

FORESTRY COMMISSION

*BOOKLET No. 5*

**Conversion Tables for  
Research Workers  
in Forestry  
and Agriculture**



*LONDON*

HER MAJESTY'S STATIONERY OFFICE

PRICE 6s. 6d. NET





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1960 : *Reprinted* 1965

## FOREWORD

These tables and charts were prepared by the staff of the Research Branch and by other forest research workers to meet their own needs when preparing data for publication, when meeting foreign visitors and when reading foreign literature. They have been amplified and now are published so that others may avoid the laborious calculations that are sometimes necessary to bring continental units to more familiar terms.

There are many deliberate omissions from these tables; no attempt has been made to prepare tables for converted timber or lumber, or for timber in units in which it is imported, though some conversion factors are given in Table 44 on page 30. Similarly, no attempt has been made to reproduce any of the data recently published in such useful books as *'The Foresters Companion'* by N. D. G. James (Blackwell, 1955).

Three main groups of tables have been brought together here: those relating to standing crops and felled round timber, (Tables 23-44); those relating to forest nursery work and forest manuring (Tables 53-59, 68-78 and 86-87); and tables of general application (Tables 1-22, 45-52, 60-67, 79-85).

Tables relating to standing crops and felled round timber will be of value only to foresters (in the broad sense), but it is hoped that the general tables and those relating to nursery work and forest manuring will have a wider appeal and will be of use particularly to field research workers in agriculture and horticulture.

## ACKNOWLEDGMENTS

The main work of compiling, checking, and editing this collection of tables has been undertaken by Mr. J. R. Aldhous, of the Commission's Research Branch; other Research officers who have assisted are Dr. F. C. Hummel, Mr. J. N. R. Jeffers and Mr. E. G. Richards.

Thanks are also due to Mr. Ragnvald Aaheim, of Norway, and to Heer Ir. J. van Soest of Holland, for assistance with the charts.

FORESTRY COMMISSION

*October, 1959*

## HOW TO USE THE TABLES

The unit to be converted should be looked up in the Alphabetical Index which will give the number and page of the appropriate table and, in some cases, the number and page of a chart. If the unit is not mentioned in the index, look on pages 7-9 where lists of units are given together with conversion factors to units used in the tables.

Values of units to be converted run from 1 to 9 or from 1 to 99, with one or two exceptions. Where a value halfway between two given values has to be converted, this can be done for the large majority of tables by taking mean of the two nearest given values, e.g. 1 inch=2.54 cm; 2 inches=5.08 cm.  $1\frac{1}{2}$  inches=3.81 cm. i.e.  $(2.54+5.08)\div 2$ . For values beyond the range given, or intermediate but not halfway between two given values, the conversion can be made by multiplying the value to be converted by the conversion factor given at the head of the relevant table.

While conversion of values not given in the table can be made by the methods given in the preceding paragraph for all Tables where both sides of the table increase by arithmetic progression, Tables 27, 28, 43, 55c, 70e, 76 and 77 are not of this type; with these latter tables, as one side increases arithmetically the other side decreases geometrically.

E.g. 1 ring per inch=6.28 inches girth increment  
2 " " " =3.14 " " "  
3 " " " =2.09 " " "

Values not given in such tables can be obtained by *dividing* the conversion factor given at the head of the table by the value to be converted. E.g.  $1\frac{1}{2}$  rings per inch=4.19 inches girth increment  $(6.2832\div 1.5)$ . (The arithmetic mean of the values for 1 and 2 rings per inch  $\frac{6.28+3.14}{2}$  gives the false answer 4.71.)

The figures given in some of the tables can be used for more than one conversion. For example, the same table can be used to convert hectares to acres as can be used for stems per acre to stems per hectare. (1 hectare=2.47 acres; 1 stem per acre=2.47 stems per hectare). In most cases the figures have not been repeated. Instead, a heading and note at the foot of the appropriate table covers the other uses of that set of figures. For example see Table 15, page 17, and notes.

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## LIST OF UNITS

Roman numbers following each unit refer to the Tables of Units and Abbreviations on pages 8 and 9, where related units are given

Acre	II i	Link	I i
Are	II ii	Litre	III ii
Board foot	Table 44a	Load	Table 44b
Bushel	III	Metre	I ii
Cental	IV i	Mile	I i
Centigram	IV ii	Milligram	IV ii
Centilitre	III ii	Millilitre	III ii
Centimetre	I ii	Millimetre	I ii
Chain	I i	Myriagram	IV ii
Cord	Table 44a	Myrialitre	III ii
Cubic centimetre	III ii	Myriametre	I ii
Cubic measure for other linear units	units— <i>see</i>	Nautical mile	I i
Decagram	IV ii	Ounce	IV i
Decalitre	III ii	Peck	III i
Decametre	I ii	Perch	I i
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Decilitre	III ii	Pole	I i
Decimetre	I ii	Pound	IV i
Doppelzentner	IV ii	Quart	III i
Drachm (fluid)	III i	Quarter	IV i
Dram	IV i	Quintal	IV ii
Fathom	I i	Raummeter	Table 44a
Fathom (piled or firewood)	Table 44a	Rod	I i
Fluid ounce	III i	Rood	II i
Foot	I i	Square chain	II i
Furlong	I i	„ foot	II i
Gallon, Imperial or U.S.	III i	„ inch	II i
Gill	III i	„ kilometre	II ii
Gram	IV ii	„ metre	II ii
Hectare	II ii	„ mile	II i
Hectogram	IV ii	„ yard	II i
Hectolitre	III ii	Standard	Table 44a
Hectometre	I ii	Stère	Table 44a
Hundredweight	IV i	Stone	IV i
Inch	I i	Tons long	IV i
Inch of rain	III i	„ metric	IV ii
Kilogram	IV ii	„ short	IV i
Kilolitre	III ii	Yard	I i
Kilometre	I ii	Zentner	IV ii
Knot	I i		

# TABLES OF UNITS AND ABBREVIATIONS

## I. LENGTH

### (i) English

12 inches = 1 foot (ft.)  
3 feet = 1 yard (yd.)  
6 feet = 1 fathom (fath.)  
5½ yards = 1 pole, rod, perch  
22 yards = 1 chain (ch.)  
7·92 inches = 1 link (lk.)  
100 links = 1 chain  
10 chains = 1 furlong (fur.)  
8 furlongs = 1 mile = 5,280 feet  
6,080 feet = 1 nautical mile  
1 knot = 1 nautical mile per hour

### (ii) Metric

10 millimetre (mm.) = 1 centimetre (cm.)  
10 centimetres = 1 decimetre (dm.)  
10 decimetres = 1 metre (m.)  
10 metres = 1 decametre (dam.)  
10 decametres = 1 hectometre (hm.)  
10 hectometres = 1 kilometre (km.)  
10 kilometres = 1 myriametre (mam.)  
1000 millimetres = 1 metre  
1000 metres = 1 kilometre

## II. AREA

### (i) English

144 square inches = 1 square foot  
9 square feet = 1 square yard  
30¼ square yards = 1 square rod, pole  
or perch  
16 square rods, poles or perches = 1  
square chain  
40 square rods, poles or perches = 1 rood  
43560 square feet = 1 acre (ac.)  
4840 square yards = 1 acre  
10 square chains = 1 acre  
4 roods = 1 acre  
640 acres = 1 square mile

### (ii) Metric

1 square metre = 1 centiare  
100 square metres = 1 are (a.)  
100 ares = 1 hectare (ha.)  
100 hectares = 1 sq. kilometre

### III. VOLUME

#### (i) English (Imperial measure)

4 gills=1 pint (pt.)  
2 pints=1 quart (qt.)  
4 quarts=1 gallon (gall.)  
2 gallons=1 peck  
8 gallons=1 bushel  
1 Imperial gallon=1.2 United States gallons  
8 fluid drachms=1 fluid ounce  
20 fluid ounces=1 pint  
8 pints=1 gallon  
1 gallon of water at 62°F. and pressure at 30 inches mercury weighs 10 lbs.  
1 cubic foot of water at 62° F. and pressure at 30 inches mercury weighs 62.321 lbs.  
One inch of rainfall on an acre=22,622 gallons=3,630 cubic feet=101 tons of water=4.67 gallons per square yard  
For special units used to measure timber volume, see Tables 44a-44c, pages 29-31.

#### (ii) Metric

10 millilitres (ml.)=1 centilitre (cl.)  
10 centilitres=1 decilitre (dl.)  
10 decilitres=1 litre (l.)  
10 litres=1 decalitre (dal.)  
10 decalitres=1 hectolitre (hl.)  
10 hectolitres=1 kilolitre (kl.)  
10 kilolitres=1 myrialitre (mal.)  
1 litre of water at 4° C. and pressure at 760 mms. mercury weighs 1 kilogram and occupies 1,000.027 cubic centimetres (cc.)

### IV. WEIGHT

#### (i) English

Avoirdupois weight

16 drams=1 ounce (oz.)  
16 ounces=1 pound (lb.)  
14 pounds=1 stone (st.)  
2 stones=1 quarter (qtr.)  
4 quarters=1 hundredweight (cwt.)  
20 hundredweights=1 ton (long ton)  
112 lb.=1 hundredweight  
2,240 lb.=1 long ton  
100 lb.=1 cental (corn measure)  
2,000 lb.=1 short ton

#### (ii) Metric

10 milligrams (mg.)=1 centigram (cg.)  
10 centigrams=1 decigram (dg.)  
10 decigrams=1 gram (gr.)  
10 grams=1 decagram (dag.)  
10 decagrams=1 hectogram (hg.)  
10 hectograms=1 kilogram (kg.)  
10 kilograms=1 myriagram  
50 kilograms=1 zentner (German)  
100 kilograms=1 quintal (fr.)=1 doppel-zentner (Ger.)  
1,000 kilograms=1 metric tonne  
10 quintals=1 metric tonne



## SECTION 1: LENGTH

**TABLE 1. INCHES TO CENTIMETRES**

Conversion factor: 1 inch=2.54000 centimetres

Ins.	0	1	2	3	4	5	6	7	8	9
<b>0</b>	—	2.54	5.08	7.62	10.16	12.70	15.24	17.78	20.32	22.86
<b>10</b>	25.40	27.94	30.48	33.02	35.56	38.10	40.64	43.18	45.72	48.26
<b>20</b>	50.80	53.34	55.88	58.42	60.96	63.50	66.04	68.58	71.12	73.66
<b>30</b>	76.20	78.74	81.28	83.82	86.36	88.90	91.44	93.98	96.52	99.06
<b>40</b>	101.60	104.14	106.68	109.22	111.76	114.30	116.84	119.38	121.92	124.46
<b>50</b>	127.00	129.54	132.08	134.62	137.16	139.70	142.24	144.78	147.32	149.86
<b>60</b>	152.40	154.94	157.48	160.02	162.56	165.10	167.64	170.18	172.72	175.26
<b>70</b>	177.80	180.34	182.88	185.42	187.96	190.50	193.04	195.58	198.12	200.66
<b>80</b>	203.20	205.74	208.28	210.82	213.36	215.90	218.44	220.98	223.52	226.06
<b>90</b>	228.60	231.14	233.68	236.22	238.76	241.30	243.84	246.38	248.92	251.46

**TABLE 2. CENTIMETRES TO INCHES**

Conversion factor: 1 centimetre=0.393701 inches

Cm.	0	1	2	3	4	5	6	7	8	9
<b>0</b>	—	0.39	0.79	1.18	1.57	1.97	2.36	2.76	3.15	3.54
<b>10</b>	3.94	4.33	4.72	5.12	5.51	5.91	6.30	6.69	7.09	7.48
<b>20</b>	7.87	8.27	8.66	9.06	9.45	9.84	10.24	10.63	11.02	11.42
<b>30</b>	11.81	12.20	12.60	12.99	13.39	13.78	14.17	14.57	14.96	15.35
<b>40</b>	15.75	16.14	16.54	16.93	17.32	17.72	18.11	18.50	18.90	19.29
<b>50</b>	19.69	20.08	20.47	20.87	21.26	21.65	22.05	22.44	22.83	23.23
<b>60</b>	23.62	24.02	24.41	24.80	25.20	25.59	25.98	26.38	26.77	27.17
<b>70</b>	27.56	27.95	28.35	28.74	29.13	29.53	29.92	30.31	30.71	31.10
<b>80</b>	31.50	31.89	32.28	32.68	33.07	33.46	33.86	34.25	34.65	35.04
<b>90</b>	35.43	35.83	36.22	36.61	37.01	37.40	37.80	38.19	38.58	38.98

**TABLE 3. FEET TO METRES**

Conversion factor: 1 foot=0.304801 metres

Feet	0	1	2	3	4	5	6	7	8	9
0	—	0.30	0.61	0.91	1.22	1.52	1.83	2.13	2.44	2.74
10	3.05	3.35	3.66	3.96	4.27	4.57	4.88	5.18	5.49	5.79
20	6.10	6.40	6.71	7.01	7.32	7.62	7.92	8.23	8.53	8.84
30	9.14	9.45	9.75	10.06	10.36	10.67	10.97	11.28	11.58	11.89
40	12.19	12.50	12.80	13.11	13.41	13.72	14.02	14.33	14.63	14.94
50	15.24	15.54	15.85	16.15	16.46	16.76	17.07	17.37	17.68	17.98
60	18.29	18.59	18.90	19.20	19.51	19.81	20.12	20.42	20.73	21.03
70	21.34	21.64	21.95	22.25	22.56	22.86	23.16	23.47	23.77	24.08
80	24.38	24.69	24.99	25.30	25.60	25.91	26.21	26.52	26.82	27.13
90	27.43	27.74	28.04	28.35	28.65	28.96	29.26	29.57	29.87	30.18
100	30.48	30.78	31.09	31.39	31.70	32.00	32.31	32.61	32.92	33.22
110	33.53	33.83	34.14	34.44	34.75	35.05	35.36	35.66	35.97	36.27
120	36.58	36.88	37.19	37.49	37.80	38.10	38.40	38.71	39.01	39.32
130	39.62	39.93	40.23	40.54	40.84	41.15	41.45	41.76	42.06	42.37
140	42.67	42.98	43.28	43.59	43.89	44.20	44.50	44.81	45.11	45.42
150	45.72	46.02	46.33	46.63	46.94	47.24	47.55	47.85	48.16	48.46
160	48.77	49.07	49.38	49.68	49.99	50.29	50.60	50.90	51.21	51.51
170	51.82	52.12	52.43	52.73	53.04	53.34	53.64	53.95	54.25	54.56
180	54.86	55.17	55.47	55.78	56.08	56.39	56.69	57.00	57.30	57.61
190	57.91	58.22	58.52	58.83	59.13	59.44	59.74	60.05	60.35	60.66

**TABLE 4. METRES TO FEET**

Conversion factor: 1 metre=3.28084 feet

m.	0	1	2	3	4	5	6	7	8	9
0	—	3.28	6.56	9.84	13.12	16.40	19.68	22.97	26.25	29.53
10	32.81	36.09	39.37	42.65	45.93	49.21	52.49	55.77	59.06	62.34
20	65.62	68.90	72.18	75.46	78.74	82.02	85.30	88.58	91.86	95.14
30	98.43	101.71	104.99	108.27	111.55	114.83	118.11	121.39	124.67	127.95
40	131.23	134.51	137.80	141.08	144.36	147.64	150.92	154.20	157.48	160.76
50	164.04	167.32	170.60	173.88	177.17	180.45	183.73	187.01	190.29	193.57
60	196.85	200.13	203.41	206.69	209.97	213.25	216.54	219.82	223.10	226.38
70	229.66	232.94	236.22	239.50	242.78	246.06	249.34	252.62	255.91	259.19
80	262.47	265.75	269.03	272.31	275.59	278.87	282.15	285.43	288.71	292.00
90	295.28	298.56	301.84	305.12	308.40	311.68	314.96	318.24	321.52	324.80
100	328.08	—	—	—	—	—	—	—	—	—

**TABLE 5. YARDS TO METRES**

Conversion factor: 1 yard=0.914399 metres

Yds.	0	1	2	3	4	5	6	7	8	9
0	—	0.91	1.83	2.74	3.66	4.57	5.49	6.40	7.32	8.23
10	9.14	10.06	10.97	11.89	12.80	13.72	14.63	15.54	16.46	17.37
20	18.29	19.20	20.12	21.03	21.95	22.86	23.77	24.69	25.60	26.52
30	27.43	28.35	29.26	30.18	31.09	32.00	32.92	33.83	34.75	35.66
40	36.58	37.49	38.40	39.32	40.23	41.15	42.06	42.98	43.89	44.81
50	45.72	46.63	47.55	48.46	49.38	50.29	51.21	52.12	53.04	53.95
60	54.86	55.78	56.69	57.61	58.52	59.44	60.35	61.26	62.18	63.09
70	64.01	64.92	65.84	66.75	67.67	68.58	69.49	70.41	71.32	72.24
80	73.15	74.07	74.93	75.90	76.81	77.72	78.64	79.55	80.47	81.38
90	82.30	83.21	84.12	85.04	85.95	86.87	87.78	88.70	89.61	90.53

**TABLE 6. METRES TO YARDS**

Conversion factor: 1 metre=1.09361 yards

m.	0	1	2	3	4	5	6	7	8	9
0	—	1.09	2.19	3.28	4.37	5.47	6.56	7.66	8.75	9.84
10	10.94	12.03	13.12	14.22	15.31	16.40	17.50	18.59	19.69	20.78
20	21.87	22.97	24.06	25.15	26.25	27.34	28.43	29.53	30.62	31.71
30	32.81	33.90	35.00	36.09	37.18	38.28	39.37	40.46	41.56	42.65
40	43.74	44.84	45.93	47.03	48.12	49.12	50.31	51.40	52.49	53.59
50	54.68	55.77	56.87	57.96	59.06	60.15	61.24	62.34	63.43	64.52
60	65.62	66.71	67.80	68.90	69.99	71.08	72.18	73.27	74.37	75.46
70	76.55	77.65	78.74	79.83	80.93	82.02	83.11	84.21	85.30	86.40
80	87.49	88.58	89.68	90.77	91.86	92.96	94.05	95.14	96.24	97.33
90	98.43	99.52	100.61	101.71	102.80	103.89	104.99	106.08	107.17	108.27

**TABLE 7. MILES TO KILOMETRES**

Conversion factor: 1 mile=1.60934 kilometres

Miles	0	1	2	3	4	5	6	7	8	9
0	—	1.61	3.22	4.83	6.44	8.05	9.66	11.27	12.87	14.48
10	16.09	17.70	19.31	20.92	22.53	24.14	25.75	27.36	28.97	30.58
20	32.19	33.80	35.41	37.01	38.62	40.23	41.84	43.45	45.06	46.67
30	48.28	49.89	51.50	53.11	54.72	56.33	57.94	59.55	61.15	62.76
40	64.37	65.98	67.59	69.20	70.81	72.42	74.03	75.64	77.25	78.86
50	80.47	82.08	83.69	85.30	86.90	88.51	90.12	91.73	93.34	94.95
60	96.56	98.17	99.78	101.39	103.00	104.61	106.22	107.83	109.44	111.04
70	112.65	114.26	115.87	117.48	119.09	120.70	122.31	123.92	125.53	127.14
80	128.75	130.36	131.97	133.58	135.18	136.79	138.40	140.01	141.62	143.23
90	144.84	146.45	148.06	149.67	151.28	152.89	154.50	156.11	157.72	159.32

*Note:* **MILES PER HOUR TO KILOMETRES PER HOUR**

Use Table 7 above.

E.g. 1 m.p.h.=1.61 km.p.h.

**TABLE 8. KILOMETRES TO MILES**

Conversion factor: 1 kilometre=0.62137 miles

Km.	0	1	2	3	4	5	6	7	8	9
0	—	0.62	1.24	1.86	2.49	3.11	3.73	4.35	4.97	5.59
10	6.21	6.84	7.46	8.08	8.70	9.32	9.94	10.56	11.18	11.81
20	12.43	13.05	13.67	14.29	14.91	15.53	16.16	16.78	17.40	18.02
30	18.64	19.26	19.88	20.51	21.13	21.75	22.37	22.99	23.61	24.23
40	24.85	25.48	26.10	26.72	27.34	27.96	28.58	29.20	29.83	30.45
50	31.07	31.69	32.31	32.93	33.55	34.18	34.80	35.42	36.04	36.66
60	37.28	37.90	38.52	39.15	39.77	40.39	41.01	41.63	42.25	42.87
70	43.50	44.12	44.74	45.36	45.98	46.60	47.22	47.85	48.47	49.09
80	49.71	50.33	50.95	51.57	52.20	52.82	53.44	54.06	54.68	55.30
90	55.92	56.54	57.17	57.79	58.41	59.03	59.65	60.27	60.89	61.52

*Note:* **KILOMETRES PER HOUR TO MILES PER HOUR**

Use Table 8 above.

E.g. 1 kilometre per hour=0.62 miles per hour.

**TABLE 9. FEET TO LINKS**

Conversion factor: 1 foot = 1.51515 links

Feet	0	1	2	3	4	5	6	7	8	9
0	—	1.52	3.03	4.55	6.06	7.58	9.09	10.61	12.12	13.64
10	15.15	16.67	18.18	19.70	21.21	22.73	24.24	25.76	27.27	28.79
20	30.30	31.82	33.33	34.85	36.36	37.88	39.39	40.91	42.42	43.94
30	45.45	46.97	48.48	50.00	51.52	53.03	54.55	56.06	57.58	59.09
40	60.61	62.12	63.64	65.15	66.67	68.18	69.70	71.21	72.73	74.24
50	75.76	77.27	78.79	80.30	81.82	83.33	84.85	86.36	87.88	89.39
60	90.91	92.42	93.94	95.45	96.97	98.48	100.00			

**TABLE 10. LINKS TO FEET**

Conversion factor: 1 link = 0.660 feet

Links	0	1	2	3	4	5	6	7	8	9
0	—	0.7	1.3	2.0	2.6	3.3	4.0	4.6	5.3	5.9
10	6.6	7.3	7.9	8.6	9.2	9.9	10.6	11.2	11.9	12.5
20	13.2	13.9	14.5	15.2	15.8	16.5	17.2	17.8	18.5	19.1
30	19.8	20.5	21.1	21.8	22.4	23.1	23.8	24.4	25.1	25.7
40	26.4	27.1	27.7	28.4	29.0	29.7	30.4	31.0	31.7	32.3
50	33.0	33.7	34.3	35.0	35.6	36.3	37.0	37.6	38.3	38.9
60	39.6	40.3	40.9	41.6	42.2	42.9	43.6	44.2	44.9	45.5
70	46.2	46.9	47.5	48.2	48.8	49.5	50.2	50.8	51.5	52.1
80	52.8	53.5	54.1	54.8	55.4	56.1	56.8	57.4	58.1	58.7
90	59.4	60.1	60.7	61.4	62.0	62.7	63.4	64.0	64.7	65.3

## SECTION 2 : AREA

**TABLE 11. SQUARE INCHES TO SQUARE CENTIMETRES**

Conversion factor: 1 sq. in. = 6.45159 sq. cm.

Sq. ins.	0	1	2	3	4	5	6	7	8	9
0	—	6.5	12.9	19.4	25.8	32.3	38.7	45.2	51.6	58.1
10	64.5	71.0	77.4	83.9	90.3	96.8	103.2	109.7	116.1	122.6
20	129.0	135.5	141.9	148.4	154.8	161.3	167.7	174.2	180.6	187.1
30	193.5	200.0	206.5	212.9	219.4	225.8	232.3	238.7	245.2	251.6
40	258.1	264.5	271.0	277.4	283.9	290.3	296.8	303.2	309.7	316.1
50	322.6	329.0	335.5	341.9	348.4	354.8	361.3	367.7	374.2	380.6
60	387.1	393.5	400.0	406.5	412.9	419.4	425.8	432.3	438.7	445.2
70	451.6	458.1	464.5	471.0	477.4	483.9	490.3	496.8	503.2	509.7
80	516.1	522.6	529.0	535.5	541.9	548.4	554.8	561.3	567.7	574.2
90	580.6	587.1	593.5	600.0	606.4	612.9	619.4	625.8	632.3	638.7
100	645.2	651.6	658.1	664.5	671.0	677.4	683.9	690.3	696.8	703.2
110	709.7	716.1	722.6	729.0	735.5	741.9	748.4	754.8	761.3	767.7
120	774.2	780.6	787.1	793.5	800.0	806.4	812.9	819.4	825.8	832.3
130	838.7	845.2	851.6	858.1	864.5	871.0	877.4	883.9	890.3	896.8
140	903.2	909.7	916.1	922.6	929.0					

**TABLE 12. SQUARE CENTIMETRES TO SQUARE INCHES**

Conversion factor: 1 sq. cm. = 0.155001 sq. in.

Sq. cm.	0	1	2	3	4	5	6	7	8	9
0	—	0.155	0.310	0.465	0.620	0.775	0.930	1.085	1.240	1.395
10	1.550	1.705	1.860	2.015	2.170	2.325	2.480	2.635	2.790	2.945
20	3.100	3.255	3.410	3.565	3.720	3.875	4.030	4.185	4.340	4.495
30	4.650	4.805	4.960	5.115	5.270	5.425	5.580	5.735	5.890	6.045
40	6.200	6.355	6.510	6.665	6.820	6.975	7.130	7.285	7.440	7.595
50	7.750	7.905	8.060	8.215	8.370	8.525	8.680	8.835	8.990	9.145
60	9.300	9.455	9.610	9.765	9.920	10.075	10.230	10.385	10.540	10.695
70	10.850	11.005	11.160	11.315	11.470	11.625	11.780	11.935	12.090	12.245
80	12.400	12.555	12.710	12.865	13.020	13.175	13.330	13.485	13.640	13.795
90	13.950	14.105	14.260	14.415	14.570	14.725	14.880	15.035	15.190	15.345

**TABLE 13. SQUARE FEET (TRUE) TO SQUARE METRES**

Conversion factor: 1 sq. ft.=0.0929029 sq. m.

Sq. ft.	0	1	2	3	4	5	6	7	8	9
0	—	0.9929	0.1858	0.2787	0.3716	0.4645	0.5574	0.6503	0.7432	0.8361

**TABLE 14. SQUARE METRES TO SQUARE FEET (TRUE)**

Conversion factor: 1 sq. m.=10.7639 sq. ft.

Sq. m.	0	1	2	3	4	5	6	7	8	9
0	—	10.764	21.528	32.292	43.056	53.820	64.584	75.347	86.111	96.875

**TABLE 15. SQUARE YARDS TO SQUARE METRES**

Conversion factor: 1 sq. yd.=0.83613 sq. m.

Sq. yd.	0	1	2	3	4	5	6	7	8	9
0	—	0.84	1.67	2.51	3.34	4.18	5.02	5.85	6.69	7.53
10	8.36	9.20	10.03	10.87	11.71	12.54	13.38	14.21	15.05	15.89
20	16.72	17.56	18.39	19.23	20.07	20.90	21.74	22.58	23.41	24.25
30	25.08	25.92	26.76	27.59	28.43	29.26	30.10	30.94	31.77	32.61
40	33.45	34.28	35.12	35.95	36.79	37.63	38.46	39.30	40.13	40.97
50	41.81	42.64	43.48	44.31	45.15	45.99	46.82	47.66	48.50	49.33
60	50.17	51.00	51.84	52.68	53.51	54.35	55.18	56.02	56.86	57.69
70	58.53	59.37	60.20	61.04	61.87	62.71	63.55	64.38	65.22	66.05
80	66.89	67.73	68.56	69.40	70.23	71.07	71.91	72.74	73.58	74.42
90	75.25	76.09	76.92	77.76	78.60	79.43	80.27	81.10	81.94	82.78

**Note: LITRES (KILOGRAMS) PER HECTARE TO MILLILITRES (GRAMS) PER SQUARE YARD**

Use figures in Table 15 above with decimal point shifted one place to the left.

E.g. 1 litre per ha.=0.084 ml. per sq. yard.

**GRAMS (MILLILITRES) PER SQUARE METRE TO GRAMS (MILLILITRES) PER SQUARE YARD**

Use Table 15 above.

E.g. 1 gr. (ml.) per sq. metre=0.84 gr. (ml.) per sq. yard.

**TABLE 16. SQUARE METRES TO SQUARE YARDS**

Conversion factor: 1 sq. m. = 1.19599 sq. yd.

Sq. m.	0	1	2	3	4	5	6	7	8	9
<b>0</b>	—	1.20	2.39	3.59	4.78	5.98	7.18	8.37	9.57	10.76
<b>10</b>	11.96	13.16	14.35	15.55	16.74	17.94	19.14	20.33	21.53	22.72
<b>20</b>	23.92	25.12	26.31	27.51	28.70	29.90	31.10	32.29	33.49	34.68
<b>30</b>	35.88	37.08	38.27	39.47	40.66	41.86	43.06	44.25	45.45	46.64
<b>40</b>	47.84	49.04	50.23	51.43	52.62	53.82	55.02	56.21	57.41	58.60
<b>50</b>	59.80	61.00	62.19	63.39	64.58	65.78	66.98	68.17	69.37	70.56
<b>60</b>	71.76	72.96	74.15	75.35	76.54	77.74	78.94	80.13	81.33	82.52
<b>70</b>	83.72	84.92	86.11	87.31	88.50	89.70	90.90	92.09	93.29	94.48
<b>80</b>	95.68	96.88	98.07	99.27	100.46	101.66	102.86	104.05	105.25	106.44
<b>90</b>	107.64	108.84	110.03	111.23	112.42	113.62	114.82	116.01	117.21	118.40

**Note: GRAMS (MILLILITRES) PER SQUARE YARD TO KILOGRAMS (LITRES) PER HECTARE**

Use figures in Table 16 above with *decimal point shifted one place to the right*.  
E.g. 1 gr. (ml.) per sq. yard = 12.0 kg. (litres) per hectare.

**GRAMS (MILLILITRES) PER SQUARE YARD TO GRAMS (MILLILITRES) PER SQUARE METRE**

Use Table 16 above.

E.g. 1 gr. (ml.) per sq. yard = 1.20 gr. (ml.) per sq. metre.

**TABLE 17. ACRES TO HECTARES**

Conversion factor: 1 acre = 0.404685 hectares

Acres	0	1	2	3	4	5	6	7	8	9
<b>0</b>	—	0.40	0.81	1.21	1.62	2.02	2.43	2.83	3.24	3.64
<b>10</b>	4.05	4.45	4.86	5.26	5.67	6.07	6.47	6.88	7.28	7.69
<b>20</b>	8.09	8.50	8.90	9.31	9.71	10.12	10.52	10.93	11.33	11.74
<b>30</b>	12.14	12.55	12.95	13.35	13.76	14.16	14.57	14.97	15.38	15.78
<b>40</b>	16.19	16.59	17.00	17.40	17.81	18.21	18.62	19.02	19.42	19.83
<b>50</b>	20.23	20.64	21.04	21.45	21.85	22.26	22.66	23.07	23.47	23.88
<b>60</b>	24.28	24.69	25.09	25.50	25.90	26.30	26.71	27.11	27.52	27.92
<b>70</b>	28.33	28.73	29.14	29.54	29.95	30.35	30.76	31.16	31.57	31.97
<b>80</b>	32.37	32.78	33.18	33.59	33.99	34.40	34.80	35.21	35.61	36.02
<b>90</b>	36.42	36.83	37.23	37.64	38.04	38.45	38.85	39.25	39.66	40.06

**Note: STEMS PER HECTARE TO STEMS PER ACRE**

Use Table 17 above.

E.g. 10 stems per hectare = 4.05 stems per acre.

**TABLE 18. HECTARES TO ACRES**

Conversion factor: 1 hectare=2.47104 acres

Ha.	0	1	2	3	4	5	6	7	8	9
0	—	2.5	4.9	7.4	9.9	12.4	14.8	17.3	19.8	22.2
10	24.7	27.2	29.7	32.1	34.6	37.1	39.5	42.0	44.5	46.9
20	49.4	51.9	54.4	56.8	59.3	61.8	64.2	66.7	69.2	71.7
30	74.1	76.6	79.1	81.5	84.0	86.5	89.0	91.4	93.9	96.4
40	98.8	101.3	103.8	106.3	108.7	111.2	113.7	116.1	118.6	121.1
50	123.6	126.0	128.5	131.0	133.4	135.9	138.4	140.8	143.3	145.8
60	148.3	150.7	153.2	155.7	158.1	160.6	163.1	165.6	168.0	170.5
70	173.0	175.4	177.9	180.4	182.9	185.3	187.8	190.3	192.7	195.2
80	197.7	200.2	202.6	205.1	207.6	210.0	212.5	215.0	217.5	219.9
90	222.4	224.9	227.3	229.8	232.3	234.7	237.2	239.7	242.2	244.6

**Note: STEMS PER ACRE TO STEMS PER HECTARE**

Use Table 18 above.

E.g. 10 stems per acre=24.7 stems per hectare.

**TABLE 19. SQUARE MILES TO SQUARE KILOMETRES**

Conversion factor: 1 sq. mile=2.58998 sq. km.

Sq. miles	0	1	2	3	4	5	6	7	8	9
0	—	2.6	5.2	7.8	10.4	12.9	15.5	18.1	20.7	23.3
10	25.9	28.5	31.1	33.7	36.3	38.8	41.4	44.0	46.6	49.2
20	51.8	54.4	57.0	59.6	62.2	64.7	67.3	69.9	72.5	75.1
30	77.7	80.3	82.9	85.5	88.1	90.6	93.2	95.8	98.4	101.0
40	103.6	106.2	108.8	111.4	114.0	116.5	119.1	121.7	124.3	126.9
50	129.5	132.1	134.7	137.3	139.9	142.4	145.0	147.6	150.2	152.8
60	155.4	158.0	160.6	163.2	165.8	168.3	170.9	173.5	176.1	178.7
70	181.3	183.9	186.5	189.1	191.7	194.2	196.8	199.4	202.0	204.6
80	207.2	209.8	212.4	215.0	217.6	220.1	222.7	225.3	227.9	230.5
90	233.1	235.7	238.3	240.9	243.5	246.0	248.6	251.2	253.8	256.4

**Note: SQUARE MILES TO HECTARES**

Use figures in Table 19 above with decimal point shifted two places to the right. E.g. 1 sq. mile=259 hectares.

**TABLE 20. SQUARE KILOMETRES TO SQUARE MILES**

Conversion factor: 1 sq. km. = 0.38610 sq. miles.

Sq. km.	0	1	2	3	4	5	6	7	8	9
0	—	0.39	0.77	1.16	1.54	1.93	2.32	2.70	3.09	3.47
10	3.86	4.25	4.63	5.02	5.41	5.79	6.18	6.56	6.95	7.34
20	7.72	8.11	8.49	8.88	9.27	9.65	10.04	10.42	10.81	11.20
30	11.58	11.97	12.36	12.74	13.13	13.51	13.90	14.29	14.67	15.06
40	15.44	15.83	16.22	16.60	16.99	17.37	17.76	18.15	18.53	18.92
50	19.31	19.69	20.08	20.46	20.85	21.24	21.62	22.01	22.39	22.78
60	23.17	23.55	23.94	24.32	24.71	25.10	25.48	25.87	26.25	26.64
70	27.03	27.41	27.80	28.19	28.57	28.96	29.34	29.73	30.12	30.50
80	30.89	31.27	31.66	32.05	32.43	32.82	33.20	33.59	33.98	34.36
90	34.75	35.14	35.52	35.91	36.29	36.68	37.07	37.45	37.84	38.22

**TABLE 21. SQUARE YARDS TO ACRES**

Conversion factor: 100 sq. yds. = 0.0206612 acres

Sq. yds.	0	100	200	300	400	500	600	700	800	900
0	—	0.02066	0.04132	0.06198	0.08264	0.10331	0.12397	0.14463	0.16529	0.18595

*Note:* 100 sq. yds. is a unit of area commonly used in forest nurseries.**TABLE 22. ACRES TO SQUARE YARDS**

Conversion factor: 1 acre = 4840 sq. yards.

Acres	0	1	2	3	4	5	6	7	8	9
0	—	4840	9680	14520	19360	24200	29040	33880	38720	43560

## SECTION 3: GIRTH, DIAMETER AND BASAL AREA

**TABLE 23. INCHES GIRTH TO CENTIMETRES DIAMETER**

Conversion factor: 1 inch girth = 0.808506 cms. diameter

Ins. girth	0	1	2	3	4	5	6	7	8	9
0	—	0.81	1.62	2.43	3.23	4.04	4.85	5.66	6.47	7.28
10	8.09	8.89	9.70	10.51	11.32	12.13	12.94	13.74	14.55	15.36
20	16.17	16.98	17.79	18.60	19.40	20.21	21.02	21.83	22.64	23.45
30	24.26	25.06	25.87	26.68	27.49	28.30	29.11	29.91	30.72	31.53
40	32.34	33.15	33.96	34.77	35.57	36.38	37.19	38.00	38.81	39.62
50	40.43	41.23	42.04	42.85	43.66	44.47	45.28	46.08	46.89	47.70
60	48.51	49.32	50.13	50.94	51.74	52.55	53.36	54.17	54.98	55.79
70	56.60	57.40	58.21	59.02	59.83	60.64	61.45	62.25	63.06	63.87
80	64.68	65.49	66.30	67.11	67.91	68.72	69.53	70.34	71.15	71.96
90	72.77	73.57	74.38	75.19	76.00	76.81	77.62	78.43	79.23	80.04
100	80.85	81.66	82.47	83.28	84.08	84.89	85.70	86.51	87.32	88.13
110	88.94	89.74	90.55	91.36	92.17	92.98	93.79	94.60	95.40	96.21

**TABLE 24. CENTIMETRES DIAMETER TO INCHES GIRTH**

Conversion factor: 1 cm. diam. = 1.236848 inches girth

Cms. dia.	0	1	2	3	4	5	6	7	8	9
0	—	1.24	2.47	3.71	4.95	6.18	7.42	8.66	9.89	11.13
10	12.37	13.61	14.84	16.08	17.32	18.55	19.79	21.03	22.26	23.50
20	24.74	25.97	27.21	28.45	29.68	30.92	32.16	33.39	34.63	35.87
30	37.11	38.34	39.58	40.82	42.05	43.29	44.53	45.76	47.00	48.24
40	49.47	50.71	51.95	53.18	54.42	55.66	56.90	58.13	59.37	60.61
50	61.84	63.08	64.32	65.55	66.79	68.03	69.26	70.50	71.74	72.97
60	74.21	75.45	76.68	77.92	79.16	80.40	81.63	82.87	84.11	85.34
70	86.58	87.82	89.05	90.29	91.53	92.76	94.00	95.24	96.47	97.71
80	98.95	100.18	101.42	102.66	103.90	105.13	106.37	107.61	108.84	110.08
90	111.32	112.55	113.79	115.03	116.26	117.50	118.74	119.97	121.21	122.45

**TABLE 25. INCHES GIRTH TO INCHES DIAMETER**

Conversion factor: 1 inch girth=0.318309 inches diameter

Ins. girth	0	1	2	3	4	5	6	7	8	9
0	—	0.32	0.64	0.95	1.27	1.59	1.91	2.23	2.55	2.86
10	3.18	3.50	3.82	4.14	4.46	4.77	5.09	5.41	5.73	6.05
20	6.37	6.68	7.00	7.32	7.64	7.96	8.28	8.59	8.91	9.23
30	9.55	9.87	10.19	10.50	10.82	11.14	11.46	11.78	12.10	12.41
40	12.73	13.05	13.37	13.69	14.01	14.32	14.64	14.96	15.28	15.60
50	15.92	16.23	16.55	16.87	17.19	17.51	17.83	18.14	18.46	18.78
60	19.10	19.42	19.74	20.05	20.37	20.69	21.01	21.33	21.65	21.96
70	22.28	22.60	22.92	23.24	23.55	23.87	24.19	24.51	24.83	25.15
80	25.46	25.78	26.10	26.42	26.74	27.06	27.37	27.69	28.01	28.33
90	28.65	28.97	29.28	29.60	29.92	30.24	30.56	30.88	31.19	31.51
100	31.83	32.15	32.47	32.79	33.10	33.42	33.74	34.06	34.38	34.70
110	35.01	35.33	35.65	35.97	36.29	36.61	36.92	37.24	37.56	37.88

**TABLE 26. INCHES DIAMETER TO INCHES GIRTH**

Conversion factor: 1 inch diam.=3.14159 inches girth

Ins. dia.	0	1	2	3	4	5	6	7	8	9
0	—	3.1	6.3	9.4	12.6	15.7	18.8	22.0	25.1	28.3
10	31.4	34.6	37.7	40.8	44.0	47.1	50.3	53.4	56.5	59.7
20	62.8	66.0	69.1	72.3	75.4	78.5	81.7	84.8	88.0	91.1
30	94.2	97.4	100.5	103.7	106.8	110.0	113.1	116.2	119.4	122.5
40	125.7	128.8	131.9	135.1	138.2	141.4	144.5	147.7	150.8	153.9
50	157.1	160.2	163.4	166.5	169.6	172.8	175.9	179.1	182.2	185.4
60	188.5	191.6	194.8	197.9	201.1	204.2	207.3	210.5	213.6	216.8
70	219.9	223.1	226.2	229.3	232.5	235.6	238.8	241.9	245.0	248.2
80	251.3	254.5	257.6	260.8	263.9	267.0	270.2	273.3	276.5	279.6
90	282.7	285.9	289.0	292.2	295.3	298.5	301.6	304.7	307.9	311.0

**TABLE 27. ANNUAL GIRTH INCREMENT UNDER BARK TO RINGS PER INCH**

Conversion factor: 1 inch annual girth increment (u.b.) =  $\frac{6.2832}{1(x)}$  rings per inch.

Annual girth increment under bark (ins.)	Rings per inch	Annual girth increment under bark (ins.)	Rings per inch
.10	63	2.50	2.5
.20	31	2.75	2.3
.25	25	3.00	2.1
.30	21	3.25	1.9
.40	16	3.50	1.8
.50	13	3.75	1.7
.60	10	4.00	1.6
.70	9.0	4.25	1.5
.75	8.4	4.50	1.4
.80	7.9	4.75	1.3
.90	7.0	5.00	1.3
1.00	6.3	5.25	1.2
1.25	5.0	5.50	1.1
1.50	4.2	5.75	1.1
1.75	3.6	6.00	1.05
2.00	3.1	6.25	1.00
2.25	2.8	6.50	0.97

**TABLE 26. RINGS PER INCH TO ANNUAL GIRTH INCREMENT UNDER BARK**

Conversion factor: 1 ring per inch =  $\frac{6.2832}{1(x)}$  inches annual girth increment (u.b.)

Rings per inch	Annual girth increment under bark (ins.)	Rings per inch	Annual girth increment under bark (ins.)
1	6.28	21	0.30
2	3.14	22	0.29
3	2.09	23	0.27
4	1.57	24	0.26
5	1.26	25	0.25
6	1.05	26	0.24
7	0.90	27	0.23
8	0.79	28	0.22
9	0.70	29	0.22
10	0.63	30	0.21
11	0.57	31	0.20
12	0.52	32	0.20
13	0.48	33	0.19
14	0.45	34	0.18
15	0.42	35	0.18
16	0.39	36	0.17
17	0.37	37	0.17
18	0.35	38	0.17
19	0.33	39	0.16
20	0.31	40	0.16

Note the similarity of these two tables; in both, the headings may be exchanged without invalidating the figures. For interpolated values see note on p. iii.

**TABLE 29. SQUARE FEET (QUARTER GIRTH) TO SQUARE CENTIMETRES**

Conversion factor: 1 q.g. sq. ft. = 1182.89 sq. cm.

Q.g. sq. ft.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0	—	118	237	355	473	591	710	828	946	1065
1.0	1183	1301	1419	1538	1656	1774	1893	2011	2129	2247
2.0	2366	2484	2602	2721	2839	2957	3076	3194	3312	3430
3.0	3549	3667	3785	3904	4022	4140	4258	4377	4495	4613
4.0	4732	4850	4968	5086	5205	5323	5441	5560	5678	5796
5.0	5914	6033	6151	6269	6388	6506	6624	6742	6861	6979
6.0	7097	7216	7334	7452	7570	7689	7807	7925	8044	8162
7.0	8280	8399	8517	8635	8753	8872	8990	9108	9227	9345
8.0	9463	9581	9700	9818	9936	10054	10173	10291	10409	10528
9.0	10646	10764	10883	11001	11119	11237	11356	11474	11592	11711

**TABLE 30. SQUARE CENTIMETRES TO SQUARE FEET (QUARTER GIRTH)**

Conversion factor: 1 sq. cm. = 0.000845384 q.g. sq. ft.

Sq. cms.	0	100	200	300	400	500	600	700	800	900
0	—	0.085	0.169	0.254	0.338	0.423	0.507	0.592	0.676	0.761
1000	0.845	0.930	1.014	1.099	1.184	1.268	1.353	1.437	1.522	1.606
2000	1.691	1.775	1.860	1.944	2.029	2.113	2.198	2.283	2.367	2.452
3000	2.536	2.621	2.705	2.790	2.874	2.959	3.043	3.128	3.212	3.297
4000	3.382	3.466	3.551	3.635	3.720	3.804	3.889	3.973	4.058	4.142
5000	4.227	4.311	4.396	4.481	4.565	4.650	4.734	4.819	4.903	4.988
6000	5.072	5.157	5.241	5.326	5.410	5.495	5.580	5.664	5.749	5.833
7000	5.918	6.002	6.089	6.171	6.256	6.340	6.425	6.509	6.594	6.679
8000	6.763	6.848	6.932	7.017	7.101	7.186	7.270	7.355	7.439	7.524
9000	7.608	7.693	7.778	7.862	7.947	8.031	8.116	8.200	8.285	8.369

**TABLE 31. SQUARE FEET (QUARTER GIRTH) PER ACRE TO SQUARE METRES PER HECTARE**

Conversion factor: 1 q.g. sq. ft. per acre = 0.292168 sq. metre per hectare

Q.g. sq. ft. per acre	0	1	2	3	4	5	6	7	8	9
0	—	0.29	0.58	0.88	1.17	1.46	1.75	2.05	2.34	2.63
10	2.92	3.21	3.51	3.80	4.09	4.38	4.67	4.97	5.26	5.55
20	5.84	6.14	6.43	6.72	7.01	7.30	7.60	7.89	8.18	8.47
30	8.77	9.06	9.35	9.64	9.93	10.23	10.52	10.81	11.10	11.39
40	11.69	11.98	12.27	12.56	12.86	13.15	13.44	13.73	14.02	14.32
50	14.61	14.90	15.19	15.48	15.78	16.07	16.36	16.65	16.95	17.24
60	17.53	17.82	18.11	18.41	18.70	18.99	19.28	19.58	19.87	20.16
70	20.45	20.74	21.04	21.33	21.62	21.91	22.20	22.50	22.79	23.08
80	23.37	23.67	23.96	24.25	24.54	24.83	25.13	25.42	25.71	26.00
90	26.30	26.59	26.88	27.17	27.46	27.76	28.05	28.34	28.63	28.92
100	29.22	29.51	29.80	30.09	30.39	30.68	30.97	31.26	31.55	31.85
110	32.14	32.43	32.72	33.01	33.31	33.60	33.89	34.18	34.48	34.77
120	35.06	35.35	35.64	35.94	36.23	36.52	36.81	37.11	37.40	37.69
130	37.98	38.27	38.57	38.86	39.15	39.44	39.73	40.03	40.32	40.61
140	40.90	41.20	41.49	41.78	42.07	42.36	42.66	42.95	43.24	43.53
150	43.83	44.12	44.41	44.70	44.99	45.29	45.58	45.87	46.16	46.45
160	46.75	47.04	47.33	47.62	47.92	48.21	48.50	48.79	49.08	49.38
170	49.67	49.96	50.25	50.55	50.84	51.13	51.42	51.71	52.01	52.30
180	52.59	52.88	53.17	53.47	53.76	54.05	54.34	54.64	54.93	55.22
190	55.51	55.80	56.10	56.39	56.68	56.97	57.26	57.56	57.85	58.14

**TABLE 32. SQUARE METRES PER HECTARE TO SQUARE FEET (QUARTER GIRTH) PER ACRE**

Conversion factor: 1 sq. metre per hectare = 3.422676 q.g. sq. ft. per acre

Sq.m. per ha.	0	1	2	3	4	5	6	7	8	9
0	—	3.4	6.8	10.3	13.7	17.1	20.5	24.0	27.4	30.8
10	34.2	37.6	41.1	44.5	47.9	51.3	54.8	58.2	61.6	65.0
20	68.5	71.9	75.3	78.7	82.1	85.6	89.0	92.4	95.8	99.3
30	102.7	106.1	109.5	112.9	116.4	119.8	123.2	126.6	130.1	133.5
40	136.9	140.3	143.8	147.2	150.6	154.0	157.4	160.9	164.3	167.7
50	171.1	174.6	178.0	181.4	184.8	188.2	191.7	195.1	198.5	201.9
60	205.4	208.8	212.2	215.6	219.1	222.5	225.9	229.3	232.7	236.2
70	239.6	243.0	246.4	249.9	253.3	256.7	260.1	263.5	267.0	270.4
80	273.8	277.2	280.7	284.1	287.5	290.9	294.4	297.8	301.2	304.6
90	308.0	311.5	314.9	318.3	321.7	325.2	328.6	332.0	335.4	338.8

## SECTION 4: TIMBER VOLUME

**TABLE 33. CUBIC FEET (HOPPUS) TO CUBIC METRES**

Conversion factor: 1 H. cu. ft. = 0.0360540 cu. metres

H. cu. ft.	0	1	2	3	4	5	6	7	8	9
0	—	0.036	0.072	0.108	0.144	0.180	0.216	0.252	0.288	0.324
10	0.361	0.397	0.433	0.469	0.505	0.541	0.577	0.613	0.649	0.685
20	0.721	0.757	0.793	0.829	0.865	0.901	0.937	0.973	1.010	1.046
30	1.082	1.118	1.154	1.190	1.226	1.262	1.298	1.334	1.370	1.406
40	1.442	1.478	1.514	1.550	1.586	1.622	1.658	1.695	1.731	1.767
50	1.803	1.839	1.875	1.911	1.947	1.983	2.019	2.055	2.091	2.127
60	2.163	2.199	2.235	2.271	2.307	2.344	2.380	2.416	2.452	2.488
70	2.524	2.560	2.596	2.632	2.668	2.704	2.740	2.776	2.812	2.848
80	2.884	2.920	2.956	2.992	3.029	3.065	3.101	3.137	3.173	3.209
90	3.245	3.281	3.317	3.353	3.389	3.425	3.461	3.497	3.533	3.569

**TABLE 34. CUBIC METRES TO CUBIC FEET (HOPPUS)**

Conversion factor: 1 cubic metre = 27.7362 H. cubic feet

Cu. m.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0	—	2.8	5.5	8.3	11.1	13.9	16.6	19.4	22.2	25.0
1.0	27.7	30.5	33.3	36.1	38.8	41.6	44.4	47.2	49.9	52.7
2.0	55.5	58.2	61.0	63.8	66.6	69.3	72.1	74.9	77.7	80.4
3.0	83.2	86.0	88.8	91.5	94.3	97.1	99.9	102.6	105.4	108.2
4.0	110.9	113.7	116.5	119.3	122.0	124.8	127.6	130.4	133.1	135.9
5.0	138.7	141.5	144.2	147.0	149.8	152.5	155.3	158.1	160.9	163.6
6.0	166.4	169.2	172.0	174.7	177.5	180.3	183.1	185.8	188.6	191.4
7.0	194.2	196.9	199.7	202.5	205.2	208.0	201.8	213.6	216.3	219.1
8.0	221.9	224.7	227.4	230.2	233.0	235.8	238.5	241.3	244.1	246.9
9.0	249.6	252.4	255.2	257.9	260.7	263.5	266.3	269.0	271.8	274.6

**TABLE 35. CUBIC FEET (HOPPUS) PER ACRE TO CUBIC METRES PER HECTARE**

Conversion factor: 1 Hoppus cubic foot per acre = 0.0890520 cu. metres per hectare

H. cu. ft. per acre	0	100	200	300	400	500	600	700	800	900
0	—	8.9	17.8	26.7	35.6	44.5	53.4	62.3	71.2	80.1
1000	89.1	98.0	106.9	115.8	124.7	133.6	142.5	151.4	160.3	169.2
2000	178.1	187.0	195.9	204.8	213.7	222.6	231.5	240.4	249.3	258.3
3000	267.2	276.1	285.0	293.9	302.8	311.7	320.6	329.5	338.4	347.3
4000	356.2	365.1	374.0	382.9	391.8	400.7	409.6	418.5	427.4	436.4
5000	445.3	454.2	463.1	472.0	480.9	489.8	498.7	507.6	516.5	525.4
6000	534.3	543.2	552.1	561.0	569.9	578.8	587.7	596.6	605.6	614.5
7000	623.4	632.3	641.2	650.1	659.0	667.9	676.8	685.7	694.6	703.5
8000	712.4	721.3	730.2	739.1	748.0	756.9	765.8	774.8	783.7	792.6
9000	801.5	810.4	819.3	828.2	837.1	846.0	854.9	863.8	872.7	881.6

**TABLE 36. CUBIC METRES PER HECTARE TO CUBIC FEET (HOPPUS) PER ACRE**

Conversion factor: 1 cu. metre per hectare = 11.2294 Hoppus cubic ft. per acre

Cu. m. per ha.	0	10	20	30	40	50	60	70	80	90
0	—	112	225	337	449	561	674	786	898	1011
100	1123	1235	1348	1460	1572	1684	1797	1909	2021	2134
200	2246	2358	2470	2583	2695	2807	2920	3032	3144	3257
300	3369	3481	3593	3706	3818	3930	4043	4155	4267	4379
400	4492	4604	4716	4829	4941	5053	5166	5278	5390	5502
500	5615	5727	5839	5952	6064	6176	6288	6401	6513	6625
600	6738	6850	6962	7075	7187	7299	7411	7524	7636	7748
700	7861	7973	8085	8197	8310	8422	8534	8647	8759	8871
800	8984	9096	9208	9320	9433	9545	9657	9770	9882	9994
900	10106	10219	10331	10443	10556	10668	10780	10893	11005	11117

**TABLE 37. CUBIC FEET (TRUE) TO CUBIC METRES**

Conversion factor: 1 true cu. ft.=0.0283171 cu. metres

True cu. ft.	0	1	2	3	4	5	6	7	8	9
0	—	0.02832	0.05663	0.08495	0.11327	0.14159	0.16990	0.19822	0.22654	0.25485

**TABLE 38. CUBIC METRES TO CUBIC FEET (TRUE)**

Conversion factor: 1 cu. metre = 35.3049 true cu. ft.

Cu. m.	0	1	2	3	4	5	6	7	8	9
0	—	35.30	70.61	105.91	141.22	176.52	211.83	247.13	282.44	317.74

**TABLE 39. CUBIC FEET (TRUE) PER ACRE TO CUBIC METRES PER HECTARE**

Conversion factor: 1 true cu. ft. per acre = 0.0699727 cu. m. per ha.

True cu. ft. per acre	0	100	200	300	400	500	600	700	800	900
0	—	6.997	13.995	20.992	27.989	34.986	41.984	48.981	55.978	62.975

**TABLE 40. CUBIC METRES PER HECTARE TO CUBIC FEET (TRUE) PER ACRE**

Conversion factor: 1 cu. m. per ha. = 14.2874 true cu. ft. per acre

Cu. m. per ha.	0	10	20	30	40	50	60	70	80	90
0	—	142.9	285.7	428.6	571.5	714.4	857.2	1000.1	1143.0	1285.9

**TABLE 41. QUARTER GIRTH OR HOPPUS MEASURE TO TRUE MEASURE**

Conversion factor: 1 unit q.g. or hoppus measure = 1.2732396 units true measure

Q.g. or Hop.	0	1	2	3	4	5	6	7	8	9
0	—	1.273	2.546	3.820	5.093	6.366	7.639	8.913	10.186	11.459

*Note:* This table can be used to convert both q.g. area (e.g. basal area) and volume Hoppus measure to true measure. E.g.

1 Quarter girth (hoppus) square foot = 1.273 sq. ft. (true)

1 Hoppus cubic foot = 1.273 cu. ft. (true)

**TABLE 42. TRUE MEASURE TO QUARTER GIRTH OR HOPPUS MEASURE**

Conversion factor: 1 unit true measure = 0.785398 units q.g. or hoppus measure

True	0	1	2	3	4	5	6	7	8	9
0	—	0.785	1.571	2.356	3.142	3.927	4.712	5.498	6.283	7.069

*Note:* This table can be used to convert both area and volume (true measure) to Hoppus or q.g. measure. E.g.

1 sq. foot (true) = 0.785 sq. ft. quarter girth (Hoppus) measure.

1 cu. foot (true) = 0.785 cubic ft. Hoppus measure.

**TABLE 43. POUNDS PER CUBIC FOOT (HOPPUS OR TRUE) TO CUBIC FT. (HOPPUS OR TRUE) PER TON**

Conversion factor: x pounds per foot =  $\frac{2240}{x}$  feet per ton

	0	1	2	3	4	5	6	7	8	9
20	112.00	106.67	101.82	97.39	93.33	89.60	86.15	82.96	80.00	77.24
30	74.67	72.26	70.00	67.88	65.88	64.00	62.22	60.54	58.95	57.44
40	56.00	54.63	53.33	52.09	50.91	49.78	48.70	47.66	46.67	45.71
50	44.80	43.92	43.08	42.26	41.48	40.73	40.00	39.30	38.62	37.97
60	37.33	36.72	36.13	35.56	35.00	34.46	33.94	33.43	32.94	32.46
70	32.00	31.55	31.11	30.68	30.27	29.87	29.47	29.09	28.72	28.35
80	28.00	27.65	27.32	26.99	26.67	26.35	26.05	25.75	25.45	25.17
90	24.89	24.62	24.35	24.09	23.83	23.58	23.33	23.09	22.86	22.63

*Note:* This table may also be used to convert cubic feet per ton to pounds per cubic foot. E.g. 20 cu. ft. per ton = 112.0 pounds per cubic foot.

**TABLE 44a TIMBER MEASURE**

**Board Measure** 1 board foot = 1 lineal foot of 1" × 12"  
 = 1 square foot × 1" thick  
 = 1/12 cubic foot (true)

(There are exceptions to this—see 'Timber Trade Practice'. Mallinson and Grugeon, 1965).

**Standards** Petrograd = 165 cubic feet (true), solid measure  
 Gothenburg = 180 „ „ „ piled measure (for pitwood)

**Fathom** Piled or Firewood  
 6' × 6' × 6' = 216 cubic feet (stacked roundwood)

**Cordwood** 4' × 4' × 8' (or equivalent) = 128 cubic feet (stacked roundwood)

**Stère**  
**Raummeter**  
**Piled cubic metre** } 1 metre × 1 metre × 1 metre = 1 cubic metre (stacked roundwood)

**TABLE 44b. PROCESSED WOOD CONVERSIONS (Based on F.A.O. Factors)**

Product	Unit	Solid Volume				Roundwood equivalent		
		Cubic Metres	Cubic feet	Standards	1,000 Board feet	Cubic Metres	Cubic feet (true)	Hoppus cubic feet
Sawnwood and hewn wood (1)	Cubic metre	1	35.3	0.214	0.424	1.67	59.0	46.35
	Cubic feet	0.02832	1	0.00606	0.012	0.0472	1.67	1.31
	Standard (sawn)	4.672	165	1	1.98	7.79	275	216.03
	1000 board ft. } 1000 super ft. }	2.36	83.3	0.505	1	3.96	140	109.98
	1 load	1.42	50.0	0.303	0.600	2.36	83.3	65.44
Sleepers	Load	1.42	50.0	0.303	—	2.58	91.1	71.56
	Piece—Type A (2)	0.10	3.53	0.0214	—	0.182	6.43	5.05
	Piece—Type B (2)	0.083	2.93	0.0178	—	0.142	5.00	3.93

Notes: (1) The roundwood equivalent is based on the assumption that the recovery of sawn lumber is 60% of the true under-bark volume of the log and that waste is 40%. For home-grown timber the recovery of saleable timber including fencing material, crate-wood, sawn mining timber as well as deals, battens and boards, may be as high as 75% of the true under-bark volume of the log. The roundwood equivalent of one true cubic foot of home-grown sawnwood is therefore often taken as 1.33 true cubic feet under bark and not the 1.67 quoted by F.A.O.

(2) Type A sleepers average 10 pieces to the cubic metre; Type B, 12 pieces to the cubic metre. There are 55.9 pieces of sleepers measuring 10 ins. × 5 ins. × 8 ft. 6 ins. to a standard of 165 cubic feet.

**TABLE 44c. ROUNDWOOD CONVERSIONS**

Based on F.A.O. Factors

<i>Product</i>	<i>Unit</i> <sup>(1)</sup>	<i>Solid volume without bark</i>		
		<i>Cubic metres</i>	<i>Cubic feet true</i>	<i>Hoppus cubic feet</i>
Roundwood (general)	Cubic metre	1	35.3	27.73
	Cubic foot true	0.0283	1	0.79
	Load	1.13	40.0	31.42
Sawlogs	1,000 board feet	4.53	160	125.68
	1,000 super feet			
	100 pulgadas	4.81	170	133.5
Pulpwood	Cord (128 piled cubic feet)	2.55	90.0	70.70 <sup>(2)</sup>
	Stère	0.75	26.5	20.82
	Raummeter } coniferous			
	Russian fathom	6.80	240	188.53
Fuelwood	Stère (coniferous)	0.70	24.7	19.40
	Stère (broadleaved)	0.65	23.0	18.07
	Cord (128 piled cubic feet)	2.12	75.0	58.92 <sup>(2)</sup>
	Russian fathom	5.66	200	157.11
Pitprops	Fathom (216 piled cubic feet)	4.28	151	118.62 <sup>(3)</sup>
	Gothenburg standard (180 piled cubic feet)	3.398	120	94.27 <sup>(4)</sup>
	Cord (128 piled cubic feet)	2.416	85.33	67.03
Telegraph and Transmission Poles	{ 1,000 linear feet 1 piece 1 piece (coniferous)	15.4	545.0	428.12
		0.43	15.2	11.94
		0.165	5.83	4.58
Europe				

*Notes:* <sup>(1)</sup> Units are grouped opposite the products for which they are most commonly used, but certain units are applicable to a variety of products.

<sup>(2)</sup> Where timber measured in cords comprises mainly hardwood branchwood, as is often the case in Britain, the fuelwood conversion factors are more appropriate than those given for pulpwood.

<sup>(3)</sup> Generally taken as 120 Hoppus feet.

<sup>(4)</sup> Generally taken as 100 Hoppus feet.

## SECTION 5: VOLUME (LIQUID)

**TABLE 45. IMPERIAL GALLONS TO LITRES**

Conversion factor: 1 gallon=4.54596 litres

Imp. galls.	0	1	2	3	4	5	6	7	8	9
0	—	4.5	9.1	13.6	18.2	22.7	27.3	31.8	36.4	40.9
10	45.5	50.0	54.6	59.1	63.6	68.2	72.7	77.3	81.8	86.4
20	90.9	95.5	100.0	104.6	109.1	113.6	118.2	122.7	127.3	131.8
30	136.4	140.9	145.5	150.0	154.6	159.1	163.6	168.2	172.7	177.3
40	181.8	186.4	190.9	195.5	200.0	204.6	209.1	213.7	218.2	222.8
50	227.3	231.8	236.4	240.9	245.5	250.0	254.6	259.1	263.7	268.2
60	272.8	277.3	281.8	286.4	290.9	295.5	300.0	304.6	309.1	313.7
70	318.2	322.8	327.3	331.9	336.4	340.9	345.5	350.0	354.6	359.1
80	363.7	368.2	372.8	377.3	381.9	386.4	391.0	395.5	400.0	404.6
90	409.1	413.7	418.2	422.8	427.3	431.9	436.4	441.0	445.5	450.1

**Note: GALLONS PER 100 SQUARE YARDS TO MILLILITRES PER SQUARE YARD**

Use figures in Table 45 above with decimal point shifted one place to the right.  
E.g. 1 gallon per 100 square yards=45 ml. per sq. yd.

**TABLE 46. LITRES TO IMPERIAL GALLONS**

Conversion factor: 1 litre=0.219975 gallons

Litres	0	1	2	3	4	5	6	7	8	9
0	—	0.22	0.44	0.66	0.88	1.10	1.32	1.54	1.76	1.98
10	2.20	2.42	2.64	2.86	3.08	3.30	3.52	3.74	3.96	4.18
20	4.40	4.62	4.84	5.06	5.28	5.50	5.72	5.94	6.16	6.38
30	6.60	6.82	7.04	7.26	7.48	7.70	7.92	8.14	8.36	8.58
40	8.80	9.02	9.24	9.46	9.68	9.90	10.12	10.34	10.56	10.78
50	11.00	11.22	11.44	11.66	11.88	12.10	12.32	12.54	12.76	12.98
60	13.20	13.42	13.64	13.86	14.08	14.30	14.52	14.74	14.96	15.18
70	15.40	15.62	15.84	16.06	16.28	16.50	16.72	16.94	17.16	17.38
80	17.60	17.82	18.04	18.26	18.48	18.70	18.92	19.14	19.36	19.58
90	19.80	20.02	20.24	20.46	20.68	20.90	21.12	21.34	21.56	21.78

**Note: MILLILITRES PER SQUARE YARD TO IMPERIAL GALLONS PER 100 SQUARE YARDS**

Use figures Table 46 above with decimal point shifted one place to the left.  
E.g. 1 ml. per square yard=0.022 gallons per 100 sq. yds.

**TABLE 47. IMPERIAL GALLONS TO UNITED STATES GALLONS**

Conversion factor: 1 Imperial gallon=1.20094 U.S. gallons

Imp. galls.	0	1	2	3	4	5	6	7	8	9
0	—	1.201	2.402	3.603	4.804	6.005	7.206	8.407	9.608	10.808

**TABLE 48. UNITED STATES GALLONS TO IMPERIAL GALLONS**

Conversion factor: 1 U.S. gallon=0.832681 Imperial gallons

U.S. galls.	0	1	2	3	4	5	6	7	8	9
0	—	0.833	1.665	2.498	3.331	4.163	4.996	5.829	6.661	7.494

**TABLE 49. UNITED STATES GALLONS TO LITRES**

Conversion factor: 1 U.S. gallon=3.78533 litres

U.S. galls.	0	1	2	3	4	5	6	7	8	9
0	—	3.79	7.57	11.36	15.14	18.93	22.71	26.50	30.28	34.07

**TABLE 50. LITRES TO UNITED STATES GALLONS**

Conversion factor: 1 litre=0.264178 U.S. gallons

Litres	0	1	2	3	4	5	6	7	8	9
0	—	0.264	0.528	0.793	1.057	1.321	1.585	1.849	2.113	2.378

**TABLE 51. IMPERIAL GALLONS PER HOUR TO MILLILITRES PER SECOND**

Conversion factor: 1 gallon per hour = 1.26278 mls. per second

Galls. per hr.	0	1	2	3	4	5	6	7	8	9
0	—	1.263	2.526	3.788	5.051	6.314	7.577	8.839	10.102	11.365

**TABLE 52. MILLILITRES PER SECOND TO IMPERIAL GALLONS PER HOUR**

Conversion factor: 1 ml. per second = 0.79192 galls. per hour

Mls. per sec.	0	1	2	3	4	5	6	7	8	9
0	—	0.792	1.584	2.376	3.168	3.960	4.752	5.543	6.335	7.127

## SECTION 6: VOLUME (LIQUID) PER UNIT AREA

**TABLE 53. IMPERIAL GALLONS PER ACRE TO MILLILITRES PER  
SQUARE YARD**

Conversion factor: 1 gallon per acre = 0.939249 mls. per sq. yd.

Galls. per acre	0	1	2	3	4	5	6	7	8	9
0	—	0.94	1.88	2.82	3.76	4.70	5.64	6.57	7.51	8.45
10	9.39	10.33	11.27	12.21	13.15	14.09	15.03	15.97	16.91	17.85
20	18.78	19.72	20.66	21.60	22.54	23.48	24.42	25.36	26.30	27.24
30	28.18	29.12	30.06	31.00	31.93	32.87	33.81	34.75	35.69	36.63
40	37.57	38.51	39.45	40.39	41.33	42.27	43.21	44.14	45.08	46.02
50	46.96	47.90	48.84	49.78	50.72	51.66	52.60	53.54	54.48	55.42
60	56.35	57.29	58.23	59.17	60.11	61.05	61.99	62.93	63.87	64.81
70	65.75	66.69	67.63	68.57	69.50	70.44	71.38	72.32	73.26	74.20
80	75.14	76.08	77.02	77.96	78.90	79.84	80.78	81.71	82.65	83.59
90	84.53	85.47	86.41	87.35	88.29	89.23	90.17	91.11	92.05	92.99

**TABLE 54. MILLILITRES PER SQUARE YARD TO IMPERIAL GALLONS  
PER ACRE**

Conversion factor: 1 ml. per square yard = 1.064861 galls. per acre

Mls. per sq. yd.	0	1	2	3	4	5	6	7	8	9
0	—	1.06	2.13	3.19	4.26	5.32	6.39	7.45	8.52	9.58
10	10.65	11.71	12.78	13.84	14.91	15.97	17.04	18.10	19.17	20.23
20	21.30	22.36	23.43	24.49	25.56	26.62	27.69	28.75	29.82	30.88
30	31.95	33.01	34.08	35.14	36.21	37.27	38.33	39.40	40.46	41.53
40	42.59	43.66	44.72	45.79	46.85	47.92	48.98	50.05	51.11	52.18
50	53.24	54.31	55.37	56.44	57.50	58.57	59.63	60.70	61.76	62.83
60	63.89	64.96	66.02	67.09	68.15	69.22	70.28	71.35	72.41	73.48
70	74.54	75.61	76.67	77.73	78.80	79.86	80.93	81.99	83.06	84.12
80	85.19	86.25	87.32	88.38	89.45	90.51	91.58	92.64	93.71	94.77
90	95.84	96.90	97.97	99.03	100.10	101.16	102.23	103.29	104.36	105.42

**TABLE 55. IMPERIAL GALLONS PER ACRE TO**  
 (a) PINTS PER 100 SQUARE YARDS  
 (b) GALLONS PER 100 SQUARE YARDS  
 (c) SQUARE YARDS PER GALLON  
 (d) LITRES PER HECTARE

Gallons per acre	Pints per 100 square yards	Gallons per 100 square yards	Square yards per gallon*	Litres per hectare
Conversion factor: 1 gall. per acre =	0.165289 pints per 100 sq. yds.	0.0206616 gallons per 100 sq. yds.	4840 sq. yds. $\frac{1}{1(x)}$ per gallon	11.23334 litres per hectare
1	0.165	0.0207	4,840	11.23
2	0.331	0.0413	2,420	22.47
3	0.496	0.0620	1,613	33.70
4	0.661	0.0826	1,210	44.93
5	0.826	0.1033	988	56.17
6	0.992	0.1240	807	67.40
7	1.157	0.1446	691	78.63
8	1.322	0.1653	605	89.87
9	1.488	0.1860	538	101.10

\* See page iii and Table 77.

**TABLE 56. PINTS PER 100 SQUARE YARDS TO IMPERIAL GALLONS PER ACRE'**

Conversion factor: 1 pint per 100 sq. yards = 6.050 gallons per acre

Pts. per sq. yd	0	1	2	3	4	5	6	7	8	9
0	—	6.05	12.1	18.15	24.2	30.25	36.30	42.35	48.40	54.45

**TABLE 57. LITRES PER HECTARE TO IMPERIAL GALLONS PER ACRE**

Conversion factor: 1 litre per hectare = 0.0890207 gallons per acre

Litres per ha.	0	1	2	3	4	5	6	7	8	9
0	—	0.0890	0.1780	0.2671	0.3561	0.4451	0.5341	0.6231	0.7122	0.8012

**TABLE 58. UNITED STATES GALLONS PER ACRE TO MILLILITRES PER SQUARE YARD**

Conversion factor: 1 U.S. gall. per acre=0.782024 mls. per sq. yard

U.S. galls. per acre	0	1	2	3	4	5	6	7	8	9
0	—	0.7820	1.5640	2.3461	3.1281	3.9101	4.6921	5.4742	6.2562	7.0382

**TABLE 59. MILLILITRES PER SQUARE YARD TO UNITED STATES GALLONS PER ACRE**

Conversion factor: 1 ml. per sq. yd.=1.278586 U.S. gallons per acre

Mls. per sq. yd	0	1	2	3	4	5	6	7	8	9
0	—	1.2786	2.5572	3.8358	5.1143	6.3929	7.6715	8.9501	10.2287	11.5073

## SECTION 7: WEIGHT

**TABLE 60. OUNCES TO GRAMS**

Conversion factor: 1 ounce=28.3495 grams

Oz.	0	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$
0	—	7.1	14.2	21.3
1	28.3	35.4	42.5	49.6
2	56.7	63.8	70.9	78.0
3	85.0	92.1	99.2	106.3
4	113.4	120.5	127.6	134.7
5	141.7	148.8	155.9	163.0
6	170.1	177.2	184.3	191.4
7	198.4	205.5	212.6	219.7
8	226.8	233.9	241.0	248.1
9	255.1	262.2	269.3	276.4
10	283.5	290.6	297.7	304.8
11	311.8	318.9	326.0	333.1
12	340.2	347.3	354.4	361.5
13	368.5	375.6	382.7	389.8
14	396.9	404.0	411.1	418.2
15	425.2	432.3	439.4	446.5
16	453.6			

**TABLE 61. GRAMS TO OUNCES**

Conversion factor: 1 gram=0.0352740 ounces

Gms.	0	1	2	3	4	5	6	7	8	9
0	—	0.035	0.071	0.106	0.141	0.176	0.212	0.247	0.282	0.317
10	0.353	0.388	0.423	0.459	0.494	0.529	0.564	0.600	0.635	0.670
20	0.705	0.741	0.776	0.811	0.847	0.882	0.917	0.952	0.988	1.023
30	1.058	1.093	1.129	1.164	1.199	1.235	1.270	1.305	1.340	1.376
40	1.411	1.446	1.482	1.517	1.552	1.587	1.623	1.658	1.693	1.728
50	1.764	1.799	1.834	1.870	1.905	1.940	1.975	2.011	2.046	2.081
60	2.116	2.152	2.187	2.222	2.258	2.293	2.328	2.363	2.399	2.434
70	2.469	2.504	2.540	2.575	2.610	2.646	2.681	2.716	2.751	2.787
80	2.822	2.857	2.892	2.928	2.963	2.998	3.034	3.069	3.104	3.139
90	3.175	3.210	3.245	3.280	3.316	3.351	3.386	3.422	3.457	3.492

**TABLE 62. POUNDS (AVOIRDUPOIS) TO KILOGRAMS**

Conversion factor: 1 lb.=0.453592 kg.

Lb.	0	1	2	3	4	5	6	7	8	9
0	—	0.45	0.91	1.36	1.81	2.27	2.72	3.18	3.63	4.08
10	4.54	4.99	5.44	5.90	6.35	6.80	7.26	7.71	8.16	8.62
20	9.07	9.53	9.98	10.43	10.89	11.34	11.79	12.25	12.70	13.15
30	13.61	14.06	14.51	14.97	15.42	15.88	16.33	16.78	17.24	17.69
40	18.14	18.60	19.05	19.50	19.96	20.41	20.87	21.32	21.77	22.23
50	22.68	23.13	23.59	24.04	24.49	24.95	25.40	25.85	26.31	26.76
60	27.22	27.67	28.12	28.58	29.03	29.48	29.94	30.39	30.84	31.30
70	31.75	32.21	32.66	33.11	33.57	34.02	34.47	34.93	35.38	35.83
80	36.29	36.74	37.19	37.65	38.10	38.56	39.01	39.46	39.92	40.37
90	40.82	41.28	41.73	42.18	42.64	43.09	43.54	44.00	44.45	44.91

**TABLE 63. KILOGRAMS TO POUNDS (AVOIRDUPOIS)**

Conversion factor: 1 kg.=2.2046223 lb.

Kg.	0	1	2	3	4	5	6	7	8	9
0	—	2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8
10	22.0	24.3	26.5	28.7	30.9	33.1	35.3	37.5	39.7	41.9
20	44.1	46.3	48.5	50.7	52.9	55.1	57.3	59.5	61.7	63.9
30	66.1	68.3	70.5	72.8	75.0	77.2	79.4	81.6	83.8	86.0
40	88.2	90.4	92.6	94.8	97.0	99.2	101.4	103.6	105.8	108.0
50	110.2	112.4	114.6	116.8	119.0	121.3	123.5	125.7	127.9	130.1
60	132.3	134.5	136.7	138.9	141.1	143.3	145.5	147.7	149.9	152.1
70	154.3	156.5	158.7	160.9	163.1	165.3	167.6	169.8	172.0	174.2
80	176.4	178.6	180.8	183.0	185.2	187.4	189.6	191.8	194.0	196.2
90	198.4	200.6	202.8	205.0	207.2	209.4	211.6	213.8	216.1	218.3

**TABLE 64. HUNDREDWEIGHTS TO KILOGRAMS**

Conversion factor: 1 cwt. = 50.80236 kg.

Cwt.	0	1	2	3	4	5	6	7	8	9
0	—	50.8	101.6	152.4	203.2	254.0	304.8	355.6	406.4	457.2
10	508.0	558.8	609.6	660.4	711.2	762.0	812.8	863.6	914.4	965.2

**TABLE 65. KILOGRAMS TO HUNDREDWEIGHTS**

Conversion factor: 1 kg. = 0.0196841 cwt.

Kg.	0	1	2	3	4	5	6	7	8	9
0	—	0.01968	0.03937	0.05905	0.07873	0.09842	0.11810	0.13779	0.15747	0.17716

**TABLE 66. TONS (LONG) TO METRIC TONS (TONNES)**

Conversion factor: 1 long ton = 1.01605 metric tons

Long tons	0	1	2	3	4	5	6	7	8	9
0	—	1.0161	2.0321	3.0482	4.0642	5.0803	6.0963	7.1124	8.1284	9.1445

**TABLE 67. METRIC TONS TO TONS (LONG)**

Conversion factor: 1 metric ton = 0.984206 tons (long)

Met. tons	0	1	2	3	4	5	6	7	8	9
0	—	0.9842	1.9684	2.9526	3.9368	4.9210	5.9052	6.8894	7.8736	8.8579

## SECTION 8: WEIGHT PER UNIT AREA

**TABLE 68. OUNCES PER SQUARE YARD TO**  
 (a) GRAMS PER SQUARE METRE  
 (b) POUNDS PER 100 SQUARE YARDS  
 (c) POUNDS PER ACRE  
 (d) HUNDREDWEIGHT PER ACRE  
 (e) TONS PER ACRE

Ounces per square yard	Grams per square metre	Pounds per 100 square yards	Pounds per acre	Hundredweight per acre	Tons per acre
Conversion factor: 1 oz. per sq. yd. =	33.906 grams per sq. metre	6.25 lbs per 100 sq. yd.	302.5 lb. per acre	2.70089 cwt. per acre	0.13504 tons per acre
1	33.9	6.25	303	2.70	0.135
2	67.8	12.50	605	5.40	0.270
3	101.7	18.75	908	8.10	0.405
4	135.6	25.00	1,210	10.80	0.540
5	169.5	31.25	1,513	13.50	0.675
6	203.4	37.50	1,815	16.21	0.810
7	237.3	43.75	2,118	18.91	0.945
8	271.2	50.00	2,420	21.61	1.080
9	305.2	56.25	2,723	24.31	1.215

**TABLE 69. POUNDS PER 100 SQUARE YARDS TO**

- (a) GRAMS PER SQUARE YARD
- (b) OUNCES PER SQUARE YARD
- (c) POUNDS PER ACRE
- (d) HUNDREDWEIGHT PER ACRE
- (e) TONS PER ACRE

Pounds per 100 square yards	Grams per square yard (Cf. table 62)	Ounces per square yard	Pounds per acre	Hundredweight per acre	Tons per acre
Conversion factor: 1 lb. per 100 sq. yd. =	4.5359 gr. per sq. yd.	0.16 oz. per sq. yd.	48.40 lb. per acre	0.43214 cwt. per acre	0.021607 tons per acre
<b>1</b>	4.54	0.16	48.4	0.432	0.0216
<b>2</b>	9.07	0.32	96.8	0.864	0.0432
<b>3</b>	13.61	0.48	145.2	1.296	0.0648
<b>4</b>	18.14	0.64	193.6	1.729	0.0864
<b>5</b>	22.68	0.80	242.0	2.161	0.1080
<b>6</b>	27.22	0.96	290.4	2.593	0.1296
<b>7</b>	31.75	1.12	338.8	3.025	0.1512
<b>8</b>	36.29	1.28	387.2	3.457	0.1729
<b>9</b>	40.82	1.44	435.6	3.889	0.1945

**TABLE 70. POUNDS PER ACRE TO**  
**(a) GRAMS PER SQUARE YARD**  
**(b) OUNCES PER SQUARE YARD**  
**(c) POUNDS PER 100 SQUARE YARDS**  
**(d) KILOGRAMS PER HECTARE**  
**(e) SQUARE YARDS PER POUND**

Pounds per acre	Grams per square yard	Ounces per square yard	Pounds per 100 square yards	Kilograms per hectare	Square yards per pound*
Conversion factor: 1 lb. per acre =	0.09372 gr. per sq. yd.	0.0033058 oz. per sq. yd.	0.020661 lb. per 100 sq. yd.	1.1189 kg. per hectare	4840 1 (x) square yd. per pound
1	0.094	0.0033	0.0207	1.12	4,840
2	0.187	0.0066	0.0413	2.24	2,420
3	0.281	0.0099	0.0620	3.36	1,613
4	0.375	0.0132	0.0826	4.48	1,210
5	0.469	0.0165	0.1033	5.59	988
6	0.562	0.0198	0.1240	6.71	807
7	0.656	0.0231	0.1446	7.83	691
8	0.750	0.0264	0.1653	8.95	605
9	0.843	0.0298	0.1860	10.07	538

\*See page iii

**TABLE 71. HUNDREDWEIGHT PER ACRE TO**  
**(a) GRAMS PER SQUARE YARD**  
**(b) OUNCES PER SQUARE YARD**  
**(c) POUNDS PER 100 SQUARE YARDS**  
**(d) KILOGRAMS PER HECTARE**

Hundredweight per acre	Grams per square yard	Ounces per square yard	Pounds per 100 square yards	Kilograms per hectare
Conversion factor: 1 cwt. per acre =	10·4964 gr. per sq. yd.	0·370248 oz. per sq. yd.	2·3140 lb. per 100 sq. yds.	125·315 kg. per hectare
1	10·50	0·370	2·31	125·3
2	20·99	0·740	4·63	250·6
3	31·49	1·111	6·94	375·9
4	41·99	1·481	9·26	501·3
5	52·48	1·851	11·57	626·6
6	62·98	2·221	13·88	751·9
7	73·47	2·592	16·20	877·2
8	83·97	2·962	18·51	1002·5
9	94·47	3·332	20·83	1127·8

**TABLE 72. TONS PER ACRE TO**  
**(a) OUNCES PER SQUARE YARD**  
**(b) POUNDS PER 100 SQUARE YARDS**  
**(c) KILOGRAMS PER HECTARE**

Tons per acre	Ounces per square yard	Pounds per 100 square yards	Kilograms per hectare
Conversion factor: 1 ton per acre =	7·40496 oz. per square yard	46·2810 lb. per 100 square yards	2432·01 kg. per hectare
1	7·40	46·3	2432
2	14·81	92·6	4864
3	22·21	138·8	7296
4	29·62	185·1	9728
5	37·02	231·4	12160
6	44·43	277·7	14590
7	51·83	324·0	17024
8	59·24	370·2	19456
9	66·64	416·5	21888

**TABLE 73. GRAMS PER SQUARE YARD TO**  
**(a) POUNDS PER 100 SQUARE YARDS**  
**(b) POUNDS PER ACRE**  
**(c) HUNDREDWEIGHT PER ACRE**

Grams per square yard	Pounds per 100 square yards*	Pounds per acre	Hundredweight per acre
Conversion factor: 1 gr. per sq. yd. =	0.220462 lb. per 100 sq. yards	10.67037 lb. per acre	0.095712 cwt. per acre
1	0.220	10.67	0.0957
2	0.441	21.34	0.1914
3	0.661	32.01	0.2871
4	0.882	42.68	0.3828
5	1.102	53.35	0.4786
6	1.323	64.02	0.5743
7	1.543	74.69	0.6700
8	1.764	86.36	0.7657
9	1.984	96.03	0.8614

\* Compare Table 63.

**TABLE 74. GRAMS PER SQUARE METRE TO OUNCES PER SQUARE YARD**

Conversion factor: 1 gram per sq. metre = 0.0294935 oz. per sq. yard

Gram per sq. m.	0	1	2	3	4	5	6	7	8	9
0	—	0.0295	0.0590	0.0885	0.1180	0.1475	0.1770	0.2065	0.2359	0.2654

**TABLE 75. KILOGRAMS PER HECTARE TO**  
**(a) GRAMS PER SQUARE YARD**  
**(b) POUNDS PER ACRE**  
**(c) HUNDREDWEIGHT PER ACRE**  
**(d) TONS PER ACRE**

Kilograms per hectare	Grams per square yard*	Pounds per acre	Hundredweight per acre	Tons per acre
Conversion factor: 1 kg. per hectare =	·0836 grams per sq. yard	0·89375 lb. per acre	0·0079799 cwt. per acre	0·00039899 tons per acre
1	0·084	0·89	0·00798	0·00040
2	0·167	1·79	0·01596	0·00080
3	0·251	2·68	0·02394	0·00120
4	0·334	3·57	0·03192	0·00160
5	0·418	4·47	0·03990	0·00199
6	0·502	5·36	0·04788	0·00239
7	0·585	6·26	0·05586	0·00279
8	0·669	7·15	0·06384	0·00319
9	0·753	8·04	0·07182	0·00359

\* See also note to Table 15.

**TABLE 76. SQUARE YARDS PER POUND TO GRAMS PER SQUARE YARD**  
**also GRAMS PER SQUARE YARD TO SQUARE YARDS PER POUND**

Conversion factor: 1 (x) square yard per pound =  $\frac{453.59}{1(x)}$  grams per square yard

1 (x) gram per square yard =  $\frac{453.59}{1(x)}$  square yards per pound

	0	1	2	3	4	5	6	7	8	9
0	—	453.59	226.80	151.20	113.40	90.718	75.598	64.799	56.699	50.399
10	45.359	41.235	37.799	34.892	32.399	30.239	28.349	26.682	25.199	23.873
20	22.680	21.600	20.618	19.721	18.900	18.144	17.446	16.800	16.200	15.641
30	15.120	14.632	14.175	13.745	13.341	12.960	12.600	12.259	11.937	11.631
40	11.340	11.063	10.800	10.549	10.309	10.080	9.8607	9.6509	9.4498	9.2569
50	9.0718	8.8939	8.7229	8.5583	8.3998	8.2471	8.0998	7.9577	7.8205	7.6880
60	7.5598	7.4359	7.3160	7.1998	7.0873	6.9783	6.8726	6.7700	6.6704	6.5738
70	6.4799	6.3886	6.2999	6.2136	6.1296	6.0479	5.9683	5.8908	5.8153	5.7416
80	5.6699	5.5999	5.5316	5.4649	5.3999	5.3364	5.2743	5.2137	5.1544	5.0965
90	5.0399	4.9845	4.9303	4.8773	4.8254	4.7746	4.7249	4.6762	4.6285	4.5817

**TABLE 77. GALLONS (POUNDS) PER ACRE TO SQUARE YARDS PER GALLON (POUND)  
 SQUARE YARDS PER GALLON (POUND) TO GALLONS (POUNDS) PER SQUARE YARD**

Conversion factor: 1 (x) gallon (pound) per acre =  $\frac{4840}{1(x)}$  square yards per gallon (pound)

1 (x) square yard per gallon (pound) =  $\frac{4840}{1(x)}$  gallons (pounds) per square yard

Gallons (lb.) per acre or Square yards per gallon (lb.)	1	10	20	30	40	50	60	70	80	90
	4840	484	242	161	121	96	81	69	60	54

Note: For interpolated values see p. iii.

## SECTION 9: WEIGHT: VOLUME

**TABLE 78. PERCENT SOLUTION TO  
 (a) GRAMS (MILLILITRES) PER IMPERIAL GALLON  
 (b) OUNCES PER IMPERIAL GALLON  
 (c) POUNDS PER IMPERIAL GALLON**

Percent solution	Grams (millilitres) per gallon*	Ounces per gallon	Pounds per gallons
Conversion factor 1% Sol'n. =	45.459 gr. (ml.) per gallon	1.600 oz. per gallon	0.100 lb. per gallon
1	45.5	1.6	0.1
2	90.9	3.2	0.2
3	136.4	4.8	0.3
4	181.8	6.4	0.4
5	227.3	8.0	0.5
6	272.8	9.6	0.6
7	318.2	11.2	0.7
8	363.7	12.8	0.8
9	409.1	14.4	0.9

\* Compare Table 45, page 32.

Note: **PARTS PER MILLION TO GRAMS, OUNCES AND POUNDS PER GALLON**

Use above table *shifting decimal point four places to the left*

In preparation of tables 78a-c calculations in the different units were made for weight of the solid/weight of water at 62°F. and barometer at 30 inches. The weight of water was then converted to volume, 10 lb. of water being equivalent to one Imperial gallon.

The convention to be followed in using the tables is to disregard the density of the solution, and to assume that the solution has the same weight as an equivalent volume of water.

## SECTION 10: SPEED

**TABLE 79. MILES PER HOUR TO FEET PER SECOND**

Conversion factor: 1 mile per hour = 1.4667 ft. per second

Miles per hr.	0	1	2	3	4	5	6	7	8	9
0	—	1.47	2.93	4.40	5.87	7.33	8.80	10.27	11.73	13.20
10	14.67	16.13	17.60	19.07	20.53	22.00	23.47	24.93	26.40	27.87
20	29.33	30.80	32.27	33.73	35.20	36.67	38.13	39.60	41.07	42.53
30	44.00	45.47	46.93	48.40	49.87	51.33	52.80	54.27	55.73	57.20
40	58.67	60.13	61.60	63.07	64.53	66.00	67.47	68.93	70.40	71.87
50	73.33	74.80	76.27	77.73	79.20	80.67	82.13	83.60	85.07	86.53
60	88.00									

**TABLE 80. FEET PER SECOND TO MILES PER HOUR**

Conversion factor: 1 ft. per second = 0.681818 m.p.h.

Feet per sec.	0	1	2	3	4	5	6	7	8	9
0	—	0.68	1.36	2.05	2.73	3.41	4.09	4.77	5.45	6.14
10	6.82	7.50	8.18	8.86	9.55	10.23	10.91	11.59	12.27	12.95
20	13.64	14.32	15.00	15.68	16.36	17.05	17.73	18.41	19.09	19.77
30	20.45	21.14	21.82	22.50	23.18	23.86	24.55	25.23	25.91	26.59
40	27.27	27.95	28.64	29.32	30.00	30.68	31.36	32.05	32.73	33.41
50	34.09	34.77	35.45	36.14	36.82	37.50	38.18	38.86	39.55	40.23
60	40.91	41.59	42.27	42.95	43.64	44.32	45.00	45.68	46.36	47.05
70	47.73	48.41	49.09	49.77	50.45	51.14	51.82	52.50	53.18	53.86
80	54.55	55.23	55.91	56.59	57.27	57.95	58.64	59.32	60.00	

**TABLE 81. MILES PER HOUR TO KNOTS**

Conversion factor: 1 mile per hour=0.8684 knots

Miles per hr.	0	1	2	3	4	5	6	7	8	9
0	—	0.9	1.7	2.6	3.5	4.3	5.2	6.1	6.9	7.8
10	8.7	9.6	10.4	11.3	12.2	13.0	13.9	14.8	15.6	16.5
20	17.4	18.2	19.1	20.0	20.8	21.7	22.6	23.4	24.3	25.2
30	26.1	26.9	27.8	28.7	29.5	30.4	31.3	32.1	33.0	33.9
40	34.7	35.6	36.5	37.3	38.2	39.1	39.9	40.8	41.7	42.6
50	43.4	44.3	45.2	46.0	46.9	47.8	48.6	49.5	50.4	51.2
60	52.1	53.0	53.8	54.7	55.6	56.4	57.3	58.2	59.1	59.9
70	60.8	61.7	62.5	63.4	64.3	65.1	66.0	66.9	67.7	68.6
80	69.5	70.3	71.2	72.1	72.9	73.8	74.7	75.6	76.4	77.3
90	78.2	79.0	79.9	80.8	81.6	82.5	83.4	84.2	85.1	86.0

**TABLE 82. KNOTS TO MILES PER HOUR**

Conversion factor: 1 knot=1.1515 miles per hour

Knots	0	1	2	3	4	5	6	7	8	9
0	—	1.2	2.3	3.5	4.6	5.8	6.9	8.1	9.2	10.4
10	11.5	12.7	13.8	15.0	16.1	17.3	18.4	19.6	20.7	21.9
20	23.0	24.2	25.3	26.5	27.6	28.8	29.9	31.1	32.2	33.4
30	34.5	35.7	36.8	38.0	39.2	40.3	41.5	42.6	43.8	44.9
40	46.1	47.2	48.4	49.5	50.7	51.8	53.0	54.1	55.3	56.4
50	57.6	58.7	59.9	61.0	62.2	63.3	64.5	65.6	66.8	67.9
60	69.1	70.2	71.4	72.5	73.7	74.8	76.0	77.2	78.3	79.5
70	80.6	81.8	82.9	84.1	85.2	86.4	87.5	88.7	89.8	91.0
80	92.1	93.3	94.4	95.6	96.7	97.9	99.0	100.2	101.3	102.5
90	103.6	104.8	105.9	107.1	108.2	109.4	110.5	111.7	112.8	114.0

1 knot=1 nautical mile per hour

1 nautical mile=6080 feet

See also notes on Tables 7 and 8.

## SECTION 11: MISCELLANEOUS

**TABLE 83. THIRTY-SECONDTHS TO DECIMALS**

			$\frac{1}{10}$	$\frac{1}{32}=0.03125$				$\frac{17}{32}=0.53125$
				$\frac{2}{32}=0.06250$			$\frac{9}{16}$	$\frac{18}{32}=0.56250$
		$\frac{1}{8}$	$\frac{2}{16}$	$\frac{3}{32}=0.09375$		$\frac{5}{8}$	$\frac{10}{16}$	$\frac{19}{32}=0.59375$
				$\frac{4}{32}=0.12500$				$\frac{20}{32}=0.62500$
				$\frac{5}{32}=0.15625$				$\frac{21}{32}=0.65625$
			$\frac{3}{16}$	$\frac{6}{32}=0.18750$			$\frac{11}{16}$	$\frac{22}{32}=0.68750$
				$\frac{7}{32}=0.21875$				$\frac{23}{32}=0.71875$
	$\frac{1}{4}$	$\frac{2}{8}$	$\frac{4}{16}$	$\frac{8}{32}=0.25000$	$\frac{3}{4}$	$\frac{6}{8}$	$\frac{12}{16}$	$\frac{24}{32}=0.75000$
				$\frac{9}{32}=0.28125$				$\frac{25}{32}=0.78125$
			$\frac{5}{16}$	$\frac{10}{32}=0.31250$			$\frac{13}{16}$	$\frac{26}{32}=0.81250$
				$\frac{11}{32}=0.34375$				$\frac{27}{32}=0.84375$
		$\frac{3}{8}$	$\frac{6}{16}$	$\frac{12}{32}=0.37500$		$\frac{7}{8}$	$\frac{14}{16}$	$\frac{28}{32}=0.87500$
				$\frac{13}{32}=0.40625$				$\frac{29}{32}=0.90625$
			$\frac{7}{16}$	$\frac{14}{32}=0.43750$			$\frac{15}{16}$	$\frac{30}{32}=0.93750$
				$\frac{15}{32}=0.46875$				$\frac{31}{32}=0.96875$
$\frac{1}{2}$	$\frac{2}{4}$	$\frac{4}{8}$	$\frac{8}{16}$	$\frac{10}{32}=0.50000$				$\frac{32}{32}=1.00000$

**Note: OUNCES TO POUNDS**

Use 1/16 column in Table 83 above

E.g. 1 ounce = 0.0625 pounds.



**TABLE 85. MOISTURE CONTENT AS % OF FRESH WEIGHT ( $M_f$ ) TO MOISTURE CONTENT AS % OF DRY WEIGHT ( $M_d$ )**

Conversion factor:  $M_f \% = \frac{100 M_d \%}{100 + M_d \%}$

$M_f$ %	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0	—	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
1	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
2	2.0	2.1	2.2	2.4	2.5	2.6	2.7	2.8	2.9	3.0
3	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	4.0	4.1
4	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0	5.2
5	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.0	6.2	6.3
6	6.4	6.5	6.6	6.7	6.8	7.0	7.1	7.2	7.3	7.4
7	7.5	7.6	7.8	7.9	8.0	8.1	8.2	8.3	8.5	8.6
8	8.7	8.8	8.9	9.1	9.2	9.3	9.4	9.5	9.6	9.8
9	9.9	10.0	10.1	10.3	10.4	10.5	10.6	10.7	10.9	11.0
10	11.1	11.2	11.4	11.5	11.6	11.7	11.9	12.0	12.1	12.2
11	12.4	12.5	12.6	12.7	12.9	13.0	13.1	13.3	13.4	13.5
12	13.6	13.8	13.9	14.0	14.2	14.3	14.4	14.5	14.7	14.8
13	14.9	15.1	15.2	15.3	15.5	15.6	15.7	15.9	16.0	16.1
14	16.3	16.4	16.6	16.7	16.8	17.0	17.1	17.2	17.4	17.5
15	17.6	17.8	17.9	18.1	18.2	18.3	18.5	18.6	18.8	18.9
16	19.0	19.2	19.3	19.5	19.6	19.8	19.9	20.0	20.2	20.3
17	20.5	20.6	20.8	20.9	21.1	21.2	21.4	21.5	21.7	21.8
18	22.0	22.1	22.2	22.4	22.5	22.7	22.9	23.0	23.2	23.3
19	23.5	23.6	23.8	23.9	24.1	24.2	24.4	24.5	24.7	24.8
20	25.0	25.2	25.3	25.5	25.6	25.8	25.9	26.1	26.3	26.4
21	26.6	26.7	26.9	27.1	27.2	27.4	27.6	27.7	27.9	28.0
22	28.2	28.4	28.5	28.7	28.9	29.0	29.2	29.4	29.5	29.7
23	29.9	30.0	30.2	30.4	30.5	30.7	30.9	31.1	31.2	31.4
24	31.6	31.8	31.9	32.1	32.3	32.5	32.6	32.8	33.0	33.2
25	33.3	33.5	33.7	33.9	34.0	34.2	34.4	34.6	34.8	35.0
26	35.1	35.3	35.5	35.7	35.9	36.1	36.2	36.4	36.6	36.8
27	37.0	37.2	37.4	37.6	37.7	37.9	38.1	38.3	38.5	38.7
28	38.9	39.1	39.3	39.5	39.7	39.9	40.1	40.3	40.4	40.6
29	40.8	41.0	41.2	41.4	41.6	41.8	42.0	42.2	42.5	42.7
30	42.9	43.1	43.3	43.5	43.7	43.9	44.1	44.3	44.5	44.7
31	44.9	45.1	45.3	45.6	45.8	46.0	46.2	46.4	46.6	46.8
32	47.1	47.3	47.5	47.7	47.9	48.1	48.4	48.6	48.8	49.0
33	49.3	49.5	49.7	49.9	50.2	50.4	50.6	50.8	51.1	51.3
34	51.5	51.7	52.0	52.2	52.4	52.7	52.9	53.1	53.4	53.6

**TABLE 85. MOISTURE CONTENT AS % OF FRESH WEIGHT ( $M_f$ ) TO MOISTURE CONTENT AS % OF DRY WEIGHT ( $M_d$ ) (continued)**

Conversion factor:  $M_f \% = \frac{100 M_d \%}{100 + M_d \%}$

$M_f$ %	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
35	53.8	54.1	54.3	54.6	54.8	55.0	55.3	55.5	55.8	56.0
36	56.3	56.5	56.7	57.0	57.2	57.5	57.7	58.0	58.2	58.5
37	58.7	59.0	59.2	59.5	59.7	60.0	60.3	60.5	60.8	61.0
38	61.3	61.6	61.8	62.1	62.3	62.6	62.9	63.1	63.4	63.7
39	63.9	64.2	64.5	64.7	65.0	65.3	65.6	65.8	66.1	66.4
40	66.7	66.9	67.2	67.5	67.8	68.1	68.4	68.6	68.9	69.2
41	69.5	69.8	70.1	70.4	70.6	70.9	71.2	71.5	71.8	72.1
42	72.4	72.7	73.0	73.3	73.6	73.9	74.2	74.5	74.8	75.1
43	75.4	75.7	76.1	76.4	76.7	77.0	77.3	77.6	77.9	78.3
44	78.6	78.9	79.2	79.5	79.9	80.2	80.5	80.8	81.2	81.5
45	81.8	82.1	82.5	82.8	83.2	83.5	83.8	84.2	84.5	84.8
46	85.2	85.5	85.9	86.2	86.6	86.9	87.3	87.6	88.0	88.3
47	88.7	89.0	89.4	89.8	90.1	90.5	90.8	91.2	91.6	91.9
48	92.3	92.7	93.1	93.4	93.8	94.2	94.6	94.9	95.3	95.7
49	96.1	96.5	96.9	97.2	97.6	98.0	98.4	98.8	99.2	99.6
50	100.0	100.0	101.0	101.0	102.0	102.0	102.0	103.0	103.0	104.0
51	104.0	104.0	105.0	105.0	106.0	106.0	107.0	107.0	107.0	108.0
52	108.0	109.0	109.0	110.0	110.0	111.0	111.0	111.0	112.0	112.0
53	113.0	113.0	114.0	114.0	115.0	115.0	116.0	116.0	116.0	117.0
54	117.0	118.0	118.0	119.0	119.0	120.0	120.0	121.0	121.0	122.0
55	122.0	123.0	123.0	124.0	124.0	125.0	125.0	126.0	126.0	127.0
56	127.0	128.0	128.0	129.0	129.0	130.0	130.0	131.0	131.0	132.0
57	133.0	133.0	134.0	134.0	135.0	135.0	136.0	136.0	137.0	138.0
58	138.0	139.0	139.0	140.0	140.0	141.0	142.0	142.0	143.0	143.0
59	144.0	144.0	145.0	146.0	146.0	147.0	148.0	148.0	149.0	149.0
60	150.0	151.0	151.0	152.0	153.0	153.0	154.0	154.0	155.0	156.0
61	156.0	157.0	158.0	158.0	159.0	160.0	160.0	161.0	162.0	162.0
62	163.0	164.0	165.0	165.0	166.0	167.0	167.0	168.0	169.0	170.0
63	170.0	171.0	172.0	172.0	173.0	174.0	175.0	175.0	176.0	177.0
64	178.0	179.0	179.0	180.0	181.0	182.0	182.0	183.0	184.0	185.0
65	186.0	187.0	187.0	188.0	189.0	190.0	191.0	192.0	192.0	193.0
66	194.0	195.0	196.0	197.0	198.0	199.0	199.0	200.0	201.0	202.0
67	203.0	204.0	205.0	206.0	207.0	208.0	209.0	210.0	211.0	212.0
68	213.0	213.0	214.0	215.0	216.0	217.0	218.0	219.0	221.0	222.0
69	223.0	224.0	225.0	226.0	227.0	228.0	229.0	230.0	231.0	232.0
70	233.0	234.0	236.0	237.0	238.0	239.0	240.0	241.0	242.0	244.0

**TABLE 86. ANALYSES OF COMMONLY USED FERTILIZERS**

- (a) Nitrogen (d) Calcium  
 (b) Phosphorus (e) Magnesium  
 (c) Potassium

The following table gives the analyses of fertilizers in common use in agriculture. As many are guaranteed only a given minimum content, the range of variation commonly found is also given. Compound fertilizers of fixed composition, e.g. 'National Compound' or 'Fison's' fertilizers have not been included.

**(a) Nitrogen Fertilizers**

<i>Common Name</i>	<i>Formula</i>	<i>% N in Fertilizer min. max.</i>	<i>% N in Purified Compound</i>	<i>Remarks (Other constituents etc.)</i>
Ammonium sulphate	$(\text{NH}_4)_2\text{SO}_4$	20.6 21.1	21.2	
'Nitrochalk'	$\text{NH}_4\text{NO}_3 + \text{CaCO}_3$	15.5*	—	29% CaO (20.7% Ca). Must be stored in moisture-proof containers.
'Nitra-shell'	$\text{NH}_4\text{NO}_3 + \text{CaCO}_3$	20.5	—	20.2% CaO (14.4% Ca). Must be stored in moisture-proof containers.
Ammonium nitrate	$\text{NH}_4\text{NO}_3$	35	35	Is deliquescent and may set in hard mass.
Calcium nitrate (nitrate of lime)	$\text{Ca}(\text{NO}_3)_2$	15.5	17.1	—
Sodium nitrate (nitrate of soda or Chile saltpetre)	$\text{NaNO}_3$	15.5 16	16.5	Chile saltpetre contains boron and iodine.
Potassium nitrate (saltpetre)	$\text{KNO}_3$		13.85	
'Potash nitrate' (from Chile)	$\text{KNO}_3 + 2\text{NaNO}_3$	15	15.6	10–15% $\text{K}_2\text{O}$ (8.25–12.4% K).
Cyanamide	$\text{CaCN}_2$	20.6	35	60% CaO (42.9% Ca). 1/3rd of this is free lime.
Hoof and horn meal	—	13–14	—	—
Dried blood	—	12–13	—	—

\*Recently increased to 21% N content.

**(b) Phosphorus Fertilizers**

<i>Common Name</i>	% P <sub>2</sub> O <sub>5</sub> (P) <i>in fertilizer</i>		<i>Other Constituents</i>	<i>Remarks</i>
	<i>min.</i>	<i>max.</i>		
Bone meal	20(8·7)	25(10·9)	3·5-5% N	—
Steamed bone flour	25·7(11·2)	30(13·1)	1-2% N	—
Superphosphate*	14(6·1)	20·5(8·9)	Approx. 29% CaO(21% Ca)	Contains about 45% CaSO <sub>4</sub>
Triple Superphosphate	42(18·4)	49(21·6)	—	Contains relatively little CaSO <sub>4</sub>
Dicalcium phosphate CaHPO <sub>4</sub> ·2H <sub>2</sub> O		41·2(18·0)	32·6 CaO (23·3%Ca)	Insoluble in water
Basic slag*	8(3·5)	18(7·9)	36% CaO (26% Ca) Mn. F.	
Mineral phosphate (Gafsa or ground mineral phosphate)	27(11·8)	35(15·3)	50% CaO (36% Ca)	—

\* Sold by grades based on soluble phosphate content.

**(c) Potassium Fertilizers**

<i>Common Name</i>	<i>Formula</i>	% K <sub>2</sub> O (K) <i>in fertilizer</i>		% <i>in</i> <i>Purified</i> <i>Compound</i>	<i>Remarks</i> <i>(other constituents)</i>
		<i>min.</i>	<i>max.</i>		
Potassium sulphate (sulphate of potash)	K <sub>2</sub> SO <sub>4</sub>	48(39·8)	50(41·5)	54(44·8)	Small % KCl and MgSO <sub>4</sub>
Potassium chloride (muriate of potash)	KCl	50(41·5)	60(49·8)	63(52·5)	Up to 15% NaCl in less pure forms. A little Ca and Mg.
Potash salts	—	30(24·9)		—	25% NaCl
Kainit	KCl. MgSO <sub>4</sub> ·3H <sub>2</sub> O	14(11·6)	17(14·1)	18·9(15·7)	(Sometimes 10-15 % Mg. salts).

**(d) Calcium**

<i>Common Name</i>	<i>Formula</i>	<i>No. of parts pure compound to give 1 part Ca.</i>	<i>No. of parts average commercial material to give 1 part Ca.</i>
Burned lime (quick-lime)	CaO	1.40	{ Best lime 1.47 Av. lump lime 1.68
Hydrated lime (slaked lime)	Ca(OH) <sub>2</sub>	1.84	Hydrated lime 2.10
Carbonate of lime (chalk or limestone)*	CaCO <sub>3</sub>	2.25	{ Ground white chalk 2.80 Ground grey chalk 3.15 Ground limestone 2.80
Magnesian limestone (Dolomite)	7CaCO <sub>3</sub> +6MgCO <sub>3</sub> (approx.)	4.18	—
Industrial Waste Lime	—	—	3.5—4.9

\* Product is not standardised and content of lime will vary according to source.

**(e) Magnesium**

<i>Common Name</i>	<i>Formula</i>	<i>% MgO(Mgl) in fertilizer</i>	<i>No. of parts compound to give 1 part Mg.</i>
Magnesium sulphate (Epsom salts)	MgSO <sub>4</sub> .7H <sub>2</sub> O	16.8(10.2)	9.88
Kieserite	MgSO <sub>4</sub> .H <sub>2</sub> O	29.2(17.6)	5.7
Dolomite (pure)	45.65% MgCO <sub>3</sub>	21.8(13.2)	Magnesian limestone usually contains more CaCO <sub>3</sub> than pure dolomite.
Magnesium carbonate	MgCO <sub>3</sub>	47.8(28.8)	—

**TABLE 87. CONVERSION FACTORS FOR FERTILIZERS**

(a) Nitrogen (c) Potassium  
 (b) Phosphorus (d) Magnesium

**(a) Nitrogen**

Number of Equivalent Parts (here expressed in grams)

Grams element N	Gram equivalents (NH <sub>4</sub> ) <sup>+</sup> or (NO <sub>3</sub> ) <sup>-</sup>	Grams of fertilizer containing					
		1% N	13% N	15.5% N	20.5% N	21% N	35% N
1	0.0714	100	7.7	6.46	4.88	4.76	2.86
14.0	1	1400	108	90.4	68.3	66.7	40.0
0.01	0.00071	1	0.077	0.065	0.049	0.048	0.029
0.13	0.0093	13	1	0.84	0.63	0.62	0.37
0.155	0.011	15.5	1.19	1	0.76	0.74	0.44
0.205	0.0146	20.5	1.58	1.32	1	0.98	0.59
0.21	0.0150	21	1.62	1.35	1.02	1	0.60
0.35	0.0250	35	2.69	2.26	1.71	1.67	1

**(b) Phosphorus**

Number of Equivalent Parts (here expressed in grams)

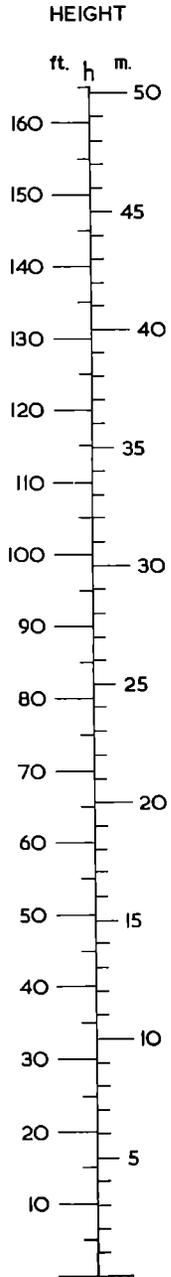
Grams element P	Grams Oxide P <sub>2</sub> O <sub>5</sub>	Grams of fertilizer containing							
		1% P <sub>2</sub> O <sub>5</sub>	14% P <sub>2</sub> O <sub>5</sub>	16% P <sub>2</sub> O <sub>5</sub>	18% P <sub>2</sub> O <sub>5</sub>	25% P <sub>2</sub> O <sub>5</sub>	29% P <sub>2</sub> O <sub>5</sub>	35% P <sub>2</sub> O <sub>5</sub>	47% P <sub>2</sub> O <sub>5</sub>
1	2.29	229	16.4	14.3	12.7	9.16	7.90	6.54	4.87
0.44	1	100	7.14	6.25	5.56	4.00	3.45	2.86	2.13
0.0044	0.01	1	0.071	0.062	0.056	0.040	0.034	0.029	0.021
0.061	0.14	14	1	0.88	0.78	0.56	0.48	0.40	0.30
0.070	0.16	16	1.14	1	0.89	0.64	0.55	0.46	0.34
0.079	0.18	18	1.29	1.12	1	0.72	0.62	0.51	0.38
0.109	0.25	25	1.79	1.56	1.39	1	0.86	0.71	0.53
0.127	0.29	29	2.07	1.81	1.61	1.16	1	0.83	0.62
0.153	0.35	35	2.50	2.19	1.94	1.40	1.21	1	0.74
0.205	0.47	47	3.36	2.94	2.61	1.88	1.62	1.34	1

**(c) Potassium**

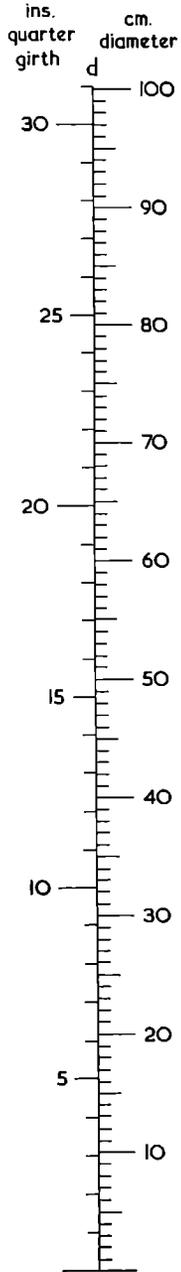
Number of Equivalent Parts (here expressed in grams)							
Grams element K	Grams equivalents K+	Grams oxide K <sub>2</sub> O	Grams of fertilizer containing				
			1% K <sub>2</sub> O	30% K <sub>2</sub> O	48% K <sub>2</sub> O	50% K <sub>2</sub> O	60% K <sub>2</sub> O
1	0.0256	1.205	120.5	4.02	2.51	2.41	2.01
39.1	1	47.1	4710	157	9.82	9.42	7.85
0.830	0.0212	1	100	3.33	2.08	2.00	1.67
0.0083	0.00021	0.01	1	0.033	0.021	0.02	0.017
0.249	0.0064	0.30	30	1	0.625	0.60	0.50
0.398	0.0102	0.48	48	1.60	1	0.96	0.80
0.415	0.0106	0.50	50	1.67	1.04	1	0.83
0.498	0.0127	0.60	60	2.00	1.25	1.20	1

**(d) Magnesium**

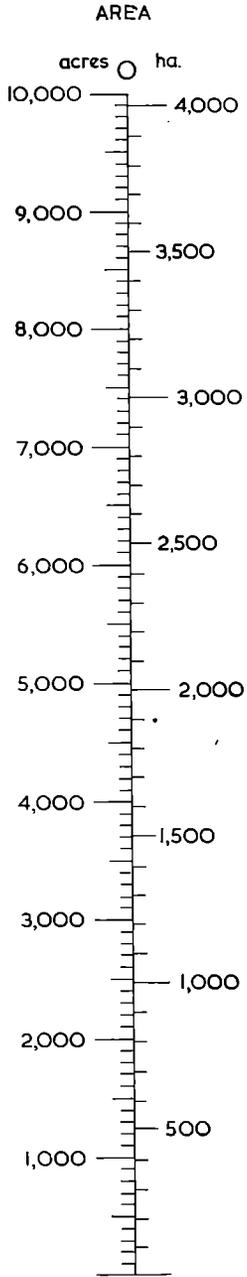
Number of Equivalent Parts (here expressed in grams)							
Grams element Mg	Gram equivalents Mg++	Grams Oxide Mg O	Grams of fertilizer containing				
			1% Mg O	16.8% Mg O	21.8% Mg O	29.2% Mg O	47.8% Mg O
1	0.0822	1.66	166	9.88	7.62	5.68	3.47
12.2	1	20.17	2017	120	92.5	69.1	42.2
0.603	0.0496	1	100	5.96	4.59	3.42	2.09
0.0060	0.0005	0.01	1	0.060	0.046	0.034	0.021
0.101	0.0083	0.17	16.8	1	0.77	0.58	0.35
0.131	0.108	0.22	21.8	1.30	1	0.75	0.46
0.176	0.0145	0.29	29.2	1.74	1.34	1	0.61
0.288	0.0237	0.48	47.8	2.84	2.19	1.64	1



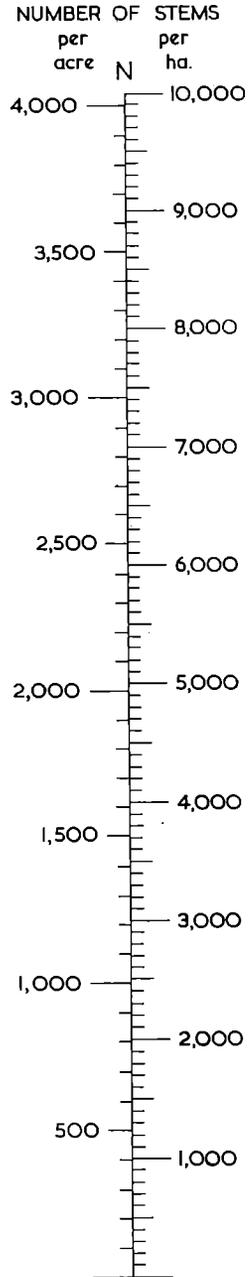
*Chart A.*  
Feet : Metres



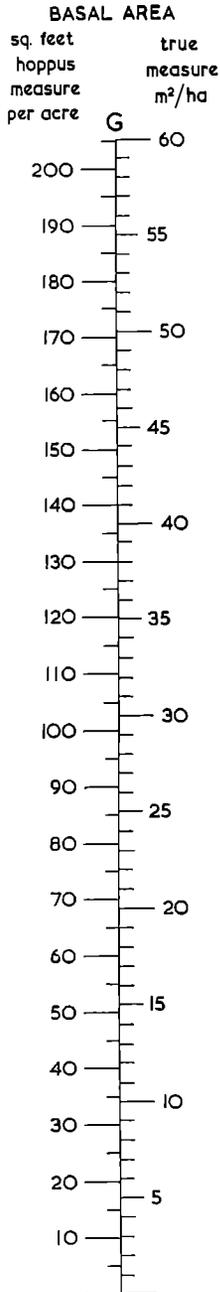
*Chart B.*  
Inches, quarter girth :  
Centimetres, diameters.



*Chart C.*  
Acres : Hectares

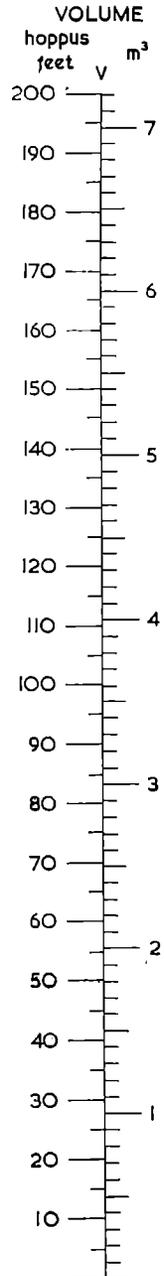


*Chart D.*  
Stems per acre : Stems per hectare.



*Chart E.*

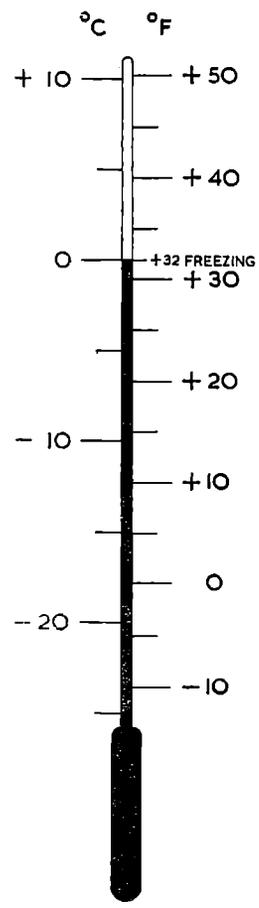
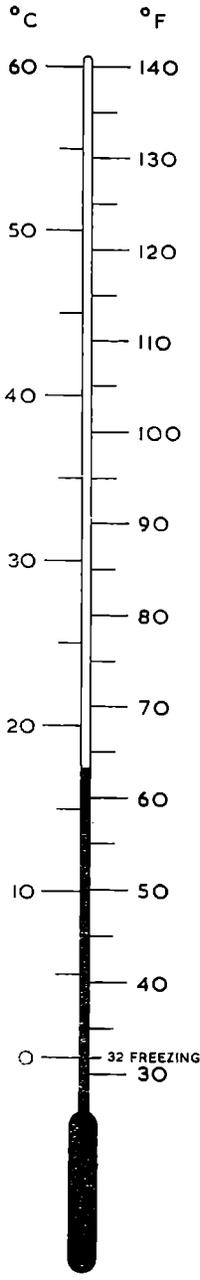
Square feet, Hoppus or quarter girth, per  
acre : Square metres, true, per hectare.



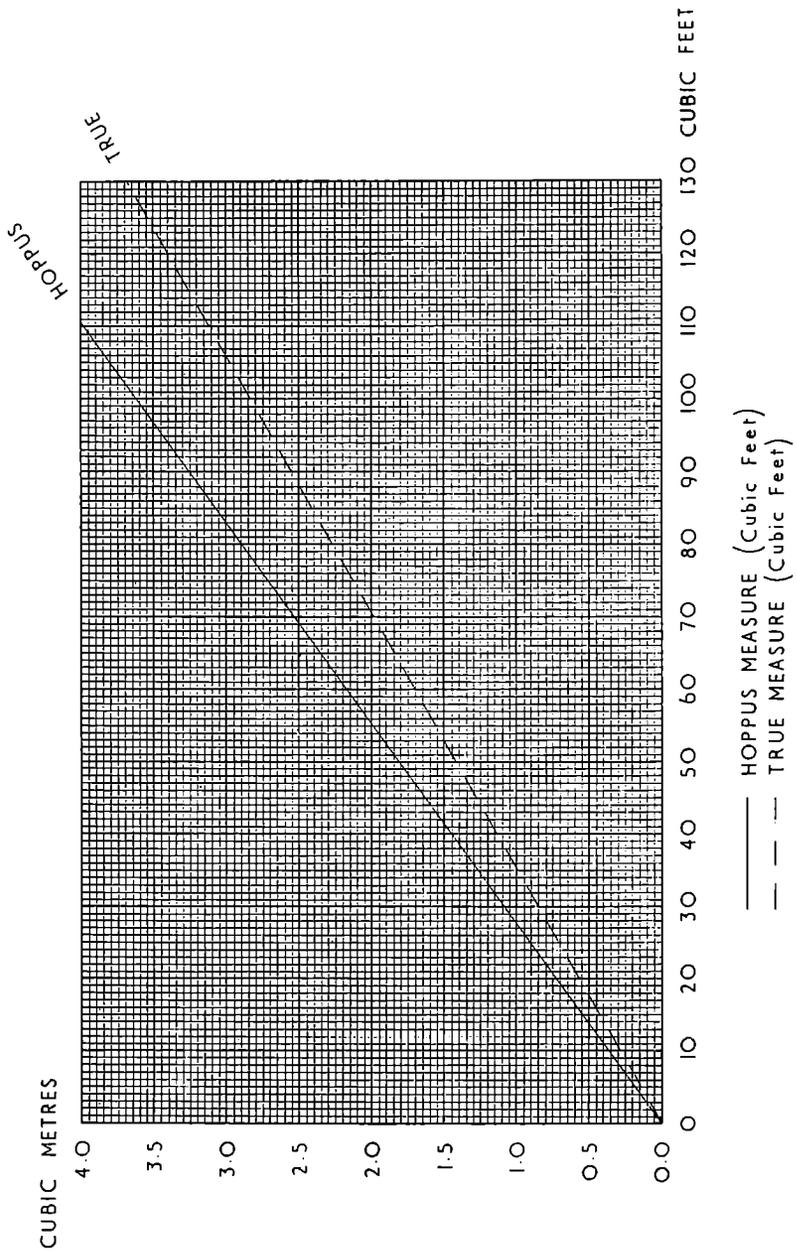
*Chart F.*

Hoppus feet : Cubic metres.





*Chart I.*  
 Temperature: ° Fahrenheit : °Centigrade or Celsius.  
*left, above freezing point*  
*right, below freezing point.*



*Chart J.*

Volumes: Cubic metres true : Cubic feet true : Cubic feet Hoppus.

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