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GUIDE FOR
STORAGE AND PROTECTION OF
LOGS AND SAWN TIMBER

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GUIDE FOR STORAGE AND PROTECTION OF LOGS AND SAWN TIMBER

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Indian Standard

GUIDE FOR
STORAGE AND PROTECTION OF
LOGS AND SAWN TIMBER

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 31 January 1979, after the draft finalized by the Timber Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 Supplies of timber are done mostly in the form of logs and in bulk quantities to the depots or saw mill yards. These logs cannot be disposed off quickly, either as such, or by conversion. Storage of logs and sawn timber for certain periods therefore becomes essential.

0.2.1 The storage period of logs in depots is normally much less compared to that of saw mill yards. But whether the periods of storage are short or long, the logs should be stored in the yard in proper and scientific way for protection against cracking, splitting and biological deterioration otherwise considerable loss of timber was likely to occur due to surface and end-cracking and by development of mould, decay and insect attack. This standard has been formulated to provide guidance in storage and protection of logs and converted timber.

0.3 In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard provides guidance for storage and protection of logs and converted timber to avoid damage and loss of timber due to surface and end-crackings and by development of mould, decay, insect attack, etc.

2. STORAGE OF LOGS IN DEPOTS AND SAW MILL YARDS

2.1 General — The timber yard should be maintained under hygienic conditions. There should be no weeds, debris and dung or decomposed organic materials which become source of infection. The yard should be level with proper drainage of rain water. Direct approach to the main road with facilities for free movement of transport from one part to another should be provided. In case the yard is big enough, trolley lines should be provided for easy movement of logs. To avoid deterioration logs should be stored in any of the ways mentioned under **2.1.1** to **2.1.4**.

2.1.1 In Log Pond — Erection of an artificial log storage pond in the yard (saw mill only for long time storage) is also necessary for storage of logs under water. Debarked logs well submerged under water would keep logs free from all menace and during this storage period it is possible that some incipient stresses (that is, growth stresses) in the wood may disappear. This makes subsequent drying of the wood, after conversion, more easy and reduces the liability of the wood to crack and split. The water of artificial log pond should be changed once in a fortnight to remove the fermented material. The initial expense may seem large and unnecessary, but the returns in the saving of wood, which would otherwise have to be discarded, will more than compensate the initial expenditure.

2.1.2 By Water-Spray — In the absence of requisite capacity of log pond and sufficient quantity of water, logs may also be stored on land under water sprays from a water reservoir through pipes and centrifugal pumps. For this, the logs after debarking but without the use of preservatives, should be stacked on cement concrete platform with suitable drainage of excess water and collection of the same in the reservoir. Water-sprays could be continuous or intermittent over the log stacks ensuring that logs remain in green condition. The water of the reservoir should be changed after every one month or so, thereby consumption of water would be much less compared to log pond storage.

2.1.3 By Prophylactic Treatment and Partial Water Spray — For want of sufficient log-pond space and supply of water, the debarked logs are stored stacked on land over raised foundation after giving prophylactic treatment with non-leachable preservatives. Subsequently, these logs

shall be covered with some cheap material which keeps off the direct rays of the sun for rapid drying of logs. Occasionally, water spraying shall be resorted to keep the logs in green condition without any surface or end cracks or splits. If required, preservatives might be sprayed over logs after every 3 to 6 months interval.

2.1.4 By Prophylactic Treatment and Under Shade — The debarked logs, after prophylactic treatment, should be stored under shade on preservative treated timber to prevent damage from termites and fungal decay. To prevent end-crackings of logs, painting or spraying with an end coating composition (*see 3*) should be done. The prophylactic treatment, conforming to IS : 401-1967* on logs by spraying should be repeated at every 3 to 6 months depending on the intensity of biological menace prevailing in the yard.

3. PROTECTION OF LOGS

3.1 End Coating Composition for Logs — Loss of moisture takes place from the ends of logs, subjecting them to end-splits. This may be prevented or minimized by coating the ends of the logs with moisture retarding compositions extending up to a distance of 10 cm from the ends. Some of the effective compositions are as follows:

- a) Thick coal tar or bituminous paint/solution;
- b) Rosin and lamp black (10 : 1), melted, mixed and applied hot;
- c) Hardened glass oil for end-coating;
- d) Paraffin wax;
- e) Molasses and lime (3 : 1);
- f) Anti-splitting-cum-preservative compound of the following composition:

H.S.P., bitumen MexR 115/15	...	37.5	}	parts by weight
L.S.P., bitumen MexR 10/20	...	12.5		
Creosote fuel oil (50 : 50)	...	5.00		
Soap stone	...	30.00		
Cinder (boiler ash)	...	15.00		
		100.00		

- g) Tar acid-pitch (1 : 1); and
- h) Bitumen paint-pitch (4 : 3).

4. INSPECTION

4.1 Periodic inspection of timber log-stacks is necessary. The points mentioned under **4.1.1** to **4.1.4** shall be kept in view while inspecting.

*Code of practice for preservation of timber (*second revision*).

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4.1.1 The logs are not cracked or splitted due to drying. If drying has already occurred, immediate conversion or protection against further damage by drying shall be undertaken.

4.1.2 The logs are all raised from the ground and yard is clean without any decomposed organic materials.

4.1.3 The logs are not being biologically deteriorated. In case of decayed or infected logs, they should be converted to recover healthy portion, or destroyed, or removed from the yard to prevent further infection to sound ones.

4.1.4 The logs are not being attacked by insects/beetles and termites. In case of such attack, effective preservative should be applied to the damaged parts, if usable, and segregated, if found, unusable after remedied measures.

5. STORAGE AFTER CONVERSION IN THE DEPOTS/YARDS

5.1 Timber yards with saw-mills are likely to store converted timbers. Converted timbers shall be seasoned either in air or in kiln, as the case may be. Air seasoning is a very slow process and the kiln seasoning is comparatively faster. In case of big cross-sections that is, more than 5 cm thick, the timber shall preferably be first air-seasoned to 30 percent moisture content before finally kiln seasoned to required moisture content.

5.2 After conversion, if kilns are not available for seasoning, the timber should be stacked for air seasoning under shade, or in shed. Specially in damp climate and with non-durable species, prophylactic treatment should be given before stacking. It would be better, if all converted timbers are end-coated before being stacked for air seasoning or kiln seasoning. Besides this, there are some refractory structural species (for example, sal, laurel, irul, etc) and thick cross-sectional members which are seasoned only in air. Hence for these purposes, the saw mill yards should have sufficient air seasoning sheds of various types to cope with different climatic conditions and members of different thicknesses as well as refractory species. The constructions of air seasoning sheds and air stacking of timbers shall conform to IS : 1141-1973*.

6. PROTECTION AGAINST CRACKS/SPLITS DURING AIR SEASONING

6.1 The sawn refractory species or other species prone to surface cracking while stacked and drying in sheds after green conversion may have many

*Code of practice for seasoning of timber (*first revision*).

surface cracks and splits or even end-splits inspite of end-coatings. Such species should be treated (spray or soaking) with a water-solution of hygroscopic-cum-antishrink chemical like polyethylene glycol, urea, common salt, etc, former one being the most effective, at a temperature of 45-50°C for a suitable period. Timbers should be treated with polyethylene glycol-1000 (PEG-1000) in a 50-percent water-solution (*w/w*) to which sodium pentachlorophenate 1-2 percent has been added for protection against insects and fungi while air-drying. The treatment should be given just after conversion in green condition and period of treatment depends on refractoriness, and cross section of species. Higher temperatures up to 60°C or longer period of treatment or both might be used for adequate diffusion and retention of chemicals for better protection. After treatment, timbers should be close packed for sometime and then air-dried in the normal procedure in sheds.

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