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IS 1140 (1988): logs for matches [CED 9: Timber and Timber Stores]



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“Knowledge is such a treasure which cannot be stolen”



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IS : 1140-1988  
REAFFIRMED 2008

*Indian Standard*

# SPECIFICATION FOR LOGS FOR MATCHES

*(Second Revision)*

UDC 674'038'3 : 662'53

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BUREAU OF INDIAN STANDARDS  
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AMENDMENT NO. 1 APRIL 1991  
TO  
IS 1140:1988 SPECIFICATION FOR LOGS FOR MATCHES

(Second Revision)

(Clause 4.1, first sentence) - Substitute  
'normally exceed one month' for 'exceed two months'.

(CED 9)

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Reprography Unit, BIS, New Delhi, India

**AMENDMENT NO. 2 MARCH 1999  
TO  
IS 1140 : 1988 SPECIFICATION FOR LOGS FOR  
MATCHES**

*( Second Revision )*

*( Page 4, clause 7.1 )* — Insert the following new clause after 7.1:

**'7.1.1 For timber species highly susceptible to blue stain fungi, like Rubber wood and Semul, the treatment given in the standard shall be done for the whole log.'**

( CED 9 )

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Reprography Unit, BIS, New Delhi, India

# *Indian Standard*

## SPECIFICATION FOR LOGS FOR MATCHES

### ( *Second Revision* )

#### 0. FOREWORD

**0.1** This Indian Standard ( Second Revision ) was adopted by the Bureau of Indian Standards on 21 November 1988, after the draft finalized by the Timber Sectional Committee had been approved by the Civil Engineering Division Council.

**0.2** The supply of logs suitable for the manufacture of matches and match boxes is of great economic importance to the match industry. To manufacture a fair quality of match boxes and splints, the raw materials, the most important of which is timber, shall conform to certain minimum requirements. *Salmali malabarica* ( Dc. ) Schott & Endl. ( *semul* ) has been found suitable for match boxes and match splints but due to inadequate supplies of this species, the match industry has had to use other available timbers to supplement its supply. As the alternate species vary in their characteristics substantially, the Sectional Committee has felt it necessary to lay down the minimum requirements for quality of logs in order to provide the forest departments and the match industry a guide in the extraction of match logs and their purchase by the match factories.

**0.3** This standard was first published in 1959 and subsequently revised in 1970. The second revision

of this standard has been taken up to incorporate further changes necessary in the light of the comments and suggestions received from users of this standard. The modifications include the modification in grades and modification in treatment clauses.

**0.4** This standard has been based upon the extensive experience of the match industry, the investigations carried out by the match industry and the Forest Research Institute and Colleges, Dehra Dun, in regard to the use of suitable timber for matches and match boxes and the statistical data collected by the match industry and the forest department during many years of match manufacture in the country.

**0.5** 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.

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

#### 1. SCOPE

**1.1** This standard covers the minimum requirements for logs of different species for use in the manufacture of match boxes and splints.

#### 2. TERMINOLOGY

**2.1** For the purpose of this standard, the definitions given in IS : 707-1976\* shall apply.

#### 3. SPECIES OF TIMBER

**3.1** Unless specified otherwise, logs for the manufacture of match boxes and splints shall be from any of the species given in Table 1. Other species found suitable may also be supplied subject to prior agreement between the purchaser and the supplier.

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\*Glossary of terms applicable to timber technology and utilization ( *second revision* ).

#### 4. GENERAL REQUIREMENTS

**4.1** Logs shall be supplied to the factories fresh after felling and the time allowed between their felling and supply to the factories should not exceed two months. In order to keep the logs fresh, the bark on the logs shall so far as possible be left intact.

**4.2** The logs shall be sound, cylindrical, of straight growth, reasonably fresh-out and with the bark intact. The logs shall be free from knob twisted or spiral growth, knots, cracks, rings, bulges, butteresses, hollow dry or decayed portions, heart-centre, crotches, brashwood and any kind of decay ( rot ) including dote, insect attack or other defects excepting those permitted under 5. The plugging of defects shall not be permissible.

#### 5. DEFECTS

**5.1** Logs shall be inspected for defects and rejections

TABLE 1 SPECIES OF TIMBER SUITABLE FOR MATCH MANUFACTURE

( Clause 3.1 )

Sl. No.	BOTANICAL NAME	TRADE NAME	USE	
			Splints	Boxes
1)	<i>Ailanthus</i> spp.	maharakh and gokul	×	—
2)	<i>Astonia scholaris</i>	chatian	×	—
3)	<i>Anhocephalus chinensis</i>	kadam	×	—
4)	<i>Canarium strictum</i> Roxb.	white dhup ( raldhup )	—	×
5)	<i>Canarium</i> Spp. ( other than <i>Canarium strictum</i> )	white dhup	—	×
6)	<i>Cryptocarya amygdalina</i> Nees.	kalasum	×	×
7)	<i>Elaeocarpus tuberculatus</i>	rudrak	×	×
8)	<i>Endospermum</i> spp.	bakota	×	×
9)	<i>Evodia</i> spp.	kambli	×	—
10)	<i>Firmiana villosa</i> Voigt ( Syn. <i>Sterculia villosa</i> Roxb. )	udal	×	—
11)	<i>Gyrocarpus jacquini</i> ( Syn. <i>Gyrocarpus americanus</i> auct. non Jacq. )	tanaku	×	—
12)	<i>Hymenodictyon excelsum</i>	kuthan	×	—
13)	<i>Lophopetalum wightianum</i>	banati	×	×
14)	<i>Machilus</i> spp.	machilus	—	×
15)	<i>Mangifera indica</i>	mango	—	×
16)	<i>Melia composita</i>	malabar neem	×	×
17)	<i>Parishia insignis</i>	red dhup	×	—
18)	<i>Planchocella longipetiolata</i>	lambapatti	×	×
19)	<i>Polyalthia</i> spp.	debdaru	×	—
20)	<i>Populus</i> spp.	poplar	×	×
21)	<i>Pterocymbium tinctorium</i>	papita	×	—
22)	<i>Salmalia insignis</i> ( Wall. ) Schott. & Endl.	didu	×	×
23)	<i>Salmalia malabarica</i> ( Dc. ) Schott. & Endl.	semul	×	×
24)	<i>Spondias</i> spp.	amra	×	×
25)	<i>Symplocos spicata</i> Roxb.	lodh ( podipari )	×	—
26)	<i>Trewia nudiflora</i>	gutel	×	—
27)	<i>Albizzia falacata</i>	—	×	×
28)	<i>Boswallia serrata</i>	Salai	×	—

NOTE — × means suitable.

— means unsuitable.

or deductions for defects in gross length and mid-girth over bark shall be made in the manner specified under 5.2 to 5.20.

**5.2 Bark Pockets, Bird Packs and Wounds** — Not exceeding 12 mm in diameter and 25 mm in depth shall be permissible up to two in number per 1 m length of log.

**5.3 Borer Hole** — The logs shall be free from marine borers and powder post borers. Occasional borer holes not exceeding 6 mm in diameter shall be permissible. However, logs over 1.5 m in girth may be accepted provided the borer holes do not extend beyond 25 mm in depth.

**5.4 Dote, Rot ( Including Blue Rot ) and Cracks** — shall be permissible if these do not penetrate more



than 12 mm into the log. In case penetration is more than 12 mm, a deduction in girth equal to six times the maximum penetration of these defects in any part of the log shall be made.

**5.5 Bulge, Knob and Knot** — A bulge, knob or live knot extending up to 50 mm and dead knot extending up to 25 mm lengthwise on a log and occurring not more than three in number in a length of 1 m shall be permissible. If extending more than 50 mm in case of a bulge, knob or live knot, and 25 mm in case of a dead knot, or occurring more than three in number in a length of 1 m, it shall constitute a defect for rejection of corresponding length from the total length of the log.

**5.6 Burnt Part** — If any part of a log has been burnt, the length of the burnt portion and 50 mm on each side of the same shall be deducted from the length of the log.

**5.7 Buttress, Flute or Oval Logs** — The girth of logs affected by these defects shall be calculated by taking the average diameter of the inscribed circle at the small and big ends of a log and then multiplying the average by 3.

**5.8 Split** — A split penetrating not more than 25 mm from the surface (excluding the thickness of the bark) shall be permissible. Cracks penetrating more than 25 mm from the surface shall constitute a defect and a deduction in length shall be made to the extent of visible length of the cracks plus 15 cm.

**5.9 Crotch** — Full deduction of the length of the crotch shall be made from the length of the log.

**5.10 Curvature** — If the log has got a sharp bend, the straight portion of the log on each side of the bend shall be treated as a separate log and each such log shall conform to the requirement of this standard. A deviation in straightness up to 5 cm in a length of 1 m shall be permissible. If there is more than one curvature, the log shall be rejected.

**5.11 Drag-Hole, Slot and Snout** — These shall be excluded when measuring the length of the log.

**5.12 Eccentric Heart** — Where the distance from the surface (or, in oval logs, from the inscribed circle), anywhere on a log to the heart of the log, is less than one-third the diameter, the log shall be rejected entirely if such log is so affected throughout. If only a part of the log is so affected, the affected portion shall be cut off or deducted from the length of the log.

**5.13 Hollow-Centre** — Hollow-centres exceeding 50 mm in diameter shall constitute a defect to the extent of the measurable length of the hollow plus 30 cm, to be deducted from the gross length of the log. Logs with plugged centres shall be entirely rejected.

**5.14 Twisted Grain** — Logs with twisted grain shall be entirely rejected.

**5.15 Heart Centre** — Logs affected with hard discoloured centres not more than 10 cm in diameter in the centre may be accepted provided the log is free from other defects and has a mid-girth over bark of at least 150 cm.

## 5.16 Shakes

**5.16.1 Cup Shake (Ring)** — Cup shake visible on one or both ends and located within 50 mm from the centre heart (pith) of the log shall be permissible.

**5.16.1.1** If there is only one ring within 50 mm from the surface of a log, the log shall be accepted subject to the girth being computed by taking the smallest diameter of the ring and multiplying the same by 3. If there are two or more rings at different distances from the centre of a log, the entire log shall be rejected.

**5.16.2 Heart Shake and Radial Shake (Star Shake)** — Visible on one or both ends and located within 50 mm from the centre heart (pith) of the log shall be permissible.

**5.16.3 Spongy Heart and Soft Heart (Punky Heart)** — Logs affected with such defects shall be rejected entirely if the spongy, soft or punky heart exceeds 50 mm in diameter.

**5.17 Spongy (Too Soft) Wood** — Logs with spongy (too soft) wood shall be rejected entirely.

**5.18 Taper** — A taper up to 2.5 cm in girth for every metre length of log shall be permissible.

**5.19 Under Girth or Short Length Log** — Logs below the stipulated minimum mid-girth or length shall be rejected entirely.

**5.20** Notwithstanding the permissible defects referred under 5.2 to 5.19, the total number of defects permitted under 5.2 to 5.19 shall not collectively exceed 4 per 1 m length of the log.

## 6. GRADING AND MEASUREMENT

**6.1 Grading** — Depending on the length and girth of the log, the logs for matches shall be graded into two grades as under:

- a) *Grade 1* — Logs with mid-girth not less than 90 cm and length 2.5 m and above, and
- b) *Grade 2* — Logs with mid-girth not less than 90 cm and length not less than 1 m and not more than 2.5 m.

**6.2 Measurement** — The length and the girth of the log shall be measured as specified under 6.2.1 and 6.2.2. The length shall be measured in metres

and shall be rounded off to the nearest lower 0.05 m. Girth shall be measured in centimetres and shall be rounded off to the nearest lower centimetre.

### 6.2.1 Length

6.2.1.1 When the ends are snouted, the length of the logs shall be measured from the first felling cut, that is, the cut extending farthest into the length from the butt end, to the nearest cut at top end.

6.2.1.2 When the cross-cut by a saw and the end surface are parallel to each other, the length of the log shall be measured from the end to the other end and, when the end surfaces are not parallel to each other, the length shall be measured by the shortest distance between the other end and the slot.

### 6.2.2 Girth

6.2.2.1 The girth, in case of logs of regular taper and without any protuberance at mid-girth, shall be measured at the mid length of the log.

6.2.2.2 In the case of a log with irregular taper, three girth measurements shall be taken, that is, one at the mid length and one at each end away from protuberance, the mean girth being obtained by taking the average of these three measurements.

6.2.2.3 In the case of a log with regular taper but with protuberance at mid length, the girth shall be measured at each side of the protuberance as near to it as possible but at equal distance from the middle of the log and the average taken.

6.2.2.4 In measuring girth, measurement shall be taken without the bark on and excluding protuberance. Where girth measurement are taken with bark on and excluding protuberance, 10 percent reduction of mean girth shall be made from mid-girth on account of the bark.

6.2.3 Volume — The volume of a log shall be calculated as follows:

$$V = \left( \frac{G}{4} \right)^2 \times L$$

where

$V$  = volume in m<sup>3</sup>,

$G$  = girth in m, and

$L$  = length in m.

## 7. TREATMENT

7.1 Soon after felling of the trees, ends and portions uncovered with bark of logs shall be given preservative treatment and moisture barrier coat in accordance with IS : 401-1982\*, IS : 1141-1973† and IS : 9104-1979‡.

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\*Code of practice for preservation of timber (*third revision*).

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

‡Guide for storage and protection of logs and sawn timber.

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