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# मानक

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IS 460-1 (1985): Test Sieves: Part-I Wire Cloth Test Sieves  
[CED 55: Sieves, Sieving and other Sizing Methods]



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“Knowledge is such a treasure which cannot be stolen”



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**IS : 460 ( Part 1 ) - 1985**  
**( Reaffirmed 1998 )**

*Indian Standard*  
**SPECIFICATION FOR  
TEST SIEVES**  
**PART 1 WIRE CLOTH TEST SIEVES**  
*( Third Revision )*

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

*Indian Standard*  
**SPECIFICATION FOR**  
**TEST SIEVES**  
**PART 1 WIRE CLOTH TEST SIEVES**  
*( Third Revision )*

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\*Dr P. C. Jain was Chairman of the meeting when this standard was finalized.

( Continued on page 2 )

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**AMENDMENT NO. 1 MARCH 2007  
TO  
IS 460 (PART 1) : 1985 SPECIFICATION FOR  
TEST SIEVES**

**PART 1 WIRE CLOTH TEST SIEVES**

**( *Third Revision* )**

*[Page 7, Table 2, col 3, subtitle] — Substitute '± Y' for '+ Y'.*

(CED 55)

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Reprography Unit, BIS, New Delhi, India

# *Indian Standard*

## SPECIFICATION FOR TEST SIEVES

### PART 1 WIRE CLOTH TEST SIEVES

### *( Third Revision )*

#### 0. FOREWORD

**0.1** This Indian Standard ( Part 1 ) ( Third Revision ) was adopted by the Indian Standards Institution on 20 February 1985, after the draft finalized by the Sieves, Sieving and Other Sizing Methods Sectional Committee had been approved by the Civil Engineering Division Council.

**0.2** This standard was first issued in 1953 and revised in 1962 and 1978. The 1978 revision of this standard was published in three parts, namely, Part 1 dealing with wire cloth test sieves; Part 2 dealing with perforated plate test sieves and Part 3 dealing with methods of examination of test sieves whether made from wire cloth or perforated plates for determining their compliance with Part 1 and Part 2 of this standard. The revision of this standard (Part 1) has been taken up in view of the experiences gained during the course of implementation of this standard and also to bring it in conformity with the following International Standards published by the International Organization for Standardization ( ISO ):

ISO 565-1983 Test sieves—Woven metal wire cloth, perforated plate and electroformed sheet—Nominal sizes of openings.

ISO 3310/1-1982 Test sieves—Technical requirements and testing—Part 1 Test sieves of metal wire cloth.

**0.3** In this revision the number of aperture sizes have been considerably increased. The Committee while revising the standard felt that the change in the sieve sizes above 5.6 mm from R 20 series in 1962 version to R 40/3 in 1978 has created difficulties in the implementation, as was evident from the various comments received from the users, since no time period was given for change-over for modifying the test procedure and specification followed at various levels for over 15 years. The sieve sizes specified in 1962 version are still in vogue. The Committee, therefore, decided to permit these sieve sizes given in 1962 version temporarily for a period of about 5 years with suitable precautionary note in the standard so that



users could get acquainted with the new sizes along with the old sizes and take appropriate steps to switch over to the R 40/3 sizes in course of their use. It is intended to withdraw the additional sizes in the next revision of the standard because the international standard ISO 565-1983 recommends that the principal sizes should be used where possible, but where a closer series is required, it should be drawn from one of the supplementary series only that is R 20 or R 40/3, and not from both. The Committee also felt the need for discouraging the use of non-ISO sizes. The British standard, ASTM and other overseas specifications have recommended ISO sizes to facilitate international coordination. Therefore, there is greater need for the adoption of the preferred sizes given in this standard.

**0.3.1** Further, in this revision the material requirements for wire cloth as well as frames have been clearly specified. The thickness of covers and receivers have been modified. Mild steel has been deleted from the materials for wire cloth and frame and the requirement for effective sieving surface also modified. The 100-mm sieve frames have not been recommended now for wire cloth sieves.

**0.4** This standard contains 9.1 under which the purchaser is required to supply certain information with enquiry and order for procurement of test sieves to suit his requirements.

**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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## **1. SCOPE**

**1.1** This standard ( Part 1 ) covers test sieves, with screening medium of woven-wire cloth, for use in testing in the classification of materials according to particle size.

**1.2** It applies to test sieves having aperture sizes from 125 mm down to 0.032 mm ( 32  $\mu$ m ).

## **2. DESIGNATION**

**2.1** Test sieves of metal wire cloth are designated by the nominal size of aperture of the wire cloth, followed by the inscription ' IS Sieve '.

*Examples:*

- a) 5.60-mm IS Sieve
- b) 425- $\mu$ m IS Sieve

---

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

**2.2 Nominal aperture sizes of 1 mm and above, as well as their associated tolerances and wire diameters, are expressed in millimetres (mm) and for aperture sizes smaller than 1 mm, these are expressed in micrometres ( $\mu\text{m}$ ).**

### 3. SIEVING MEDIUM

**3.1 Materials for Sieving Media** — The wire-cloths for test sieves shall be manufactured from any of the materials given in Table 1. Plated or coated wires shall not be permitted in the test sieves.

**NOTE** — The grades of the materials used shall be declared by the manufacturer, if so desired by the purchaser.

**TABLE 1 MATERIALS FOR WIRE CLOTH**

SL No.	MATERIAL	CONFORMING TO	RANGE OF APERTURE SIZE FOR WHICH SUITABLE
(1)	(2)	(3)	(4)
i)	Phosphor bronze	IS : 7608-1975*	Less than 250 $\mu\text{m}$
ii)	Brass	IS : 4413-1981†	250 $\mu\text{m}$ to 16 mm
iii)	Stainless steel	IS : 6528-1972‡	All sizes

\*Specification for phosphor bronze wires ( for general engineering purposes ).

†Specification for brass wires for general engineering purposes ( *first revision* ).

‡Specification for stainless steel wire.

**3.2 Wire Diameter** — After the cloth is mounted in the sieve the average wire diameter at different positions across the sieving surface shall be uniform in order that the limits on aperture size can be obeyed. The preferred wire diameters  $d$  ( see Fig. 1 ) and the permissible range of choice of wire diameters  $d_{\text{max}}$  and  $d_{\text{min}}$  are given in col 5, 6 and 7 of Table 2.

**3.3 Weave** — Wire cloth shall be woven to produce uniform square apertures within the tolerances given in 3.4. All aperture sizes apply for plain weave, but for aperture sizes of 63  $\mu\text{m}$  and smaller, twilled weave is permissible for aperture sizes of 4.00 mm and greater the wire shall be crimped before weaving.

**3.3.1 Perpendicularity of Wires** — If the purchaser requires a tolerance on perpendicularity, this shall be included in the order. No tolerance on perpendicularity of warp and weft wires is specified in this standard since users' requirements may differ according to the material to be tested. A tolerance of  $\pm 3^\circ$  from perpendicularity may be acceptable in many cases and a visual inspection of general appearance of perpendicularity is acceptable in other cases. It should be recognized that a test should apply to

the general directions of the warp and weft wires over several apertures and not to a single aperture.

TABLE 2 APERTURE TOLERANCES AND WIRE DIAMETERS

( Clauses 3.2 and 3.4.1 )

NOMINAL APERTURE SIZES <i>w</i>	TOLERANCE ON APERTURE SIZE			WIRE DIAMETERS		
	Maximum Tolerance for Any One Aper- ture $+ X$	Tolerance for Average Aperture Size $\pm Y$	Interme- diate Tole- rance $+ Z$	Preferred Size $d$	Permissible Range of Choice	
					$d_{\max}$	$d_{\min}$
(1)	(2)	(3)	(4)	(5)	(6)	(7)
mm	mm	mm	mm	mm	mm	mm
*125	4.51	3.66	4.09	8	9.2	6.8
106	3.99	3.12	3.55	6.3	7.2	5.4
†100	3.82	2.94	3.38	6.3	7.2	5.4
*90.0	3.53	2.66	3.09	6.3	7.2	5.4
†80.0	3.24	2.37	2.80	6.3	7.2	5.4
75.0	3.09	2.22	2.65	6.3	7.2	5.4
*63.0	2.71	1.87	2.29	5.6	6.4	4.8
53.0	2.39	1.58	1.99	5	5.8	4.3
†50.0	2.29	1.49	1.89	5	5.8	4.3
*45.0	2.12	1.35	1.73	4.5	5.2	3.8
†40.0	1.94	1.20	1.57	4.5	5.2	3.8
37.5	1.85	1.13	1.49	4.5	5.2	3.8
*31.5	1.63	0.95	1.29	4	4.6	3.4
26.5	1.44	0.80	1.12	3.55	4.1	3
†25.0	1.38	0.76	1.07	3.55	4.1	3
*22.4	1.27	0.68	0.98	3.55	4.1	3
†20.0	1.17	0.61	0.89	3.15	3.6	2.7
19.0	1.13	0.58	0.85	3.15	3.6	2.7
*16.0	0.99	0.49	0.74	3.15	3.6	2.7
13.2	0.86	0.41	0.64	2.8	3.2	2.4
†12.5	0.83	0.39	0.61	2.5	2.9	2.1
*11.2	0.77	0.35	0.56	2.5	2.9	2.1
†10.0	0.71	0.31	0.51	2.5	2.9	2.1
9.50	0.68	0.30	0.49	2.24	2.6	1.9
*8.00	0.60	0.25	0.43	2	2.3	1.7
6.70	0.53	0.21	0.37	1.8	2.1	1.5
†6.3	0.51	0.20	0.35	1.8	2.1	1.5
*5.60	0.47	0.18	0.32	1.6	1.9	1.3
4.75	0.41	0.15	0.28	1.6	1.9	1.3

( Continued )

**TABLE 2 APERTURE TOLERANCE AND WIRE DIAMETERS — Contd**

NOMINAL APERTURE SIZES <i>W</i>	TOLERANCE ON APERTURE SIZE			WIRE DIAMETERS		
	Maximum Tolerance for any one aper- ture	Tolerance for Average aperture Size	Interme- diate Tole- rance	Perferred Size	Permissible Range of Choice	
	+ <i>X</i>	+ <i>Y</i>	+ <i>Z</i>	<i>d</i>	<i>d</i> max	<i>d</i> min
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	mm	mm	mm	mm	mm	mm
* 4.00	0.37	0.13	0.25	1.4	1.7	1.2
3.35	0.32	0.11	0.22	1.25	1.5	1.06
* 2.60	0.29	0.09	0.19	1.12	1.3	0.95
2.36	0.25	0.08	0.17	1	1.15	0.85
* 2.00	0.23	0.07	0.15	0.9	1.04	0.77
1.70	0.20	0.06	0.13	0.8	0.92	0.68
* 1.40	0.18	0.05	0.11	0.71	0.82	0.6
1.18	0.16	0.04	0.10	0.63	0.72	0.54
* 1.00	0.14	0.03	0.09	0.56	0.64	0.48
μm	μm	μm	μm	μm	μm	μm
850	127	29	78	500	580	430
* 710	112	25	69	450	520	380
600	101	21	61	400	460	340
* 500	89	18	54	315	360	270
425	81	16	48	280	320	240
355	72	13	43	224	260	190
300	65	12	38	200	230	170
* 250	58	9.9	34	160	190	130
212	52	8.7	30	140	170	120
* 180	47	7.6	27	125	150	106
150	43	6.6	25	100	115	85
* 125	38	5.8	22	90	104	77
106	35	5.2	20	71	82	60
* 90	32	4.6	18	63	72	54
75	29	4.1	17	50	58	43
* 63	26	3.7	15	45	52	38
53	24	3.4	14	36	41	31
* 45	22	3.1	13	32	37	27
38	20	2.9	11	30	35	24
32	19	2.7	11	28	33	23

NOTE 1 — Sizes indicated by '†' have been permitted temporarily only. It is intended to withdraw these sizes in the next revision of the standard. The users are, therefore, advised to switch-over to other sizes permitted in table in due course of their use.

NOTE 2 — Sizes indicated by '\*' are the principal sizes of ISO 565-1983.

### 3.4 Aperture Tolerances

3.4.1 The nominal aperture  $W$  and tolerances,  $X$ ,  $Y$  and  $Z$  as given in col 1, 2, 3 and 4 of Table 2 shall apply separately to the warp and weft directions. They shall apply to the aperture sizes as measured on the centre lines of the aperture ( see Fig. 1 ).

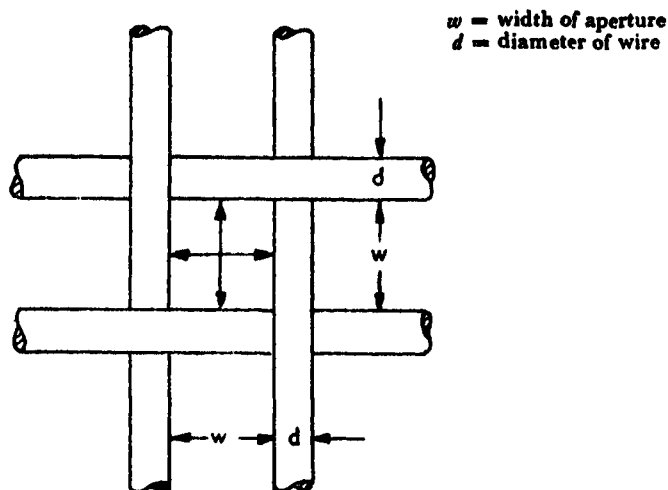


FIG. 1 POINTS OF MEASUREMENT OF APERTURE WIDTH

3.4.2 No aperture size shall exceed the nominal size by more than  $X$ .

3.4.3 The average aperture size shall not depart from the nominal size by more than  $\pm Y$ .

3.4.4 Not more than 6 percent of the total number of apertures shall have sizes between 'nominal +  $X$ ' and 'nominal +  $Z$ '.

3.4.5 When a sieve has less than 50 apertures, not more than 3 apertures shall fall within the limits of 'nominal +  $X$ ' and 'nominal +  $Z$ '.

### 4. TEST SIEVE FRAME

4.1 Material — The frames of test sieves shall be manufactured from any of the materials given in Table 3.

NOTE — The grades of the materials used shall be declared by the manufacturer, if so desired by the purchaser.

TABLE 3 MATERIALS FOR TEST SIEVE FRAMES

( Clause 4.1 )

SL No.	MATERIAL	CONFORMING TO	SUITABLE FOR FRAME SIZE
(1)	(2)	(3)	(4)
i)	Brass sheet	IS : 410-1977*	All sizes
ii)	Stainless steel sheet	IS : 6911-1972†	All sizes
iii)	Galvanized steel sheet	IS : 277-1977‡	Size 300 mm and above
iv)	Electroplated steel sheet: sheet material	IS : 513-1973§	

\*Specification for cold rolled brass sheet, strip and foil ( *third revision* ).

†Specification for stainless steel sheets and strips.

‡Specification for galvanized steel sheets ( plain and corrugated ).

§Specification for cold rolled carbon steel sheets ( *second revision* ).

**4.2 Shapes and Sizes** — The commonly used shapes and sizes are given in Table 4 ( *see Fig. 2* ).

**NOTE** — The use of special size and shape frames, however, are to be discouraged where the standard frames can be used.

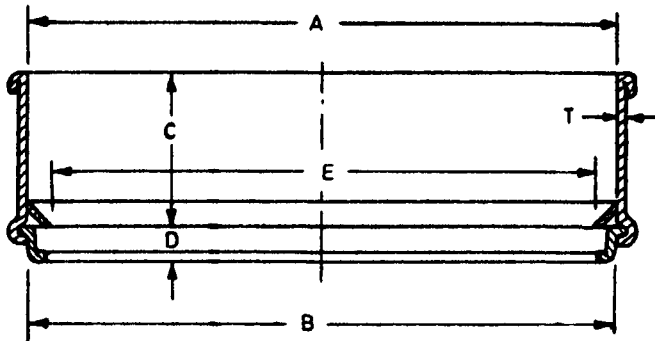


FIG. 2 DIMENSIONS OF FRAME FOR TEST SIEVE

**4.3** It is recommended that the 200 mm round frame should be used as far as possible, especially for wire cloth up to 1 mm nominal aperture size. For large aperture sizes the 300 mm round or square sieve may be required, or even larger sieves of 450 mm size for aperture sizes greater than 25 mm and large sample quantities.

**NOTE** — The shape and size of the sieve have little effect on the results of sieving operation.

**4.4 Cover and Receiver** — When specified by the purchaser a cover and receiver shall be provided for sieves, of the same metal and thickness as the sieve frame ( *see* Fig. 3 ). The cover of the sieve shall be double walled. The depth of the receiver shall be equal to the dimension ( *C* ) specified in Table 4.

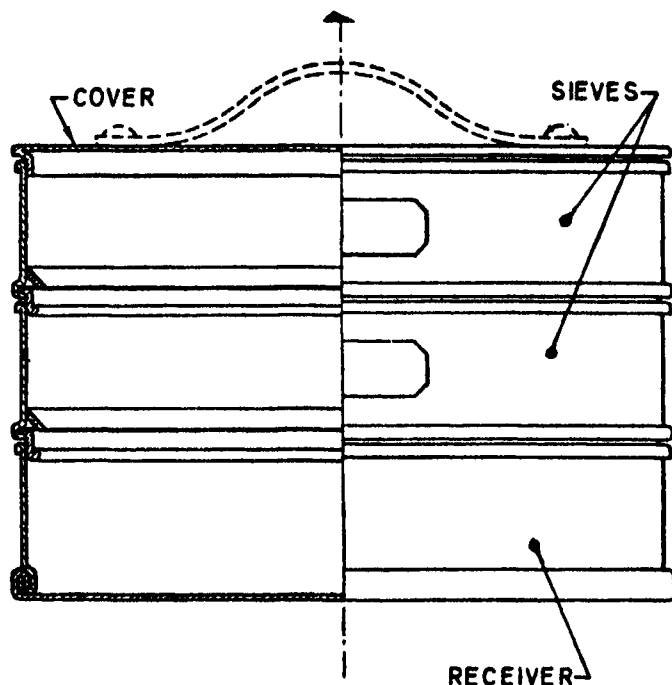


FIG. 3 NEST OF TEST SIEVES WITH COVER AND RECEIVER

## 5. FINISH

5.1 The sieving surface, frame receivers, and covers, shall be smoothly finished. Seal between frame and sieving medium shall be so formed as to prevent lodging of the material to be sieved. There shall be no lacquer on surfaces which come into contact with a sample.

## 6. NESTING

6.1 The test sieves shall nest snugly with each other and with the lid and receiver of the same shape and size.

**TABLE 4 RECOMMENDED SHAPES AND SIZES OF TEST SIEVE FRAMES**  
( Clauses 4.2 and 4.4 )

All dimensions in millimetres

Sl. No.	SHAPE	NOMINAL SIZE	TOP INTERNAL DIA- METER LENGTH	BOTTOM EX- TERNAL DIA- METER/ LENGTH	MINIMUM THICK- NESS	T	E		C	DEPTH FROM TOP EDGE TO SIEVING SURFACE	DEPTH FROM BOTTOM EDGE TO SIEVING SURFACE D
							Min	Max			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)		
i) Round		200	$200^{+1}_{-0}$	$200^{+0}_{-1}$	0.45	185	200	50	15		
ii) Round or Square }		300	$300^{+1}_{-0}$	$300^{+0}_{-1}$	1.00	275	300	75	15		
iii) Round or Square }		450	$450^{+1}_{-0}$	$450^{+0}_{-1}$	1.00	425	450	100, Min	20		

NOTE 1 — Where so desired, sieves having 25 mm depth from top edge to sieving surface may also be supplied.

NOTE 2 — When fine wire mesh is used in large sieves, it may be supported by a spider or other means.

\* A and B shall be such as to make the sieves nestable as required in 6.1.



## **7. MOUNTING**

**7.1** The wire cloth shall be so mounted in the frame as to be held firmly and equally taut in all directions without any distortion of the mesh.

## **8. TESTING**

**8.1** Each of the wire cloth test sieves shall be tested to meet the requirements of this standard. The apertures of the test sieves shall be examined in accordance with IS : 460 ( Part 3 )-1985\*. If calibration test is required to be performed, it shall be clearly stated in the enquiry and order.

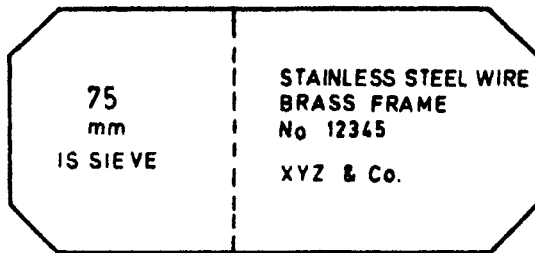
## **9. INFORMATION TO BE SUPPLIED BY THE PURCHASER**

**9.1** The purchaser should state the following with any enquiry and order:

- a) Designation of the sieve;
- b) Sieving medium : Material;
- c) Frame shape, size and material;
- d) Whether a receiver is required;
- e) Whether a cover is required;
- f) Whether calibration test is to be performed; and
- g) Whether statement on wire diameter is required.

## **10. MARKING**

**10.1** A label shall be fixed to the frame of each sieve complying with this standard, legibly marked with the following information ( see Fig. 4 for an example of the label ).



**FIG. 4 TYPICAL ILLUSTRATION OF SPECIMEN LABEL**

- a) Designation ( The figures shall be bold, and easily readable at the left hand side of the label );

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\*Specification for test sieves : Part 3 Methods of examination of apertures of test sieves ( *third revision* ).

- b) The material of the wire cloth;
- c) The material of the sieve frame;
- d) The maker's name or trade-mark;
- e) An identification number; and
- f) The wire diameter, when the purchaser requests.

**10.2** Each test sieve may also be marked with the Standard Mark.

**10.3** The use of the Standard Mark is governed by the provisions of 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.

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

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

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

5th Floor, Koval Towers, 44 Bala Sundaram Road, COIMBATORE 641018 21 88 35

Plot No 58, Neelam Bata Road, NIT, FARIDABAD 121001 542 82 61

Savitri Complex, 116 G T Road GHAZIABAD 201001 471 19 98

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

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

E-52, Chitranganj 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

Mahabir Bhawan, 1st Floor, Ropar Road, NALAGARH 174101 2 14 51

Patiputra Industrial Estate, PATNA 800013 26 28 08

First Floor, Plot Nos 657-660, Market Yard, Guttedi, PUNE 411037 426 86 59

\*Sahajanand House 3rd Floor, Bhaktinagar Circle, 80 Feet Road,  
RAJKOT 360002 37 82 51

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,  
KOLKATA 700072 237 10 85

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