IS 3337 (1978): ballies for general purposes [CED 9: Timber and Timber Stores]

BLANK PAGE

IS : 3337 - 1978
Reaffirmed 2008

Indian Standard

SPECIFICATION FOR BALLIES FOR GENERAL PURPOSES

(First Revision)

UDC 674.71

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG

Price Rs 6·00 Gr 3 *August* 1978

Indian Standard

SPECIFICATION FOR *BALLIES* FOR GENERAL PURPOSES

(First Revision)

Timber Sectional Committee, BDC 9

Chairman	*Representing*
SHRI S. K. SETH	Ministry of Agriculture & Irrigation
Members	
SHRI S. S. ABHYANKAR MAJ V. S. RAO (*Alternate*)	Engineer-in-Chief's Branch, Army Headquarters
ADDITIONAL DIRECTOR (TIMBER) JOINT DIRECTOR (WORKS) (*Alternate*)	Railway Board (Ministry of Railways)
CHIEF CONSERVATOR OF FORESTS, VADODARA ADDITIONAL CHIEF CONSERVATOR OF FORESTS (*Alternate*)	Agriculture, Forests & Cooperation Department, Government of Gujarat, Ahmadabad
CHIEF CONSERVATOR OF FORESTS CONSERVATOR OF FORESTS (*Alternate*)	Forest Department, Government of Himachal Pradesh, Simla
CHIEF CONSERVATOR OF FORESTS	Forest Department, Government of Maharashtra, Bombay
SHRI G. C. DAS	National Test House, Calcutta
SHRI H. C. DAY	Forest Department, Government of Uttar Pradesh, Lucknow
DEPUTY INSPECTOR GENERAL OF FORESTS	Ministry of Agriculture & Irrigation
DIRECTOR, FOREST RESEARCH AND UTILIZATION	Forest Department, Government of Karnataka, Bangalore
CAPT V. P. GARG SHRI R. S. CHAUDHARY (*Alternate*)	Naval Headquarters
DR JOSEPH GEORGE SHRI V. SIVANANDA (*Alternate*)	Indian Plywood Industries' Research Institute, Bangalore
SHRI K. S. LAULY EXECUTIVE DIRECTOR (*Alternate*)	Federation of Indian Plywood & Panel Industry, New Delhi

(*Continued on page* 2)

(*Continued from page* 1)

Members	*Representing*
SHRI P. V. MEHTA	Directorate General of Technical Development, New Delhi
LT-COL S. A. MOHILE SHRI U. B. KANCHAN (*Alternate*)	Ministry of Defence (R & D)
DR A. N. NAYER	In personal capacity (*C-59, Inderpuri, New Delhi*)
SHRI J. N. PANDEY SHRI B. M. PRASAD (*Alternate*)	Bihar State Forest Development Corporation Ltd, Patna
PRESIDENT	Forest Research Institute & Colleges, Dehra Dun
DR S. K. PURKAYASTHA	Forest Research Institute & Colleges (Wood Anatomy Branch), Dehra Dun
DR A. PURUSHOTHAM	Indian Plywood Manufacturing Co Ltd, Bombay
DR V. RANGANATHAN	In personal capacity (*C-19B Defence Colony, New Delhi*)
DR R. S. RATRA	National Buildings Organization, New Delhi
SHRI A. C. SEKHAR	Forest Research Institute & Colleges (Timber Mechanics Branch), Dehra Dun
SHRI SHARAN SINGH	Directorate General of Supplies & Disposals, New Delhi
SHRI F. C. SHARMA	Directorate General of Civil Aviation (Ministry of Tourism & Civil Aviation), New Delhi
SHRI T. C. SUR SHRI S. K. AWASTHY (*Alternate*)	Forest Department, Government of Madhya Pradesh, Bhopal
SHRI D. V. VERMA SHRI J. K. SINHA (*Alternate*)	Ministry of Defence (DGI)
SHRI D. AJITHA SIMHA, Director (Civ Engg)	Director General, ISI (*Ex-officio Member*)

Secretary

SHRI J. R. MEHTA
Deputy Director (Civ Engg), ISI

Timber Conversion and Grading Subcommittee, BDC 9:10

Convener

SHRI A. C. SEKHAR	Forest Research Institute & Colleges (Timber Mechanics Branch), Dehra Dun

Members

ADDITIONAL DIRECTOR (TIMBER) ASSISTANT DIRECTOR (SPECIFICATIONS), RDSO (*Alternate*)	Railway Board (Ministry of Railways)
CHIEF CONSERVATOR OF FORESTS, VADODARA ADDITIONAL CHIEF CONSERVATOR OF FORESTS (*Alternate*)	Agriculture, Forests & Cooperation Department, Government of Gujarat, Ahmadabad

(*Continued on page* 9)

AMENDMENT NO. 1 OCTOBER 1991
TO
IS 3337 : 1978 SPECIFICATION FOR *BALLIES* FOR GENERAL PURPOSES

(First Revision)

(*Page* 6, *Appendix* A) — Insert the following matter :

STANDARD TRADE NAME	BOTANICAL NAME	ABBREVIATED SYMBOL
Ash	*Fraxinus* spp.	ASH
Black locust	*Robinia-pseud-acacia*	BLO
Indian oak	*Quercus grifithii*	IOA
Mysore gum	*Eucalyptus tereticornis*	MGU
River-red gum	*Eucalyptus Camaldulensis*	RIG
Subabul	*Lencsena lecocesphela*	SUB'

(CED 9)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR *BALLIES* FOR GENERAL PURPOSES

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 30 January 1978, after the draft finalized by the Timber Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 *BALLIES* of various sizes and species of timber are extensively used for the construction of scaffolding and for the erection of temporary and semi-permanent structures. *BALLIES* are also used in large quantities for fencing work, pile foundation, supports for shuttering and for flood protection work in the form of permeable spurs and bank piling for preventing erosion. This standard has, therefore, been prepared with the object of providing guidance on the sizes and requirements of *BALLIES* for general purposes.

0.3 This standard was first published in 1965. This is the first revision of the standard. In this revision, besides incorporating some modifications in the provisions relating to preservation, modifications have also been made in the limits of permissible defects.

0.4 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.

0.5 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 of 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.

1. SCOPE

1.1 This standard covers the requirements of *BALLIES* used for general purposes.

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

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 *Air Dried BALLIES* — *BALLIES* dried in open air, usually protected from the direct action of sun and rain.

2.1.2 *BALLIES* — Thin round poles usually without bark.

2.1.3 *Cross Break* — Break or fracture across the grain of the wood.

2.1.4 *Curvature* — Deviation of a *BALLIE* from straightness.

2.1.5 *Decay* — Disintegration of wood tissues caused by fungi (wood destroying) or other micro-organism.

2.1.6 *Hollow Heart* — A cavity in the heart of a *BALLIE* resulting from decay.

2.1.7 *Short Crook* — A localized deviation from straightness which, within any section of 1·5 m or less in length, is more than one-half the mean diameter of the crooked section.

2.1.8 *Spiral or Twisted Grain* — Grain in which the vertical elements are aligned spirally in the bole of a standing tree or a log.

3. SPECIES OF TIMBER

3.1 The species of timber suitable for *BALLIES* are given in Appendix A.

3.2 Other species not included in Appendix A shall not be supplied without the prior approval, in writing, of the indentor/user.

4. MANUFACTURE

4.1 Unless otherwise specified, the bark shall be completely removed and all the branches and excrescences shall be dressed down flush with the surface. The top and bottom ends shall be cut square.

5. DIMENSIONS

5.1 Unless otherwise 'ordered', the *BALLIES* shall conform to the dimensions given below:

Class of BALLIES	*Diameter at the Top*	*Diameter at the Butt End*	*Length*
	cm	cm	m
1	Over 8·5 up to 12·5	Over 15 up to 20	3 to 9
2	Over 6·5 up to 8·5	Over 11·5 up to 15	3 to 9
3	Over 5 up to 6·5	Over 7·5 up to 11·5	3 to 9

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

6. REQUIREMENTS

6.1 *BALLIES* shall be air-dried to a moisture content not exceeding 20 percent within a depth of 12 mm from the surface when measured at one-third length of the *BALLIES* from its butt end.

6.2 *BALLIES* shall be reasonably straight, and shall be free from cuts across the grain, live insect attack, any kind of decay (rot), pronounced spiral or twisted grain, hollow heart and dead knots exceeding 5 cm in diameter.

7. PERMISSIBLE DEFECTS

7.1 Surface Cracks — These shall not exceed 20 mm in depth and 3 mm in width for Class 1 *BALLIES*, and not exceed 12 mm in depth and 3 mm in width for Classes 2 and 3 *BALLIES* provided they are not so numerous or so located as to impair the usefulness of the *BALLIES*.

7.2 End Cracks — The longest end crack at each end shall be measured and the lengths added together. The total length of the longest cracks shall not exceed 30 cm irrespective of the length of the *BALLIE*.

7.3 Spiral or Twisted Grain — There shall not be more than one complete twist of grain or spiral in any 6 m of length.

7.4 Curvature — *BALLIES* shall be so straight that when laid horizontally in any position, the centre line joining the apex and base shall not deviate from the actual axis of the *BALLIES* by more than 7·5 cm.

7.5 Short Crooks — These shall not exceed two in number per *BALLIE*.

7.6 Pin Hole (Dead Infestation) — These shall be scattered and not concentrated, provided they are not due to powder post beetles.

8. MEASUREMENTS

8.1 Length — The length shall be measured between the extreme ends of *BALLIES*. *BALLIES* shall not be more than 7·5 cm shorter or more than 15 cm longer than the 'ordered' length.

8.2 Diameter — The top and butt end diameters shall be measured at the extreme ends of the *BALLIES*.

9. PRESERVATION

9.1 Whenever required the entire *BALLIE* or the butt ends up to the specified length shall be preserved by dipping, brushing or spraying with any one of the following compositions (*see also* IS:401-1967*):

a) Creosote-fuel oil mixture 50:50,

b) 6 percent solution of copper-chrome-arsenic composition,

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

c) 6 percent solution of acid-cupric-chromate composition,

d) 8 percent solution of copper-chrome-boric composition, and

e) 1·0 percent solution of sodium pentachlorophenate.

10. MARKING

10.1 Each *BALLIE* shall be legibly and indelibly marked with the following information at a distance of 2 m from the butt end of the *BALLIE*:

a) Species of timber by symbol (*see* Appendix A),

b) Class of *BALLIE*, and

c) Supplier's name or initials or registered trade-mark, if any.

10.1.1 The *BALLIE* 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.

APPENDIX A

[*Clauses* 3.1 *and* 10.1(a)]

SPECIES OF TIMBER SUITABLE FOR *BALLIES*

STANDARD TRADE NAME	BOTANICAL NAME	ABBREVIATED SYMBOL
Arjun	*Terminalia arjuna*	ARJ
Axlewood (Bakli)	*Anogeissus latifolia*	AXL
Ballagi	*Poeciloneuron indicum*	BAL
Benteak	*Laterstroemia lanceolata*	BEN
Bijasal	*Pterocarpus marsupium*	BIJ
Black chuglam	*Terminalia manii*	BCH

STANDARD TRADE NAME	BOTANICAL NAME	ABBREVIATED SYMBOL
Casuarina	*Casuarina equisetifolia*	CAS
Chir	*Pinus roxburghii*	CHR
Cypress	*Cupressus torulosa*	CYP
Deodar	*Cedrus deodara*	DEO
Dhaman	*Grewia tiliifolia*	DHA
Ebony	*Diospyros* spp.	EBO
Fir	*Abies* spp.	FIR
Garuga	*Garuga pinnata*	GAU
Gurjan	*Dipterocarpus* spp.	GUR
Haldu	*Adina cordifolia*	HAL
Hopea	*Hopea* spp.	HOP
Hoom	*Miliusa tomentosa*	HOO
Hollock	*Terminalia myriocarpa*	HOL
Irul	*Xylia xylocarpa*	IRU
Jaman	*Syzygium* spp.	JAM
Jarul	*Lagerstroemia speciosa*	JAR
Kail	*Pinus wallichiana*	KAL
Karada	*Cleistanthus collinus*	KAA
Kardabi	*Anogeissus pendula*	KAH
Kasi	*Bridelia* spp.	KAS
Kindal	*Terminalia paniculata*	KIN
Khasi pine	*Pinus insularis*	KPI
Laural	*Terminalia alata*	LAU
Landi	*Lagerstroemia perviflora*	LEN
Makai	*Shorea assamica*	MAK
Mesua	*Mesua ferrea*	MES
Mundani	*Acrocarpus fraxinifolius*	MUN

STANDARD TRADE NAME	BOTANICAL NAME	ABBREVIATED SYMBOL
Piney	*Hardwickia pinnata*	PIN
Poon	*Calophyllum* spp.	POO
Pussur	*Xylocarpus* spp.	PUS
Pyinma	*Lagerstroemia hypoleuca*	PYI
Sal	*Shorea robusta*	SAL
Sandan	*Ougeinia oojeinensis*	SAD
Siris	*Albizzia chinensis*	SIR
Sissoo	*Dalbergia sissoo*	SIS
Spruce	*Picea smithiana*	SPR
Sundri	*Heritiera* spp.	SUN
Teak	*Tectons grandis*	TEA
White bombwe	*Terminalia procera*	WBO
White chuglam	*Terminalia bialata*	WCH

(*Continued from page* 2)

Members	*Representing*
CHIEF CONSERVATOR OF FORESTS	Forest Department, Government of Himachal Pradesh, Simla
CONSERVATOR OF FORESTS (*Alternate*)	
CHIEF CONSERVATOR OF FORESTS	Forest Department, Government of West Bengal, Calcutta
SHRI H. C. DAY	Forest Department, Government of Utter Pradesh, Lucknow
SHRI B. R. GUPTA	Forest Department, Government of Jammu & Kashmir, Jammu
SHRI N. LAXMINARAYAN	Andhra Pradesh Timber Merchants' Federation, Hyderabad
SHRI V. SUDERSHAN (*Alternate*)	
SHRI P. V. MEHTA	Directorate General of Technical Development, New Delhi
OFFICER-IN-CHARGE	Forest Research Institute & Colleges (Timber Logging Branch), Dehra Dun
PRESIDENT	Himachal Pradesh Forests Lessees Association, Simla
SHRI B. S. RAWAT	Forest Research Institute & Colleges (Wood Working, Saw Milling & Finishing Branch) Dehra Dun
SHRI F. C. SHARMA	Directorate General of Civil Aviation (Ministry of Tourism & Civil Aviation), New Delhi
SHRI J. K. SINHA	Ministry of Defence (DGI)
SHRI GULAM ALAM (*Alternate*)	
SHRI R. T. SOMAIYA	Bombay Timber Merchants' Association, Bombay
SHRI JIMMY WACHA (*Alternate*)	
SHRI T. C. SUR	Forest Department, Government of Madhya Pradesh, Bhopal
SHRI S. K. AWASTHY (*Alternate*)	

INDIAN STANDARDS

ON

TIMBER

IS:

190-1974 Coniferous sawn timber (baulks and scantlings) (*third revision*)

287-1973 Recommendations for maximum permissible moisture content of timber used for different purposes (*second revision*)

399-1963 Classification for commercial timbers and their zonal distribution (*revised*)

401-1967 Code of practice for preservation of timber (*second revision*)

656-1975 Logs for plywood (*second revision*)

707-1976 Glossary of terms applicable to timber technology and utilization (*second revision*)

876-1970 Wood poles for overhead power and telecommunication lines (*second revision*)

1140-1970 Logs for matches (*first revision*)

1141-1973 Code of practice for seasoning of timber (*first revision*)

1150-1976 Trade names and abbreviated symbols for timber species (*second revision*)

1326-1976 Non-coniferous sawn timber (baulks and scantlings) (*first revision*)

1329-1975 Aircraft timber (baulks and scantlings) (*first revision*)

1331-1971 Cut sizes of timber (*second revision*)

1708-1969 Method of testing small clear specimen of timber (*first revision*)

1898-1975 Timber for use in aircraft construction (*first revision*)

1900-1974 Method of testing wood poles

1902-1961 Code of practice for preservation of bamboo and cane for non-structural purposes

2178-1962 Timber for use in aircraft propeller construction

2179-1962 Timber for lorry bodies

2203-1976 Wooden cross arms (*first revision*)

2372-1963 Timber for cooling towers

2377-1967 Tables for Volume of cut sizes of timber (*first revision*)

2408-1963 Methods of static tests of timber in structural sizes

2455-1974 Method of sampling of model trees and logs for timber testing and their conversion (*first revision*)

2683-1966 Guide for installation of pressure impregnation plants for timber (*first revision*)

2753 (Part I)-1964 Method of estimation of preservatives in treated timber and in treating solutions: Part I Determination of copper, arsenic, chromium, zinc, boron, creosote and fuel oil

2753 (Part II)-1968 Method of estimation of preservatives in treated timber and in treating solutions: Part II Determination of copper (in copper naphthenate) and pentachlorophenol

3337-1978 *BALLIES* for general purposes (*first revision*)

3364 (Part I)-1976 Method of measurement and evaluation of defects in timber: Part I Logs (*first revision*)

3364 (Part II)-1976 Method of measurement and evaluation of defects in timber: Part II Converted timber (*first revision*)

3731-1966 Grading rules for teak squares

4422-1967 Willow clefts for cricket bats

4423-1967 Guide for handsawing of timber

4424-1967 Use of timber in coal mines

4833-1968 Method for the field testing of preservatives in wood species

4873-1968 Method for laboratory testing of wood preservatives against fungi

4895-1968 Grading rules for teak logs

4907-1968 Methods of testing timber connectors

4970-1973 Key for identification of commercial timber (*first revision*)

5246-1969 Coniferous logs

5247-1969 Converted timber (coniferous) for packing cases, crates and light furniture

5248-1967 Teak logs for production of sliced veneers

5806-1970 Non-coniferous timber in converted form ammunition/explosives boxes

5966-1970 Non-coniferous timber in converted form for general purposes

5978-1970 Code of practice for design of wood poles for overhead power and telecommunication lines

6056-1970 Jointed wood poles for overhead power and telecommunication lines

6341-1971 Method of laboratory test for efficacy of wood preservatives against soft rot

6342-1971 Rosewood logs for production of sliced veneers

6346-1971 Methods of test for timber props for mines

6497-1972 Method of test for the efficacy of preservatives and evaluating the natural durability of timbers used in cooling towers

6534-1971 Guiding principles of grading of timber

6707-1972 Willow logs for artificial limbs

6711-1972 Code of practice for maintenance of wood poles for overhead power and telecommunication lines

6791-1973 Method of testing natural durability of timber and efficacy of the wood preservatives against marine borers

6874-1973 Methods of test for round Bamboos

7308-1973 Guidelines for design installation and test of timber seasoning kilns (compartment type with cross-forced air circulation)

8242-1976 Methods of test for split bamboos

8292-1976 Methods for evaluation of wood working qualities of timber

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Conversion*
Force	newton	N	1 N=0·101 972 kgf
Energy	joule	J	1 J=1 N.m
Power	watt	W	1 W=1 J/s
Flux	weber	Wb	1 Wb=1 V.s
Flux density	tesla	T	1 T=1 Wb/m^2
Frequency	hertz	Hz	1 Hz=1 c/s (s^{-1})
Electric conductance	siemens	S	1 S=1 A/V
Pressure, stress	pascal	Pa	1 Pa=1 N/m^2

PUBLICATIONS OF INDIAN STANDARDS INSTITUTION

INDIAN STANDARDS

Over 9 500 Indian Standards covering various subjects have been issued so far. Of these, the standards belonging to the Civil Engineering Group fall under the following categories:

Aggregates, concrete
Apparatus for testing cement and concrete
Asbestos cement products
Bricks and blocks
Builder's hardware
Cement
Concrete design and construction
Concrete testing
Construction equipment
Construction practices
Doors and windows
Drawing office practice and equipment
Fire fighting equipment
Fire safety
Flexible floor coverings
Floor finishes
Fluid flow measurement
Fluid flow measuring instruments
Foundation engineering
Functional design of buildings
Furniture
Gypsum products
Lime, building
Loading standards, structural safety
Measurement and estimation of civil engineering
Modular co-ordination
Multi-purpose river valley projects
Pipes
Planning, regulation and control
Plaster, paint and allied finishes
Plywood and allied products
Poles
Pozzolanas
Reinforcement, concrete
Roof and roof coverings
Safety in construction
Sieves and wire gauzes
Soil engineering
Stones, building
Structural design
Tar and bitumen
Tiles
Timber
Timber design and construction
Timber stores
Wall and ceiling finish
Waterproofing and damp-proofing
Water supply, drainage and sanitation
Water supply, sanitation and drainage fittings
Wood-based materials
Unclassified

OTHER PUBLICATIONS

ISI Bulletin (Published Every Month)	
Single Copy	Rs 4·00
Annual Subscription	Rs 36·00
Standards : Monthly Additions	
Single Copy	Re 0·30
Annual Subscription	Rs 3·00
Annual Reports (from 1948-49 Onwards)	Rs 2·00 to 7·00
ISI Handbook, 1975	Rs 30·00

INDIAN STANDARDS INSTITUTION

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephone : 27 01 31 (20 lines) **Telegrams : Manaksanstha**

Regional Offices:		Telephone
Western : Novelty Chambers, Grant Road	BOMBAY 400007	37 97 29
Eastern : 5 Chowringhee Approach	CALCUTTA 700072	23-08 02
Southern : C.I.T. Campus, Adyar	MADRAS 600020	41 24 42
Branch Offices:		
'Pushpak', Nurmohamed Shaikh Marg, Khanpur	AHMADABAD 380001	2 03 91
'F' Block, Unity Bldg, Narasimharaja Square	BANGALORE 560002	2 76 49
R-26 Guru Teg Bahadur Complex	BHOPAL 462003	6 27 16
Showhouse Bldg, Sachivalaya Marg	BHUBANESHWAR 751001	5 36 27
Ahimsa Bldg, SCO 82-83, Sector 17C	CHANDIGARH 160017	2 83 20
5-8-56/57 L. N. Gupta Marg	HYDERABAD 500001	22 10 83
D-277 Todarmal Marg, Banipark	JAIPUR 302006	6 98 32
117/418 B Sarvodaya Nagar	KANPUR 208005	82 72
B.C.I. Bldg (3rd Floor), Gandhi Maidan East	PATNA 800004	5 36 55
Hantex Bldg (2nd Floor), Rly Station Road	TRIVANDRUM 695001	32 27