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IS 620 (1985): Wooden Tool Handles General Requirements  
[CED 9: Timber and Timber Stores]



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IS: 620 - 1985  
(Reaffirmed 2010)

*Indian Standard*

SPECIFICATION FOR  
WOODEN TOOL HANDLES GENERAL  
REQUIREMENTS  
*(Fourth Revision)*

UDC 685.531.054 [ 674-7 ]



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INDIAN STANDARDS INSTITUTION  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

*Indian Standard*  
**SPECIFICATION FOR  
WOODEN TOOL HANDLES GENERAL  
REQUIREMENTS**  
*( Fourth Revision )*

Timber Stores Sectional Committee, BDC 33

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**IS : 620 - 1985**

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**AMENDMENT NO. 1 MARCH 1992**  
**TO**  
**IS 620 : 1985 SPECIFICATION FOR WOODEN TOOL**  
**HANDLES GENERAL REQUIREMENTS**

( *Fourth Revision* )

( *Page 5, clause 4.2, line 2* ) — Delete the words 'and not less than 8 percent'.

( *Page 5, clause 5.1, Note* ) — Substitute the following new clause for the existing Note:

'5.1.1 It is recommended that, immediately after manufacture, all tool handles be dipped momentarily in raw linseed oil at room temperature, as this treatment retards changes in moisture content.'

( *Page 5, clause 6.2* ) — Substitute the following for the existing clause:

'6.2 Tolerances — Unless otherwise specified in the relevant Indian Standard for the various types of wooden tool handles, the following tolerances shall be permissible:

a) Where the head, socket, blade or tongue of the tool is to be fitted	+ 3 mm - 0
b) At other places	± 2 mm
c) On overall length of the tool handle	± 3 mm for handles up to 300 mm ± 5 mm for handles from 310 mm to 600 mm ± 10 mm for handles from 610 mm and above

( *Page 7, Appendix A* ) — Insert the following matter:

*'Leucaena leucocephala* Su - babul 94'

( Page 9, Appendix B ) — Insert the following matter:

<i>'Acacia tortilis</i>	Israeli babool	87
<i>Adina obliogocephala</i>	Haldusopa	80
<i>Albizia lucida</i>	Taprie siris	83
<i>Eucalyptus tereicornis</i>	Mysore gum	77
<i>Robinia - psued - acacia</i>	Black locust	82 '

( Page 10, Appendix C ) — Insert the following matter :

<i>'Acacia mearnsii</i>	Black wattle	67
<i>Aphanamixis polystachya</i>	Pitraj	74 '

( CED 9 )

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Reprography Unit, BIS, New Delhi, India



*Indian Standard*  
 SPECIFICATION FOR  
 WOODEN TOOL HANDLES GENERAL  
 REQUIREMENTS  
 ( *Fourth Revision* )

0. FOREWORD

**0.1** This Indian Standard ( Fourth Revision ) was adopted by the Indian Standards Institution on 20 February 1985, after the draft finalized by the Timber Stores Sectional Committee had been approved by the Civil Engineering Division Council.

**0.2** This standard was originally published in 1954 to provide guidance to industry and others concerned in manufacture and inspection of tool handles made from Indian timbers. In its first revision in 1962, tool handles were classified into five classes depending on the nature of the tool for which handle is meant; grading on basis of defects was dropped and list of suitable timbers revised. In the second revision, classification of timber species suitable for tool handles was made on the basis of suitability coefficient. The list of suitable timbers was also enlarged. In the third revision a few more species found suitable for tool handles were added, besides incorporating two amendments.

**0.2.1** The suitability coefficient included in the standard so far have been calculated taking Burma teak as reference timber. The Sectional Committee was of the view that reference timber for calculating the suitability coefficients should be such which is widely available and is suitable for tool handles. In this revision, therefore, *Anogeissus latifolia* ( Axle-wood ) has been taken as reference timber and comparative suitability coefficients of other timbers suitable for tool handles have been calculated taking into consideration the publication ' Classification of timber for tool handles and helves ' By N. K. Shukla and S. S. Rajput, J. Timb. Dev. Asson. ( India ), Vol. XXVII, No. 3, July 1981.

**0.2.2** Based on the suitability coefficients so obtained, timber species suitable for various classes of tool handles have been regraded. Besides a few more timber species which have since been evaluated and found suitable for tool handles, have been included in this version.

**0.3** 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, 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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## **1. SCOPE**

**1.1** This standard covers the general requirements of different classes of wooden tool handles.

## **2. TERMINOLOGY**

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

**2.1.1 Suitability Coefficient** — The value of a timber species for the use of tool handles is evaluated taking into consideration its shock resistance, bending strength, resilience, stiffness and hardness.

## **3. CLASSIFICATION OF TOOL HANDLES**

**3.1** For the purpose of this standard, all wooden tool handles have been divided into the following five classes depending on the nature of the tool for which the handle is meant and the strength required:

- a) *Class 1* — This class includes all tool handles over 75 cm in length required for heavy duty striking tools, such as 9.2 kg forging hammers, 6.3 kg double faced sledge hammers, 2 kg felling axes, 2 kg pick axes, 3 kg axes, beaters and carpenters adzes;
- b) *Class 2* — This class includes tool handles varying in length from over 60 cm to 75 cm required for medium duty striking tools, such as 1 kg boiler makers riveting ballpane hammers and 3 kg double-faced sledge hammers.
- c) *Class 3* — This class includes tool handles up to 60 cm in length required for light duty striking tools, such as 2 kg Indian adzes, 1.5 kg smith hammers, 2 kg splicing wire hammers and 1.75 kg tinmans hammers;
- d) *Class 4* — This class includes handles required for scooping tools, such as shovels, rakes and spades; and
- e) *Class 5* — This class includes handles required for cutting and shaping tools, such as chisels, files, saws, augers, screw drivers and sickles.

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

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

#### **4. TIMBERS SUITABLE FOR VARIOUS CLASSES OF TOOL HANDLES**

**4.1** The various classes of tool handles shall be manufactured from any of timbers given in Appendices A to E.

**4.2** The blanks shall be seasoned to a moisture content not exceeding 15 percent and not less than 8 percent. It shall be free from centre heart ( pith ), any kind of decay ( rot ), checks, shakes, splits ( except a few hair splits ), borer holes, warp and any other defect, except those permitted in the finished handles under 8 which is likely to reduce the life of handles or affect-their utility.

#### **5. MANUFACTURE**

**5.1** Tool handles shall be manufactured from seasoned blanks and shaped as required.

*NOTE* — It is recommended that, immediately after manufacture, all tool handles be dipped in raw linseed oil at room temperature as this treatment retards changes in moisture content.

#### **6. DIMENSIONS AND TOLERANCES**

**6.1 Dimensions** — Tool handles shall conform to the dimensions as indicated in the relevant Indian Standards for various types of tool handles.

**6.2 Tolerances** — Unless otherwise indicated in the relevant Indian Standards for various types of tool handles, the following tolerances shall be permissible,  $\pm \frac{3}{0}$  mm where the head, socket, blade or tongue of the tool will fit; and  $\pm 2$  mm at other places.

#### **7. WORKMANSHIP AND FINISH**

**7.1** Tool handles shall be finished reasonably smooth all over and all the sharp edges shall be rounded off.

**7.2** The general workmanship and finish shall be reasonably good.

#### **8. PERMISSIBLE DEFECTS**

**8.1** Unless otherwise specified in the relevant Indian Standards for various types of wooden tool handles, defects to the extent as indicated in Table 1 shall be permissible in the finished handles.

#### **9. TESTS**

**9.1** Tool handles shall satisfy the tests prescribed under **9.1.1** and **9.1.2**.

TABLE 1 PERMISSIBLE DEFECTS

( Clause 8.1 )

SL No.	DEFECT	LENGTH OF HANDLES	EXTENT OF PERMISSIBLE DEFECT
i)	Deviation of grain	All	1 in 20 <i>Max</i>
ii)	Pin knots	{ Up to 30 cm Over 30 cm	None One beyond two-thirds of the length from the tool end
iii)	Sapwood		
	At waist	All	None
	At other places	{ Up to 30 cm Over 30 cm	None 20 percent, <i>Max</i>

NOTE - Unlimited sapwood shall be permitted in tool handles manufactured from axle wood, yon, kardahi, ash, black chuglam, haldu and kaim.

**9.1.1 Timber Species** — The species of timber used may be identified by the procedure given in IS : 4970-1973\*.

NOTE — When the supply is made in mixed species of timbers, the tool handles of each species shall be kept separately.

**9.1.2 Moisture Content** — Moisture content shall be determined either by using a moisture meter or by oven drying method in accordance with IS : 1708-1969†. The specimen used for determination of moisture content by oven drying method shall be a disc of thickness 2.5 cm. For class 1 and class 2 handles, 3 specimens shall be cut at distance of  $\frac{L}{4}$ ,  $\frac{L}{2}$ , and  $\frac{3L}{4}$  from one end of the selected sample handle and the average of 3 moisture contents shall be reported. In case of handles other than class 1 and class 2 handles, one specimen cut from the middle of the selected sample handle would be sufficient.

**9.1.3 Striking Test** — Handles required for heavy, medium and light striking tools shall be correctly fitted to the relevant dummy heads and shall be struck twelve times, as in normal use, against a block of sal-wood or any other harder wood. At the end of this test, the handle shall not show any sign of failure.

## 10. TREATMENT

**10.1** Unless otherwise specified by the purchaser, immediately after inspection all accepted tool handles shall be thoroughly soaked in hot

\*Specification for key for identification of commercial timbers ( *first revision* ).

†Methods of testing small clear specimens of timber ( *first revision* ).

( about 90°C ) raw linseed oil for one hour and allowed to drain. They shall then be wiped clean with a dry piece of cloth.

## 11. SAMPLING

11.1 The method of drawing representative samples of tool handles and the criteria for conformity shall be as prescribed in Appendix F.

## 12. MARKING

12.1 Each tool handle shall be legibly and indelibly marked with the manufacturer's name, initial or recognized trade-mark, the year of manufacture and the class of the handle.

12.1.1 The tool handle may also be marked with the ISI Certification Mark.

**NOTE** — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ), Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

# A P P E N D I X A

( Clause 4.1 )

## TIMBERS FOR CLASS 1 HANDLES

BOTANICAL NAME	TRADE NAME	COMPERATIVE SUITABILITY COEFFICIENT FOR TOOL HANDLES WITH RESPECT TO AXLEWOOD TAKEN AS 100
(1)	(2)	(3)
<i>Acacia Catechu</i>	Khair	109
<i>Acacia nilotica</i>	Babul	92
<i>Aglaiia spp.</i>	Aglaiia	113
<i>Albizia odoratissima</i>	Kala-siris	110
<i>Anogeissus acuminata</i>	Yon	113
<i>Anogeissus latifolia</i>	Axlewood	100
<i>Anogeissus pendula</i>	Kardhai	96
<i>Atalantia monophylla</i>	Jungli nimbu	98

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BOTANICAL NAME	TRADE NAME	COMPERATIVE SUITABILITY COEFFICIENT FOR TOOL HANDLES WITH RESPECT TO AXLEWOOD TAKEN AS 100
(1)	(2)	(3)
<i>Careya arborea</i>	Kumbi	104
<i>Cassia fistula</i>	Amaltas	105
<i>Casuarina equisetifolia</i>	Casuarina	95 (tentative)*
<i>Chloroxylon sivistenia</i>	Satin wood	103
<i>Dalbergia sissoo</i>	Sissoo	91
<i>Fraxinus spp.</i>	Ash	97
<i>Grewia tillifolia</i>	Dhaman	106
<i>Heritiera spp.</i>	Sundri	110
<i>Hopea spp.</i>	Hopea	123
<i>Manilkara spp.</i>	Bullet wood	116
<i>Maniltoa polyandra</i>	Ping	114
<i>Mesua assamica</i>	Sianahor	103
<i>Mesua floribunda</i>	Karol	104
<i>Mesua ferrea</i>	Mesua	141
<i>Olea spp.</i>	Olive	133 (tentative)*
<i>Parrotiopsis Jacquemontiana</i>	Pohu ( Parrotia )	91
<i>Planchona valida</i>	Red-bombwe	91
<i>Pterocarpus marsupium</i>	Bijasal	97
<i>Quercus spp.</i>	Indian Oak	92
<i>Sageraea elliptica</i>	Chooi	146
<i>Schleichera oleosa</i>	Kusum	112
<i>Shorea robusta</i>	Sal	104
<i>Terminalia alata</i>	Laurel	94
<i>Terminalia citrina</i>	—	91
<i>Terminalia manii</i>	Black chuglam	91
<i>Terminalia chebula</i>	Myrobalan	100
<i>Thespesia populnea</i>	Bhendi	120
<i>Vitex spp.</i>	Milla	97
<i>Xylia Xylocarpa</i>	Irul	91
<i>Xylocarpus spp.</i>	Pussur	92 (tentative)*
<i>Zanthoxylum rhetsa</i>	Mullilam	92

\*Estimated from specific gravity and these are likely to be revised.

## APPENDIX B

( Clause 4.1 )

## TIMBERS FOR CLASS 2 HANDLES

**B-1.** In addition to the timbers specified for class 1 handles, the following timbers are also permitted:

BOTANICAL NAME	TRADE NAME	COMPERATIVE SUITABILITY COEFFICIENT FOR TOOL HANDLES WITH RESPECT TO AXLEWOOD TAKEN AS 100
(1)	(2)	(3)
<i>Acacia melanoxylon</i>	—	80
<i>Acrocarpus fraxinifolius</i>	Mundani	86
<i>Aegle marmelos</i>	Bael	79
<i>Albizia procera</i>	Safed siris	89
<i>Amoora</i> spp.	Amari	81
<i>Azadirachta indica</i>	Neem	84
<i>Celtis australis</i>	Celtis	81 (tentative)*
<i>Cullenia rosayroana</i>	Karani	82
<i>Diospyros</i> spp.	Econy	88
<i>Dipterocarpus</i> spp.	Gurjan	77
<i>Dysoxylum malabaricum</i>	White cedar	85
<i>Exbucklandia populnea</i>	Pipli	79
<i>Gluta travancorica</i>	Gluta	76
<i>Hardwickia binata</i>	Anjan	87
<i>Lagerstroemia microcarpa</i>	Benteak	81
<i>Lagerstroemia parviflora</i>	Lendi	85
<i>Madhuca longifolia</i>	Mahua	79
<i>Miliusa tomentosa</i>	Hoom	83
<i>Queinia oojeinensis</i>	Sandan	82
<i>Palaquium ellipticum</i>	Pali	79
<i>Palaquium polyanthum</i>	Tali	85
<i>Pongamia minnata</i>	Karanji	80
<i>Prosopis cineraria</i>	Jhand	85
<i>Shorea talura</i>	—	88
<i>Stereospermum</i> spp.	Padri	85
<i>Syzygium</i> spp.	Jaman	86
<i>Tecoea Mandis</i>	Teak	85
<i>Terminalia arjuna</i>	Arjun	85
<i>Terminalia bialata</i>	White chuglem	83
<i>Terminalia Paniculata</i>	Kindal	82

\*Estimated from specific gravity and this is likely to be revised.

## APPENDIX C

( Clause 4.1 )

## TIMBERS FOR CLASS 3 HANDLES

**C-1.** In addition to the timbers specified for classes 1 and 2 handles, the following timbers are also permitted:

BOTANICAL NAME	TRADE NAME	COMPERATIVE SUITABILITY COEFFICIENT FOR TOOL HANDLES WITH RESPECT TO AXLEWOOD TAKEN AS 100
(1)	(2)	(3)
<i>Acer</i> spp.	Maple	70
<i>Adina cordifolia</i>	Haldu	73
<i>Albizia lebbeck</i>	Kokko	74
<i>Artocarpus hirsutus</i>	Aini	74
<i>Bridelia</i> spp.	Kassi	65
<i>Calophyllum</i> spp.	Poon	74
<i>Gardenia latifolia</i>	Gardenia	65
<i>Grevillea robusta</i>	Silver Oak	66 ( tentative )*
<i>Holoptelea integrifolia</i>	Kanju	68
<i>Lagerstroemia hypoleuca</i>	Pyinma	68
<i>Lagerstroemia speciosa</i>	Jarul	70
<i>Mitragyna parvifolia</i>	Kaim	71
<i>Morus</i> spp.	Mulberry	72
<i>Terminalia procera</i>	White-bombwe	68

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\*Estimated from specific gravity and this is likely to be revised.

## APPENDIX D

( Clause 4.1 )

## TIMBERS FOR CLASS 4 HANDLES

**D-1.** Same timbers as for classes 1 and 2 handles are permissible for class 4 handles.



## APPENDIX E

( Clause 4.1 )

### TIMBERS FOR CLASS 5 HANDLES

**E-1.** In addition to the timbers specified for classes 1, 2 and 3 handles, the following timbers are also permitted:

BOTANICAL NAME	TRADE NAME	COMPERATIVE SUITABILITY COEFFICIENT FOR TOOL HANDLES WITH RESPECT TO AXLEWOOD TAKEN AS 100
<i>Artocarpus chaplasha</i>	Chaplash	58
<i>Betula</i> spp.	Birch	56
<i>Dillenia</i> spp.	Dillenia	63

## APPENDIX F

( Clause 11.1 )

### SAMPLING OF TOOL HANDLES

#### F-1. SAMPLING AND TESTING

**F-1.1 Lot** — In any consignment, all the tool handles of the same class and manufactured under similar conditions of production shall be grouped together to constitute a lot.

**F-1.2 Visual Examination** — All the tool handles in the lot shall be first inspected for visual defects, workmanship and finish. Any tool handle failing to satisfy the requirements for these characteristics shall be rejected. Those tool handles, which pass the visual examination shall be subjected to further tests.

**F-1.3 Selection of Samples for Further Tests** — The number of tool handles to be selected for further testing from those accepted as in **F-1.2** shall be in accordance with col 1 and 2 of Table 2.

**F-1.3.1** The samples shall be selected at random. In order to ensure randomness of selection, all the accepted tool handles shall be kept separately in one lot and starting from any random tool handle, the requisite number is to be obtained from all sections of the stock as far as possible.

**TABLE 2 NUMBER OF TOOL HANDLES TO BE SELECTED AND CRITERIA FOR CONFORMITY**

( Clauses F-1.3 and F-2.1 )

No. of TOOL HANDLES ACCEPTED AFTER VISUAL INSPECTION	SAMPLE SIZE	PERMISSIBLE NO. OF DEFECTIVE HANDLES
(1)	(2)	(3)
201 to 300	6	0
301 to 500	7	0
501 to 800	8	0
801 and above	10	1

NOTE — For lots of 200 or less tool handles the number of handles to be tested and the tests to be carried out shall be as agreed to between the purchaser and the supplier.

**F-1.3.2** The samples selected as in **F-1.3** shall be tested for dimensional requirements, moisture content and performance tests.

**F-2. CRITERIA FOR CONFORMITY**

**F-2.1** The lot shall be considered as conforming to the requirements of the characteristics mentioned in **F-1.3.2** if the number of tool handles failing to satisfy the requirements of the characteristics does not exceed the corresponding numbers given in col 3 of Table 2.



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