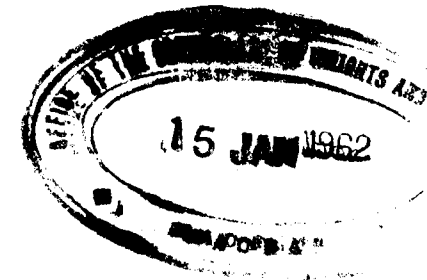


VOL. 4

SEPTEMBER 1961



425
443

JOURNAL OF WEIGHTS AND MEASURES

40 NAYE PAISE

ABBREVIATIONS FOR METRIC UNITS

(1) DECIMAL MULTIPLES AND SUBMULTIPLES

Prefix	Value in Terms of Unit	Abbreviation
kilo ..	1,000	k
centi ..	0.01 (10 ⁻²)	c
milli ..	0.001 (10 ⁻³)	m
micro ..	0.000 001 (10 ⁻⁶)	μ

(2) WEIGHTS

Denomination	Value	Abbreviation
tonne ..	1,000 kg	t
quintal ..	100 kg	q
kilogram ..	1 kg	kg
gram ..	1 g	g
milligram ..	1 mg	mg
carat ..	200 mg	c

(3) CAPACITY

kilolitre ..	1 000 l	kl
litre ..	1 l	l
millilitre ..	1 ml	ml

(4) VOLUME

cubic metre	m ³	m ³ or cu m*
cubic centimetre	cm ³	cm ³ or cu m*
cubic millimetre	mm ³	mm ³ or cu mm*

(5) LENGTH

kilometre ..	1 000 m	km
metre ..	1 m	m
centimetre ..	1 cm	cm
millimetre ..	1 mm	mm
micron ..	1/1 000 mm or 10 ⁻³ mm	μm

(6) AREA

square kilometre	1 000,000 m ²	km ² or sq km*
square metre	1 m ²	m ² or sq m*
square centimetre	1 cm ²	cm ² or sq cm*
square millimetre	1 mm ²	mm ² or sq mm*

(7) LAND MEASURE

are ..	100 m ²	a
hectare ..	100 a	ha
centiare ..	m ²	ca

*Both these abbreviations are current, but the first set should preferably be used. The former abbreviation is used more commonly internationally than the latter.

Rules for Abbreviations:

- (1) Do not make any change, such as addition of 's' to indicate plurality e.g. write 1 kg, 10 kg, 20 g, 5 g, 10 t, 20 ml, 27 l, 165 km, 2 mm, 100 cm³, 66 km²;
- (2) Do not capitalize the abbreviations. For example, do not write 1 Kg, 2Kg, 20 MM, 50 MM; the right way is to write 1 kg, 2 kg, 20 mm, 50 mm, etc.
- (3) Do not use any other abbreviations except those given above.

EDITORIAL BOARD

S. L. KUMAR, Principal,
Patiala Engineering College,
Patiala.

U. S. MOHAN RAO,
Director, Publications Division,
Ministry of Information
& Broadcasting, New
Delhi.

A. NAGARAJA RAO,
Chairman, Heavy Engineering
Corporation, Ranchi.

P. N. NAYER, Secretary,
Standing Metric
Committee, Ministry of
Commerce & Industry,
New Delhi.

PITAMBAR PANT,
Private Secretary to Chairman,
Planning Commission,
New Delhi.

H. L. ROY, Chairman,
Indian Decimal Society,
Calcutta.

B. N. SASTRI, Chief
Editor, Council of Scientific
& Industrial Research,
New Delhi.

K. V. VENKATACHALAM,
Joint Secretary,
Ministry of Commerce &
Industry, New Delhi.

LAL, C. VERMAN,
Director, Indian Standards
Institution, New Delhi.

V. B. MAINKAR,
Editor & Ex-Officio
Secretary.



metric measures

(JOURNAL OF WEIGHTS AND MEASURES)

STANDING METRIC COMMITTEE
MINISTRY OF COMMERCE AND INDUSTRY

Vol. 4 SEPTEMBER 1961 (BHADRA 1883) No. 5

CONTENTS

Clothes in Metric System	3
(Miss) Shama Mahajan	
Metric Building Products: Part 1	6
J. K. Varshneya	
Metric System in Printing and Stationery	9
D. P. Mukherji	
Fourth Conference of Controllers	19
Eleventh General Conference of Weights & Measures	22
News & Views	25
Readers' Forum	29
Standards News	31
Licensed Manufacturers, Dealers and Repairers of Weights and Measures (15)	34

Cover design by R. Sarangan

Annual Subscription Rs. 2.00

Single Copy 40 nP

metric measures

METRIC MEASURES is published every two months.

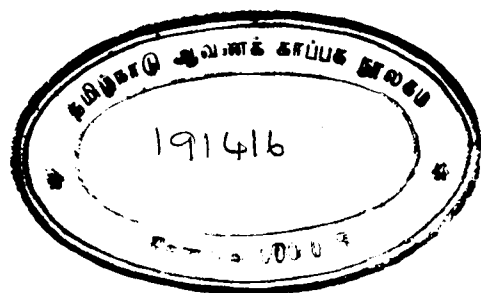
METRIC MEASURES provides information to the general public on the administrative, commercial, educational, industrial, historical and other aspects of weights and measures, with particular reference to the introduction of the metric system in India.

Contributions for publication should be sent to the Editor, METRIC MEASURES, Standing Metric Committee, Ministry of Commerce & Industry, Udyog Bhavan, New Delhi.

Enquiries regarding subscriptions and supply of copies should be addressed to the Business Manager, Publications Division, Ministry of Information and Broadcasting, Old Secretariat, Delhi-6.

Articles published in the Journal may be reproduced. Credit line should read: METRIC MEASURES.

The opinions expressed by authors are not necessarily those of the Government.



SL
X: 5200000000
N61

Clothes in Metric System

(Miss) SHAMA MAHAJAN

Ministry of Commerce & Industry,
New Delhi

METRIC length measures will be introduced all over India from 1 October 1961 with a transition period of one year. Length measures have already been compulsorily introduced in the textile industry so far as wholesale transactions by the mills are concerned. As a result many textile mills which have their own retail shops and show-rooms spread all over the country would like to change over to the sale of cloth by the metre as early as possible after October 1961, so that their complete sales organization would have changed over to one system of accounting.

Retail Purchases

The impact of this change-over would be felt by the general public late this year. It is, therefore, necessary that we should examine the metric requirements of cloth for various items of clothing. It is but natural that nobody would like to purchase more cloth than he has been buying so far. However, there are limitations to actual conversions and a certain amount of rounding off is necessary.

The simplest way is to round off the requirements to the nearest convenient 5 centimetres (cm). The metre rod with which the salesman would measure out cloth would also be marked only at every 5 cm except the first 10 cm which would be marked at

every centimetre. Rounding off to the nearest 5 cm would thus have the advantage of facilitating measurement of cloth.

Tables showing the normal length of cloth required for various types of apparel and the converted lengths are given at the end of this article.

There are certain items whose lengths cannot be rounded off according to the above general consideration. Sarees, dhoties, ready-made wear etc. come under this category.

Sarees

Sarees and dhoties are sold in predetermined lengths. In these cases the rounding off should be such that the lengths can be expressed in suitable easy-to-understand fractions of the metre. Sarees are supposed to be sold usually by nominal lengths. Thus a 5-yard saree may measure even $4\frac{3}{4}$ or $5\frac{1}{4}$ yards though it would be normally sold as a 5-yard saree. It would appear that the best way of rounding off in this case would be the nearest $\frac{1}{4}$ metre. The industry would have to lay down what tolerance in length should be allowed on each nominal length of the saree.

Ready-to-Wear Clothes

In view of the possibility of the early change-over by well-established textile mills it is also likely that tailoring houses which

market ready-made clothes may follow suit early. In some of the faster selling wear like shirts, bush-shirts, manilas etc. the change-over would involve considerable adaptation. For example, the measurements of a shirt are related with a basic neck size. The industry would have to give due thought to the problem of rationalizing the neck sizes and the other related measurements. It is obvious that the present range of shirt sizes which increase in steps of $\frac{1}{2}$ inch cannot be converted to steps of 1.27 cm. A little thought would suggest that a 1 cm range would be desirable. Similar rationalization would be necessary for bush-shirts, manilas, trousers, etc. It should also be kept in mind that the range of measurements in which ready-to-wear clothes are made may vary from one firm to another. In this article only the normal ranges are covered. If sizes other than those covered in the table are produced, they could be converted in the same way as suggested for other similar products.

Children's Clothing

Children's clothing is the department where cloth requirements cannot be easily laid down. The variation of cloth requirements of growing children from month

to month and year and year as also from baby to baby and child to child are so variable that what is applicable to one child may not necessarily be good enough for another.

A simple rule could, however, be suggested: for every yard of cloth, purchase 90 centimetres. Remember that one metre has 100 centimetres in it. The actual conversion of one yard is about 91½ cm but it will be difficult to buy that length of cloth: therefore 90 cm is suggested.

As every mother knows, the best way to get a good fit of ready-to-wear clothes for a child is to take it to the shop and try on the various sizes

Caution

The cloth requirements and other measurements given in the tables are those for an 'average' person. Ultimately it is the tailor who will have to be the judge. If he says that you have bought 5 cm less cloth than he requires, he may refuse to stitch your clothes and, what is worse, he may throw the blame for bad fitting on that small strip of 5 cm cloth. This article only suggests average requirements and the temperament of the tailor may necessitate a change in them!

TABLE 1

Cloth Requirements for Men's Apparel

Sl. No.	Item	Present requirements (yds)	Converted metres	Rounded metres
(1)	Shirt	3	2.74	2.75 or 2½
(2)	Bush-shirt, manila, etc.	(i) 2½ (36 in. width) (ii) 3 (29-31 in. width)	2.29 (91 cm width) 2.74 (74-76 cm width)	2.30 (90-91 cm width) 2.75 (74-75 cm width)
(3)	Trousers Cotton	3	2.74	2.75
(4)	Trousers Woollen	1½ (double width)	1.37	1.40
(5)	Coat Cotton	3½	3.43	3.45
(6)	Coat Woollen	1½ (double width)	1.60	1.60
(7)	Suit Woollen	3½ (double width)	2.97	3.00
(8)	Ordinary Pyjama	2½-3	2.29-2.74	2.30-2.75
(9)	Night Suit	5½	5.03	5.00
(10)	Half 'Pant'	2	1.83	1.80
(11)	Dhotie	5	4.57	4.50 (nominal)

CLOTHES IN METRIC SYSTEM

TABLE 2
Cloth Requirements for Ladies' Wear

Sl. No.	Items	Present Requirements (yds)	Converted metres	Rounded metres
(1)	Saree	5 5½ 6 7 8 9	4.57 5.03 5.49 6.40 7.32 8.23	4.50 i.e. 4½ 5.00 i.e. 5 5.50 i.e. 5½ 6.50 i.e. 6½ 7.25 i.e. 7½ 8.25 i.e. 8½
(2)	Blouse	1 (36 in. width) ½ (45 in. width)	0.91 (91 cm) 0.69 (114 cm)	0.90 (90-91 cm) 0.70 (114-115 cm)
(3)	Salwar	3½ (36 in. width) 3 (45 in. width)	3.20 (91 cm) 2.74 (114 cm)	3.20 (90-91 cm) 2.75 (114-115 cm)
(4)	Kameez	2½ (36 in. width) 2½ (45 in. width)	2.29 (91 cm) 2.06 (114 cm)	2.30 (90-91 cm) 2.05 (114-115 cm)
(5)	Petticoat	2½ (36 in. width)	2.29 (91 cm)	2.30 (90-91 cm)
(6)	Ladies' Coat Full (Woollen)	2½-2½ (double width)	2.06-2.29	2.05-2.30
(7)	Ladies' Coat Half (Woollen)	2 (double width)	1.83	1.85

TABLE 3
Ready Made Apparel

Sl. No.	Items	Present Sizes inches	Converted Sizes cm	Suggested Sizes cm
(1)	Shirts	Collar sizes 13½-17 (½ in. range)	34.3-43.2 (1.27 cm range)	34-43 (1 cm range)
(2)	Bushshirts, manilas, etc.	Chest sizes 32-44 (2 in. range)	81.3-111.8 (5.08 cm range)	80-110 (5 cm range)
(3)	Trousers	Length 38-46 (2 in. range) Waist 28-36 (1 in. range)	96.5-116.8 (5.08 cm range) 71.1-91.4 (2.54 cm range)	95-115 (5 cm range) 70-92 (2 cm range)

* * *

Metric Building Products : Part 1

J. K. VARSHNEYA

Deputy Director (Metric),
National Buildings Organisation,
New Delhi

THE Standards of Weights and Measures Act, 1956, envisages a period of ten years for the complete change-over to the metric system in all spheres of activities. During the transition period the building industry is gradually adapting itself to the metric system. The Indian Standards Institution has formulated standard specifications for a number of building products and many of them are being manufactured according to the new standards.

During the transition period the building engineer is faced with many problems regarding the nominal dimensions of metric building products. What will be the nominal thickness of sheet glass for glazing? What will be the nominal diameter of cast iron or asbestos pipes? In what thickness and size plywood will be available? These are some of the questions he will be constantly facing. The aim of this article is to acquaint the building engineer with the nominal dimensions of metric building products. For detailed information the reader may refer to the Indian Standards quoted or to the Handbook for Building Engineers in Metric System to be published by the National Buildings Organisation, New Delhi.

A—STRUCTURAL STEEL SECTIONS

- (1) *Rolled steel beams, channels and angle sections*: see IS : 808—1957.
- (2) *Rolled steel tee bars*—see IS: 1173—1957.
- (3) *Rolled steel bulb angles*—see IS: 1252—1958.
- (4) *Rolled steel bulb plates*—see Doc: SMD C 6(283)F.
- (5) *Mild steel flats* (IS: 1731—)
(a) Nominal thickness of flats in mm
3·15, 4·0, 5·0, 6·0, 8·0, 10·0, 12·0, 16·0, 18, 20, 25, 32, 40.
(b) Width of flats in mm
10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 90, 100, 110, 120, 130, 150, 200, 250, 300, 400.
- (6) *Mild steel plates* (IS: 1730—)
Nominal thickness of plates in mm
5, 6, 8, 10, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56 and 63.
- (7) *Mild steel sheets* (IS: 1730—)
Nominal thickness of sheets in mm
0·40, 0·50, 0·63, 0·80, 0·90, 1·00, 1·12, 1·25, 1·40, 1·60, 1·80, 2·00, 2·24, 2·50, 2·80, 3·15, 3·55, 4·00.
- (8) *Mild steel strip* (IS: 1730—)
Nominal thickness of strip in mm
1·60, 1·80, 2·00, 2·24, 2·50, 2·80, 3·15, 3·55, 4·00, 4·50, 5·00, 6·00, 8·00, 10·00.
- (9) *Round and square steel bars*—see IS: 1732—

METRIC BUILDING PRODUCTS: PART I

Properties of Reinforcing Round Bars

Diameter mm	Sectional Area sq cm	Perimeter cm	Weight per Metre Length kg
5·0	0·20	1·57	0·15
6·0	0·28	1·88	0·22
8·0	0·50	2·51	0·39
10	0·79	3·14	0·62
12	1·13	3·77	0·89
16	2·01	5·03	1·58
20	3·14	6·28	2·47
25	4·91	7·85	3·85
28	6·16	8·80	4·83
32	8·04	10·05	6·31
36	10·18	11·31	7·99
40	12·57	12·57	9·86
45	15·90	14·14	12·49
50	19·64	15·71	15·41

B—PIPES, TUBES AND ALLIED PRODUCTS

- (1) *Sheet metal rain water pipes* (IS 1728—1960)
Nominal diameter of pipes in mm
50, 60, 80, 90 and 100
- (2) *Sheet metal gutters and fittings*—see IS: 1728—1960
- (3) *Cast iron rain water pipes* (IS: 1230-1957)
Nominal bore of pipes in mm
50, 75, 100, 125 and 150.
- (4) *Mild steel tubes (galvanized and black)* (IS: 1239—1958)
Nominal bore of tubes in mm
6, 8, 10, 15, 20, 25, 32, 40, 50, 65, 80, 90, 100, 125 and 150.
- (5) *Steel tubes for structural purposes* (IS: 1161—1958)
Nominal diameter of tubes in mm
15, 20, 25, 32, 40, 50, 65, 80, 90, 100, 125 and 150.
- (6) *Centrifugally cast (spun) iron pressure pipes* (IS: 1536—1960)
(a) Nominal diameter of socket and spigot pipes—class LA, A and B in mm
80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700 and 750.
Working lengths in metres—3·66, 4, 4·88 and 5·5.
(b) Nominal diameter of flanged pipes with screwed flanges—class A and B in mm
80, 100, 125, 150, 200, 250 and 300.
Working lengths in metres
2, 2·8, 3, 4, 4·88, 5 and 5·5.

(7) Vertically cast iron pressure pipes (IS: 1537—1960)

Nominal diameter of spigot and socket pipes—Class A and B and flanged pipes—Class A and B in mm

80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 750, 800, 900, 1000, 1100, 1200, 1500.

Working lengths in metres

3·66, 4, 4·88, 5 and 5·5 for spigot and socket pipes and 1 to 4 metres for flanged pipes.

(8) Asbestos cement pressure pipes (IS: 1592—1960)

Nominal bore of pipes in mm

50, 80, 100, 125, 150, 200, 250, 300, 450, 600, 900 and 1000.

Length in metres—3 to 4.

(9) Pre-stressed concrete pipes (IS: 784—1959)

Nominal bore in mm

Length

80, 100, 125, 150, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1400, 1600, 1800.
2 metres
2·5 metres

(10) Wire gauge for general purposes (IS: 1568—1960)

Gauge designation (size of square opening in decamicros)

160 G, 140 G, 120 G, 100 G, 85 G, 80 G, 70 G, 60 G, 50 G, 40 G.

(11) Diameter of metric screws and bolts—see IS: 1330—1958

(12) Length of bolts and screws (IS: 1363—1960 and IS: 1364—1960)

Length in mm

6, (7), 8, (9), 10, (11), 12, 14, 16, (18), 20, (22), 25, (28), 30, (32), 35, (38), 40, 45, 50, 55, 60, 65, 70, 75, 80, (85), 90, (95), 100, (105), 110, (115), 120, (125), 130, 140, 150, 160, 170, 180, 190, 200, 220, 240, 260, 280, 300, 320, 340, 360, 380 and 400.

Note:— Value within bracket is second choice

(13) Copper sheet and strip—see IS: 1550—1960.

(14) Lead Sheets (IS: 405—1961)

Nominal thickness in mm

0·5, 0·8, 1·0, 1·6, 2·0, 2·5, 3·2, 3·5, 4·0, 4·5, 5·0, 5·5, 6, 7, 8, 9, 10, 12, 14, 16.

C—BRICKS AND BLOCKS

(1) Modular bricks (IS: 1077—1957)

Nominal dimensions

20 cm × 10 cm × 10 cm

20 cm × 10 cm × 5 cm

Actual dimensions

19 cm × 9 cm × 9 cm

19 cm × 9 cm × 4 cm

(2) *Soil cement blocks* (IS: 1725—1960)

Nominal dimensions

20 cm × 10 cm × 10 cm
20 cm × 10 cm × 5 cm
30 cm × 20 cm × 10 cm

Actual dimensions

19 cm × 9 cm × 9 cm
19 cm × 9 cm × 4 cm
29 cm × 19 cm × 9 cm

D—FLOOR COVERING(1) *Clay flooring tiles* (IS: 1478—1959)

Nominal dimensions

15 cm × 15 cm
20 cm × 20 cm
22.5 cm × 22.5 cm

(2) *Linoleum* (IS: 653—1955)

Nominal thickness in mm

6.7, 6.0, 4.5, 3.2, 2.0, 1.6.

(3) *Limestone slabs for flooring*—see IS: 1128—1957(4) *Cement concrete flooring tiles*
(IS: 1237—1959)

Nominal size

20 cm × 20 cm
25 cm × 25 cm
30 cm × 30 cm

Actual size

19.85 cm × 19.85 cm
24.85 cm × 24.85 cm
29.85 cm × 29.85 cm

(5) *Rubber flooring* (IS: 809—1957)

Nominal thickness in mm

3.2, 4.8, 6.4.

Dimension of tiles

20 cm × 20 cm
30 cm × 30 cm
45 cm × 45 cm

E TIMBER PRODUCTS(1) *Plywood* (IS: 303—1960 revised)

No. of Plies

Thickness of mm

3 ply 3, 4, 5, 6
5 ply 5, 6, 8, 9
7 ply 9, 13, 16
9 ply 13, 16, 19
11 ply 19, 22, 25.

(b) Sizes

240 cm × 120 cm
240 cm × 90 cm
210 cm × 120 cm
210 cm × 90 cm
180 cm × 120 cm
180 cm × 90 cm
150 cm × 120 cm
150 cm × 90 cm
120 cm × 120 cm
90 cm × 90 cm

(2) *Blockboards* (IS: 1659—1960)

Nominal thickness in mm

12, 16, 20, 25, 30, 32, 35, 40, 45, 50.

Length in cm

240, 210, 180, 150, 120

Width in cm

120 and 90.

F MISCELLANEOUS(1) *Sheet glass* (IS: 1761—1960)

Nominal thickness in mm

2.0, 2.5, 3.0, 4.0, 5.0, 5.5, 6.5.

(2) *Hardboards* (IS: 1658—1960)

Type of board

Nominal thickness in mm

Semi-hardboard 6, 8, 10, 12.

Hardboard and superhard-

board 3, 4.5, 6.

Width

1.2 metres

Length in metres

1.2, 1.8, 2.4, 3, 3.6, 4.8, and 5.5.

Metric System in Printing & Stationery

D. P. MUKHERJI

Officer on Special Duty,
Office of the Chief Controller of Printing and Stationery,
New Delhi

At present there is in common use a large variety of paper sizes along with their subdivisions and multiples. Rationalization and reduction in the number of sizes of paper was, therefore, a necessity.

A study of the subject by itself and in relation to international practices led to the adoption of the basic A-series of sizes. In fact the use of the A-series of sizes is fairly common in many countries.

The important features of the A-series are that the surface area of the basic format, A0, is one square metre, and the width (841 mm) and length (1189 mm) of size A0 bear the ratio of 1 : $\sqrt{2}$. Thus at each doubling or halving lengthwise of any paper size in the A-series, the aspect ratio of 1 : $\sqrt{2}$ remains constant. The principal A-series sizes are as follows :

PRINCIPAL A-SERIES SIZES

Designation	Size in mm	Exact size in in.
4A0 .. 1	682 × 2 378	66.22 × 93.62
2A0 .. 1	189 × 1 682	46.81 × 66.22
A0 ..	841 × 1 189	33.11 × 46.81
A1 ..	594 × 841	23.39 × 33.11
A2 ..	420 × 594	16.54 × 23.39
A3 ..	297 × 420	11.69 × 16.54
A4 ..	210 × 297	8.27 × 11.69
A5 ..	148 × 210	5.83 × 8.27
A6 ..	105 × 148	4.13 × 5.83
A7 ..	74 × 105	2.91 × 4.13
A8 ..	52 × 74	2.05 × 2.91
A9 ..	37 × 52	1.46 × 2.05
A10 ..	26 × 37	1.02 × 1.46

The A-series sizes suitable for various commercial forms are given in Appendix 1.

Besides these sizes, longitudinal half, quarter, eighth etc. of the various sizes of the series can be used whenever required. Provision has also been made for the sizes of cover paper by adding 4 percent in either dimension.

The sizes mentioned are all trimmed sizes. Untrimmed sizes are being standardized. Tentatively the following untrimmed sizes have been recommended:

Raw Stock Sizes for A-Series:

RA0 86 × 122 cm
RA1 61 × 86 cm
RA2 43 × 61 cm and so on.

Special Raw Stock Sizes for Bled Work:

Special RAO—88 × 124 cm and so on

The B-Series Sizes

The B-series sizes are derived from the A-series. In this series the basic size, called B0, is 1000 × 1414 mm. This series is normally used as a supplement to the A-series. The procedure for halving and doubling and the nomenclature is similar to that used for the A-series.

For B-series only one standard raw stock size has been proposed viz.,

RB1—75 × 105 cm and so on.

Substance in Grams per Square Metre (gsm)

With the change-over in sizes of paper it is also necessary to express substance in metric units. Here also the system now in use internationally is being adopted. In this system substance is expressed as the weight in grams per square metre (gsm) of the paper. This system does not require any complicated calculations, is not related to the variable ream and can be applied to all types of paper and pulp board easily.

The following 15 groups of gsm, namely, 40, 45, 50, 55, 60, 75, 90, 110, 130, 150, 175, 200, 225, 275 and 325 will ordinarily serve all the purposes of the printing and stationery trade; printing paper is usually required in 3 substances 45, 60, 75, writing paper in 6 substances 45, 70, 90, 110, 130, 150, wrapping and kraft paper in 7 substances 65, 75, 90, 110, 130, 150, 200 and cover paper in 3 substances 110, 130, 150. The above is yet to be finalized in consultation with the paper mills. But for special work, special-make could also be ordered provided the quantity justifies its manufacture.

The vocabulary of all varieties of paper—printing, writing, wrapping—has now been modified to show the weight of paper in grams per square metre.

Appendix 2 shows the new gsm for a variety of papers. The formula for converting pounds per ream to grams per square metre is :

$$\frac{\text{lb per ream} \times 703,082}{500 \times \text{area of sheet in sq. in.}} = \text{gsm}$$

Description of Article	Present Size in Inches	Proposed Size
Blotting White Demy (40 lbs) ..	17½" × 22½"	=150 gsm
Blotting White Demy (38 lbs) ..		A-2 i.e. 420 × 594 mm
Blotting Pink Demy (40 lbs) ..		or =130 gsm =150 gsm

All the sizes and gsm have been tentatively decided and final concurrence of the Indian paper mills is shortly expected. It is hoped that even with their present equipment there will be no difficulty in getting supplies of metric sizes of paper in the recommended gsm.

Conversion

As metric weights have now come into use in various fields, presses have already adjusted themselves to the change.

Some presses have paper cutting machines with scales calibrated in feet and inches. New scales have to be fixed to these but the cost of this is negligible.

Mere numerical conversion from the non-metric to the metric system is not what is required. It will also be necessary to determine the metric units for procurement and issue. The metric system is based on the principle of multiplying or dividing the basic unit by 10. In order to derive benefit from this principle, it is suggested that where purchases and issues are made in terms of numbers, the units of dozen and gross should be replaced by 10 and 100 respectively and this procedure should apply for purchasing, stocking and issue of stationery stores and thus accounts could be maintained in a convenient manner.

The Government of India have already standardized several items of manufactured stationery and forms commonly used in all Government departments. There will not be any difficulty in their manufacture with the existing machinery and equipment. The items are :

METRIC SYSTEM IN PRINTING AND STATIONERY

Description of Article	Present Size in Inches	Proposed Size
Typewriting (6 lbs)	13" × 16"	=40 gsm
Books Blank Plain Royal (in different quires) File Books, 250 guards cloth bound ..	13½" × 19½" 10½" × 14½"	A-3 i.e. 297 × 420 mm
Typewriting (3 lbs)	8" × 13"	=40 gsm
Books blank and ruled in different qrs. Draft Continuation Sheet Buff ..	8½" × 13"	A-4 i.e. 210 × 297 mm
Note Sheet Blocks in different varieties Draft Sheet pad F' cap folio	6½" × 8"	A-5 i.e. 148 × 210 mm
Books quarto-ruled, cloth bound 6 qrs. Exercise Books 64 pgs. of different varieties of Note Book, Shorthand		
Draft sheet pad F' cap folio.		

Printing Presses

It is likely that in many presses at present jobs are not being printed on such a large format as A0 (33·11 × 46·81 in. trimmed). So we have to consider the next smaller size format, A1. Double Demy formats are widely used and A1 size (23·39 × 33·11 in. trimmed) which is to replace Double Demy is slightly larger in one direction than the Double Demy (22½ × 35 in.) now in use, but most of the printing machines known as Demy, Double Demy, Quad Crown, Double Royal etc. have tolerances in both directions and manufacturers also prescribe the maximum sheet size for each of the machines built by them. It will be noticed from the data furnished below that A1 formats could be conveniently printed on most of the

machines available in our country of size Double Demy and upwards.

The question of printing A1 formats, nearly equivalent to the traditional Double Demy on any printing machines in sizes less than the Double Demy does not arise. Thus, all A1 formats should be printed on all available Double Demy size machines and also on any other bigger size machines now available. This would not necessarily mean any heavy loss of printing capacity. Besides, this position will progressively ease as existing machines of traditional sizes i.e. Foolscap, Crown, Royal, Super Royal and their multiples are gradually replaced by machines built strictly according to the metric system. Even now some presses possess continental printing machines having metric sizes.

Sl. No.	Machine	Maximum sheet size (in.)
(1)	Dawson Payne & Elliot S.W.4 Double Demy	25" × 40"
(2)	Victorial Front DF German	25" × 37½" (640 mm × 960 mm)
(3)	Rhenus ..	25" × 38"
(4)	Michle No. 4 (other sizes 1 + 3 big) Linotype & Machinery Ltd.	28½" × 40½"
(5)	Rex ..	27½" × 39½"
(6)	Superman ..	29" × 41"
(7)	Albert ..	27½" × 39½"
(8)	Grant ..	27½" × 39½"
(9)	Saturnia ..	25" × 38"
(10)	Super E I by High Speed Cylinder Verwatts V 611	29½" × 41"
(11)	Kelly—Three (George Mann & Co Ltd)	25" × 37" (63·5 cm × 94 cm)
(12)	Chuma's D'Demy C3B ..	26½" × 38"
(13)	Stop Cylinder Press, C 41, Japan	24" × 37"
(14)	Nebiole ..	25-13/32" × 36-7/32"
	Italian	
	G.M.A. TP—110	34-5/8" × 44" (880 mm × 1120mm)
	Two Rev. Sweden	

B-series paper sizes, which are to be used for some time, do not create any difficulty as the sizes B1, B2, B3 etc. correspond to Quad Crown, Double Crown, Crown etc. Similarly, however, for ready reference some of the sizes are shown below :

It will be clear that excepting Crown 8vo and Crown 4to publications, for which also special provision exists during the interim period, all the other publications and forms, if relaid very carefully to A-series, will yield exactly the same number of

(1) Dawson, Payne & Elliot Ltd.	S.W.5 Dl. Royal S.W.6 Qd. Crown	Usual Maximum Usual Maximum	25"×40" 30"×45" 30"×40" 35"×45" (890×1140 mm)
(2) Purnival Single colour Two Rev.	No. 4 Dl. Royal		28"×40½" (724×1020 mm)
(3) Harrild Otley High Speed Rev. Press in 3 sizes Demy, D' Royal, Qd. Demy 50×40	Dl. Royal	Maximum	30"×44" (762×1118 mm) 30"×42"

Certain presses have confined themselves to only one group of printing machines, namely Crown, irrespective of the fact that some of their publications have been standardized in Royal 8vo and Foolscap folio and all their forms in Royal. Foolscap and their subdivisions. There is a fear that a large portion of the printing capacity of such

pages in the forme as at present on the existing machines. So the printing capacity will not be rendered useless. Besides, the new sizes are not likely to be either too small or too large as shown already. Text-books in 5×7½ in. sizes (untrimmed) printed on such machine could be printed on B1 paper in B5 (4·9×7 in. trimmed) sizes with

Publications	Untrimmed	Trimmed
Crown 8 vo	(5"×7½") = A-5(6"×8½")	i.e. 16 pages forme of A1
Crown 4 to	(7½"×10") = A-4(8½"×11½")	i.e. 9 pages forme of A1
Royal 8 vo	(6½"×10") = A-5(6"×8½")	i.e. 16 pages forme of A1
F' cap folio	(8½"×13½") = A-4(8½"×11½")	i.e. 8 pages forme of A1
Forms		
F' cap 4to	(6½"×8½") = A-5(6"×8½")	i.e. 16 pages forme of A1
Folio	(8½"×13½") = A-4(8½"×11½")	i.e. 8 pages forme of A1
F' cap	(13½"×17½") = A-3(11½"×16½")	i.e. 4 pages forme of A1
Royal 8vo	(6½"×10") = A-5(6"×8½")	i.e. 16 pages forme of A1
Royal 4to	(10"×13") = A-4(8½"×11½")	i.e. 8 pages forme of A1
Royal folio	(13"×22") = A-3(11½"×16½")	i.e. 4 pages forme of A1
Royal	(20"×26") = A-2(16½"×23½")	i.e. 2 pages forme of A1

machines would be rendered useless. But close examination shows that if during the interim period B-series are adopted for some of the long run publications now in Crown 8vo and Crown 4to, the position would remain unaltered as regards sizes and the number of pages in a forme with their existing Crown group machines.

32 pages per forme as at present. Thus trimmed sizes as well as number of pages in a forme remain unaffected even with the existing printing machines. Some A-series metric size printing machines should be indented at the earliest possible opportunity for discarding the use of B-series paper for such publication work.

Rotaries

As regards rotaries it is presumed that most of them have a cut of 27 in. Even on such rotaries A4 (8·27×11·69 in. trimmed), A5 (5·83×8·27 in. trimmed) and A6 (4·13×5·83 in. trimmed) publications could be conveniently printed by carefully arranging the format so that the side 4·13 in. or 8·27 in. of the page runs along the web and thus with necessary up 6 or 3 as the case may be, along with trimming margins at the head and tail or fore-edge, spoilage of paper will be very little. Even otherwise, the small strip that will be available out of 27 in. cut could be utilized for printing small slips simultaneously and also for slip pads and various other work in binding branches. Thus the existing book rotary of 27 in. cut with 34 in. web will serve the purposes for which it was intended.

Chases

Chases are generally one inch larger in their inside measurements than the untrimmed size of paper. Double Demy chases now in general use have inside measurements of 23½×36 in.; so these chases will not be convenient for A1 formats. Of course, larger size chases now available with the presses could be used, but would require excessive use of imposing furniture. The immediate requirements would be to procure

chases of metric sizes. The expenditure would not be heavy.

Individual Examination Necessary

It is, however, suggested that it will be in the best interest of presses that each press should make its own arrangements for examination of their existing plant and machinery for drawing up a phased programme of replacements. It will also be necessary to have all forms, books, publications, gazettes, periodicals etc. carefully examined and relaid in metric sizes sufficiently in advance so that when paper is supplied in metric sizes there will be quick switch-over to the metric sizes.

Conclusion

It will be seen that the problems involved are not so complicated as apprehended nor is any heavy initial expenditure necessary for the switch-over excepting purchase of a few minor items such as chases, metric scales, imposing furniture etc. nor any appreciable loss of printing capacity. In most presses new and old machines have been working side by side and normal replacements are occurring regularly. So in all cases of replacements and renewals as well as expansion metric size machines should be ordered.

APPENDIX 1

Suggested Sizes of A-Series Suitable for Commercial Formats

(The sizes given in bold are the ones most commonly used)

	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
(1) Tear Off Calendar Block					A4	A5	A6	A7	A8				
(2) Tear Off Calendar Base			A2	A3	A4	A5	A6	A7					
(3) Directories (General)					A4	A5							
(4) Official Gazette					A4								
(5) Share Scrips				A3	A4	A5							
(6) Advertisement Posters	A0	A1	A2	A3									

APPENDIX 1—(contd.)

(7) Certificates ..	..	..	..	A4	A5	A6			
(8) Order Forms ..	..	..	..	A4	A5	A6			
(9) Printing Proof ..	..	..	A3	A4	A5	A6	A7		
(10) Letters (General) ..	..	..	..	A4					
(11) Half Letter Size (General) ..	..	..	..	..	A5				
(12) Books ..	..	..	..	A4	A5	A6	A7		
(13) Carbon Papers ..	..	..	..	A4	A5				
(14) Railway Time-Tables ..	A0	A1	A2	A3	A4	A5	A6		
(15) Telephone Directory ..	..	..	..	A4	A5				
(16) Scribbling Pads or Note Papers ..	..	..	..	A4	A5	A6	A7		
(17) Trade Books ..	..	..	A2	A3	A4	A5			
(18) Commercial Letter Papers ..	..	..	A3	A4	A5	A6	A7		
(19) Card Index ..	..	..	..	A4	A5	A6	A7		
(20) Catalogues ..	..	..	..	A4	A5	A6	A7		
(21) Advertising Pamphlets ..	A0	A1	A2	A3	A4	A5	A6	A7	A8
(22) Hand Bills ..	..	..	..	..	..	A6	A7	A8	A9
(23) Periodicals, Magazines ..	..	..	..	A3	A4	A5			
(24) Costing and Posting Sheets ..	..	..	..	A4	A5				
(25) Maps ..	A0	A1	A2	A3	A4	A5	A6		
(26) Patent and Standard Drawing Papers ..	..	..	..	A3	A4				
(27) Posters (Big) ..	A0	A1	A2	A3					
(28) Drawing ..	A0	A1	A2	A3	A4	A5	A6		
(29) Post Cards ..	..	..	..	..	..	A6			
(30) Newspaper ..	..	..	A2	A3	A4				
(31) Price Lists ..	..	..	..	A4	A5	A6	A7		
(32) Receipts ..	..	..	..	..	A5	A6			
(33) Instrument Record Sheets (Round) ..	..	..	..	A4	A5				
(34) Sign Boards ..	A0	A1	A2	A3	A4	A5	A6	A7	A8
(35) Pocket Note Books ..	..	..	..	..	A5	A6	A7		
(36) Sand Paper ..	..	..	..	A4	A5	A6			
(37) Instruction and Rule Sheets ..	..	..	A3	A4	A5	A6			

APPENDIX 2

Weight of Paper in Grams per Square Metre (gsm)

Code No.	Description of Article	Substance in Lbs. per Ream	Substance Converted in Grams per Sq. Metre	Substance to be Indicated i.e. the nearest gsm
(1)	(2)	(3)	(4)	(5)
WRITING PAPER				
B 001	Azure Laid D'ble Long Royal ..	88	119.02	110
B 002	Azure Laid Long Royal ..	44	119.020	110
B 003	Azure Laid Imperial ..	72	151.36	150
B 004	Azure Laid Quad F'cap ..	48	65.536	75
B 005	Azure Laid D'ble F'cap ..	34	104.176	110
B 006	Azure Laid D'ble F'cap ..	24	75.536	75
B 007	Azure Laid F'cap ..	12	75.536	75
B 008	Azure Laid 19 1/2 x 27 1/2 ..	54	137.5	130
B 009	Azure Laid Medium ..	34	115.6	110
B 010	Blue Hand Made, 18" x 21" ..	30	111.00	110
B 011	Blue Hand Made 22" x 18" ..	18	63.72	60
B 012	Blue Laid Hand Made D. F'cap ..	30	91.92	90
B 013	Blue Laid Hand Made E" x F'cap ..	15	91.92	90
B 014	Blue Laid Hand Imperial ..	72	151.36	150
B 015	Blue Laid Hand Medium ..	34	115.6	110
B 016	Blue Laid Hand Demy ..	25	89.3	90
B 017	Blue Laid Hand Super Royal ..	54	127.98	130
B 018	Blue Laid Hand Royal ..	44	119.020	110
B 019	Cream Laid D'ble F'cap ..	40	122.56	130
B 020	Cream Laid F'cap ..	10	61.28	60
B 021	Cream Laid F'cap ..	20	122.56	130
B 022	Cream Laid Demy ..	21	75.012	75
B 023	Cream Toned Hand Made 20" x 28" ..	22	55.00	60
B 024	Cream Wove Hand Made Bank Medium 18" x 23" ..	13	44.2	45
B 025	Cream Wove D'ble F'cap ..	24	75.536	75
B 026	Cream Wove F'cap ..	12	75.536	75
B 027	Cream Wove F'cap Ruled ..	12	75.536	75
B 028	Ledger Azure Laid Cambridge D'ble F'cap ..	30	91.920	90
B 029	Ledger Lancashire D'ble F'cap ..	30	91.920	90
B 030	Ledger Lancashire D'ble F'cap ..	15	45.96	45
PRINTING PAPER				
D 001	Art Double Crown ..	72	168.768	175
D 002	Art Double Crown ..	60	140.64	130
D 003	Art Double Crown ..	50	117.20	110
D 004	Art Double Crown ..	82	75.008	75
D 005	Art Double F'cap ..	40	112.56	130
D 006	Art Double F'cap ..	24	75.536	75
D 007	Art Double Medium 23" x 36" ..	68	115.6	110
D 008	Art Enamelled 13" x 10" ..	16	181.12	175
D 009	Art Enamelled 10" x 16 1/2" ..	6 1/2	140.660	130

(1)	(2)	(3)	(4)	(5)
PRINTING PAPER— <i>contd.</i>				
D 010	Art Imitation white 40×26"	80	188·20	175
D 011	Art Imitation White 40×30"	96	112·512	110
D 012	Art Imitation White 36"×23"	68	115·6	110
D 013	Art Imitation White 36"×23"	60	102·0	110
D 014	Art Imitation White 36"×23"	50	85·0	90
D 015	Art Imitation White 26½"×20½"	47	150·4	150
D 016	Art Imitation White 22½"×17½"	37	132·164	130
D 017	Art Imitation White 17×27"	43	131·752	130
D 018	Badami Double Large Super Royal	52	61·62	60
D 019	Badami Large Super Royal	26	61·62	60
D 020	Badami D'ble Long Royal	46	62·215	60
D 021	Badami Long Royal	23	62·215	60
D 022	Badami Double Demy	35	62·51	60
D 023	Badami Demy	17½	62·51	60
D 024	Badami Quad F'cap	40	61·28	60
D 025	Badami D'ble F'cap	20	61·28	60
D 026	Badami F'cap 19½×17½	10	61·28	60
D 027	Cream Wove Bank Long Royal	18	48·69	45
D 028	Cream Wove D'ble F'cap	20	61·28	60
D 029	Cream Wove 18×23"	13	44·2	45
D 030	Cream Wove Pink 18"×28"	18	61·82	60
D 031	Bleached D'ble Large Super Royal	52	61·62	60
D 032	Bleached Large Super Royal	26	61·62	60
D 033	Bleached Double Long Royal	46	62·215	60
D 034	Bleached Double Long Royal	40	54·100	60
D 035	Bleached Long Royal	23	62·215	60
D 036	Bleached Quad Crown	52	60·344	60
D 037	Bleached Double Crown	40	93·076	90
D 038	Bleached Double Crown	20	60·344	60
D 039	Bleached Double Crown	24	56·256	60
D 040	Bleached Double Crown	42	98·448	90
D 041	Bleached Double Crown	35	82·040	75
D 042	Bleached Demy	17½	62·51	60
D 043	Bleached Quad F'cap	48	75·536	75
D 044	Bleached Quad	40	61·28	60
D 045	Bleached Quad	32	49·024	50
D 046	Bleached Quad	28	42·896	40
D 047	Bleached Double F'cap	24	75·536	75
D 048	Bleached Double F'cap	20	61·28	60
D 049	Bleached Double F'cap	16	49·024	50
D 050	Bleached F'cap	10	61·28	60
D 051	Bleached F'cap Ruled	10	61·28	60
D 052	Cartridge Semi-bleached 22"×30" Imperial	60	127·8	130
D 053	Cartridge Semi-bleached 21½×28½"	57	135·09	130
D 054	Cartridge 17×27" D'ble F'cap	34	104·176	110
D 055	Cartridge White 26"×20" Long Royal	40	108·20	110
D 056	Cartridge Royal 17"×27" D'ble F'cap	34	104·176	110
D 057	Cartridge White 22½×35" D'ble Demy	64	114·304	110
D 058	Cartridge White 17½×22½" Demy	32	114·304	110

(1)	(2)	(3)	(4)	(5)
PRINTING PAPER— <i>Contd.</i>				
D 059	Cartridge White 22"×30" Imperial	62	132·06	130
D 060	Cartridge White 21½×28½"	50	114·8	110
D 061	Cartridge White 18½×28½"	84	226·80	225
D 062	Coloured Prtg. (Blue, Green, Pink, Salmon, Orange, Yellow and Mottled Grey) Large Super Royal	44	104·28	110
D 063	Coloured Prtg. (Blue, Green, Pink, Orange and Yellow) Long Royal	25	67·625	60
D 064	Coloured (Blue, Green, Pink, Orange and Yellow) Demy	15	53·58	60
D 065	Coloured Printing (Blue, Green, Pink, Orange, & Yellow) Quad F'cap	100	153·20	150
D 066	Coloured Printing (Blue, Green, Pink) F'cap	28	171·584	175
D 067	Coloured Printing (Blue, Green, Pink) D'ble F'cap	60	183·84	175
D 068	Coloured Printing (Yellow, Blue, Green, Pink) D'ble F'cap	24	75·536	75
D 069	Coloured Printing (Lt. Green, Pink) 22"×29"	84	183·12	175
D 070	Dull Enamelled Ptg. Chrome, Coated one side 35"×45"	240	214·320	200
D 071	Litho Rag. D'ble Elephant 27"×46"	67	87·1	90
D 072	Litho Rag. 22"×36"	60	106·2	110
D 073	Litho Rag. 22"×36"	48	84·96	90
D 074	Litho Rag. 17"×27"	30½	93·452	90
D 075	Rag, Bank White Wove 22"×36"	60½	110·4	110
D 076	Rag, Bank White Wove 22"×36"	57	100·89	110
D 077	Rag, Bank White Wove Imperial	38	80·94	75
D 078	Semi-bleached D'ble Large Super Royal	52	61·62	60
D 079	Semi-bleached Large Super Royal	26	61·62	60
D 080	Semi-bleached D'ble Long Royal	46	62·215	60
D 081	Semi-bleached Long Royal	23	62·215	60
D 082	Semi-bleached D'ble Crown	26	60·344	60
D 083	Semi-bleached D'ble Demy	35	61·51	60
D 084	Semi-bleached Demy	17½	62·51	60
D 085	Semi-bleached Quad F'cap	100	153·2	150
D 086	Semi-bleached Quad F'cap	48	75·336	75
D 087	Semi-bleached Quad F'cap	40	61·28	60
D 088	Semi-bleached Quad F'cap	32	49·024	50
D 089	Semi-bleached D'ble F'cap	24	75·536	75
D 090	Semi-bleached D'ble F'cap	16	49·024	50
D 091	Unbleached D'ble Large-Super Royal	52	61·62	60
D 092	Unbleached Large Super Royal	26	61·62	60
D 093	Unbleached D'ble Long Royal	26	62·215	60
D 094	Unbleached Long Royal	23	62·215	60
D 095	Unbleached D'ble Crown	26	60·344	60
D 096	Unbleached D'ble Demy	35	62·51	60
D 097	Unbleached Demy	7½	62·51	60
D 098	Unbleached Quad F'cap	40	61·28	60
D 099	Unbleached D'ble F'cap	20	61·28	60
D 100	White Wove Imperial	38	80·94	75
D 101	White Printing Super Calendered 20"×30"	27	63·288	60
D 102	White Printing Super Calendered 20"×30"	27	63·288	60
D 103	White Printing Super 20"×26"	43	91·970	90
D 104	White Printing Super Royal	41	110·905	110

(1)	(2)	(3)	(4)	(5)
PAPER OF OTHER KINDS				
E 001	Blotting White Demy	40	142.83	150
E 002	Blotting White Demy	38	135.736	130
E 003	Blotting Pink	40	142.88	150
E 004	Brown Kraft, D'ble Imperial 29"×45"	90	95.85	90
E 005	Brown Kraft, D'ble Imperial 22½"×29"	66	70.29	75
E 006	Brown Kraft, D'ble Imperial 22½"×29"	100	231.00	200
E 007	Brown Kraft, D'ble Imperial 22½"×29"	45	103.65	110
E 008	Brown Kraft D'ble Imperial 28½"×36"	38	87.78	90
E 009	Brown Kraft, D'ble Imperial 28½"×36"	156	216.84	200
E 010	Brown Kraft, D'ble Imperial 21"×26"	40	102.4	110
E 011	Brown Kraft, D'ble Imperial 17"×27"	38	116.432	110
E 012	Brown Wrapping D'ble Imperial ..	200	213.0	200
E 013	Brown Wrapping D'ble Imperial ..	97	106.3	110
F 014	Brown Wrapping Imperial	100	213.0	200
F 015	Brown Wrapping Imperial	50	110.5	110
E 016	Brown Wrapping Imperial	38	80.94	75
E 017	Brown Wrapping Imperial	30	63.9	60
E 018	Brown Wrapping Quad F'cap	80	122.56	130
E 019	Brown Wrapping Quad F'cap	72	110.304	110
E 020	Brown Wrapping Quad F'cap	40	61.28	60
E 021	Brown Wrapping Quad F'cap	127	41.364	40
E 022	Brown Wrapping Demy	60	214.32	200
E 023	Brown Wrapping Demy	30	107.160	110
E 024	Brown Wrapping 21"×26"	80	204.8	200
E 025	Brown Wrapping 21"×26"	40	102.4	110
E 026	Brown Wrapping 19"×30"	60	144.0	150
E 027	Cover Hindustan 20½"×30½" (Green, blue, pink) ..	60	130.4	130
E 046	Duplicating white absorbant Folio 13½"×8½"	6½	79.3	75
E 047	Duplicating white semi absorbant F'cap 13½"×17"	13	79.3	75
E 048	Duplicating white semi absorbant F'cap Folio 13½"×8½"	6½	79.3	75
E 049	Duplicating unbleached soft size 13½"×8½"	5	61.0	60
E 050	Manilla D'ble Imperial	97	102.82	90
E 051	Manilla Imperial	92	193.96	175
E 052	Manilla Imperial	34	72.42	75
E 053	Manilla Double long Royal	60	81.15	75
E 054	Manilla Double Demy	50	89.3	90
E 055	Manilla Azure shed Imperial	170	362.1	325
E 056	Manilla Buff D'ble Imperial	316	336.54	325
E 057	Pulp Boards Superior, Royal White	125	297.29	275
E 058	Pulp Boards Superior, white 22½"×29"	170	362.7	325
E 063	Surface coloured, double crown brown, chocolate, dark green and vermillion	30	70.32	75
E 064	Target 26"×40" (Badami and brown)	48	64.92	60
E 065	Target 26"×40" (Blue)	32	43.29	40
E 066	Target 20"×40" (Badami)	48	81.6	75
E 067	Target 20"×30" (Badami and white)	52	120.688	110
E 068	Target 38"×38" (Black, gray and ochre)	48	81.60	75
E 069	Target 26"×26" (Black)	34	71.40	75
E 070	Target 24"×28" (Buff and green)	38	79.8	75

(1)	(2)	(3)	(4)	(5)
PAPER OF OTHER KINDS—Contd.				
E 071	Target 26"×52" (Green, ochre and white)	45	47.20	45
E 072	Target 24"×48" (Gray)	36	40.60	40
E 073	Target 26"×40" (White)	40	64.1	60
E 075	Typewriting 13"×6" (Brief size)	6	40.57	40
E 076	Typewriting F'cap folio, 13"×18"	3	40.57	40
E 077	Watermarked Blue Wove D'ble F'cap (480 shts.) ..	24	75.53	75
E 078	Watermarked Cream Wove 13½"×8½" (a ream) ..	7	85.79	90

Fourth Conference of Controllers

METRIC measures of length would be introduced on an optional basis all over India from 1 October 1961 and would become compulsory after one year *i.e.* from 1 October 1962. As is now well-known use of metric weights would be compulsory in the entire country from 1 April 1962. Capacity measures have already been introduced optionally in selected areas in States and would be fully adopted by the middle of 1963.

The recommendation about length measures was made by the fourth Conference of Controllers held at Bangalore on 14-15 July 1961. The Conference was attended by the Controllers of Weights and Measures of the various States and Union Territories as also by representatives of the Ministry of Commerce and Industry, India Government Mints at Bombay and Calcutta, Ministry of Information and Broadcasting as well as Indian Standards Institution, National physical Laboratory and others.

Inauguration

The Conference was inaugurated by Shri Mali Mariyappa, Minister for Co-operation, Government of Mysore. In his inaugural address, the Minister referred to the three ages in the history of weights and measures, *viz.*, the stone age, the medieval age and the modern age. In the stone age, articles were weighed against pieces of stone. This was succeeded by the medieval or the pound and seer age when weights like the pound and seer were in vogue. The modern age began with the adoption of the metric system. This system had now been accepted in India and legislation enacted for its adoption. He praised the Controllers for the progress achieved in enforcing metric weights. He emphasized the need for publicity to make the public and the trade familiar with the new system.

Shri K. V. Venkatachalam, Joint Secretary, Ministry of Commerce and Industry, New Delhi, who presided over the Conference,

reviewing the progress achieved said that legislation to adopt the metric system was enacted in 1956. Earlier it had been anticipated that the completion of the reform of this magnitude would take about a quarter century. Parliament, however, had allowed only 10 years. There had been apprehensions that this period would be far too short. The Central and State Governments had been making efforts to complete the reform within the time-limit laid down by Parliament. All the States had enacted legislation and set up Organizations for enforcing weights and measures. Intensive publicity was being conducted both by the Central and State Governments to familiarize the people with the new system.

Continuing, he pointed out that in October 1958, metric weights were introduced in certain specified areas. The use of metric weights was not made compulsory in the beginning, 2 years being allowed for the continued use of other weights. This period ended in October 1960. The use of metric weights had become compulsory in these areas. Metric weights had come into exclusive use in the wholesale trade and to a very large extent in the retail trade as well in these areas. Most traders have purchased metric weights although some of them continued to use old weights. He hoped that it would be possible to dissuade people from using the old weights against the law without resorting to penal action.

He stressed that the metric system had come into use in Government Departments and undertakings like the Railways, Posts and Telegraphs, Customs and Excise Departments and the Ports. Major industries like cotton and jute textiles, iron and steel, engineering, sugar, cement and paper had adopted the metric system in their transactions.

He referred to certain special problems of the engineering industry. It would take quite some time to redesign products of the engineering industry to conform to the metric system. Till then, the industry would have to continue to work with drawings and specifications on the foot-pound system. This would involve the use of measuring tools and instruments in that system. Engineers and designers would, therefore, have to use both the systems side by side for some time to come. The metric system had also come into increasing use in general and technical education. He hoped that the use of metric weights and measures would be extended to the whole country well before the close of the 10-year period allowed by Parliament.

Some of the important recommendations made by the Conference are given below.

(1) State Weights and Measures Organizations

The Weights and Measures Organization in every State should be a wholetime Organization. Inspectors, Assistant Controllers, Deputy Controllers should be officers exclusively concerned with weights and measures. The possibility of laying down norms for the strength of Weights and Measures Organizations and the status and salaries of Inspectors and other officers should be explored.

(2) Enforcement of Weights

The use of metric weights in trade became compulsory in specified areas on 1 October 1960. Most traders in these areas had adopted metric weights in transactions. In certain States, however, a section of retailers including squatters and hawkers continued to use seer or pound weights side by side with metric weights. Steps should be taken to ensure that all weights other than metric weights were completely eliminated from the markets as soon as possible,

and in any case before the end of the year. The Controllers of Weights and Measures should take such steps as they think necessary for the purpose. Non-standard or unauthorized weights found in the possession of traders should be seized.

Weights seized from traders should be disposed of by auction to licensed manufacturers of weights. An essential condition for the sale should be that every weight was broken up before removal by the buyer, or alternatively, arrangements might be made to have them melted in the presence of an Inspector.

The Controllers should persuade traders in areas where metric weights were not yet compulsory, either directly or through their Associations to buy metric weights and start using them immediately. This would save the traders money and anxiety later when metric weights become compulsory all over India from April 1962. The Controllers should also make efforts to maintain the output of weights and to avoid production tailing off due to the present slackness of demand.

(3) Introduction of Metric Capacity Measures

The use of metric capacity measures had been authorised in selected areas from April 1961. In these areas, they would become compulsory from 1 April 1962. Steps should be taken to ensure the supply of commercial measures to trade in these areas. Manufacturers of measures should be encouraged to maximize their production. They would be given assistance in obtaining supplies of materials and fuels (G.P. sheets and coal). Brass sheets being in short supply in the country, manufacturers should be advised to use aluminium alloy in place of brass as far as possible.

The use of capacity measures would be authorised in further areas on 1 October

1961. In these areas, they would be made compulsory on 1 October 1962. They would be authorized in the remaining part of the country on 1 April 1962 and made compulsory on 1 April 1963.

(4) Introduction of Length Measures

The use of length measures should be authorized throughout the country from 1 October 1961. The length measures now in vogue might be allowed for a period of one year from 1 October 1961.

(5) Tank Lorries and Fees for Verification

Tank lorries should be classified as capacity measures except where there was a metering arrangement for delivering specified quantities of fuel. The metering arrangement should be classified as a measuring instrument.

(6) Verification of Taximeters and Watermeters

The Indian Standards Institution would be asked to recommend specifications and procedure for verification of these instruments for inclusion in the Rules.

(7) Permissible Errors for Prepacked Materials

The net weight has to be marked on every package which is sold by weight or measure. An Inspector may test the weight or measure of any such package to ascertain if it conforms to the quantity marked. It is necessary to specify maximum permissible errors in the net content of packages for commodities like cement, foodgrains, pulses, tea, coffee, biscuits, flour etc. The Ministry of Commerce and Industry, in consultation with the interests concerned, would suggest permissible errors.

(8) Sale of Milk by Volume or Weight

Milk is ordinarily sold in retail trade by volume, but it is common to sell it wholesale by weight. It would not, therefore, be practicable to ban the sale of milk by weight.

(9) **Manufacturers' Selling Agents in States**

A manufacturer could appoint in a State other than his own as many selling agents as he wished for the sale of his weights and measures. The stamping of these weights and measures should, however, be concentrated at specified centres designated by the Controller. The number of such centres would be decided by the Controller in his discretion.

(10) **Verification of Weights Used for Excisable Commodities**

According to the Excise Manual, such weights had to be verified by the Excise

Inspectors. This was intended to guarantee the accuracy of the weights at a time when there was neither a law nor an agency for enforcing weights and measures in the country. Now that there are such laws and special agencies for administering them, the Excise Inspectors should be divested of this responsibility. The relevant provisions in the Excise Manual should be examined and amended in consultation with the excise Commissioners.

Eleventh General Conference of Weights & Measures

(The Eleventh General Conference of Weights and Measures adopted resolutions on the definitions of the metre, second and the International System of Units. In view of their importance, a translation of the resolutions from the original French is given below.—*Editor*)

Definition of the Metre

The Eleventh General Conference of Weights and Measures,

taking into consideration:

that the International Prototype does not define the metre with a precision sufficient for the actual needs of metrology,

that it is on the other hand desirable to adopt a natural and indestructible standard, decided on 14 October 1960:

- (1) The metre is the length equal to 1650 763·73 wavelengths in vacuum of the radiation corresponding to

the transition between the levels $2p_{10}$ and $5d_5$ of the atom of krypton 86.

- (2) The definition of the metre in force since 1889, based on the International Prototype of platinum—iridium, is abrogated.

- (3) The International Prototype of the metre sanctioned by the First General Conference of Weights and Measures in 1889 will be kept at the International Bureau of Weights and Measures under the same conditions as those which were fixed in 1889.

Definition of the Unit of Time

The Eleventh General Conference of Weights and Measures,

ELEVENTH GENERAL CONFERENCE OF WEIGHTS & MEASURES

taking into consideration the power given by the Tenth General Conference of Weights and Measures to the International Committee of Weights and Measures to take a decision on the subject of the definition of the fundamental unit of time,

taking into consideration the decision taken by the International Committee of Weights and Measures in its session of 1956, ratifies the following definition:

'The second is the fraction $1/31\,556\,925\cdot974\,7$ of the tropical year for 1900 January 0 at 12 hours ephemeris time'.

International System of Units

The Eleventh General Conference of Weights and Measures,

taking into consideration resolution 6 of the Tenth General Conference of Weights and Measures, wherein it had adopted six units to serve as the basis for the establishment of a practical system of measures for international relations:

Length..... metre.....m
Mass..... kilogram.....kg
Time..... second.....s
Intensity of electric current.... ampere.....A
Thermodynamic temperature.... degree Kelvin.. °K
Luminous intensity...candela.....cd

taking into consideration resolution 3 adopted by the International Committee of Weights and Measures in 1956,

taking into consideration the recommendations adopted by the International Committee of Weights and Measures in 1958 concerning the abbreviation of the name of this system and the prefixes for the formation of multiples and submultiples of the units;

decides:

- (1) the system based on the six basic units given above be designated under the name of International System of Units;
(2) the international abbreviation of the name of this System is 'SI';
(3) the names of multiples and submultiples of the units are formed by means of the following prefixes:

Factor by which the unit is multiplied	Prefix	Symbol
$1\,000\,000\,000\,000 = 10^{12}$	.. tera	T
$1\,000\,000\,000 = 10^9$	.. giga	G
$1\,000\,000 = 10^6$	.. mega	M
$1\,000 = 10^3$	.. kilo	k
$100 = 10^2$	.. hecto	h
$10 = 10^1$	.. deca	da
$0\cdot1 = 10^{-1}$	.. deci	d
$0\cdot01 = 10^{-2}$	.. centi	c
$0\cdot001 = 10^{-3}$	.. milli	m
$0\cdot000\,001 = 10^{-6}$	.. micro	μ
$0\cdot000\,000\,001 = 10^{-9}$	.. nano	n
$0\cdot000\,000\,000\,001 = 10^{-12}$	.. pico	p

- (4) to use in this System the following units, without prejudice to other units which may be added in future.

Supplementary Units			
Plane angle		radian	rad
Solid angle		steradian	sr
Derived Units			
Area		square metre	m^2
Volume		cubic metre	m^3

Frequency	hertz	Hz	1/s
Density (mass density)	kilogram per cubic metre	kg/m ³	
Velocity	metre per second	m/s	
Velocity of rotation (rotational speed)	radian per second	rad/s	
Acceleration	metre per second squared	m/s ²	
Acceleration of rotation	radian per second squared	rad/s ²	
Force	newton	N	kg.m s ⁻²
Pressure (mechanical tension)	newton per square metre	N/m ²	
Dynamic viscosity	newton-second per square metre	N.s/m ²	
Kinematic viscosity	square metre per second	m ² /s	
Work, energy, quantity of heat	joule	J	N.m
Power	watt	W	J/s
Quantity of electricity	coulomb	C	A.s
Potential, potential difference, electromotive force	volt	V	W/A
Electric field strength	volt per metre	V/m	
Resistance	ohm	Ω	V/A
Capacitance	farad	F	A.s/V
Magnetic flux	weber	Wb	V.s
Inductance	henry	H	V.s/A
Magnetic inductance	tesla	T	Wb/m ²
Intensity of magnetic field	ampere per metre	A/m	
Magnetomotive force	ampere	A	
Luminous flux	lumen	lm	cd.sr
Luminosity	candela per square metre	cd/m ²	
Illumination	lux	lx	lm/m ²

*

ERRATUM

The following corrections may be noted in the article 'Abbreviations For Engineering Units' by J.K. Varshneya, appearing in the July 1961 issue of *Metric Measures*.

(1) page 20 Table 1 insert the following table:

TABLE-1

Abbreviations for Prefixes of Sub-multiples and Multiples of Metric Units

Prefix	Numerical value	Abbreviation
pico	10 ⁻¹²	p
nano	10 ⁻⁹	n
micro	10 ⁻⁶	μ
milli	10 ⁻³	m
centi	10 ⁻²	c
deci	10 ⁻¹	d
deca	10	da
hecto	10 ²	h

Prefix	Numerical value	Abbreviations
kilo	10 ³	k
mega	10 ⁶	M
giga	10 ⁹	G
tera	10 ¹²	T
(2) : 21	Omit 6(c)	
(3) : 21	In place of 7(a) substitute the following: 'Acceleration of rotation radian per second per second	rad/s ²
(4) : 21	From the abbreviation in 9(b) third line delete the dot after kg	
(5) : 21	For 10(b) read: centimetre ⁴	cm ⁴
(6) : 21	Item 15, last line read as tonne force per square metre	tf/m ²
(7) : 21	Item 16 line 2, substitute	kWh
(8) : 22	Item 17 read kW	

News & Views

Recent Notifications

Quintal sugar pack

No. G.S.R. 718-ESS. Com./Sugar. dated 20th May 1961.

In exercise of the powers conferred by clause 7 of the Sugar (Control) Order, 1955, as in force in India and as applied to the State of Pondicherry, and in supersession of the notification of the Government of India in the Ministry of Food and Agriculture (Department of Food) No. D.S.R. 117 Ess, Com/Sugar dated the 17th October, 1959, the Central Government hereby directs that, unless otherwise permitted by the Central Government, with effect from the 1st day of November, 1961,

- (a) all sugar manufactured by vacuum pan process shall be sold by the producer packed in new A Twill jute bags, each bag being 112 cm long and 67 cm wide and weighing 1.2 kg;
- (b) every such bag shall contain 100 kilograms sugar net;

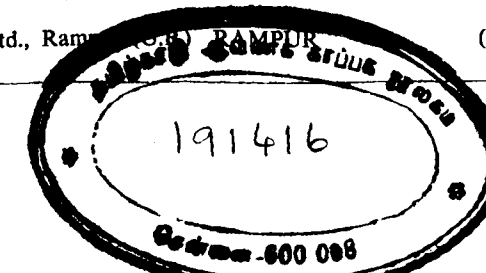
(c) every such bag shall bear on it :—

- (i) the name of the place where the producer carries on the business of manufacturing sugar by vacuum pan process;
- (ii) the quality of sugar at the time of delivery in terms of the Indian Sugar Standards in force at the time of manufacture;
- (iii) the quantitative contents of the bag; and
- (iv) the season of production of the sugar contained therein;

- (d) Each bag containing sugar manufactured at the vacuum pan sugar factories specified in column (1) below shall also bear the name of the place of manufacture and the words specified in the corresponding entries in Columns (2) and (3) respectively :—

Name of Factory (1)	Name of place of Manufacture (2)	Additional words (3)
(1) Sitalpore Sugar Works Ltd., Garaul (Bihar)	GARAUL	(SITALPORE)
(2) Maheshwari Khetan Sugar Mills Private Ltd., Ramkola (U.P.).	RAMKOLA	(MK)
(3) The Ramkola Sugar Mills Co. Ltd., Ramkola (U.P.)	RAMKOLA	(RSM)
(4) Nawabganj Sugar Mills Co. Ltd., Nawabganj (U.P.).	NAWABGANJ	(GONDA)
(5) Raza Buland Sugar Co. Ltd., Ramkola (U.P.) Raza Factory.	RAMPUR	(RAZA)

X:SR 1961



(1)	(2)	(3)
(6) Raza Buland Sugar Co. Ltd., Rampur (U.P.) Buland Factory.	RAMPUR	(BULAND)
(7) Shree Vijay Lakshmi Sugar Mills, Tanuku (A.P.).	TANUKU	(VL)
(8) The Andhra Sugar Ltd., Tanuku (A.P.)	TANUKU	(ANDHRA)
(9) The Nizam Sugar Factory Ltd., Shakarnagar Factory No. I.	SHAKARNAGAR	(NSF. I)
(10) The Nizam Sugar Factory Ltd., Shakarnagar Factory No. II.	SHAKARNAGAR	(NSF. II)
(11) The Malegaon Shakari Sakhar Karkhana Ltd., Shivnagar, Baramati (Maharashtra).	MALEGAON	(POONA)
(12) Godavari Sugar Mills Ltd., Sakarwadi (Maha- rashtra).	SAKARWADI	(GSM)
(13) Godavari Sugar Mills Ltd. Lakshmiwadi, (Maharashtra).	LAKSHMIWADI	(GSM)
(14) The Phaltan Sugar Works Ltd., Sakharwadi (Maharashtra).	SAKHARWADI	(PHALTAN)
(15) Shriram Sahakari Sakhar Karkhana Ltd., Phaltan (Maharashtra).	PHALTAN	(SHRIRAM)
(16) The Mysore Sugar Co., Ltd., Mandya (Mysore)	MANDYA	(MYSORE)

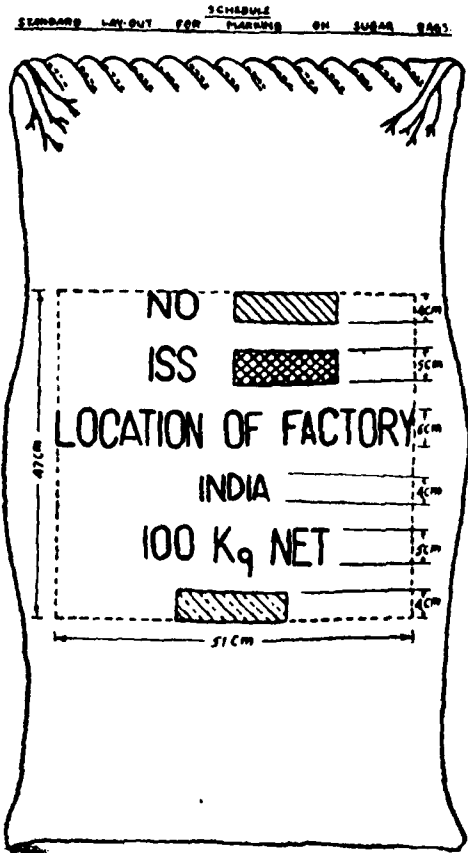
- (e) the lay out of marking shall resemble the layout set out in the Schedule attached hereto; and
(f) no particulars other than those indicated in the lay out mentioned in clause (e) shall be marked on any such bag.

Seizure of Weights

Seizure of old weights has already started in the areas where metric weights have become compulsory from October 1960. The picture given on page 27 shows illegal weights seized from Hyderabad shops.

Large number of old and illegal weights have been seized all over the country from shopkeepers who have been using them for transactions. If the owners of such weights had purchased their metric weights earlier and disposed of the old weights, they would have saved themselves the ignominy of having their weights seized.

Metric weights will become compulsory all over India from April 1962. It is to be hoped that the judicious traders will purchase metric weights much earlier than April 1962 and do away with their old weights well in advance of that date.

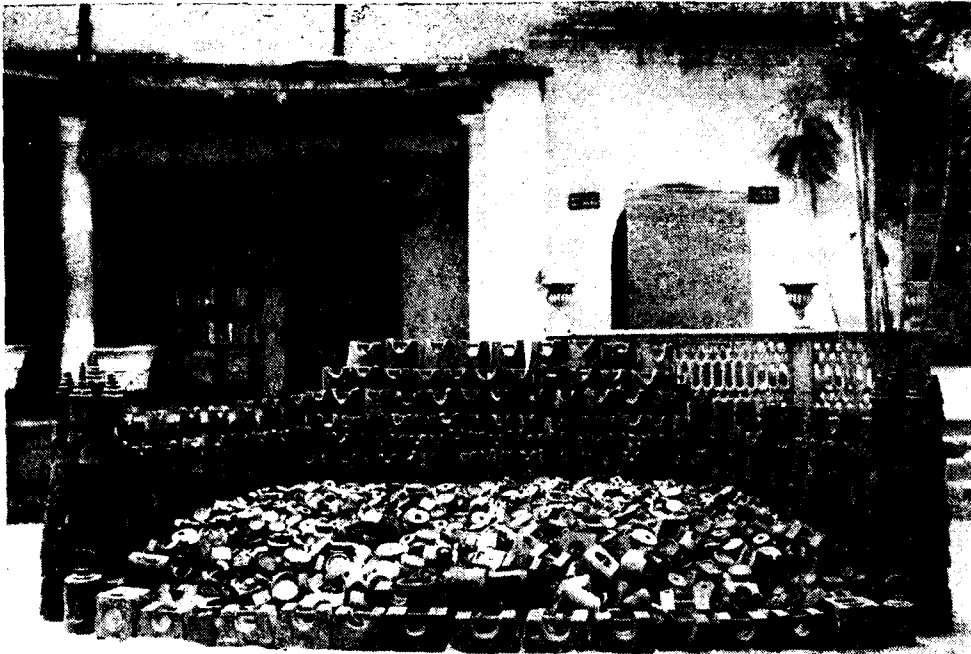


NOTE: THE MATTER IN SHADY RECTANGLES WILL HAVE TO BE MARKED AS REQUIRED. THE REST CAN BE LEFT UNMARKED BEFORE HAND.

LEGEND:

- Hatched pattern: SERIAL AND/OR LOT NUMBER
- Dotted pattern: QUALITY IN TERMS OF INDIAN SUGAR STANDARDS

STAMP OF PRODUCTION



Non-Metric Weights Seized in Hyderabad

ECM and Metrology

Bulletin Belge de Metrologie, May 1961 reports that Chiefs of Legal Metrology Departments of the six Common Market countries, grouped under the name of 'College des Six', held their fourth meeting at Brussels on 21 and 22 February 1961. They continued their examination of the best way to ensure elimination of obstacles resulting from the present or future disparities in the laws, decisions and orders on legal metrology.

The Director of the International Bureau of Legal Metrology took part in this meeting. The Governments committed to the Treaty of Rome are also members of the International Organisation Legal of Metrology; they should, therefore, endeavour to bring about harmony not only among the Common Market countries but also aim at unification at the international level. The two objects

are reconcilable if the pursuit of the latter does not retard the realization of the former.

The next meeting will be held in Brussels in mid-September 1961. It will be accompanied by a meeting of weighing instrument experts from the six countries.

The meeting following that will be held in Rome early in 1962 and the Presidency and the Secretariat will then pass to Italy.

According to the rules in force in the 'College des Six', the Presidency is held by the Head of the Department of the Country in which the meeting takes place, and the Secretariat by one of its collaborators, till the 'College' meets in another country.

Weights and Measures in Israel

The Annual Report of the Weights and Measures Section on the Ministry of Commerce and Industry, State of Israel, for the

period 1 April, 1960 to 31 March, 1961 makes interesting reading.

During the year 1,172 length measures, 3,002 measures of capacity, 790 measuring pumps, 94,472 weights and 19,761 weighing machines were verified giving a grand total of 119,197. Over 4,800 weighing machines which were newly verified were almost all produced locally in Israel. There has been a continuous increase in the average revenue per instrument during the last 10 years as more instruments for which higher fees are charged have been verified than weights etc., for which low fees are charged.

The Department instituted legal action in 267 cases and obtained convictions in 263 of them. The possession for use in trade of false instruments accounted for the largest number of charges followed by possession for use in trade of non-verified and unstamped instruments and negligence in offering instruments for re-verification.

The main offence in respect of false instruments was possession, for use in trade, of self-indicating weighing machines which were not properly balanced and indicated weight to the prejudice of the buyer. In these cases it is almost impossible to prove whether there was intent on the part of the user or negligence. As, however, in most of the cases of out-of-balance condition in these scales the false weight indication is to the buyer's disadvantage legal action against the users appears to be unavoidable.

An interesting feature is that in cooperation with other units of the Ministry, Inspectors of Weights and Measures were active in the following fields :

- (1) Inspection of the capacity of glasses used in kiosks for the sale of soft drinks.
- (2) Inspection of the weight of pre-packed articles of food.

- (3) Inspection of the quantities of kerosene sold by kerosene vendors.
- (4) Inspection of the areas of surfaces of leather.
- (5) Weighing of articles of food in cold stores.

Stainless Steel for Standard Weights

Materials Research & Standards, volume 1, number 1, January 1961, issued by the American Society for Testing Materials has published a paper by S. J. Rosenberg and T. P. Royston in which the authors have given an account of a stainless steel they have developed for standard weights. The stainless steel satisfies the requirements of a good material for use as a mass standard, namely, that it should be corrosion-resistant, nonmagnetic, and have a density of 8.4 g per cm³. They believe that the following desired composition and composition range would be suitable for standard weights, subject to experimental determination of mass constancy :

			Composition, per cent	
			Desired	Range or Maximum
Carbon	..	..	0.10	0.20 max
Manganese	..	..	1.70	2.00 max
Phosphorus	..	..	—	0.040 max
Sulphur	..	..	—	0.030 max
Silicon	..	..	1.25	1.60 max
Chromium	..	..	16.5	15.5 to 17.5
Nickel	..	..	32.5	31.5 to 33.5
Tungsten	..	..	9.5	9.0 to 10.0

Units for Trading in Oilseeds and Oils

It is understood that the Central Organisation for Oil Industry and Trade, Bombay, have recommended that, as a first step towards achieving uniform all-India standards in units of price quotation, units of trading and units of packing under the metric system, prices of oilseeds, oils and oilcakes should

READERS' FORUM

be quoted on a uniform basis throughout the country. They have recommended, after inviting suggestions from the Associations concerned with oilseeds trade and industry that the following units should be adopted :—

Oilseeds	100 kg
Oils	10 kg
Oilcakes	100 kg

However, as regards uniformity in units of trading and packing, the Organisation has expressed the view that though it is desirable to introduce it, its actual adoption may be considered later as a second step in the direction.

Converting Recipes

During the 4th Conference of Controllers, Shri A. A. J. Gomez, Mint Master, Bombay, suggested a novel way of converting cooking

recipes. If the recipe is given in terms of pounds and ounces, assume the pound to be replaced by the kilogram and convert other quantities accordingly. For example, 8 ounces would become 500 grams, 4 ounces 250 grams and so on. One ounce would then be replaced by 62.5 grams, but little harm would be done by rounding it off to 60 grams. He cautioned, however, that before preparing the dish according to this converted recipe, it should be remembered that the quantity would be about 2½ greater than that obtained on the pound basis. It may be reduced proportionately to suit requirements.

If the recipe is given in terms of the seer, there would be no trouble of conversion: simply replace the seer by the kilogram and so on. The extra amount is only 1 in 14.

Readers' Forum

Easy Conversion Tables

(Shri G. S. Sharma, Inspector of Weights and Measures, Narasipatnam, has sent the following tables for easy understanding of the metric system for the common man. Since the tables are interesting, they are published below—Editor.)

(1) Pay by Metric Weights only

Instead of one seer buy 1 kg or 1000 grams (g)	
(80 tolas)	buy 500 g
Instead of ½ seer	buy 200 g
(40 tolas)	buy 100 g
Instead of ¼ seer	buy 50 g
(20 tolas)	buy 20 g
Instead of 1/16 seer	buy 10 g
(5 tolas)	
Instead of 1/32 seer	
(2½ tolas)	
Instead of 1/64 seer	
(1½ tolas)	

Pay in Naye Paise only

If one seer is	Re. 1.00	one kg is	Rs. 1.07
If ½ seer is	Re. 0.50	500 g is	Re. 0.54
If ¼ seer is	Re. 0.25	200 g is	Re. 0.21
If 1/8 seer is	Re. 0.13	100 g is	Re. 0.11
If 1/16 seer is	Re. 0.07	50 g is	Re. 0.06
If 1/32 seer is	Re. 0.04	20 g is	Re. 0.02
If 1/64 seer is	Re. 0.02	10 g is	Re. 0.01

1 Kilogram (kg). = 1000 grams (g)

(2) <i>Buy by Metric Weights only</i>		<i>Pay in Naye Paise only</i>			
Instead of one viss (120 tolas)	buy 1 kg or 1000 g	If one viss is Re. 1.00	one kg is Re. 0.72		
Instead of $\frac{1}{2}$ viss (60 tolas)	buy 500 g	If $\frac{1}{2}$ viss is Re. 0.50	500 g is Re. 0.36		
Instead of $\frac{1}{4}$ viss (30 tolas)	buy 200 g	If $\frac{1}{4}$ viss is Re. 0.25	200 g is Re. 0.14		
Instead of $\frac{1}{8}$ viss (15 tolas)	buy 100 g	If $\frac{1}{8}$ viss is Re. 0.13	100 g is Re. 0.07		
Instead of 1/16 viss (7½ tolas)	buy 50 g	If 1/16 viss is Re. 0.07	50 g is Re. 0.04		
Instead of 1/32 viss (3¾ tolas)	buy 20 g	If 1/32 viss is Re. 0.04	20 g is Re. 0.01		
Instead of 1/64 viss (1.87 tolas)	buy 10 g	If 1/64 viss is Re. 0.02	10 g is Re. 0.01		
(3) <i>Buy by Metric Weights only</i>		<i>Pay in Naye Paise only</i>			
Instead of one lb. (40 tolas)	buy 500 g	If one lb. is Re. 1.00	500 g is Rs. 1.10		
Instead of $\frac{1}{2}$ lb. (20 tolas)	buy 200 g	If $\frac{1}{2}$ lb. is Re. 0.50	200 g is Re. 0.44		
Instead of $\frac{1}{4}$ lb. (10 tolas)	buy 100 g	If $\frac{1}{4}$ lb. is Re. 0.25	100 g is Re. 0.22		
Instead of $\frac{1}{8}$ lb. (5 tolas)	buy 50 g	If $\frac{1}{8}$ lb. is Re. 0.13	50 g is Re. 0.11		
Instead of 1/16 lb. (2½ tolas)	buy 20 g	If 1/16 lb. is Re. 0.07	20 g is Re. 0.04		
Instead of 1/32 lb. (1¼ tolas)	buy 10 g	If 1/32 lb. is Re. 0.04	10 g is Re. 0.02		
(4) <i>Buy by Metric Weights only</i>		<i>Pay in Naye Paise only</i>			
Instead of 1 tola	buy 10 g	If one tola is Re. 1.00	10 g is Re. 0.87		
Instead of $\frac{1}{2}$ tola	buy 5 g	If $\frac{1}{2}$ tola is Re. 0.50	5 g is Re. 0.44		
Instead of $\frac{1}{4}$ tola	buy 2 g	If $\frac{1}{4}$ tola is Re. 0.25	2 g is Re. 0.18		
Instead of $\frac{1}{8}$ tola	buy 1 g	If $\frac{1}{8}$ tola is Re. 0.13	1 g is Re. 0.09		
Instead of 1/16 tola	buy 500 milli-grams(mg)	If 1/16 tola is Re. 0.07	500 mg is Re. 0.05		
Instead of 1/32 tola	buy 200 mg	If 1/32 tola is Re. 0.04	200 mg is Re. 0.02		
Instead of 1/64 tola	buy 100 mg	If 1/64 tola is Re. 0.02	100 mg is Re. 0.01		
Instead of 1/128 tola	buy 50 mg	If 1/128 tola is Re. 0.01	50 mg is Re. 0.01		
		1 Kilogram (kg) = 1000 grams 1 gram = 1000 milligrams			
(5) <i>Buy by Metric Measures only</i>		<i>Pay in Naye Paise only</i>			
Instead of one yard	buy 1 metre or 100 cm	If one yard is Re. 1.00	one metre is Rs. 1.09		
Instead of $\frac{1}{2}$ yard	buy 50 cm	If $\frac{1}{2}$ yard is Re. 0.50	50 cm is Re. 0.55		
Instead of $\frac{1}{4}$ yard	buy 20 cm	If $\frac{1}{4}$ yard is Re. 0.25	20 cm is Re. 0.25		
Instead of $\frac{1}{8}$ yard	buy 10 cm	If $\frac{1}{8}$ yard is Re. 0.13	10 cm is Re. 0.13		
Instead of 1/16 yard	buy 5 cm	If 1/16 yard is Re. 0.07	5 cm is Re. 0.07		
Instead of 1/32 yard	buy 2 cm	If 1/32 yard is Re. 0.04	2 cm is Re. 0.03		
Instead of 1/64 yard	buy 1 cm	If 1/64 yard is Re. 0.02	1 cm is Re. 0.02		

Quiz On Metric Weights

(Shri J. K. Varshneya, Deputy Director (Metric), National Buildings Organisation, New Delhi has sent the following quiz on metric weights. It is hoped that the readers find it interesting.—*Editor.*)

How conversant are you with metric units, abbreviations and conversion factors? Answer the following questions and rate yourself:

(1) What are the abbreviations of the following prefixes of metric units?

- (a) Micro
(b) Centi
(c) Deca
(d) Mega

(2) What is the numerical value of the following prefixes of metric units?

- (a) Milli
(b) Deci
(c) Hecto
(d) Kilo

(3) How long is—

- (a) Micron
(b) Nautical mile (international)

(4) What is an are?

(5) What are the abbreviations of—

- (a) Quintal
(b) Metric carat
(c) Metric tonne

(6) How many kilograms are there in a

- (a) Quintal
(b) Metric tonne

(7) What is the metric equivalent of

- (a) Pound
(b) Gallon
(c) Mile

(8) How many milligrams are there in a metric carat?

(9) What is the metric equivalent of—

- (a) Tola
(b) Chhatak
(c) Seer
(d) Maund

(10) What is the net weight of cement in a cement bag?

Answers

(1) (a) μ (b) c (c) da (d) M.

(2) (a) 10^{-3} (b) 10^{-1} (c) 10^2 (d) 10^3

(3) (a) 10^{-6} metre (b) 1852 metres

(4) 100 square metres.

(5) (a) q (b) c (c) t.

(6) (a) 100 (b) 1,000

(7) (a) 0.454 kilogram (b) 4.55 litres (c) 1.61 kilograms

(8) 200 milligrams

(9) (a) 11.66 grams (b) 58.32 grams (c) 0.933 kilogram (d) 37.32 kilograms.

(10) 50 kg.

Standards News

(Indian Standards which have a particular bearing on the change-over to the metric system are indicated here. Copies would be available from the Indian Standards Institution, Manak Bhavan, 9 Mathura Road, New Delhi or their Branch Offices at Bombay, Calcutta and Madras)

Draft Indian Standard for Mild Steel Wire Rod for Machine Screws

On the recommendation of the Tariff Commission, Government of India, the Indian Standards Institution has prepared a draft specification for mild steel wire rod

for the manufacture of machine screws (by cold heading process).

The draft standard covers the requirements of mild steel wire rod up to 20 mm diameter suitable for the manufacture of machine screws by the cold heading process.

This draft standard will be shortly circulated to interested producers, consumers, and technologists for eliciting technical comments.

Draft Indian Standard for Butter Tins

The Indian Standards Institution has prepared a draft Indian Standard specification for butter tins, which prescribes the requirements of round open top containers manufactured from tinplate for packing 200 grams and 400 grams.

The draft standard has been prepared at the instance of the Union Ministry of Food and Agriculture with the object of ensuring good quality of the product to the consumer as well as rationalizing the sizes and dimensions of tins in metric units and simplifying large variety of containers. This rationalization and simplification is expected to result in overall economy and assist in standardization work in the allied industries.

The draft standard will shortly be put into wide circulation to all interests concerned for eliciting technical comments.

Draft Indian Standard for Test Sieves (IS: 460-1953)

The Indian Standards Institution has prepared a draft revision of IS : 460—1953 Indian Standard specification for test sieves, which lays down aperture widths of both fine and coarse test-sieves.

The standard was first issued in 1953 and contained quantities in fps system of units. However, in accordance with the decision of the Government of India to switch over to the metric system of units, revision of the standard has been necessitated to give the quantities and dimensions in metric system of units.

The revised draft will shortly be circulated to the interests concerned for eliciting comments.

Indian Standard for Metric Values in Standards (IS: 1722-1960)

The Indian Standards Institution has just published an Indian Standard guide for specifying metric values in standards (IS :

1722—1960). The standard is intended to provide guidance in resolving technical problems concerned with determining and specifying values in terms of the metric system while preparing new standards or converting the existing standards to the metric system.

Pursuant to the decision of the Government of India to adopt the metric system for all weights and measures before December 1966, it has become necessary to convert all existing standards as well as write all new standards in this system. In carrying out this task, many problems are met with, requiring adjustment and co-ordination with the existing practices, within the changing pattern of industry. While no general guide can be laid down for solving the organizational type of problems in switching over to the metric system, an attempt has been made in this guide keeping in view different types of difficulties that one has to come across.

Price: Rs. 3.50

Indian Standard Specification for Precision, and Turned Hexagonal Bolts (6 to 39 mm) with Nuts and Hexagonal Screws (6 to 39 mm) (IS: 1364-1960)

The Indian Standards Institution has just published IS : 1364—1960 specification for precision, and turned hexagonal bolts (6 to 39 mm) with nuts and hexagonal screws (6 to 39 mm), covering the requirements of such bolts and screws of coarse and fine pitches.

This standard belongs to a series of Indian Standards on threaded fasteners, three other Indian Standards in the series having already been published.

Price: Rs. 2.00

Indian Standard Specification for Sheet Metal Rain-Water Pipes upto 100 mm Nominal Size, Gutters, Fittings and Accessories (IS:1728-1960)

The Indian Standards Institution has just published IS : 1728—1960 specification for sheet metal rain-water pipes up to 100 mm

nominal size, gutters, fittings and accessories, which lays down requirements regarding material, shape and dimensions, workmanship, finish, sampling and testing of such articles.

The standard specification for these pipes and gutters will be a valuable guide, specially to the user in specifying his requirements and this standard which covers galvanized sheet metal rain-water pipes, gutter, fittings and accessories, is intended to serve that purpose.

Price: Rs. 3.00

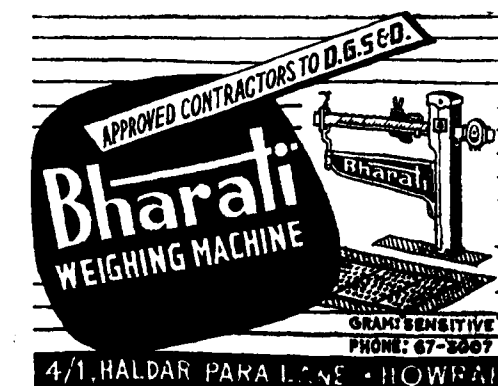
Indian Standard Method Gauging of Petroleum and Liquid Petroleum Products (IS: 1518—1960)

For the purpose of laying down a standard method for gauging of petroleum and liquid petroleum products in tanks, ships and

barges, tank trucks, and pipe-lines, the Indian Standards Institution has just published an Indian Standard method on the subject (IS : 1518—1960).

Accurate gauging of bulk quantities of petroleum and liquid petroleum products is essential for stock accounting, loss control, custom and excise purposes and for blending and similar operations. Methods of measuring the quantity of the material received, stored, delivered or transferred vary with the type of product and construction of the container. The directions given in this standard, therefore, lay down the procedure to be adopted for determining the volume of the material in any of the different types of containers normally employed for the bulk storage of petroleum and liquid petroleum products.

Price: Rs. 8.00



Licensed Manufacturers, Dealers and Repairers of Weights and Measures(15)

Metric Measures has been publishing a series of lists of manufacturers, dealers and repairers of weights and measures, weighing and measuring instruments licensed by the Governments in the various States and Union Territories under their Weights and Measures (Enforcement) Acts in their respective jurisdictions. This is the fifteenth list. The first list appeared in the March 1959 issue.

Progressively steps are being taken for licensing manufacturers, dealers and repairers in all States and further lists of licensees would be published in *Metric Measures* as this work progresses.

The number in brackets against the name of the State or Union Territory indicates the particular instalment number of the State or the Union Territory. The issues of *Metric Measures* in which previous lists appear are also shown suitably.

An analysis of the licensees, including the present list, shows that the total number of licensees in 14 States and 3 Union Territories is 843 manufacturers, 2,690 dealers, and 615 repairers. The details of published information are as follows :—

Sl. No.	State/Union Territory	Licensees		
		Manu- fac- turers	Dealers	Re- pairers
1.	Andhra Pradesh ..	40	84	31
2.	Assam	11	44	16
3.	Bihar	20	69	34
4.	Delhi	22	76	19
5.	Gujarat	83	404	105
6.	Himachal Pradesh ..	1	7	1
7.	Kerala	18	283	34
8.	Madhya Pradesh ..	99	310	4
9.	Madras	79	210	37
10.	Maharashtra	60	163	106
11.	Mysore	75	399	41
12.	Orissa	14	17	1
13.	Punjab	32	128	25
14.	Rajasthan	16	69	18
15.	Tripura	1	5	0
16.	Uttar Pradesh	207	222	88
17.	West Bengal	65	200	55
		843	2,690	615

LICENSED MANUFACTURERS, DEALERS & REPAIRERS OF WEIGHTS & MEASURES (15)

ANDHRA PRADESH (4)

The following is a list of Licenced Manufacturers, Dealers and Repairers of Weights and Measures of the year 1961 to whom licences have been renewed and granted under the Andhra Pradesh Weights and Measures (Enforcement) Act, 1958.

Manufacturers.

Sl. No.	Name and Address of Manufacturer	Details of Articles manufactured
(1)	Avery Co. of India (P) Ltd., Hide Road Extension, Alipur, Calcutta	Weights, Measures, Weighing and Measuring Instruments.
(2)	Bhagwannarayana Iron Balance Works, Dowlaishwaram, East Godavari	Beam Scales.
(3)	Bharat National Foundry, Motia Khan, Delhi	Weights.
(4)	Central Metal Works, Feel Khana, Hyderabad	Brass Weights and Litre Measures.
(5)	Deccan Porcelain and Enamel Works, Bakaram, 2707, Murshidabad, Hyderabad.	Weights and Measures.
(6)	Deccan Moulding and Steel Works, Vidyanagar, Addikamet, Hyderabad	Weights.
(7)	Hercules Engineering Works, Udhyognagar, Bombay-22 ..	Counter Scales, Spring Balances.
(8)	Hilal Consumer Goods Manufacturing Works, Joshi, Begum Decar, Hyderabad	Litre Measures.
(9)	Hyderabad Iron and Steel Works, Industrial Area, Azamabad, Hyderabad	Weights.
(10)	S. K. Industries, Bakaram, Murshidabad, Hyderabad ..	Weights.
(11)	S. & P Industries, Factory Unit Industrial Estate, Warangal	Weights.
(12)	Jaya Krishna Industrial Works, 3/236, Kottapata Street, Post Office, Dowlaishwaram, East Godavari	Beam Scales.
(13)	Krishna Iron Works, Dowlaishwaram, East Godavari ..	Beam Scales.
(14)	Lucky Weight Works, Charkavman, Hyderabad	Weights.
(15)	Luhar Mulji Naran, Savarkundla, Sarashtra, Saurashtra	Beam Scales
(16)	Luhar Jiva Gopal, Savarkundla, Saurashtra	Beam Scales.
(17)	Marwadi Moulding Factory, Kasaratta Road, Hyderabad-2	Cylindrical Dipping type Measures (100 ml to 500 ml).
(18)	A. M. Master & Co., 179-81, Janjekar Street, Bombay-3	Beam Scales and counter machines.
(19)	Misri Lal Moti Lal, Old Top Khana Road, Osmanganj, Hyderabad	Brass Weights, Linear Measures & Weighing Instruments.
(20)	Majestic Metal Works, Mithka Shair, Begum Bazar, Hyderabad	Brass Weights and Litre Measures.
(21)	National Iron Foundry, Moti Lal Nehru Road, Agra ..	Cast Iron and Brass Weights.
(22)	National Moulding Factory, 1-7-741, Mushirabad, (Near Badi Masjid) Hyderabad	Weights.
(23)	Om Industries, 1-2-539, Azamabad, Hyderabad	Weights.
(24)	Oriental Metal pressing Works (P) Ltd., 131, Worli, Bombay-13	Weights Measures, and Measuring Instruments.
(25)	Panduranga Engineering Works, Tadapatri Anantapur	Weights.
(26)	Pappu Varakayya & Sons, Dowlaishwaram, East Godavari	Beam Scales.
(27)	Pappu Veerana & Sons, Dowlaishwaram, East Godavari	Beam Scales and Cast Iron Weights.
(28)	Ranganayaka Iron Works, Mani Dowlaishwaram, East Godavari	Beam Scales.
(29)	Ravi Engineering Co. 81/1, Rajpur Road, Dehra Dun ..	Weighing Instruments, Weigh Bridges Dormant Machines Platform Weighing Machines, Counter Scales.
(30)	Sadanand Engineering Works, Azamabad, Mushirabad, Azamabad	Cast Iron & Brass Weights.

Manufacturers (Contd.)

Sl. No.	Name and Address of Manufacturer	Details of Articles manufactured
(31)	Safe Scale Co., 22-6-242, Miralam Mandi, Hyderabad	Weights.
(32)	Saraswathi Iron Balance Works, Dowlaishwaram, East Godavari.	Weighing Instruments (Scales).
(33)	Shivarama Engineering Works, Guntur	Weights.
(34)	Sitarama Engineering Works, Dowlaishwaram, East Godavari.	Beam Scales.
(35)	Star Metal Works, Begum Bazar, Hyderabad	Litre Measures.
(36)	Surya Engineering Works, Industrial Estate, Warangal	Weights.
(37)	Swamy Engineering Works, Dowlaishwaram, East Godavari	Beam Scales.
(38)	Venkateswara Light Casting Works, 1-7-176, Bakaram, Hyderabad.	Weights.
(39)	M. Vinayak Metric Moulding Works, Hari Bouli, Chouraha, Mogalpur, Hyderabad. No. 23-2-197.	
(40)	Watan Weight Works, Shop No. 22-6-132, (Prop. M.A. Raheim) Machlikaman, Hyderabad.	Weights.

DEALERS

Dealers Licensed for Weights and Measures, Weighing and Measuring Instruments

(1) Avery Co. of India (P) Ltd., 889/Imperial Post Office Road, Hyderabad.	(18) Deccan Porcelain and Enamel Works, Post Box No. 3, Bakaram, Mushirabad, Hyderabad-20.
(2) Anjaneya Weights and Measures Depot., Vinayaka Street, Tenali, Guntur Dist.	(19) Dawood Baiz, Shop No. 58, Pattabi Market, Mushlipatam, Krishna Dist.
(3) Annavarapu Rama Subha Rao, Gandhi Chowk, Tenali, Guntur Dist.	(20) Everest & Co., Almdi Bazar, Nizamabad Dist.
(4) Amara Subha Rao, Venkata Rao & Co., Morrispet, Tenali, Guntur Dist.	(21) Gelli Krishna Murthy Firm, Mani Road, Vijayawada, Krishna Dist.
(5) K.S. Acharya, Murali Printers, Kadiri, Anantapur Dist.	(22) Guntur Town Rice Dealers Association, Kanyaka Prameshwari Street, Guntur Dist.
(6) Abdul Aziz Sons, Hardware Merchant, Adoni, Kurnool Dist.	(23) Hardware Merchant, (Prop. Chitkashi Vishvanadham Narshimloo), Nirmal.
(7) Abdul Kareem Manyar, Iron Fabricator & Hardware Merchant, Adoni, Kurnool Dist.	(24) Industrial and Agricultural Engineering Company, (Hyderabad) Ltd., Gunfoundry, Hyderabad.
(8) Bombay Scale Works, Barketpura, Nizamabad.	(25) Jamshed Iron and Steel Co., Siddiamber Bazar, Hyderabad.
(9) Bombay Hardware Stores, 15-1-511, Siddiamber Bazar, Hyderabad.	(26) Jaya Metric Stores, 33/2, Netaji Chowk, Jaggayapet, Krishna Dist.
(10) Bombay Scale Adjusting Centre, 22-7-490, Purani Haveli, Hyderabad.	(27) K. Jagganadha Rao, 11/100, Main Road, Visakhapatnam Dist.
(11) K. Basawaraj, Weights and Measures, Dealer, Railway Feeder Road, Yellimanchelli, Visakhapatnam Dist.	(28) J. Joseph, Mandi Bazar, Warangal.
(12) S. Chenariah, S/o Kishtiah, Gunj Bhongir, Nalgonda Dist.	(29) Karana Venkatachalam, Jammala Madugu, Cuddapah Dist.
(13) Chandura Gopala Krishna, Murthy, Repalli Taluk, Guntur Dist.	(30) Kesari Hardware Stores, Tilak Road, Guddvada, Krishna Dist.
(14) Chittuluru Padma Venkata Subbaiah & Co., 18/138, Rasool Bazar, Kurnool Dist.	(31) Konnadula Venkatagiri, Agraharam, Guntur Dist.
(15) Cheethirala Subbairamiah Gupta, Proddatur, Cuddupah Dist.	(32) Kota Pulliah & Sons, 23-12-41, Hazarivari Street, Eluru Bazar, Guntur Dist.
(16) Co-operative Marketing Society, Armur Taluk Nizamabad Dist.	(33) K. Krishna Murthy, Kankipada, Post Office Vijayawada, Guntur Dist.
(17) Chaudur, Sambiah, Pachipulu Suvari Lane, Guntur.	(34) K. Krishnamurthy, Old Beet Bazar, Warangal
	(35) Lakshmi Iron Stores, 14/175, Main Road, Hardware Merchant, Gudivida, Krishna Dist.

Dealers (Contd.)

Dealers Licensed for Weights & Measures, Weighing and Measuring Instruments

(36) Manohare Metric Weights (Prof. G. Yerraswamy) 143/40/Nersingraopet, Kurnool.	(61) Syed Mohiuddin, Market Road, Mahboobnagar Dist.
(37) Markandeylu, M. Kohiah & Co., Broker Bazar, Guntur Dist.	(62) Syed Nadeem Bakaram, Murshidabad, Hyderabad.
(38) Majestic Metal Works Opp : Mittikashar, Begum Bazar, Hyderabad.	(63) Tammanna Bapaniah & Sons, Coir Ropes, Etc., Merchant, Main Bazar, Vijayawada, Krishna Dist.
(39) Mante Subha Rao, Bhimavaram, West Godavari.	(64) Safe Scale Co., 22-6-242, Miralam Mandi, Hyderabad.
(40) Metric Stores (Prop. Grandhi Chanchiah), Kotla Bazar, Chirala, Guntur Dist.	(65) T. Suryanarayan Rao, Mangalagiri, Guntur Dist.
(41) R. Mohan & Bros., Purani Haveli, Hyderabad.	(66) M. S. Sanyasiah & Co., Main Road, Hardware Merchant, Visakhapatnam Dist.
(42) Mohd. Yousuf and Bros., 9/72, Mandi Bazar, Warangal.	(67) Syed Hussain Scale Centre, 2-10-86, Shah Bazar, Market Road, Mahboobnagar.
(43) Paluri Narayana Murthy, Iron & Steel Merchant, Railway Station Road, Visakhapatnam.	(68) Syed Ibrahim, Kothaguda, Suryapet, Nalganda Dist.
(44) Pappu Veerana & Sons, Dowlaishwaram, Dist. Godavari.	(69) C. Saryanarayana & G. V. Satyanarayana & Co., Main Bazar, Vijayawada, Krishna Dist.
(45) Paramount Scale Centre, 22-8-430 Purani Haveli, Hyderabad.	(70) B. V. Subrahmanyam Sresti, Bapatla, Guntur Dist.
(46) N. Prabhakara Rao, Tilak Road, (Old Town) Gudivida, Krishna Dist.	(71) Swamy Alavelu Industries, Razole Taluk, East Godavari.
(47) Prakash & Co., 12-1-111, Main Road, Narasaraopet, Guntur Dist.	(72) Telangana Scale Adjusting Centre, Prop. Mohd. Mahboob Ali, Sardar Road, Sadasivepet, Madak Dist.
(48) Pullah Khanduan Pulliah, Son Firm, Kaman Bazar, Khamman.	(73) Union Agency, 4, Vulugandamvari Street, Kothapet.
(49) Raghu Cottage Industries, Main Road, Bapatla, Guntur Dist.	(74) United Weights & Measures, Mittikashar, Begum Bazar, Hyderabad.
(50) T. Rajesham, Mandi Bazar, Warangal.	(75) K. Vereriah, Afzal Gunj, Hyderabad.
(51) Rameshchandra Amrutalal, Ward 13, Door No. 640, Shroff Bazar, Adoni, Kurnool Dist.	(76) K. Veeranjaneya Vara Prasad Rao, Kothapet, Tenali, Guntur Dist.
(52) Ravi Krishiah, Chintalappa Street, Tadpatri, Anantapur Dist.	(77) Vetcha Gangaraj Sons, 18/245, Main Road, Rajahmuni, Vishwanatham, South Street.
(53) Sadanand Engineering Works, Industrial Area, Plot No. 19/1, Azamabad, Mushirabad, Hyderabad.	(78) Veakadara Subha Rayadu Chetty & Co., 17/20, Meady Bazaar, Cuddapah Dist.
(54) T. Shankar Rao, Gautalama Street, Guntur Dist.	(79) Venkonda, Guntur Dist.
(55) Sivarama Engineering Works, K.M.S. Gupta, P. A. Choudry & Co., Post Box No. 116, Sangadiganta, Guntur.	(80) Vijaya Iron Mart, Main Bazar, Adoni, Kurnool Dist.
(56) Scale Adjusting Services, Topkhana Khadeem, Osmangunj, Hyderabad.	(81) Vijaya Weights and Measures (Prop. B. V. Ramaiah), Bungalow Road, Alagapada, Post Office, Kurnool Dist.
(57) Shaik Aziz Mohiuddin, Iron Manufacturing Works, Harding Street, Ongole, Guntur Dist.	(82) Vuruturi Gopala Krishnaiah, Proddatur Cuddapah Dist.
(58) Shaik Abdul Wahab, Wahab Chowk, Tenali, Guntur Dist.	(83) Weighing Instrument and Measuring Instruments, (Prop. Racharla Rama Rao), Netaji Chowk, Jaggayapet, Krishna Dist.
(59) Saggi Venkattarayana Chitty & Co., Jewellers, Diamond Hall, Nandyal, Kurnool Dist.	(84) Ch. Yagnaiah & Sons, 10-363, Park Road, Vijayawada, Krishna Dist.
(60) Sugguna Lakshmi Satyanarayana, Gangana-mad-Tenali, Guntur Dist.	

Repairers

Repairers of Weights & Measures, Weighing and Measuring Instruments	
(1) Andhra Scale Centre, Old Bazar, Market Road, Davaparthi.	(16) J. Joseph, Old Beet Bazar, Warangal.
(2) Arjanaya Weights & Measures Department, Vinayaka Street, Tenali, Guntur Dist.	(17) Jonnadula Venkatagiri, Agrahram, Guntur Dist.
(3) Abdul Wahab, Wahab Chowk, Tenali, Guntur Dist.	(18) K. Lingum Gupta, Siddipet, Medak Dist.
(4) Avery Co. of India (P) Ltd., 889, Imperial Post Office Lane, Tilak Road, Hyderabad.	(19) Misri Lal Moti Lal, Topkhana Khadeem, Osmanganj, Hyderabad.
(5) Sk. Azeed Mohiuddin, Iron Manufacturing Works, Ongole, Guntur.	(20) R. Mohan & Bros., Purani Haveli, Hyderabad.
(6) Burmal Shell & Co., 32, Sarojini Devi Road, Secunderabad.	(21) Paramount Scale Centre, 22-8-430, Purani Haveli, Hyderabad.
(7) Bombay Scale Adjusting Centre, 22-7-490, Purani Haveli, Hyderabad.	(22) Syed Abraham, Kothaguda Suryapet, Nalgonda Dist.
(8) Central Metal Works, 553, Old Topkhana Road, Osmanganj, Hyderabad.	(23) T. Rajesham, Old Beet Bazar, Warangal.
(9) Chunduri Sambiah, Pachipulusuvar Lane, Guntur.	(24) Scale Adjusting Services, Topkhana Khadeem, Osmanganj, Hyderabad.
(10) S. Chenmiah Son of Kistiah, Gunj, Bhongir, Nalgonda Dist.	(25) Safe Scale Co., 22-6-242, Miralam Mandi, Hyderabad.
(11) Crescent Scale Centre, (Syed Mohiuddin), Market Road, Mahboobnagar.	(26) Syed Hussain Scale Centre, Mount Road, Shabazar, Mahboobnagar.
(12) Dawn Scale Company, 23-1-868, Bibi Bazar, Mir Junla Tank, Hyderabad.	(27) Tehngana Sdale Adjusting Centre (Mohd. Mahboob Ali), Sardar Road, Sadasivepet Medak Dist.
(13) Deccan Scale Centre, Barketpura Nizambabad.	(28) Shivapuramalla Vishwanathan, 1-177, South Street, Vinukonda, Guntur Dist.
(14) Dawood Baig, Shop No. 58, Pattabhi Market, Masulipatan, Krishna Dist.	(29) Union Agency, Vubuyandamavari Street, Kothapet, Guntur.
(15) Jamsheed Iron & Steel Company, Siddiamber Bazar, Hyderabad.	(30) Varamjanaya Varaprasad Rao, Kothapet, Tenali, Guntur Dist.
	(31) Venkateswar Scale Adjusting Scale (K. Linhuna Gupta), Karimnagar.

ASSAM (2)

In the March 1961 issue of *Metric Measures* a list of manufacturers, dealers and repairers licensed by the Government of Assam was published. The following is a list of manufacturers, dealers and repairers of weights and measures since licensed under the Assam Weights and Measures (Enforcement) (Amendment) Act, 1960.

Manufacturers

Sl. No.	Name and Address of Manufacturer	Details of Articles manufactured
(1)	Impex (Calcutta) Private Ltd., Industrial Estate, Bamuni Maidan, Gauhati.	Weights.
Dealers of Weights & Measures, Weighing and Measuring Instruments		
(1)	Aluminium Industries (Assam) (P) Ltd., Makum Road, Tinsukia.	(4) Avery Company of India (P), Lakhtokia Road, Gauhati.
(2)	Assam Steel & Wire Products, Udyongur, Tinsukia P. O. Dist. Lakhimpur.	(5) Banshilal Jugal Kishore, Jorhat, Assam.
(3)	Askaran Panchiram Ramlall, Gara Ali, Jorhat, Dist. Sibsagar.	(6) Bhawaram Jodhranj & Co., Dibrugarh, P.O. Dibrugarh.
		(7) Chandi Stores, Bokakhat, Dist. Sibsagar.

Dealers (Contd.)

Dealers of Weights & Measures, Weighing & Measuring Instruments	
(8) Dass & Co., Dhubri, District Goalpara.	(19) Jaskaran Sohanlall (Private) Ltd., Jorhat, Dist. Sibsagar.
(9) Director, Trade & Industry Private Ltd., Tezpur P. O. Dist. Darrang.	(20) Maya Ram Bhagawan Dass, Siding Bazar, Tinsukia, Dist. Lakhimpur.
(10) S. Dutta Phookan, Tazpur, Dist. Darrang.	(21) Radha Shyam Agarwalla-Assam, Iron Stores, Haibargaon, P.O. Nowgong.
(11) Gajanand Chachan, G. S. Road, Shillong, (U. K. Jaintia Hills).	(22) Krishadhan Roy, Fancy Bazar, Gauhati, P.O. Gauhati.
(12) Gangadhar Hari Prasad, Jhodhar Ali, Ward No. III, Chawk Bazar, Golaghat, Assam.	(23) Krishanlal Mohabir Prasad, P.O. Tarabari Hat, Dist. Kamrup.
(13) Garodia Engineering Works, Factory Show-room, Jodhar Ali, Ward No. III, Golaghat.	(24) Sita Ram Kishanlal, P. O. Barpeta Road, Dist. Kamrup.
(14) Girharilal Agarwalla, Haibargaon, P. O. Nowgong.	(25) Sobhagmal Ghorowat, A. T. Road, Nowgong.
(15) Gobardhandas Kojriwal, Marwari Road, Dibrugarh.	(26) Secretary Dhing Pioneer Multipurpose, Co-operative Ltd., P.O. Dhing, Nowgong.
(16) Hanumandas Satya Narayan, P. O. Bongaijaon, Dist. Goalpara.	(27) Shodir Chandra Das & Sons (India) Private Ltd., Fancy Bazar, Gauhati.
(17) Hiralal Bhowrilal, A. T. Road, Jorhat.	
(18) Hojai Marketing Co-operative Society Ltd., P. O. Hojai, Nowgong.	

Repairers of Weights and Measures, Weighing & Measuring Instruments

(1) Aluminium Industries (Assam) Private Ltd., Tinsukia.	(5) R. B. Industries, Fancy Bazar, Gauhati.
(2) Avery Company of India (P) Ltd., Lakhtokia Road, Gauhati.	(6) J. C. Gogoi, C/o, B.O.C. (I.T.), Ltd., Digboi.
(3) Bindeswar Koch, C/o B.O.C. (I.T.) Ltd., Digboi.	(7) Md. Maniruddin, C/o B.O.C. (I.T.) Ltd., Digboi.
(4) Chamanlal David, C/o Caltex (India) Ltd., Pandu.	(8) K. C. Trunk and Bucket Factory, Fancy Bazar, Gauhati.
	(9) Wazid Ali, C/o Depot Superintendent, B.O.C. (I.T.) Ltd. Badanpur-Ghat.

GUJARAT (2)

In the March 1961 issue of *Metric Measures*, a list of manufacturers, dealers, and repairers was published. This is a second instalment of manufacturers, dealers and repairers licensed under the Bombay Weights and Measures (Enforcement) Act, 1958.

Manufacturers

Sl. No.	Name and Address of Manufacturer	Details of Articles manufactured
(1)	Ambica Moulding & Engineering Co., Inside Sarangpur Bridge, Ahmedabad.	Weights.
(2)	Asha Metal Industries, Prajapati Wadi, Vijalpore, Navsari (W. Rly.)	Liquid Litre Measures.
(3)	Bavaji Laxmidas, Ram Krishna, Vanda, Saurashtra	Beam Scales Class B.
(4)	Bharat Iron and Brass Works, Chacharia Mota Mohalla, Mormor Wali Sheri, Patan (N. G.).	Weights.
(5)	Famy Measures, 2554, Radiant Building, Kharuwala, Khas Bazar, Ahmedabad.	Conical Capacity Measures.
(6)	Ganesh Foundry Works, Near Ranmukteshwar Mahadev, Pratapnagar, Baroda.	Weights.

Manufacturers (Contd.)

Sl. No.	Name and Address of Manufacturer	Details of Articles manufactured
(7)	Gohil's Industries, Near Sukhnath Chawk, Junagadh	Weights.
(8)	R. P. Harsora, Nadi Kantha, Chital, Saurashtra	Beam Scales Class C.
(9)	Harilal Bhurabhai Shah, Mandvi Chawk, Rajkot	Bullion Weights.
(10)	K. L. Kandhari Industries, Kuberanagar Bungalow, P.O. Sardar Nagar, Ahmedabad.	Weights.
(11)	Luhar Bhagwan Haka, Sanghedia Bazar, Savarkundla	Beam Scales Class C & D.
(12)	Luhar Nanji Mulji, Nadi Kantha, Chital, District Amreli	Beam Scales Class B & C.
(13)	Luhar Vallabh Govind Pandya Sheri, Savarkundla	Counter machine.
(14)	V. K. Makvana & Co., Kalupura, Baroda	Beam scales - Class B, C, & D & Counter balances.
(13)	Shri Manjibhai Premjibhai, Sutar, Vanda, Via. Savarkundla	Beam scales Class B.
(16)	Mistry Maganlal, Madhubhai, Mahidharpura, Nagar Sheri, Surat.	Beam Scales Class B & C.
(17)	Nanji Purshottam Luhar, Nadi Kantha, Chital, Dist. Amreli, (Saurashtra).	Beam Scales Class B & C.
(18)	Narshidas Purshottam & Sons, Opp. Kabutar Khana, Chital (Saurashtra).	Beam Scales Class C.
(19)	Swastic Engineering Works, Station Road, Anand	Weights.

I**Dealers licensed for Weights, Measures, Weighing and Measuring Instruments**

- (1) Abbasbhai Alimahmed Latiwala, Lati Bazar, Dholka District, Ahmedabad.
- (2) Abdeali Abdulhusen Baldiwala, Limda Chowk, Surat.
- (3) Abdeali Kikabhai & Sons, Bazar, Amod, Dist. Broach.
- (4) Abdulbhai Mithabhai, Opp. Post Office, Dabhoi, Dist. Baroda.
- (5) Akberali F. Kalolwala, Nava Bazar, Godhra, District Panchmahals.
- (6) Ambalal Garbaddas, Station Road, Rajpipla.
- (7) Ambica Industries, Pipla Sheri Tragiwada, Patan (N.C.).
- (8) Amibhai Ganibhai, Bazar, Harij, Dist. Mehsana.
- (9) Amichand Manekchand & Co. Gadhdha—Via—Nigamla.
- (10) Amreli Jila Udyogic Sahkari Sangh Ltd., Amreli.
- (11) Anilkumar Trambaklal Mehta, Dhebarbhai Road, Rajkot.
- (12) Ashabhai Mathurbhai Patel, Bazar Harij, Dist. Mehsana.
- (13) Baroda General Stores, Opp. Tower Raopura, Baroda.
- (14) Babulal Shankarlal Modi, Ranuj, Dist. Mehsana.

II**Dealers licensed for Weights, Measures and Weighing Instruments**

- (1) Abdul Taib Abdul Hussain, Kapad Bazar Amreli.
- (2) Amin and Company, Kansarawad, Rangraj Ambli, Cambay.
- (3) S. R. Amin and Company, Jawahar Street Vaso, Dist. Kaira.
- (4) Bhatia Lilidhar Champshi, Near Power Station Amreli.
- (5) Bulsar Paint & Hardware Mart, Azad Road Bulsar.
- (6) Cambay Wire Nail Products, Ayatamata, Polc, Cambay, Dist. Kaira.
- (7) Chandulal Harkishandas & Company, Old Bus Stand, Modasa, Dist. Sabarkantha.
- (8) Chimanlal Chunilal Gandhi, Vavsetakhat Bazar Modasa, Dist. Sabarkantha.
- (9) Chimanlal Motilal Penchal, Near New Tower Makni's Gate, Sankheda, Dist. Baroda.
- (10) Chimanlal & Co., Main Road, Surendranagar.
- (11) Chokshi Construction Company, Dev Nivas Juna Bazar, Himatnagar, Dist. Sabarkantha.
- (12) Dayaram Govindji Lakhandwala, Bazar, Chikhli District Surat.
- (13) Dalichand Raichand, Doshi, Bazar Area, Savarkundla.
- (14) Dilip and Company, Kedarshwar Road, Porbandar.
- (15) Gandhi Scale Manufacturing Company, Sheti Street, Savarkundla.
- (16) Ganesh Foundry Works, Pratapnagar, Baroda

LICENSED MANUFACTURERS, DEALERS & REPAIRERS OF WEIGHTS & MEASURES (15)

- (17) Gajjar Govindlal & Ramanlal Brothers, Dana Bazar, Dholka, Dist. Ahmedabad.
- (18) Gangaram Kanjibhai and Company, Chowkshi Bazar, Mehsana.
- (19) Gohil's Industries, Near Sukhnath Chowk, Junagadh.
- (20) Gordhandas Chimanlal and Company, Station Road, Modasa, District Sabarkantha.
- (21) Haidarali Sulemanji Iron Merchant, Bazar Area, Vanthali.
- (22) Haribhai Govindhai Mistry, Lokhandwala Bazar, Vyara, Dist. Surat.
- (23) Haji Abdul Rahim Mohamad Umar, Lokhandwala, Near Municipal Office, Kadi, Dist. Mehsana.
- (24) Haji Nathabhai Rajabhai's Company, C/o Shri Suleman Haji Nathabhai Vohra, Kathlal, Dist. Kaira.
- (25) Harishankar Ambalal Gajjar, Gajjar Bazar, Mahudha, Dist. Kaira.
- (26) Indian Metallica Industries, C/o Shri Bhupatrai Shantilal Shah, 1124/2, Talia's Street, Sarangpura, Ahmedabad.
- (27) Ishvarlal Parbhudas Patel, Bazar, Visnagar, Dist. Mehsana.
- (28) Jambusar Taluka Luhar Karigareni, Sahakari Mandli Limited, Kot Barna, Jambusar Dist. Broach.
- (29) Jayantilal and Brothers, C/o Parbhudas B. Contractors, Raghunath Pura, Swaminarayan Wadi, Surat.
- (30) Jethabhai Pachabhai, Kansara Bazar, Nadiad.
- (31) Jyoti Mechanical Industries, Behind Income Tax Office, Navsari, Dist. Surat.
- (32) Kanaiya Hardware Stores, Bayad, Dist. Sabarkantha.
- (33) Kantilal Mohanlal Patel & Company, Vijay Talkies, Dehad, Dist. Panchmahala.
- (34) Kantilal Punamchand and Company, Dhansura, Dist. Sabarkantha.
- (35) Kantilal Somnath Vohra, Desai Wade, Kadi, Dist. Mehsana.
- (36) Khushiram Tarachand, Private Limited, Ganganaka, Luhar Chowk, Anjar.
- (37) A.M. Lekhandwala, Bandhan Square, Jamnagar.
- (38) V.K. Makwana and Contractor Company, Nava Bazar, Baroda.
- (39) Luhar Jamnadas Ladhahbai, Natwar Road, Upleta.
- (40) Mohan General Stores, Shop D-22, Gandhidham.
- (41) Mohsinbhai Gulamali Vohra, Vohrawad, Balasinder, District Kaira.
- (42) Mithanbhai Chandbhai, Station Road, Dabhoi, Dist. Baroda.
- (43) S.S. Parmar Scale Works, Dabhan Bhagol, Dev Bhavan, Nadiad.
- (44) M.J. Parmar and Sons, Kansara Bazar, Bhuj.
- (45) Narayan Moulding Works, Dargah Road, Nanak Hapa Chawl, Navsari, Dist. Surat.
- (46) Narendrakumar Natverlal, Bazar, Talod, Dist. Sabarkantha.
- (47) Nemchand G. Shah, Nemji Building, Kanpith, Surat.
- (48) Parbhudas Premjibhai, Engineer, Near Swaminarayan Temple, Cambay.
- (49) Popatlal Govindji & Sons, Hathibhai Street, Savarkundla.
- (50) Ramji Jivraj Kansara, Kansara Bazar, Anjar.
- (51) Ramnik Lal Kantilal & Bros., Near Tower Chowk, Botad (Para).
- (52) Ratanlal Chhaganlal Shah, Bazar, Jhaled, Dist. Panch mahals.
- (53) Ratilal Sundarji, Main Bazar, Bardoli, Dist. Surat.
- (54) Safe Sale Works, Baradpura, Palanpur, District Sabarkantha.
- (55) Saify Hardware and Paint Store, Mahatma Gandhi Road, Dehad, District Panchmahals.
- (56) G. Sardarmal & Brothers, T.C.X. No. 85, Gandhidham.
- (57) Shah Gandalal Bhagvandas, Flower Market, Kodinar.
- (58) Sureshkumar M. Raj pura, Near Post Office, Savarkundla.
- (59) Swastik Engineering Works, Station Road, Anand.
- (60) K.C. Thakkar & Co., Station Road, Nadiad.
- (61) Umar Bhai Jivabhai Bhirawala & Sons, Bazar Talad, Dist. Sabarkantha.
- (62) Vanraj Engineering Corporation, Station Road, Patnam, District Mehsana.
- (63) Vasantilal Purshottamdas Shah, Tower Bazar, Dhanduka, District Ahmedabad.
- (64) Vinodkumar Natvarlal Shah, Station Road, Naswadi, Dist. Baroda.
- (65) Vishandas Ahuja Sindhi, Simla Gate, Palanpur, District Banashkantha.
- (66) Vora Mohamadali Pirbhai Lokhandwala, Mulla Medi Road, Jamnagar.
- (67) Vora Fakroodin Gulamhussain, Bazar Area, Vishavadar.
- (68) Vora Fidahusen Ismailji and Brothers, Cloth Market, Una.

III. Dealers Licensed for Weights

- (1) Shantilal Maganlal, Shroff Bazar, Rajkot.
- (2) Shah Engineering Works, Canal Road, Rajkot.

IV. Dealers Licensed for Weighing Instruments

- (1) Luhar Shamji Valji, Gandhichowk, Savarkundla.
- (2) Luhar Govind Mulji Nadi Kantha, Savarkundla.
- (3) Luhar Bhagvan Naka, Sanghadia Bazar, Savarkundla.

V. Dealers licensed for Weights & Measures

- (1) Shah Engineering Co., Agency Deptt., Garedia, Kuva Road, Rajkot.
- (2) Sulemanji Ibrahimji, C/o Bazar, Vanthali.

Repairers licensed for Weights, Measures, Weighing and Measuring Instruments.

(1) Akbarali Abdulali Vadgamwala, Near Vohra Musafirkhana, New Deesa, Dist. Banaskantha.	(13) Luhar Hiralal Bhimji, Ashapura Road, Joshi Falia, Bhuj.
(2) Amin and Company, Jawahar Street, Vaso, District Kaira.	(14) Luhar Kanji Jethabhai, Burdhan Chowk, Jamnagar.
(3) Amthalal Mangalji Prajapati, Kheda Falia, Vejalpur, District Panchmahals.	(15) Luhar Rajvi Madhavji, Luhar Sar, Jamkhambhali.
(4) Bapulal Ishwarlal Patel, Mahatma Gandhi Road, Kalol, District Mehsana.	(16) Masa Kala Okhai Bazar, Mandvi.
(5) Chunilal Shivalal Soni, Limdi Fali, Dhandhuka.	(17) M.J. Parmar and Sons, Kansara Bazar, Bhuj.
(6) Gandhi Scale Manufacturing Company, Sheth Street, Savarkundla.	(18) Natubhai Kashibhai Patel, Golden Street, Sojatra, District Kaira.
(7) Gohil's Industries, Near Sikhnath Chowk, Junagadh.	(19) Natvarlal Chimanlal Panchal, Lal Bazar, Sanaad, District Ahmedabad.
(8) Harishankar Ambalal Gajjar, Gajjar Bazar, Mahudha, District Kaira.	(20) Parmar Nandlal Govindji, Digvijay Plot, Street No. 13, Jamnagar.
(9) Jambusar Lahar Karigaroni, Sahakari Mandli Limited, Ket Barna, Jambusar, District Broach.	(21) P. V. Parmar & Brothers, Plot No. 32, Gandhidham.
(10) Jayantilal & Brothers, C/o Shri Parbhudas B. Contractor, Reghunathpura, Swaminarayana Wadi, Surat.	(22) S.S. Parmar Scale Works, Dabhan Bhagol, Dev Bhavan, Nadiad.
(11) Kantilal Mohanlal Patel & Company, Opp. Vijay Talkies, Dohad, District Panchmahals.	(23) Popatlal Govindji and Sons, Hathibhai Street, Savarkundla.
(12) Luhar Govind Mulji, Savarkundla.	(24) Shanta Vijay Tin Factory, Pandya Street, Savarkundla.
	(25) Tulsidas Sundarji Mistry, Behind New Gandhi Chowk, Petlad, District Kaira.

KERALA (6)

In the November 1959, March and November, 1960 and January 1961, issues of Metric Measures lists of licensed manufacturers, dealers and repairers of weights and measures in Kerala state were published. The following is a list of manufacturers, dealers and repairers subsequently licensed by the Government of Kerala under the Kerala Weights and Measures (Enforcement) Act, 1958.

Manufacturers

Sl. No.	Name and Address of Manufacturers	Details of Articles Manufactured
(1)	Ashok Foundry & Engg. Works, Karamanai P. O., Trivandrum-2.	Cast Iron Weights. (2 kg to 100 g).
(2)	Calicut Tin Works, Thiruvannoor Road, Calicut-3	.. Liquid and Dry Measures.
(3)	M.P. Philip, P. M. Foundry, Mavelikara	.. Cast Iron Weights.
(4)	Pioneer Industrials, Nellalam, Kozhikode-3	.. Brass Weights.
(5)	Saintjos Casting Industries, Palarivattom P. O., Ernakulam ..	.. Cast Iron Weights.

Dealers

Sl. No.	Name and Address of Dealer	Details of Articles Sold
(1)	K. S. Abbas & Co., Merchants, Vandiperiyar	.. Weights, Measures, Weighing and Measuring Instruments.
(2)	M.P. Abdulkhader, Merchant, Market, Alwaye	.. Weights, Measures and Weighing Instruments.
(3)	K. A. Abraham & Co., Hardware Merchants, Ponkunnam P. O. Kanjirapally.	Weights and Measures.

LICENSED MANUFACTURERS, DEALERS & REPAIRERS OF WEIGHTS & MEASURES (15)

Dealers (Contd.)

Sl. No.	Name and Address of Dealers	Details of Articles Sold
(4)	A.T. Anthony, Hardware Merchants, High Road, Trichur	Weights, Measures, Weighing and Measuring Instruments.
(5)	C. Assan & Co., Hardware Merchants, Main Road, Tellicherry	Do.
(6)	K. Bava, National Stores, Court Road, Trichur	Weights and Measures.
(7)	E.M. Chakkoru, Proprietor, Peoples Picture Palace, Kunnankulam.	Weights only.
(8)	T.D. Chakku, Hardware Merchant, Nairangadi, Trichur ..	Weights, Measures, Weighing and Measuring Instruments.
(9)	M.P. Fakhurudeen Sahib, Maravettickal, Hardware Merchant, Thodupuzha.	Do.
(10)	C.A. Galiakotwal & Co. (P) Ltd., Cloth Bazaar, Ernakulam.	Weights & Measures.
(11)	The General Stores, Hardware Merchants, Chengannur ..	Do.
(12)	K.M. Joseph, Hardware Merchant, Athirampuzha	Weights, Measures, Weighing and Measuring Instruments.
(13)	P. Kochukunjan, Hardware Merchant, Aingamom, Parassala, Kaliyikavila P.O.	Weights and Measures.
(14)	T.C. Koshy (Thoppil), Merchant, Puramattom	Weights, Measures, Weighing and Measuring Instruments.
(15)	T. Krishna Pillai, Hardware Merchant, Chalai, Trivandrum-1	Do.
(16)	M.A. Mohamed Kannu & Brother, Hardware Merchants, Marakkada Road, Chalai, Trivandrum.	Weights and Measures.
(17)	M.A.M.S.E. Mohamed Kanno & Co., Mullackal, Alleppey	Weights and Weighing Instruments.
(18)	C.A. Moideen Rowther & Sons, Hardware and Paint Merchants, Kollengode, Palghat District.	Weights, Measures, Weighing Instruments.
(19)	P.K. Oommen, Merchant, Pulamon Junction, Kottarakara	Weights, Measures and Weighing Instruments.
(20)	T.M. Ouseph, Hardware Merchant, Kandassankadavu, Trichur Dist.	Weights and Measures.
(21)	K.P. Padmanabhan, Kumar Stores, Camp Bazaar, Cannanore.	Weights, Measures, Weighing and Measuring Instruments.
(22)	N.T. Paul, Merchant, Ettumanoor	Do.
(23)	P.C. Brothers, Hardware Merchants, Main Road, Tellicherry	Do.
(24)	C.V. Philipose, Hardware Merchant, Near S.C.S. Junction, Thiruvella.	Do.
(25)	P.K. Brothers, Huzur Road, Calicut	Weights and Measures.
(26)	K.K. Raman Nair, Ravindra Stores, Hardware Merchants, Mullackal, Alleppey.	Weights, Measures, and Weighing Instruments.
(27)	K.S. Rama Iyer, Hardware Merchant, Palayam Road, Calicut-1.	Do.
(28)	Sampath Jewellery, Big Bazar, Palghat-1.	Bullion Weights and Weighing Instruments.
(29)	M.P. Sankaran, Merchant, Court Road, Badagara	Weights, Measures, Weighing and Measuring Instruments.
(30)	P. N. Shah and Co., Indian Drugs Merchants, 1st Rly. Gate, Kozhikode-1.	Metric Weights.
(31)	K.C. Sebastian, Hardware Merchant, Palai	Weights, Measures, Weighing and Measuring Instruments.
(32)	Sree Narayana, Engg. Industries (P) Ltd., Kulappully, Shoranur.	Weights and Measures.
(33)	N. B. Syed Mohammed, General Merchant, Parli, Palghat	Weights, Measures and Weighing Instruments.
(34)	The Popular Hardwares, Marakkada Road, Chalai, Trivandrum-1.	Weights, Measures, Weighing and Measuring Instruments.
(35)	A.V. Thomas and Co. (India) Ltd., Main Road, Trivandrum	Weights and Measures.
(36)	K. J. Thomas, Kochampazhathunkal, Erttupetta	Weights, Measures, Weighing and Measuring Instruments.
(37)	Vokart Brothers, Tellicherry	Measures.

Dealers (Contd.)

Sl. No.	Name and Address of Dealer	Details of Articles Sold
List of Dealers whose licences have since been cancelled		
(1)	Multipurpose Cooperative Society No. 3456, Kadakkal, Kottarakara Taluk. (Licence No. D. 30).	Published at Page 34 of the "Metric Measures" Vol. 3, March, 1960, issue.
(2)	Shri K. P. G. Menon, Sole Proprietor, M/s. Construction House, Post Ottappalam, Kerala, (Licence No. D. 145).	Published at page 40 of the "Metric Measures", Vol. 4, January, 1961 issue.

The address of Shri V.V. Ramaswamy Iyer, General Merchant, Yadakkancherry, Palghat District, published on Page 33 of *Metric Measures*, Volume 3, May, 1960 has been changed as follows:—

M/s. V.V. Ramaswamy Iyer Sons, Merchants, Vadakkancherry, Palghat District,

Repairers

Sl. No.	Name and Address of Repairer	Details of Articles Repaired
(1)	M/s. N.A. Lonappan Sons, Hardware Merchants, High Road, Trichur.	Weights, Measures, Weighing and Measuring Instruments.
(2)	M/s. Palliveetil Mammed Koya and Bros., 9/88, Tobacco Street, Calicut.	Weights, Measures and Weighing Instruments.
(3)	M/s. C.J. Palu & Bros., Chirianandath, High Road, Trichur.	Weights, Measures and Weighing Instruments.
(4)	M/s. Southern Scale Service, Haroon Buildings, Francis Road, Calicut.	Weighing Instruments.
(5)	M/s. A.V. Thomas and Co. Ltd., Main Road, Trivandrum.	Weighing Instruments.
(6)	Shri Vadakkethalakkal Kunhuvareed Chummar, People's Stores, Kunnamkulam.	Weights, Measures, Weighing and Measuring Instruments.

UTTAR PRADESH (6)

In the July, September, November 1960 and January and March 1961 issues of *Metric Measures* lists of licensed manufacturers, dealers and repairers of weights and measures were published. The following is a list of manufacturers, dealers and repairers subsequently licensed by the Government of Uttar Pradesh under the Uttar Pradesh Weights and Measures (Enforcement) Act, 1959.

(List of dealers licensed will be published in the next issue).

Manufacturers

Sl. No.	Name and Address of Manufacturer	Details of Articles Manufactured
(1)	Agriculture Iron Industries, Nehru Road, Baraut, Meerut ..	Weights and Measures.
(2)	Alloy Founders, Jeoni Mandi, Jamuna Road, Agra ..	Cast Iron, Brass and Bullion Weights.
(3)	O.P. Aggrawal Industries, 209, West End Road, Meerut ..	Weights and Measures.
(4)	U.P. Agricultural Industries, Station Road, Roorkee ..	Cast Iron, Brass and Bullion Weights, Measures, Weighing and Measuring Instruments.
(5)	Abdul Rashid & Co., 124, Begum Bagh, Meerut City ..	Brass and Bullion Weights.
(6)	Amar Industries, Loha Mandi, Katghar, Agra ..	Weights and Measures.

Manufacturers (Contd.)

Sl. No.	Name and Address of Manufacturer	Details of Articles Manufactured
(7)	Anil Metal Industries, 1042, Lane Gaushala, Pathwari, Belanganj, Agra.	Cast Iron and Brass Weights.
(8)	Agra Taj Industry, Behind Police Station, Loha Mandi, Agra	Brass Weights, Measures and Weighing Instruments.
(9)	Atul Engineering Works, 1251 Belanganj, Agra ..	Cast Iron and Brass Weights.
(10)	Adarsha Metal Works, 2814, Baghanta Loha Mandi, Agra ..	Brass Weights.
(11)	Agarwal Industrial Corporation 3605-C, Sutturganj, Agra ..	Brass Weights.
(12)	Agarwal Weights and Measures Manufacturing Co. Daulat Market, Agra.	Cast Iron, Bronze and Brass Weights and Measures.
(13)	Ashok Iron Foundry, c/o Bohrey Ram Gopal, Manpara, Agra.	Cast Iron Brass Weights and Measures.
(14)	Associated Industrial Corp., 1278, Bheron Belanganj, Agra.	Cast Iron, Brass and Bullion Weights and Measures.
(15)	Babu Lal and Sons, 76/517, Cooly Bazar, Kanpur ..	Cast Iron and Brass Weights and Beam Scales.
(16)	Bharat Industries, Debipura, Chandi Mandi Road, Hapar, District Meerut.	Weights and Measures.
(17)	Bajrang Engineering Works, Hanuman Chauraha, Moti Katra, Agra.	Brass Weights.
(18)	Bharat Tin Industries, Seth Gali Agra ..	Cast Iron, Brass and Bullion Weights and Measuring Instruments.
(19)	Bimal Industries, 3652, Sultan Ganj, Agra ..	Cast Iron and Brass Weights.
(20)	Brij Metal Industries, Kangra-ki-Chanki, Agra ..	Cast Iron, Brass and Bullion, Weights.
(21)	Bharat Metal Industries, New Basta, Loha Mandi, Agra ..	Cast Iron and Brass Weights.
(22)	Bharat Iron Foundry, 1514, Baraf Khana, Moti Katra, Agra	Cast Iron and Brass Weights and Measures.
(23)	Bharat Electro-Plating Works, 195, Moti Katra Road, Agra	Cast Iron and Brass Weights and Measures.
(24)	Bajrang Iron Foundry, 1014, Nala Bhairon, Belanganj, Agra.	Cast Iron and Brass Weights.
(25)	Bharat Moulding Centre, 1006, Belanganj, Agra ..	Cast Iron and Brass Weights.
(26)	Bhartiya Ispat Udyog, 77/3, Cooly Bazar, Kanpur ..	Weights and Measures.
(27)	Bharat Metal Works, Hanumangali, Hathras ..	Weights.
(28)	Bharat Brush Traders, Gaushala Lane, Belanganj, Agra ..	Weights and Measures.
(29)	Bright Industrial Corporation, 158-F, Ram Nagar, Colony, Agra.	Cast Iron and Brass Weights.
(30)	Chhajju Lal Babu Lal Jain, Loha Mandi, Agra ..	Cast Iron and Brass Weights.
(31)	Cawnpore Steel Products, 76/2 Halsey Road, Lohai, Kanpur ..	Weights and Measures.
(32)	Doon Industrial Society, Arhat Bazar, Dehra Dun.	Weights
(33)	Durga Prasad Razora, Polishwala, Seo-ka-Bazar, Opp. Taj Hotel, Agra.	Cast Iron & Brass Weights.
(34)	Eagle Metal and Electrical Works, Bansal Building, Chhipotolia Agra.	Cast Iron, Brass and Bullion Weights and Measures.
(35)	S.O. Engineering Works, Mansa Devi Rajmandi Agra ..	Brass Weights.
(36)	Eastern Industries India (Private) Ltd., 7/191 Swarup Nagar, Kanpur.	Cast Iron and Brass Weights.
(37)	Eastern Steel and Iron Foundry, 3953, Ratnapura, Agra ..	Weights.
(38)	Fakhruddin Kkramuddin, 267, Bazara Street, Meerut City ..	Cast Iron and Brass Weights & Measuring Instruments.
(39)	Fayazuddin, Koharpur, Bareilly ..	Cast iron and Brass Weights.
(40)	Ganesh Industries Corporation, Freeganj, Road, Agra ..	Brass Weights.
(41)	Gib India Scientific Works, B. 5/34, Shivala Road, Varanasi-1	Brass Weights, Measures and Weighing Instruments.
(42)	Gopal Prasad & Son, 837, Bara Bhai Gali, Agra ..	Cast Iron and Brass Weights.
(43)	Hanuman Traders, Shivpuri, Varanasi ..	Cast Iron, Brass and Bullion Weights.

Manufacturers (Contd.)

Sl. No.	Name and Address of Manufacturer	Details of Articles Manufactured
(44)	Hindustan Casting Corporation, 2002, Chimanlal Road, Freeganj, Agra Gate, Meerut.	Cast Iron and Brass Weights and Measures.
(45)	Hindustan Engineering Industries, Lisari Gate, Meerut ..	Weights and Measures.
(46)	Hindustan Agricultural & Engineering Works, 1075, Baghpat, Gate, Meerut.	Cast Iron and Weights.
(47)	K.R. Industries, Ekkawaligali, Noorigate, Agra	Weights and Measuring Instruments.
(48)	Indian Trade Corporation, 302, Belanganj, Agra	Cast Iron and Brass Weights.
(49)	N.S. Industries, 1681, Belanganj, Agra	Cast Iron and Brass Weights.
(50)	V.N. Industries Opp. Arya Samaj Mandir, Freeganj Road, Agra	Cast Iron and Brass Weights.
(51)	A.K. Industries, Ekkawaligali, Noorigate, Agra	Weights and Measuring Instruments.
(52)	Immam Ali Sons, Tin Merchants, No. 15, Gautam Budh Marg, Lucknow.	Weights and Measures.
(53)	G.O. Iron Foundry, Bhairon Bazar, Belanganj, Agra ..	Cast Iron and Brass Weights.
(54)	G.S. Industries, No. 2994-A, Naya Bans, Loha Mandi, Agra	Cast Iron, Bullion and Brass Weights.
(55)	R.G. Industrial Service, Near Belanganj, Goodshed, Jeoni Mandi, Agra.	Weights.
(56)	Jayshree Industries, 308, Belanganj, Agra	Cast Iron and Brass Weights.
(57)	Janta Industrial Co-operative Society Ltd., 81, North Vijaya Kagar, Agra.	Cast Iron and Brass Weights.
(58)	Jain Iron Works, 5228, City Station Road, Opp. Basant Talkies, Agra.	Cast Iron and Brass Weights.
(59)	Jain Industries, 1166, Phatak Suraj Bhan, Agra	Weights, Measures & Weighing Instruments.
(60)	Jain Metal Industries, 1048, Lane Gaushala, Agra	Cast Iron and Brass Weights.
(61)	Jindal Agricultural Industries, Town and P.O. Agarwal, Mandi	Cast Iron Weights.
(62)	Jain Company, Behron Bazar, Agra	Cast Iron, Brass and Bullion Weights.
(63)	Jain Industries, Opp. Post Office, Nai-ki-Mandi, Agra ..	Cast Iron, Brass and Bullion Weights, Measures and Measuring Instruments.
(64)	Jain Traders, 46/45, Raj Gaddi, Hatia, Kanpur	Brass Weights 1 g to 50 g.
(65)	Kanpur Iron Foundry, 104/307, Ram Bag, Kanpur	Weights.
(66)	Krishna Scale Works, 190/1, Faithpulgaj, Kanpur	Weights & Weighing Instruments.
(67)	Laxmi Metal Works, 914, Belanganj, Agra	Cast Iron and Brass Weights.
(68)	Lucky General Industries, Nai-ki-Mandi, Agra	Cast Iron and Brass Weights and Measuring Instruments.
(69)	Metal Kraits, 10-D, Industrial Estate, Naini, Allahabad ..	Cast Iron Weights, Sheets, Metal and Brass Weights.
(70)	Meerut Foundry and Engineering Works, 77, Mahatama Gandhi Road (Lisari Gate), Meerut.	Weights and Measures.
(71)	Modern Agricultural Implements Manufacturing Co., Khera Meerut.	Weights, Measures, Weighing and Measuring Instruments.
(72)	Matadin Bhagwan Das Oil Mills Ltd., Bans Mandi, Kanpur ..	Cast Iron and Brass Weights.
(73)	Mitthan Lal Padam Kumar Jain, Manufacturers and Engineers, Loha Mandi, Agra.	Brass Weights.
(74)	Madhu Sudan Iron Foundry, 1125, Durganand Road, Agra ..	Cast Iron Weights.
(75)	Moha Industrial Corporation, Maingate, Pathwari, Agra ..	Weights and Measuring.
(76)	Mahajan Iron Foundry, Opp. Billochpura, Railway Station, Agra.	Cast Iron and Brass Weights.
(77)	Blipan Iron Foundries, 1755, Alawganj Kaswan, Agra ..	Cast Iron and Brass
(78)	Manjil Moulding Works, Bari Panni Gali, Agra	Weights.
(79)	Mital Brass Industries, 4569, Mohalla Rangraizan, Rajaki Mandi Agra.	Cast Iron and Brass Weights.

Manufacturers (Contd.)

Sl. No.	Name and Address of Manufacturer	Details of Articles Manufactured
(80)	Nirmal Engineering Works, No. 1980, Freeganj Road, Agra ..	Cast Iron and Brass Weights.
(81)	Naveen Engineering Co., 915, Belanganj, Agra	Cast Iron and Brass Weights.
(82)	National Industries & Foundry, 488/37, Mirpur Cantt. (Rail Basar) Kanpur.	Weights.
(83)	National Wire Works, 4341, Vijay and Colony, Agra	Cast Iron and Brass Weights.
(84)	Om Engineering Works and Co., Chawalwala Bagh, Sultan-ganj, Agra.	Weights.
(85)	Om Iron Foundry, Belanganj, Agra	Cast Iron and Brass Weights.
(86)	Phool Kumar Sons, Puranaganj, Rampur	Cast Iron, Brass and Bronze Weights.
(87)	Parmason Engineering Industries, Delhi-Meerut Road, Ghaziabad.	Weights and Measures.
(88)	Pioneer Moulding and Engineering Works, 2478, Jeewan Mandi, Agra.	Cast Iron, Brass and Bullion Weights.
(89)	Pioneer Electronic Corporation, 53, Old Vijay Nagar, Agra ..	Brass, Bullion and Cylindrical Weights.
(90)	Rajinder Welding and Mechanical Works, Delhi Road, Meerut City.	Weights, Measures, Weighing and Measuring Instruments.
(91)	Raj Kumar Iron Foundry, Lashkarpur, P.O. Jaganpur, Agra ..	Cast Iron and Brass Weights.
(92)	Radha Engineering Works, C. 29/69, Maldahia, Varanasi ..	Cast Iron, Brass and Bronze Weights.
(93)	Radha Industries, Bheron Bazar, Agra	Weights and Measuring Instruments.
(94)	Ravi Engineering Company, 81/1, Rajpur Road, Dehra Dun ..	Weighing Instruments.
(95)	Raj Kamal Industries, 6382, Khati Para, Loha Mandi, Agra	Cast Iron Weights and Brass Weights.
(96)	Ram Gulam Bachai Lal, Mohalla, Bazar Town Bind Ki, Distt. Fatehpur.	Cast Iron and Measures.
(97)	Rafiuddin Mohinddin and Sons, 98/195, Anwarganj, Kanpur	Brass Weights and Measures.
(98)	Ram Prakash and Co. Nihal Chand Agarwal, 2249, Naigali, Moti Katra, Agra.	Brass Weights.
(99)	Ravi Industrial Corporation, 1104, Lane Gaushala, Pathwara, Agra.	Weights.
(100)	Satya and Tayag Manufacturing Co., 54/1, Nayaganj, Kanpur	Cast Iron and Brass Weights, Measures, Measuring and Weights Instruments.
(101)	Swantantra Bharat Iron Foundry, Narain Bhawan, Moti Lal Nehru Road, Agra.	Cast Iron Weights.
(102)	Sadhna Metal Industries, Loha Mandi, Nayabans, Agra ..	Brass Weights and Measuring Instruments.
(103)	Sharma Brass Engineering Works, 124, Khapara Mohal, Kanpur.	Weights, Measures and Measuring Instruments.
(104)	Sohan Ram Jain, Loha Mandi, Agra	Brass Weights.
(105)	Sarvodaya Industrial Corporation, Kanpur, 89/193 and 194, Bans Mandi, Kanpur.	Cast Iron, Brass, Bronze and Metal and Metal Sheet Weights, Measures, Weighing and Measuring Instruments.
(106)	Standard Chemical Co. (Private) Ltd., 113/8, Swarup Nagar, Kanpur.	Cast Iron Weights.
(107)	Society Iron Industries, Hiraganj, Kanpur	Weights, Measures, Weighing and Measuring Instruments.
(108)	Star Engineering Works, Seo-ka-Bazar, Agra	Weights and Measures.

Manufacturers (Contd.)

Sl. No.	Name and Address of Manufacturer	Details of Articles Manufactured
(109)	Tota Ram Mithan Lal Jain, Manufacturer, Loha Mandi, Agra	Weights.
(110)	Tarolia Moulding Works, Lane Gaushala Belanganj, Agra	Cast Iron and Brass Weights.
(111)	United Metal Industries, 17, Civil Lines, Bulandshahr Lal Talab, Bulandshahr.	Weights and Measures.
(112)	Universal Industries, 4/5, Hasanpura Shahganj, Agra	Cast Iron, Brass and Bullion Weights.
(113)	United Iron and Metal Works, C/124, 25, Govind Nagar, Kanpur.	Weights and Measures.
(114)	Vijay Trading Company, 1410, Jeoni Mandi, Agra	
(115)	Vishnu Iron Foundry, 4533/1, Chiman Lal Road, Freeganj, Agra	Cast Iron and Brass Weights.
Repairers of Weights and Measures, Weighing and Measuring Instruments		
(1)	Aurn Iron Stores, Rakabganj, Lucknow.	(20) New Bharat Traders, Sahidganj, Bazar, Saharanpur.
(2)	Bharat Iron Foundry, 1514, Baraf Khana, Moti Katra, Agra.	(21) Nukal Sacu Sri Ram, Kagzi Bazar, Meerut City.
(3)	Bihari Lal Jairamdass, Halsey Road, Lohai, Kanpur.	(22) Panchayati Dharam Kanta (Regd.), Sarafa Bazar, Meerut City.
(4)	Dharam Kanta Sarafa Committee, Chowk Bazar, Moradabad.	(23) Paramason Engineering Industries, Delhi-Meerut Road, Ghaziabad.
(5)	Gujadhar Lal Baijnath, 76/157, Halsey Road, Lohai, Kanpur.	(24) Rajkumar Iron Foundry, Lashkarpur, P.O. Jaganpur, Agra.
(6)	Ganesh Iron Foundry, Freeganj Road, Agra.	(25) Ram Gulani, Bachai Lal, Mohalla Bazar, Town Bindki, District Fatehpur.
(7)	Ganesh Foundry, 118/229, Kanshalpuri, Kanpur.	(26) Randhir Singh Kherbchand, Iron Foundry, Master-ki-Bagichi, Agra.
(8)	Gupta and Company, 55/108 Chaumuhala Generalganj, Kanpur.	(27) Ravi Engineering Company, 81/1, Rajpur Road, Dehra Dun.
(9)	Hanuman Traders, Shivpuri, Varanasi.	(28) Shivalal Das Mool Chand, Hardware Merchant, 311, Belanganj, Agra.
(10)	R.G. Industrial Service, 2442, Jeoni Mandi, Agra.	(29) Sand T. Manufacturing Co., 54/1, Nayaganj, Kanpur.
(11)	Immam Ali & Sons, Tin Merchants No. 15, Gautam Budh Marg, Lucknow.	(30) Sarvodaya Industrial Corporation, 89/193-194, Banswandi, Kanpur.
(12)	Jagdish Prasad and Phool Singh, Industries, Tajganj Road, Agra.	(31) Steel Fab. Company, 21, Dalampara, Meerut City.
(13)	Jay Shree Industries, 308, Belanganj, Agra	(32) Sua Rice Engineering Works, Yamuna Bridge, Agra.
(14)	Kishan Swarup Kanshal Kishore, 52, Derkar, Collectorganj, Kanpur.	(33) Sita Ram Shri Chand Lal, Tata Dealers, Lohani Marg, Saharanpur.
(15)	K.R. Kohli & Sons, C.K. 13/8, Gyanwapi, Varanasi-1.	(34) Singhal Iron Foundry, Farrah, District Mathura
(16)	Krishna Iron Foundry, Gauri Kunj, Freeganj, Agra.	(35) B.L. Sinha & Sons, Jhutha Ram-Ka-Phatak, Kinari Bazar, Agra.
(17)	Krishna Engineering Works, Shivpur, Varanasi	(36) U.P. Agricultural Industries, Station Road, Roorkee.
(18)	Mata Din Bhagwan Das Oil Mills Ltd., Bans Mandi, Kanpur.	(37) United Industrial Concern, 98, Durga Bari, Meerut Cantt.
(19)	Meerut Foundry and Engineering Works, 17, Mahatma Gandhi Road, Meerut.	

TYPICAL METRIC PRICING UNITS FOR WHOLESALE TRANSACTIONS

Serial No.	Commodity	Metric Unit
(1) Gold		10 grams (g)
(2) Grocery and Confectionery	Biscuits, sweetmeats, cardamoms.	1 kilogram (kg)
Textiles & Textile Fibres	Cotton yarn, damaged and seconds cloth, raw silk, rayon, silk yarn, raw wool, wool manufacturers (when sold by weight).	
Paints & Chemicals	Paint (if sold by weight), indigo, liquid chlorine.	
Hides, Skins & Leather	Raw hides, leather (hides and skins).	
Metals	Silver, aluminium sheets, strips and circles, copper and brass wires and utensils.	
Miscellaneous	Tea, meat, camphor tablets, mica.	1 quintal (q) (100 kilograms)
(3) Grains and Pulses	Rice, wheat, jowar, arhar, moong, masur, gram.	
Spices	Black pepper, mustard, chillies, dhania, dalehchini, turmeric, betelnuts.	
Plantation Products	Rubber, cashewnuts, cashew kernels, tobacco (raw and manufactured).	
Forest Products	Lac and lac products, gums, myrobalans, galmuts, soapnuts.	
Textiles & Textile Fibres	Raw jute, raw hemp, coir yarn.	
Oils, Oilseeds & Oilcakes	Vegetable oils, oilseeds, oil cakes.	
Non-Ferrous Metals	Aluminium: ingots, bars, blocks, slabs, billets. Lead: ingots, sheets and strips. Copper: Ingots, blooms, slabs, cakes, tiles, bricks, billets, blisterbars and wirebars, rods, sections and pipes, plates, sheets and strips, circles. Brass: ingots, rods, sections, pipes, sheets, strips, circles. Zinc: ingots, sheets, strips. Tin: blocks.	
Chemicals	Caustic soda, bleaching powder, glycerine, soaps, paper salt.	
Others	Sugar, gur, ice, fish, sugarcane, vegetables, tamarind.	
(4) Minerals	Iron ore, manganese ore, bauxite, coal.	one metric tonne (t) (1,000 kilograms)
Iron & Steel	Pig iron, iron & steel manufactures, semis (billets for rerolling etc.)	
(5)	Cloth (mill, handloom, silk, rayon and woollen cloth).	1 metre (m)
(6)	Jute carpets, coir mats and matings, sheet glass.	one square metre (m ²)
(7)	Timber.	one cubic metre (m ³)
(8)	Paints (when sold by measure), spirits.	one litre (l)

Weights

- (1) In place of the present units of seer, pound, rattal, viss etc, use the kilogram.
- (2) In place of the tola, use the gram or 10 grams.
- (3) In place of maund or corresponding unit, use the quintal i.e. 100 kg.

Capacity Measures

In place of seer or gallon or any other measure use the litre.

Length Measures

- (1) Use the metre in place of yard or foot and the centimetre in place of inch.

Square Measures

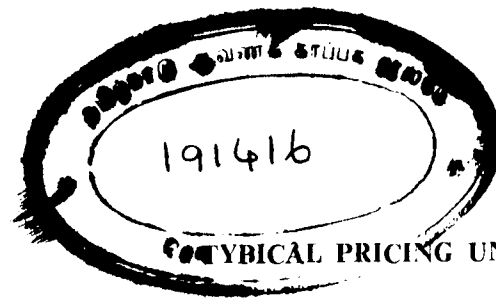
- (1) Use the square metre in place of square yard or square foot, and square centimetre in place of square inch.

Cubic Measures

- (1) Use the cubic metre in place of cubic yard or cubic foot and cubic centimetre in place of cubic inch.

Packaging

It is advantageous if sizes of packages correspond to series of commercial weights and measures prescribed. These are: 50 kg, 20 kg, 10 kg, 5 kg, 2 kg, 1 kg, 500 g, 200 g, 100 g, 50 g, 20 g, 10 g, 5 g, 2 g, 1 g, and so on.



Serial No.	Commodity	Metric Unit for Use
(1)	Foodgrains, cereals, pulses, spices, ghee, bread, vegetables, meat, fish, sweetmeats, tea, coffee, sugar, salt.	1 kg
(2)	Oil for cooking	1 kg or 1 litre depending upon prevalent practice.
(3)	Fruits	1 kg or number depending upon prevalent practice.
(4)	Milk	1 litre
(5)	Cloth and related materials	1 metre
(6)	Prepackaged materials	Preferably sizes corresponding to series of commercial weights and measures.

Published by the Director, Publications Division, Ministry of Information and Broadcasting, Delhi and printed by the Manager, Government of India Press, Faridabad.

Registered with the Registrar of Newspapers for India under No. 977/58.