

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 2191-2 (1983): wooden flush door shutters (cellular and hollow core type): Part 2 Particle board and hardboard face panels [CED 11: Doors, Windows and Shutter]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



IS : 2191 (Part 2)- 1983
REAFFIRMED

2006

Indian Standard

SPECIFICATION FOR
WOODEN FLUSH DOOR SHUTTERS
(CELLULAR AND HOLLOW CORE TYPE)

PART 2 PARTICLE BOARD AND HARDBOARD
FACE PANELS

(Third Revision)

Fourth Reprint NOVEMBER 1999

UDC 69.028.1.011-413:674.816-41

© Copyright 1983

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

Indian Standard
SPECIFICATION FOR
WOODEN FLUSH DOOR SHUTTERS
(CELLULAR AND HOLLOW CORE TYPE)
PART 2 PARTICLE BOARD AND HARDBOARD
FACE PANELS
(Third Revision)

Doors, Windows and Shutters Sectional Committee, BDC 11

Chairman

SHRI T. S. NARAYANA RAO
Consulting Architect & Engineer
93 ' Aruna ', East Road
Basavangudi, Bangalore 560004

Members

SHRI H. S. ANAND
SHRI P. N. ANAND (*Alternate*)
SHRI S. N. BASU

SHRI SHARAN SINGH (*Alternate*)

SHRI J. S. BEDI
SHRI G. L. DE (*Alternate*)

DIRECTOR

DR H. N. JAGADEESH (*Alternate*)

SHRI P. G. GANDHI

SHRI B. P. GANDHI (*Alternate*)

SHRI A. S. GULATI

SHRI B. K. JHAJHARIA

SHRI A. K. JHAVERI

SHRI H. S. SAMBA MURTHY (*Alternate*)

SHRI S. N. JEUNJHUNWALA

SHRI S. K. JEUNJHUNWALA (*Alternate*)

SHRI M. K. LAKHANI

Representing

Anand Industries Limited, New Delhi

Directorate General of Supplies & Disposals,
New Delhi

Hopes Manufacturing Co Pvt Ltd, Calcutta

Indian Plywood Industries Research Institute,
Bangalore

Swastik Rolling Shutters and Engineering Works,
Bombay

Forest Research Institute & Colleges (Timber
Mechanics Branch), Dehra Dun

Multiwyn Industrial Corporation, Calcutta

Ahmedabad Steel Craft and Rolling Mills (Pvt)
Ltd, Ahmadabad

Premier Wood Craft (P) Ltd, Calcutta

Maharashtra Housing Board, Bombay

(Continued on page 2)

© Copyright 1983

BUREAU OF INDIAN STANDARDS

This publication is protected under the *Indian Copyright Act* (XIV of 1957) and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

IS : 2191 (Part 2) - 1983

(Continued from page 1)

<i>Members</i>	<i>Representing</i>
SHRI K. S. LAULY	Indian Plywood Manufacturing Co Ltd, Bombay
LT-COL G. B. SINGH (<i>Alternate</i>)	
SHRI J. S. MATHARU	Directorate General of Technical Development, New Delhi
SHRI K. SREENIVASAN (<i>Alternate</i>)	
SHRI J. V. MEHTA	Engineer-in-Chief's Branch, Army Headquarters, New Delhi
MAJ B. K. TANEJA (<i>Alternate</i>)	
SHRI G. M. MENON	Indian Aluminium Co Ltd, Calcutta
SHRI K. SUBYANARAYANAN (<i>Alternate</i>)	
SHRI R. D. MENON	Diana Shutters Pvt Ltd, Madras
SHRI S. ANANTHASUBRAMONEY (<i>Alternate</i>)	
SHRI M. M. MISTRY	National Buildings Organization, New Delhi
SHRI B. D. DHAWAN (<i>Alternate</i>)	
SHRI MOHAN SINGH	Eastern Commercial & Industrial Enterprises (P) Ltd, Bangalore
SHRI S. S. GANDHI (<i>Alternate</i>)	
SHRI J. S. PARMAR	Mysore Plywoods Ltd, Bangalore
SHRI K. SANKARAKRISHNAN	Kutty Flush Doors and Furniture Co Ltd, Madras
SHRI R. S. RAGHAVAN (<i>Alternate</i>)	
SHRI P. K. SINGHLA	Builders' Association of India, Bombay
SHRI T. C. SOLANKI	Indian Metal Windows Association, Bombay
SHRI M. P. SHAH (<i>Alternate</i>)	
SUPERINTENDING SURVEYOR OF WORKS (FOOD)	Central Public Works Department, New Delhi
SURVEYOR OF WORKS (FOOD) (<i>Alternate</i>)	
SHRI G. R. SUNDERAM	Man Industrial Corporation Ltd, Jaipur
SHRI H. G. TODI (<i>Alternate</i>)	
SHRI H. THOMSON	Sitapur Plywood Manufacturers' Ltd, Sitapur
SHRI B. K. TYAGI	Central Building Research Institute (CSIR), Roorkee
SHRI T. N. GUPTA (<i>Alternate</i>)	
SHRI G. RAMAN, Director (Civ Engg)	Director General, BIS (<i>Ex-officio Member</i>)

Secretary

SHRI C. K. BEBARTA
Senior Deputy Director (Civ Engg), BIS

AMENDMENT NO. 1 SEPTEMBER 2000
TO
IS 2191 (PART 2) : 1983 SPECIFICATION FOR
WOODEN FLUSH DOOR SHUTTERS (CELLULAR AND
HOLLOW CORE TYPE)

PART 2 PARTICLE BOARD AND HARDBOARD FACE PANELS

(Third Revision)

(Page 4, clause 0.3.1) — Insert the following new para after 0.3.1 and renumber the subsequent para:

‘0.4 A scheme of labelling environment friendly products to be known as ECO Mark is being introduced at the instance of the Ministry of Environment and Forests (MEF), Government of India. The ECO Mark shall be administered by the Bureau of Indian Standards (BIS) under the *BIS Act*, 1986 as per the Resolution No. 71 dated 21 February 1991 published in the Gazette of the Government of India. For a product to be eligible for ECO Mark, it shall also carry the Standard Mark of the BIS besides meeting additional optional environment friendly requirements’.

(page 9, clause 9.1) — Insert the following new clause after 9.1 and renumber the subsequent clauses:

‘10 REQUIREMENTS FOR ECO MARK

10.1 Particle Board and Hardboard Face Panels shall be manufactured from agricultural or industrial wastes or wood residues or wood from sources other than natural forests such as timber from industrial and social forestry plantations, shade trees from tea and coffee estates etc as specified in IS 2191 (Part 1) : 1983 and such Particle Board and Hardboard Face Panels shall conform to the requirements of quality and performance as specified in this standard as well as the requirements of ECO Mark for all the referred standards.

NOTES

1 The manufactures shall provide documentary evidence by way of certificate or declaration to Bureau of Indian Standards while applying for ECO Mark.

Amend No. 1 to IS 2191 (Part 2) : 1983

2 The manufacturers shall produce to BIS environmental consent clearance from the concerned State Pollution Control Board as per the provisions of the Water (*Prevention and Control of Pollution*) Act, 1974 and Air (*Prevention and Control of Pollution*) Act, 1981 alongwith the authorization, if required under the *Environment (Protection) Act*, 1986, while applying for ECO Mark.

(*Page 9, renumbered clause 11.1*) — Insert the following at the end of the clause:

'e) Species of timber, in case of ECO Mark; and

f) The criteria for which the product has been labelled as ECO Mark.'

(CED 11)

Indian Standard
**SPECIFICATION FOR
WOODEN FLUSH DOOR SHUTTERS
(CELLULAR AND HOLLOW CORE TYPE)
PART 2 PARTICLE BOARD AND HARDBOARD
FACE PANELS
(Third Revision)**

0. FOREWORD

0.1 This Indian Standard (Part 2) (Third Revision) was adopted by the Indian Standards Institution on 30 June 1983, after the draft finalized by the Doors, Windows and Shutters Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 This standard was first published in 1962 and subsequently revised in 1966 and 1980. During this period the standard has undergone modifications relating to grade of doors, species of timber, etc, and the sizes were rationalized.

0.3 Keeping in view the advantages of modular co-ordination, Indian Standards specify the dimensions of components in modular units. In line with this, the dimensions of shutters were also specified in modular units. However, it was repeatedly brought to the notice of the Committee that there was sufficient demand for sizes other than modular sizes and that the manufacturers were meeting such demands at present. This had led to a situation where shutters satisfying the other requirements of the standard, but not the requirements regarding the dimensions were classified as not satisfying the requirements of the standard. This situation also came in the way of satisfying the consumer needs for other quality requirements by a third party inspection system. Therefore, with a view to encouraging production of timber shutters to the quality requirements specified in the standard, the Committee reviewed the relevant clauses of the Indian Standards and decided to relax the dimensional requirements in this third revision by permitting non-modular sizes in addition to the modular sizes specified in the standard at present. However, the relaxation has been made only in the height and width, the thickness remaining unchanged from the present provisions. This

IS : 2191 (Part 2) - 1983

relaxation will be for a period of four years from the publication of this standard and it is intended that the manufacturers and consumers organizations can gradually switch over within this period to the modular sizes, which are the preferred sizes.

0.3.1 Wooden flush door shutters using particle board for face panels are generally manufactured in the same way as the doors with plywood face panels. This standard, therefore, covers only the necessary requirements and provisions which are additional or alternative to those covered in IS : 2191 (Part 1)-1983*.

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.

1. SCOPE

1.1 This standard (Part 2) lays down the requirements regarding material, grade, types, sizes, construction, finishes and tests of wooden flush door shutters of cellular and hollow core type with particle board face panels (both veneered and unveneered) and hard-board face panels.

2. TYPES AND DESIGNATION

2.1 Cellular and hollow solid core flush door shutters with particle board face panels may be of the decorative type or non-decorative (paintable) type. The designation of various types of shutters shall be based on the type of core and the type of face panel as given in Table 1.

3. SIZES AND TOLERANCES

3.1 Sizes of the door shutters shall generally conform to the modular sizes specified in Table 2 (*see also* Fig. 1). Sizes other than modular sizes, as agreed to between the manufacturer and the purchaser, may also be permitted; however, the thickness of shutters in such cases shall not be less than those specified against the nearest higher modular size given in 3.2.

*Specification for wooden flush door shutters (cellular and hollow core type) : Part 1 Plywood face panels (*fourth revision*).

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

**TABLE 1 DESIGNATION OF WOODEN FLUSH DOOR SHUTTERS,
CELLULAR AND HOLLOW CORE TYPES WITH PARTICLE
BOARD FACE PANELS**

(Clause 2.1)

CORE	TYPE	DESIGNATION
Cellular	Decorative with skins of decorative veneered particle boards	CDPV
	Non-decorative with skins of particle boards unveneered	CNP
	Non-decorative with skins of particle boards veneered with commercial veneers	CNPV
Hollow	Decorative with skins of decorative veneered particle boards	HDPV
	Non-decorative with skins of particle boards unveneered	HNP
	Non-decorative with skins of particle boards veneered with commercial veneers	HNPV

TABLE 2 DIMENSIONS OF FLUSH DOOR SHUTTERS

(Clause 3.1)

DESIGNATION OF DOORS	WIDTH	HEIGHT
	mm	mm
8 DS 20	700	1 905 (1 945)
8 DS 21	700	2 005 (2 045)
9 DS 20	800	1 905 (1 945)
9 DS 21	800	2 005 (2 045)
10 DS 20	900	1 905 (1 945)
10 DS 21	900	2 005 (2 045)
12 DT 20	1 100*	1 905 (1 945)
12 DT 21	1 100*	2 005 (2 045)

NOTE 1 — D = Door, S = Single shutter, and T = Double shutter.

NOTE 2 — The designation indicates the size of door opening, the first number referring to width in modules of 100 mm and the last number the height in modules.

NOTE 3 — Standard sizes of door frames are covered in IS : 4021-1983† and IS : 4351-1976‡.

NOTE 4 — In arriving at the standard widths and heights for flush doors, an allowance of 60 mm has been made for door frames, 40 mm for floor finish and 5 mm for clearance all round (see also Fig. 1) between the door opening and door frame and 15 mm for rebate all round for the shutter into the frame. In case, the modular height is taken from the finished floor level, the height of the flush door shall be the one given in the bracket. In the case of double shutters, the rebate and clearance between the shutters shall be as given in 6.7 of IS : 2191 (Part 1)-1983§.

*Combined width of two shutters in closed position.

†Specification for timber door, window and ventilator frames (second revision).

‡Specification for steel door frames (first revision).

§Specification for wooden flush door shutters (cellular and hollow core type) : Part 1 Plywood face panels (fourth revision).

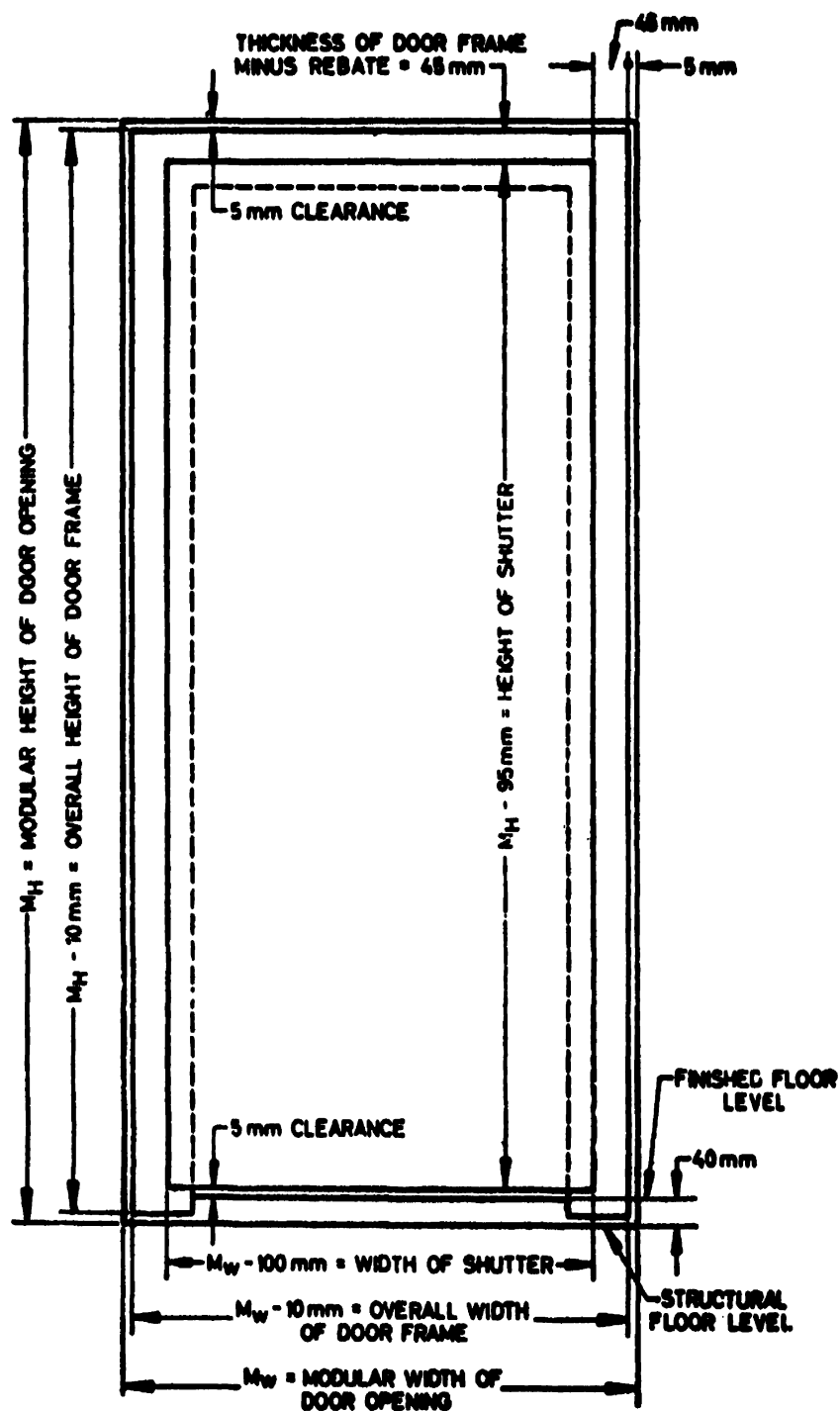


FIG. 1 SKETCH ILLUSTRATING DIMENSIONS OF SHUTTER

3.2 Nominal thickness of shutters shall be 25, 30 or 35 mm.

NOTE — It is recommended that, as far as possible, the thickness adopted for flush doors should be as given below:

<i>Flush Door Designation</i>	<i>Thickness of Shutter</i> mm
8 DS 20 and 8 DS 21	25
9 DS 20 and 9 DS 21	30 or 35
10 DS 20 and 10 DS 21	35
12 DT 20 and 12 DT 21	35

3.3 Tolerances — Tolerance on nominal width and height shall be $\pm \frac{3}{0}$ mm and the tolerance on nominal thickness shall be ± 1.2 mm. The thickness of the door shutter shall be uniform throughout with a permissible variation of not more than 0.8 mm when measured at any two points.

4. MATERIAL

4.1 Timber — Species of timber, moisture content and permissible defects therein and preservative treatment required for use in the core and lipping shall conform to the relevant requirements laid down in IS : 2191 (Part 1)-1983*.

4.2 Particle Board — Particle boards used for core as well as face panels of flush doors shall be made with phenol formaldehyde adhesive and the swelling in thickness and length when tested in accordance with IS : 2380 (Part 17)-1977†, shall not exceed 5 percent.

4.2.1 Unveneered particle board used for face panel of flush door shutters of CNP and HNP types shall conform to Types FPSI or FPTH of IS : 3087-1965‡, and shall be manufactured using Type BWR synthetic resin adhesives conforming to IS : 851-1978§, and out of naturally durable timbers listed on Appendix A of IS : 1659-1979||.

4.2.2 For CDPV and HDPV types of flush door shutters, face panel of only veneered particle board of Type ESD of IS : 3097-1980¶ shall be used.

4.2.3 For flush door shutters of CNPV and HNPV (veneered) the particle board with commercial veneers conforming to Type ESC of IS : 3097-1980¶ shall be used.

*Specification for wooden flush door shutters (cellular and hollow core type) : Part 1 Plywood face panels (*fourth revision*).

†Methods of test for wood particle boards and boards from other lignocellulosic materials : Part 17 Determination of swelling in water (*first revision*).

‡Specification for wood particle boards (medium density) for general purposes.

§Specification for synthetic resin adhesives for construction work (non-structural) in wood (*first revision*).

||Specification for blockboards (*second revision*).

¶Specification for veneered particle boards (*first revision*).

IS : 2191 (Part 2) - 1983

4.3 Fibre Hardboard — For shutters with fibre hardboard face only tempered hardboards conforming to IS : 1658-1977*.

4.4 Adhesive — Adhesive used for bonding particle board or fibre hardboard face panels to the core shall be phenol formaldehyde synthetic resin conforming to BWP type specified in IS : 848-1974†.

5. CONSTRUCTION

5.1 The construction of flush doors shall be in accordance with the relevant requirements laid down in IS : 2191 (Part 1)-1983‡ with modifications as in 5.2.

5.2 Face Panel — The particle board or veneered particle board for the face panel shall be not less than 6 mm thick in the case of cellular core flush doors and not less than 9 mm thick in the case of hollow core flush doors. Hardboard, if used, for the face panel shall be not less than 4 mm in thickness in the case of cellular core flush doors and not less than 6 mm in thickness in the case of hollow core flush doors. The panel shall be glued under pressure on both faces of the core by the hot press process.

6. FITTINGS

6.1 Locks — Shutters shall be shop-prepared for taking mortice locks or latches as may be ordered. Where the purchaser so desires, suitable blocks of wood may be provided for fixing the hardware; in the absence of specified requirements, the sizes of blocks shall preferably correspond to the maximum size of lock covered in IS : 2209-1976§.

6.2 Where special blocks are provided for fixing hardware, these portions shall be so marked in indelible ink.

7. WORKMANSHIP AND FINISH

7.1 All the four edges of the door shutter shall be square. The shutter shall be free from twist or warp in its plane.

7.2 Both faces of the door shutter shall be sanded to a smooth even texture. If required by the purchaser, all surfaces of shutters which are required to be painted ultimately shall be covered evenly by brush painting with suitable priming coat as may be ordered by the purchaser [see also IS : 2380 (Part 1)-1977||].

*Specification for fibre hardboards (second revision).

†Specification for synthetic resin adhesives for plywood (phenolic and aminoplastic) (first revision).

‡Specification for wooden flush door shutters (cellular and hollow core type) : Part 1. Plywood face panels (fourth revision).

§Specification for mortice locks (vertical type) (third revision).

||Methods of test for wood particle boards and boards from other lignocellulosic materials : Part 1 Preparation and conditioning of test specimens (first revision).

7.3 Workmanship and finish of face panels shall conform to the requirements specified for the respective grades and types of particle boards in IS : 3087-1965* and IS : 3097-1980†.

8. TESTS

8.1 The various tests for flush door shutters shall be as laid down in 9 of IS : 2191 (Part 1)-1983‡.

9. SAMPLING AND CRITERIA FOR CONFORMITY

9.1 The sampling and criteria for conformity for flush door shutters shall be as laid down in 10 of IS : 2191 (Part 1)-1983‡.

10. MARKING

10.1 Each shutter shall be legibly and indelibly marked on any of its edges with the following information:

- a) Name of the manufacturer or trade-mark, if any;
- b) Abbreviation indicating the nature of construction of the shutter (*see 2.1*).
- c) Designation as specified in Table 2 of the standard for modular sizes; or the actual size (width and height) for non-modular sizes along with appropriate symbols for door shutters as given in Table 2; and
- d) Thickness of door shutters (*see 3.2*).

10.2 BIS Certification Marking

The product may also be marked with Standard Mark.

10.2.1 The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

*Specification for wood particle boards (medium density) for general purposes.

†Specification for veneered particle boards (*first revision*).

‡Specification for wooden flush door shutters (cellular and hollow core type) .
Part 1 Plywood face panels (*fourth revision*).

BUREAU OF INDIAN STANDARDS

Headquarters:

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

Telephones: 323 0131, 323 3375, 323 9402 Fax :+ 91 011 3234062, 3239399, 3239382

E - mail : bis@vsnl.com. Internet : <http://wwwdel.vsnl.net.in/bis.org>

Central Laboratory :

Plot No. 20/9, Site IV, Sahibabad Industrial Area, Sahibabad 201010

Telephone

77 00 32

Regional Offices:

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002 323 76 17

*Eastern : 1/14 CIT Scheme VII, V.I.P. Road, Kankurgachi, CALCUTTA 700054 337 86 62

Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022 60 38 43

Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113 235 23 15

†Western : Manakalaya, E9, MIDC, Behind Marol Telephone Exchange, Andheri (East), MUMBAI 400093 832 92 95

Branch Offices:

'Pushpak', Nurmohamed Shaikh Marg, Khanpur, AHMEDABAD 380001 550 13 48

‡Peenya Industrial Area, 1st Stage, Bangalore-Tumkur Road, BANGALORE 560058 839 49 55

Commercial-cum-Office Complex, Opp. Dushera Maidan, E-5 Arera Colony, Bittan Market, BHOPAL 462016 72 34 52

62/63, Ganga Nagar, Unit VI, BHUBANESWAR 751001 40 36 27

Kalai Kathir Building, 670 Avinashi Road, COIMBATORE 641018 21 01 41

Plot No. 43, Sector 16 A, Mathura Road, FARIDABAD 121001 28 88 01

Savitri Complex, 116 G.T. Road, GHAZIABAD 201001 71 19 98

53/5 Ward No.29, R.G. Barua Road, 5th By-lane, GUWAHATI 781003 54 11 37

5-8-56C, L.N. Gupta Marg, Nampally Station Road, HYDERABAD 500001 320 10 84

E-52, Chitrangan Marg, C- Scheme, JAIPUR 302001 37 38 79

117/418 B, Sarvodaya Nagar, KANPUR 208005 21 68 76

Seth Bhawan, 2nd Floor, Behind Leela Cinema, Naval Kishore Road, LUCKNOW 226001 21 89 23

NIT Building, Second Floor, Gokulpat Market, NAGPUR 440010 52 51 71

Patliputra Industrial Estate, PATNA 800013 26 28 08

Institution of Engineers (India) Building, 1332 Shivaji Nagar, PUNE 411005 32 36 35

'Sahajanand House' 3rd Floor, Bhaktinagar Circle, 80 Feet Road, RAJKOT 360002 36 85 86

T.C. No. 14/1421, University P. O. Palayam, THIRUVANANTHAPURAM 695034 32 21 04

*Sales Office is at 5 Chowringhee Approach, P.O. Princep Street, CALCUTTA 700072 27 10 85

†Sales Office is at Novelty Chambers, Grant Road, MUMBAI 400007 309 65 28

‡Sales Office is at 'F' Block, Unity Building, Narashimaraaja Square, BANGALORE 560002 222 39 71