilus(Kalamavu)	Machilus macrantha
Irul	Xylis xylocarpa
Irulbaken	Hopes
Karumarudu	Terminalia tomentosa
Murtenga	Bursera serrata
Nangal	Mesua ferrea
Pillamarudu	Terminalia paniculata
Sal	Shorea Robusta

Any other species of wood as per Groups I, II of IS 6662 will also be accepted.

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3. Compliance With Standards:

Assistance has been derived from the following standards in the preparation of this specification.

BHEL Corporate Packing Standard No.. : AA 51402 for non-coniferous wood

BHEL Corporate Packing Standard No.. : AA 51401 for coniferous wood

IS 1326-1992: Non-Coniferous Sawn Timber (Baulks & Scantling)

IS 5966-1993: Non-Coniferous Timber in Converted Form for General Purposes

IS: 190 – 1991 Grade I:Coniferous Sawn Timber (Baulks & Scantling)

IS: 6662 – 1993 : Timber Species Suitable For Wooden Packaging Groups I & II

4. Requirements:

- 4.1 Wooden boxes shall be duly provided with a 70 GSM (Colourless/Transparent) Multi Layered Cross Laminated Polythene Film Specification No: AA51420 on inner surface of four sides of box & inner surface of top cover using blue nails to protect the valves from outside rain water or condensing moisture. The length of blue nails shall be 16mm.
- 4.2 Wherever 2 pieces of Cross laminated poly film are used, the joint shall have an overlap of minimum 20 mm. The film used for top cover shall project outside on 4 sides by at least 100 mm and shall be nailed properly on sides. The film is not required for the base of the boxes.
- 4.3 Corner plates and sling plates made of mild steel sheet measuring as per drawing shall be used.
- 4.4 Two consecutive planks shall be joined by lap joint as per drawing.
- 4.5 The dia. of the nails shall be 3.15mm. The length of the nails shall be 65mm wherever two planks of 25mm thickness are joined and 85mm wherever a 25mm planks is joined to a 50mm plank. The extra length of nail after nailing in both planks shall be bend properly. Nailing should be done in such a way that head of nail shall be outside the box. Distance between any two nails shall not be more than 100mm.

5. Dimensions and Tolerances:

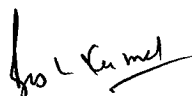
Width, thickness and length of all components of wood used in wooden boxes shall be as specified in drawing/Purchase Order. Dimensional tolerances shall be as follows:

Width: +/- 5mm

Thickness : +2/-1 mm (for thickness less than 20 mm)

+3/-1 mm (for thickness $\geq$ 20 mm)

Length: +/- 2% of total length or 25 mm whichever is lower.

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6. Moisture Content:

The timber shall have moisture content as stated below within a depth of 15mm from the surface excluding a length of 300 mm from each end at the time of inspection. The moisture content will be determined in accordance with IS: 287

October to June : 30%
July to September (Rainy season) : 40%.

7. Permissible Defects:

- 7.1 Brashness, splits across the grains, shakes, cups, twist, insect attack, centre heart in planks are the defects which are not acceptable.
- 7.2 **Bow:** Shall be permissible upto a maximum of 2mm for 300mm
- 7.3 **End Splits:** The largest end splits at each end shall be measured and the length added together. The added lengths of these shall not exceed 60 mm per meter run of the piece.
- 7.4 **Live / Dead Knots:** A maximum of 5 Knots/m length are permissible; however, the knots shall not be so grouped or located as to affect the strength of the piece. Knots above 35mm. diameter are not permissible. Major axis of the knot shall be taken as the diameter of this knot.
- 7.5 **Surface Cracks:** Surface cracks with a depth of 10% subjected to maximum of 10 mm are permissible. A continuous crack of any depth all along the length is not permissible.

8. Certificate:

The supplier shall furnish a certificate with each lot/consignment in support of the species of the wood, moisture content, size of the nails used, GSM of polythene used, dimension report of one piece per type per lot and any special information which the tenderer feel is essential for the quality of the packing boxes.

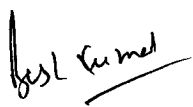
9. Identification and Marking:

The boxes shall be marked/painted in order to identify the source of supply on one of two small side faces.

- SUPPLIER NAME:
- BOX TYPE:
- BOX SERIAL NO.:
- SUPPLIER INVOICE NO.:

Following marking has to be done using paint/ink & stencil on one long side face-

- CONSIGNEE :
- INVOICE NO.:
- OA NO./WO. NO.:



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- CASE NO.:
- MATERIAL/QTY:
- WEIGHT:
- FROM :BHEL/GOINDWAL/TARN TARAN

The ink shall be non-fading/indelible and non-washable by water.

Loose planks supplied by supplier as per PO shall be done colour coding on one end as per colour allotted to supplier.

10. Inspection: Supplier shall submit inspection report as per below format for one box of each type per lot of supply:

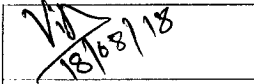
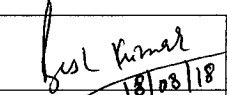
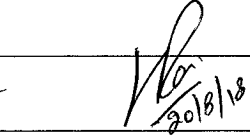
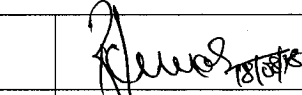
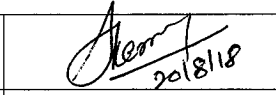
Inspection Format for wooden boxes and planks:									
Date of inspection:					Box inspection format no: Wooden box insp:001				
Supplier name									
Supplied batch details									
Observed dimensions									
Box type	L	W	H	C	D	Dimension	LENGTH	width	Thickness
						Plank			
						Resting Beam			
						others			
SN	Type of check		Remarks						
1	Polythene film								
2	Corner and sling plates								
3	Planks overlapping								
4	Moisture content								
5	Size of nails used								
6	Defect details (If found above permissible limit as per clause No. 7)								
7	Identification and Marking								
8	Other remarks(If any)								

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11. AUDIT CHECKS AT BHEL:

BHEL reserves the right to carry out audit checks for wood species, polythene film confirmation to standard, nails size, Corner & Sling plate material & dimension, planks & overall box dimensions. Items found defective during check at BHEL will be rejected.

 18/08/18	 18/08/18	 20/8/18	 18/08/18	 20/8/18
Vikas Kumar	Rajesh Kumar	Harpreet Rai	Rakesh Kumar	S R Kenny
Sr. Engr/QM	Dy Mgr/CML	Sr DGM/CML	Sr DGM/MM	AGM/QM &HSE
Prepared by		Reviewed by		Approved by