



भारत हेवी इलेक्ट्रिकल्स लिमिटेड  
Bharat Heavy Electricals Limited  
सोलर बिजनेस डिवीजन

सामग्री प्रबंधन विभाग  
Materials Management

**Solar Business Division,**

Prof. CNR Rao Circle, Opp. Indian Institute of Science post.  
Malleswaram, Bengaluru- 560012.INDIA  
Website: www.bhel.com

Phone: 080-23346352  
080-22182286  
Fax: 080-23340535

**Purchasing Specification.**

Ref. Purchasing specification EL-PS-12-0004/OO DT 9-9-2009

**1. General**

This specification governs the requirement of packing wood. The packing wood governed by this specification of BHEL-SBD shall generally be in compliance with the provision of IS 6662: 1993 and defect classification as per DN 55350-31 (1985 -12)

**2. Scope**

All packing wooden Crates for hollow insulators boxes below 8 cft and boxes above 8 cft category and wooden planks as per P.O.

**3. Condition of delivery**

The crates/ boxes below 1 cft shall be supplied in two halves assembled/Semi-fabricated conditions as per purchase order, boxes to be supplied in knocked down conditions above 1 cft and wooden planks as per P.O specification

**4. Dimensions and tolerances**

Shall confirm strictly to relevant Crate & box drawings.

**5. General Specifications of Wood for Crates and boxes**

5.1 Generally. The drawings may specify the material of wood, which is used for Crates, such as Mango. Rubber, Neem, Jack fruit, jungle wood ...etc. or as specified in the Indian standard IS 6662 of 1993 — group I and II

5.2 Wood shall be generally free from defects, cracks and objectionable knots and shall also meet the requirement of specification. Dead wood shall not be used.

5.3 Depending on the moisture and nature of wood, the vendor shall provide for possible shrinkage allowance for wood to ensure the final dimensional requirement...

5.4 All dimensions given in the drawings are in "mm" unless exclusively specified. Proper care to be taken while cutting wood so that the required measurement shall be achieved.

5.5 No requests for tolerance/allowances beyond the specified limits will be entertained normally.

5.6 Proper care to be taken at the time of nailing of planks, boxes and crates.

5.7 Nails to be driven at 15° inclination to vertical force line and parallel to both side surfaces of the plank where the nail end rests. All nails should lie within the thickness of the planks. No projection is allowed.

5.8 The nails of the specified size mentioned in the drawings shall be used.

Note: Please contact concerned executive from MM w.r.t any doubt regarding Purchase Specification.



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**6.Finish and workmanship**

6.1 The quality of wood shall be free from defects defined in the purchase Specification.

6.2 The crates & boxes shall be properly assembled as per given drawing and nailed with required gauge wire nails. (Package-A). Package B & C to be supplied in knocked down conditions (frames) and Package D to be as per P.O. specifications. 6.3 The sharp edges of nails shall not be projected to outside from the wood. Inside projected ends are to be bent to avoid damage or injury to the material and personnel.

**7.Freedom from defects**

The crates and boxes shall be free from defects like Knots, barks, Pin holes, seasonal cracks and other harmful defects like termite attack and dead wood. The size of holes shall not be greater than 20 mm dia and seasonal cracks shall not be greater than 20 mm length

**8.Sampling for various tests**

SL NO	Type of test/ inspection	BHEL's lot acceptance criteria
1	Dimensional check	All crates & boxes will be inspected as per drawing dimensions with allowances
2	Visual inspection	100% visual inspection by BHEL 4th inspection as per IS 6662-1993 Group 1 & 11 and 55350-31 1985-12)
3	Load test	1% sample may be tested for load tests (The Insulator shall be packed as per drawing inside the crates and tested for load carrying capacity by rolling on ground).

DIN 55350- 31, (1985 -12)

**Defect classification Table**

Defect Class	Definition	Evaluation
CD (Critical dimension)	Critical defects are those which make the packing wood unfit for use, which jeopardize human health, safety and the environment or which contravene legal requirement or lead to destruction of or a change in packaged condition	Packaging material not usable.
( Major Defect)	Major defects are those which severely impair handling and use of the packaging and lead to a loss of performance	Usability of packaging material markedly impaired.
Min D (Minor Defect)	Minor defects are those which represent a general lowering of quality but do not Limit the function of packing	Usability of packaging material slightly impaired.



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9. Inspection at Vendor's premises

BHEL's representative shall have free access to all parts of vendor's premises at all times when work on contract is being executed. The vendor shall offer BF-EL's representative all reasonable facilities to convince the latter that the crates and boxes are manufactured in accordance with this specification.

10. Visual acceptance norms for wooden packing crates, boxes and planks.

10.1 Cracks

In two planks of one crate box, seasonal crack of 30 mm length (Max) will be allowed.

10.2 Knots

Rotten knots not allowed.

One knot in one plank maximum of 20 mm diameter is allowed and maximum of two plank in one crate and box is allowed (Not on the ends and sides).

10.3 Clearance

Maximum clearance between two halves of crate and box is 6 mm.

10.4 Buckling of Planks Not allowed.

10.5 Dead wood and Bark covered wood

Dead wood shall not be allowed in any kind of planks. Only, in some exceptional cases, part of dead wood about 1/4 th of total width of plank is allowed. Bark covered wood planks are not allowed.

10.6 Termite and Pin holes

Wood plank should be free from termite attacks and pin holes.

11. Rejection

Crates and boxes which are not conforming to the above specifications are liable to be rejected

12. Nailing of Slit

Wherever slits occur during nailing, two extra nails to be provided on both sides of slits.