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HOW TO ASSESS YOUR MILL'S PRODUCTIVITY ?

THE SOUTH INDIA TEXTILE RESEARCH ASSOCIATION, COIMBATORE - 14

HOW TO ASSESS YOUR MILL'S PRODUCTIVITY ?

(Giving the revised conversion factors being applied with effect from
SITRA's 29th Productivity Survey for September 2002)

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PREFACE

This edition replaces the last SITRA publication 'How to Assess Your Productivity' (Vol. 46, No 8, Sep 2001). In the present edition, the conversion factors given in Table A in Appendix have been reworked as the norms for spinning have been revised with effect from SITRA's 29th Productivity Survey in Spinning for September 2002. No changes have been made in the reeling and cone-winding norms, and hence the figures in Tables B, C and D in the Appendix are the same as in the last edition. Apart from the method of calculation of various productivity measures used in SITRA productivity surveys, the publication also explains how the conversion factors can be applied to find out the standard production per spindle and HOK in different counts. For the benefit of those who prefer 20s conversion to 40s conversion, illustrative examples have been added to show how 20s converted figures can be easily arrived at from the corresponding 40s converted figures. Grateful acknowledgement is made to Shri D. Shanmuganandam, Assistant Director and Head of L&C Division, SITRA, for making available the norms for post-spinning departments, based on which the relevant conversion factors have been worked out.

CONTENTS

SPINNING

This section describes the method of assessing productivity in spinning. Briefly, the method consists in adjusting the various parameters to 40s cotton carded count so that a Mill could compare its productivity from month to month and also judge its performance against SITRA standards regardless of the differences in the counts produced. The standards are fixed such that they reflect the productivity levels being attained or excelled by the top 10% of the mills in the industry. The revised SITRA standards for HOK and OHS are given in Table 1.

Table 1

Standard HOK and OHS for Different Departments (40s Cotton Carded)

Department	HOK	OHS
Mixing & Blow Room	1.4	0.18
Cards	2.0	0.26
Drawing	0.7	0.09
Fly Frames	1.8	0.24
Ring Spinning	9.1	1.19
Total	**15.0**	**1.96**
Ring frame tenters including reserve piecers and relievers	3.8	0.50
Ring frame doffing boys and sweepers	2.6	0.34
Ring frame 'others' comprising cleaning gang, maistries, doff carriers and maintenance workers	2.7	0.35
Production per spindle per 8 hours adjusted to 40s (g)	105	

Notes :

1. The level of modernisation assumed is as follows : single process blow room with automatic lap doffing, high production cards, high-speed draw frames (two passages), high production speed frames and high speed ring frames (new or converted).

2. The production rates are the same as those given in the SITRA Combined Norms, 'Norms for Productivity in Spinning', 6th edition, 2003 (in print).

3. Work assignments and ancillary operatives assumed correspond to those given in the above publication.

The definitions of the various productivity parameters, the calculations of which are illustrated and explained in this note, are given below :

HOK : Operative hours to produce 100 kg. of yarn

ADJUSTED HOK : The HOK (that is, the operative hours engaged to produce 100 kg. of yarn) is adjusted to a common count of 40s cotton carded by multiplying the actual production in different counts by relevant conversion factors. The production so converted is termed 'standardised production'. Thus, the adjusted HOK is calculated from :

$$\frac{\text{Operative Hours}}{\text{Total of the standardised ring spinning production in individual counts}} \times 100$$

CONVERSION FACTORS FOR HOK : The conversion factors are the ratios of the HOKs of individual counts to that of 40s count:

$$\frac{\text{HOK for a given count}}{\text{HOK for 40s cotton carded count}}$$

These HOK's have been worked out taking the production rates, work assignments, etc., that correspond to those for the standard mill. The conversion factors are different for different departments, and for the cotton carded count of 40s, it is unity for all departments. Another major practical advantage of the method is that it is not required to obtain a break-up of the operatives according to each count.

STANDARD HOK : HOK for 40s cotton carded count under the specified conditions. Standard HOK's for different departments are given in Table 1 and the conditions under which these standard HOK's can be attained are given in the footnotes to this Table. As can be seen, the total standard HOK for these conditions is 15.0.

COMPOSITE PRODUCTIVITY INDEX (CPI) : A measure of productivity calculated by expressing the standard total HOK of 15.0 as a percentage of the Mill's total HOK adjusted to 40s cotton carded count and reflects the effect of both labour and machines.

P : Production per spindle per 8 hours adjusted to 40s cotton carded in g.

CONVERSION FACTORS FOR P : These conversion factors are the ratios which the standard production per spindle in 40s cotton carded count rounded off to two decimals (i.e., 104.77 g.) bears to the production per spindle in the standard mill (rounded off to two decimals) in the respective counts. That is :

$$\frac{104.77 \text{ g.}}{\text{Std prodn per spdl per 8 hrs (g) in the given count}}$$

OHS : Number of operatives per 1000 spindles adjusted 40s cotton carded count obtained by dividing the product of adjusted HOK and adjusted P by 800. For standard OHS for different departments, reference may be made to Table 1. As can be seen, the total standard OHS is 1.96.

OHSAM : OHS modified to allow for valid comparison of a Mill's OHS with the standard OHS of 1.96 taking into account the deviation of the Mill's production per spindle from the standard production per spindle.

EOPD : Giving the fewer number of operatives which the standard mill would have engaged for the same quantum of production as that for the given Mill. Negative sign for EOPD means that the Mill engages less number of operatives as compared to the standard mill. EOPD is arrived at as follows:

$$\frac{\text{Operatives engaged by the Mill x (100-CPI)}}{\text{No. of Working Days x 7.5 x 100}}$$

SH : A measure of spindle utilisation calculated by dividing the average spindle hours worked per day by the installed spindles.

MPI : A combined measure of production per spindle and spindle utilisation. It is calculated by expressing the product of production per spindle (P) adjusted to 40s cotton carded count and spindle utilisation (SH) as a percentage of 2514 (=104.77 x 24.0). The index would be reduced by one-seventh if the Mill works only 6 days a week.

PFD : Production per Frame Day in Kg., and is equal to MPI x 1.38, number of spindles per frame being 420 as assumed for the standard mill.

DATA NEEDED FOR PRODUCTIVITY ASSESSMENT

The Mill's HOK, production per spindle, and other productivity parameters are assessed based on a month's data with respect to operatives engaged, ring spinning production and spindle shifts worked.

OPERATIVES

Operative hours actually engaged in different departments irrespective of whether the operatives are permanent, badli, temporary, apprentice, or daily-paid. The categories of operatives to be included for the calculation of HOK are as follows :

MACHINE TENTERS, BACK ATTENDANTS, RESERVE AND INTERVAL RELIEVING TENTERS, HEAD JOBBERS, DOFFING JOBBERS, LINE JOBBERS, OILERS, FITTERS, FITTER HELPERS, CLEANING GANG, SWEEPERS, DOFFERS AND INTERVAL RELIEVING DOFFERS, MIXING COOLIES, CAN TENTERS, STRIPPERS, FLAT CLEANERS, GRINDERS, FLY CARRIER-CUM-SWEEPERS, LAP CARRIERS, BELT STITCHERS, ROVING BOBBIN CARRIERS, TAPE STITCHERS, ROLLER COVERERS, AND DOFF CARRIER-CUM-CONDITIONING MEN.

As an example, suppose that the operative hours in different departments and ring spinning production and spindle shifts for a Mill are as given in Tables 2 and 3.

Table 2
Operative Hours

Department	Operative Hours
Mixing & blow room	4662
Cards	6262
Drawing	2357
Fly Frames	9672
Ring Spinning	32464
Total	55417

Table 3
Production and Spindle Shifts in Ring Spg.

Count	Prodn (Kg.)
20s	30988
40s CHO	13250
60s	39761
72s C	5474
80s	21074
80s C	19495
Spindle shifts (8 hours)	2473201

PRODUCTION PER SPINDLE (P) ADJUSTED TO 40s COTTON CARDED COUNT

To obtain a combined converted production per spindle for all the counts produced in the ring spinning department, the production per spindle for each count may be first converted to 40s cotton carded count, then each of these converted figures may be multiplied by the respective spindle shifts, and finally a weighted average is taken.

It is also possible to arrive at this combined figure, as described below, without first finding out the converted production per spindle for each count. The production in each count is multiplied by the respective conversion factor for that count (given in column 2 of Table A in appendix). The products so obtained are totalled up and this total is divided by the total number of spindle shifts worked during the month. The calculation for the data in Table 3 is illustrated below.

$$\frac{\left[\begin{array}{l}(30988 \times 0.415) + (13250 \times 0.756) + (39761 \times 1.706) + \\ + (5474 \times 2.012) + (21074 \times 2.416) + (19495 \times 2.239)\end{array}\right]}{2473201} \times 1000$$

$$= \frac{196287 \times 1000}{2473201} = 79.37$$

ADJUSTED HOK

To find the adjusted HOK, the first step is to calculate the standardised production for different departments using the conversion factors given in Table A in Appendix. The ring frame production in each count is multiplied by the corresponding conversion factor appropriate to that department and the sum is taken. Thus, applying the conversion factors given in column 3 of Table A, the standardised production for mixing and blow room department for the above data would be :

$$\left[\begin{array}{l}(30988 \times 0.97) + (13250 \times 1.19) + (39761 \times 1.04) + \\ + (5474 \times 1.28) + (21074 \times 1.08) + (19495 \times 1.28)\end{array}\right] = 141898$$

$$\text{HOK} = \frac{\text{Operative Hours} \times 100}{\text{Standardised Production}} = \frac{4662 \times 100}{141898} = 3.29$$

By making similar calculations for other departments, HOK figures in Table 4 can be arrived at.

OPERATIVES PER 1000 SPINDLES (OHS)

It will also be useful to assess separately the extent to which the differences in productivity are explained by the production per spindle and the number of operatives engaged.

The number of operatives engaged per 1000 spindles adjusted to 40s cotton carded (OHS) can be calculated by using the formula.

$$\text{OHS} = \frac{\text{HOK} \times \text{P}}{800}$$

where P is the production per spindle per 8 hours in grams, and both HOK and P have been adjusted to 40s count on the lines explained earlier.

For the example considered, the total OHS as obtained from this formula is :

$$\frac{35.12 \times 79.37}{800} = 3.48$$

The OHS figures for individual departments (Table 4) as well as those for ring frame tenters, doffing boys and 'others' (Table 5) can be worked out similarly from the corresponding HOK's.

MODIFIED OHS (OHSAM)

From the definition of OHS given above, it follows that OHS is a function of production per spindle (P), although for small deviations in production per spindle, say, less than 5%, the workers' complement engaged in different departments can be expected to remain practically unchanged. However, for any large increases in production per spindle, the OHS would increase significantly. This is because operatives such as number of ring frame doffing boys and the preparatory department operatives would require to be engaged in proportionately larger numbers to cope with the higher volume of ring spinning production.

The OHSAM can be worked out from the expression :

$$OHSAM = (1.96 \times OHS) / (1.96 - 0.010325 \times (104.77 - P_A))$$

where P_A is the production per spindle for the Mill. For the example considered,

$$OHSAM = (1.96 \times 3.48) / (1.96 - 0.010325 \times (104.77 - 79.37)) = 4.02$$

Table 4
Standardised Production, HOK and OHS for the Data given in Tables 2 and 3

Department	Operative Hours	Standardised Production	HOK	OHS
Mixing & blow room	4662	141898	3.29	0.33
Cards	6262	147054	4.26	0.42
Drawing	2357	136001	1.73	0.17
Fly frames	9672	161912	5.97	0.59
Ring Spinning	32464	163746	19.83	1.97
Total	55417	157791	35.12	3.48

COMPOSITE PRODUCTIVITY INDEX

Composite productivity index is calculated by expressing the standard total HOK of 14.99 as a percentage of the actual HOK. For example :

$$\text{Composite Productivity Index (CPI)} = \frac{14.99 \times 100}{35.12} = 43$$

EXCESS OPERATIVES PER DAY (EOPD)

The composite productivity index as defined above is basically an overall ratio of the operative hours engaged in the standard mill to that actually engaged in a given Mill, with both the count pattern and the quantum of production in each count in the standard mill being identical to that in the given Mill. Thus, the composite productivity index of 43 means that the given Mill engages 100 operative hours to produce 100 kg. of yarn compared with only 43 operative hours required in the standard mill. This difference could be translated to its 'operatives per day equivalent' (EOPD) as follows :

$$\frac{\text{Operative hours engaged during the month}}{\text{No. of working days} \times 7.5} \times \frac{(100 - CPI)}{100}$$

where CPI is the composite productivity index for the Mill. A negative sign for EOPD means that fewer number of operatives are being engaged in the Mill as compared to the standard mill.

It is clear from the above formula that the absolute numbers of excess operatives in a Mill for a given deviation of CPI from 100 will be larger for a coarse count Mill than for a smaller or fine count Mill.

Thus, for the example considered,

$$\text{EOPD} = \frac{55417}{30 \times 7.5} \times \frac{100 - 43}{100} = 140$$

That is, the Mill engages about 140 operatives more per day than what would be engaged by the standard mill having the same count pattern as the Mill.

PARTIAL RING FRAME HOK AND OHS

Since nearly two-thirds of the operatives upto spinning in a Mill are engaged in ring spinning department, it would be useful to calculate HOK's separately (termed partial HOK) for tenters, doffing boys, and 'others' in this department. The method of calculation is similar to that followed for working out the HOK for individual departments, and the conversion factors are given in Table A in Appendix.

Consider that the number of operative hours of 32464 given under ring spinning in Table 2 has the following break-up according to the category of operatives : tenters including reserve piecers 16240, doffing boys including sweepers 7436 and 'others' 8788. Then, the partial HOK's and OHS's would be as set out in Table 5.

Table 5
Partial Ring Frame HOK and OHS

Category	Operative Hours	Standardised Production	HOK	OHS
Tenters	16240	172824	9.40	0.93
Doffing Boys	7436	130042	5.72	0.57
'Others'	8788	183095	4.80	0.48

HOURS WORKED PER SPINDLE PER DAY (SH)

$$\text{SH} = \frac{\text{Spindle shifts (8 hours)} \times 8}{\text{Working days in the month} \times \text{installed spindles}}$$

The spindle shifts figure used in the above calculation is inclusive of the spindle shifts stopped due to routine maintenance, cleaning and count change. These stoppages should not ordinarily be far in excess of 1%. In cases of abnormally large percentage of stoppages due to these causes, a flat allowance of 1% may be applied. That is, the total worked spindle shifts (8 hours) figure is to be multiplied by 1.01 and the figure arrived at should be taken for SH calculation.

Suppose, in this example, the Mill has an installed spindleage of 28800 and it has worked for 30 days in the month. Assuming that the spindle shifts (8 hours) figure of 2473201 includes the above categories of stoppages, then the SH figure works out to :

$$= \frac{2473201 \times 8}{30 \times 28800} = \frac{19785608}{864000} = 22.9$$

MACHINE PRODUCTIVITY INDEX (MPI)

The machine productivity index is a measure of the overall productivity of ring frames and takes into account both production rate and spindle utilisation. It is calculated as follows :

$$MPI = \frac{\text{Mill's adj. prdn. per spindle}}{\text{Std. Production per Spindle}} \times \frac{SH}{24.0} \times \frac{\text{days in a week}}{7}$$

In the above, days in a week is either 6 or 7 depending on whether the Mill is scheduled to work 6 days in a week or 7 days in a week.

Let us assume that the Mill considered in the example worked 7 days a week. Then,

$$MPI = \frac{79.37}{104.77} \times \frac{22.9}{24.0} \times \frac{7}{7} \times 100 = 72$$

If the Mill had adopted 6-day week working instead of 7-day week, then the MPI would be :

$$\frac{79.37}{104.77} \times \frac{22.9}{24.0} \times \frac{6}{7} \times 100 = 62$$

PRODUCTION PER FRAME DAY (PFD)

As PFD is equal to 1.38 x MPI, for the example, PFD = 1.38 x 72 = 99.4 kg.

So far, definitions and procedures for working out the various productivity parameters were explained. The following sections explain some more uses of conversion factors.

HOW TO FIND OUT STANDARD PRODUCTION PER SPINDLE IN DIFFERENT COUNTS?

SITRA publication "Norms for Productivity in Spinning" to which reference was made earlier gives ring spinning production per spindle norms for major counts only. If it is desired, the production per spindle fixed as standard in counts (not covered in the above publication), can be found from the corresponding production per spindle conversion factors listed in column (2) of Table A in the following manner.

As defined, production per spindle conversion factor for a given count is :

$$\frac{\text{Standard production per spindle per 8 hours in 40s cotton carded count (g)}}{\text{Standard production per spindle per 8 hours in the given count (g)}} = \frac{104.77 \text{ g.}}{\text{Standard production per spindle per 8 hours in the given count}}$$

The above formula can be rewritten as :

$$\text{Standard production per spindle per 8 hours in a given count} = \frac{104.77}{\text{Prdn. per spindle conv. factor for that count}}$$

To illustrate, the conversion factor for production per spindle for 72s C is 2.012. Then the standard production per spindle in 72s C is obtained as follows :

$$\frac{104.77}{2.012} = 52.07 \text{ g.}$$

HOW TO FIND OUT STANDARD TOTAL HOK FOR A GIVEN COUNT?

Sometimes, for costing purposes, it might be required to get a quick estimate of the total actual HOK for a count under a Mill's conditions. This can be done by assuming that the HOK for all the counts in the Mill will be uniformly higher or lower in the ratio of the extent to which the CPI for the Mill is less or more than the standard of 100.

$$\text{Total HOK estimated for a given count} = \frac{\text{Standard total HOK for the count}}{\text{CPI for the Mill}} \times 100$$

Standard total HOK for a count can be obtained from the respective conversion factor from the relation :

$$\text{Standard Total HOK in a Count} = \text{Standard total HOK for 40s} \times \text{Respective conv. factor}$$

$$= 14.99 \times \text{Respective Conversion Factor}$$

For example, let us consider 60s carded count. The total HOK conversion factor for 60s carded is 1.29, which gives the standard Total HOK for this count as 19.34 (= 14.99 x 1.29). Suppose that the composite productivity index for a Mill is 80. Then, the estimated actual Total HOK in 60s count in this Mill is :

$$\frac{19.34}{80} \times 100 = 24.18$$

In a similar manner, the standard HOK of any department (or the partial standard HOK's for ring spinning) for a given count can be obtained.

HOW TO GET 20s COTTON CARDED COUNT CONVERSION?

Some mills, particularly those producing coarser ranges of counts, may prefer to apply 20s conversion rather than 40s. These mills may apply the following procedure to obtain 20s converted figures.

20s ADJUSTED PRODUCTION PER SPINDLE

The factors for 20s conversion can be easily derived from those given in the table since it involves merely multiplying the tabulated values by a constant factor of 2.4086. The production per spindle, against which the Mill figure would be judged, will accordingly change from 104.77g. for 40s conversion to 252.35g for 20s conversion.

Where a combined 20s conversion alone is desired, the 40s conversion factors themselves can be used; only the final figure need be multiplied by 2.4086 to change it to 20s conversion. Referring again to the example given on page 4, the 20s converted figure will be 79.37 x 2.4086 = 191.17 g.

20s ADJUSTED HOK

Mills may first work out the various adjusted HOK's using the 40s conversion factors tabulated in Table A. These HOK's may then be multiplied by the respective 20s conversion multipliers (Table 6) to convert them to HOK's adjusted to 20s. The standard HOK's for 20s count against which the 20s converted HOK's may be compared are also given in Table 6.

Table 6
20s Conversion Multipliers and 20s Standard HOK

Department/ Category	Multipliers	20s Standard HOK
Mix & blow room	0.9686	1.36
Cards	0.9437	1.86
Drawing	0.7525	0.55
Fly Frames	0.7690	1.39
Ring Spg.	0.6731	6.11
Total	0.7519	11.27
Ring Spg. Tenters	0.5931	2.28
Ring Spg. Doffers	1.0000	2.56
Ring Spg. Others	0.4745	1.27

For the example considered, the 20s converted HOK's corresponding to the 40s converted HOK's arrived at in Tables 4 and 5 are as follows :

Mix & Bl Rm	3.29 x	0.9686	= 3.19
Cards	4.26 x	0.9437	= 4.02
Drawing	1.73 x	0.7525	= 1.30
Fly Frames	5.97 x	0.7690	= 4.59
Ring Spg.	19.83 x	0.6731	= 13.35
Total	35.12 x	0.7519	= 26.41
Spg Tenters	9.40 x	0.5931	= 5.58
Spg Doffers	5.72 x	1.0000	= 5.72
Spg Others	4.80 x	0.4745	= 2.28

REELING AND CONE WINDING

Effective from SITRA's productivity survey in September 1992, the concept of HOK is being extended to reeling and cone winding departments also. The relevant conversion factors are tabulated in Tables B to D of Appendix. The standards for these departments are based on SITRA time study standards, unlike in spinning where the standards are based on the productivity levels achieved or excelled by the top 10% of the mills in the industry.

REELING

Double Hank Plain reeling (DHPR) has been taken as being adopted in the standard mill. The standard production per reeler in DHPR in 40s cotton carded count being 30.8 kg. per 8 hours, the standard HOK for 40s DHPR works out to 25.97 (=800/30.8). The conversion factors for different counts can be obtained as follows :

$$\frac{\text{Standard HOK for a given count for DHPR}}{25.97}$$

The standard production per reeler in DHPR and other relevant conditions thereof such as work assignment in terms of doffs per reeler, cop contents assumed in different count ranges, etc., for major counts are given in SITRA Combined Norms "Norms for Productivity in Spinning", 6th edition, 2003. The conversion factors are tabulated in Table B in the Appendix of the present publication.

The standard production per reeler in a count for DHPR system of reeling can be obtained by simply dividing 30.8 by the relevant conversion factor.

The following examples illustrate the method of calculations.

Let us take that a Mill's data with respect to number of reelers worked and reeled yarn production in various counts are as shown in Table 7.

Table 7

No. of Reelers Worked and Reeled Yarn Production

Count	Type of Reeling	No. of Reelers Actually Worked	Total Prodn. Reeled (kg) (8 Hrs.)
20s	SHPR	120	4966
26s C	DHPR	90	3720
2/60s	DHPR	183	7857
Nf2/17	DHPR	41	4390
Total		434	20933

Reeler Operative hours engaged during the month = 434 x 8 = 3472

Reeled production converted to 40s = (4966 x 0.548) + (3720 x 0.689) + (7857 x 0.708) + (4390 x 0.252)

= 11953

Reeling HOK adjusted to 40s count = $\frac{3472 \times 100}{11953}$ = 29.0

That the reeling HOK as arrived at above can also be obtained from the reeling productivity index is illustrated below. Table 8 gives the standard production per reeler required for this calculation along with the Mill data with respect to reeled yarn production in different counts.

Table 8
Calculation of No. of Reelers Expected to be Engaged for Standard Production per Reeler

Count (1)	Total Prodn. Reeled (kg) (2)	Std Prodn. per reeler per 8 Hrs for DHPR (kg.) (3)	No. of Reeler shifts (8 hrs) to be engaged for Std Prodn. under (3) (4)
20s	4966	56.2	88.4
26s C	3720	44.7	83.2
2/60s	7857	43.5	180.6
Nf 2/17	4390	122.1	36.0
Total			388.2

Column (4) shows the number of reeler shifts of 8 hours that ought to have been engaged in each count if the reelers had given the standard production per 8 hours. Total of column (4) (that is, 388.2 in the present example) expressed as a percentage of the reeler shifts of 8 hours actually engaged by the Mill during the month (that is, the figure of 434 given in Table 7) gives the reeling productivity index for the Mill. Thus, for the example considered :

Reeling Productivity Index = $\frac{\text{No. of Reeler shifts for Std. Prodn. per Reeler}}{\text{No. of reeler shifts actually engaged in the month}}$ x 100

= $\frac{388.2 \times 100}{434}$ = 89.4

$$\text{HOK for reeling} = \frac{\text{Standard HOK for 40s DHPR}}{\text{Reeling Productivity Index}} \times 100$$

$$= \frac{25.97 \times 100}{89.4} = 29.0 \text{ (same as that arrived at from conversion factors)}$$

CONVENTIONAL CONE WINDING

In conventional cone winding the standard production per operative per 8 hours in 40s count is 97.1 kg. for mechanical yarn clearers, which gives 8.24 as the standard HOK for 40s (=800/97.1). The conversion factors for different counts given in Table C in the Appendix are arrived at as follows :

$$\frac{\text{Standard Conventional Cone Winding HOK in a given count}}{8.24}$$

The standard production per operative in conventional cone winding department for the major counts is given in SITRA Combined Norms "Norms for Productivity in Spinning", 6th Edition, 2003. The drums assigned per tenter, machine efficiency, winding-on speed, breakage rates, cop contents and work load taken for arriving at the standard production per operative are also given.

Suppose in a Mill the number of cone-winding operative shifts engaged during a month in different counts and the corresponding production details are as given in Table 9.

Table 9
Cone Winding Operative Shifts Engaged and Cone Yarn Production

Count	No. of Winder Shifts (8 hrs) Engaged	Total Cone Yarn Production (kg.)
20s	405	52723
60s	251	19922
34s SF	262	22523
2/60s P/V	194	24248
34s CH	577	50393
Total	1689	169809

Total number of winder operative hours engaged during the month = 1689 x 8 = 13512

$$\text{Production adjusted to 40s count} = \left[\begin{array}{l}(52723 \times 0.872) + (19922 \times 1.119) + (22523 \times 1.062) + \\ (24248 \times 0.728) + (50393 \times 1.062)\end{array}\right]$$

$$= 163357$$

$$\text{Cone Winding HOK adjusted to 40s count} = \frac{13512 \times 100}{163357} = 8.3$$

Alternatively, the above HOK can be worked out from the cone winding productivity index in a manner similar to that explained for reeling.

The standard production per cone winding operative for the counts in the above example as well as the number of operative shifts expected to be engaged for the cone yarn production shown in Table 9 for the standard production per operative are given in Table 10.

Table 10
Calculation of No. of Operatives Expected to be Engaged for the Standard Production per Operative

Count (1)	Std Prodn per Operative (kg) (2)	Total Coned Yarn Prdn (kg) (3)	* No of Operatives Expected to be Engaged for Std. Prodn/Operative (4)
20s	111.3	52723	473.7
60s	86.8	19922	229.5
34s SF	91.4	22523	246.4
2/60s P/V	133.3	24248	181.9
34s CHO	91.4	50393	551.3
Total			1682.8

* Column (3) divided by Column (2).

$$\text{Cone Winding Productivity Index} = \frac{\text{No. of Operative Shifts for Std Production per Operative}}{\text{No of Operative Shifts Actually Engaged}} \times 100$$

$$= \frac{1682.8 \times 100}{1689} = 99.6$$

$$\text{Cone Winding HOK} = \frac{8.24 \times 100}{99.6} = 8.3$$

which is the same as that worked out by applying conversion factors.

AUTOMATIC CONE WINDING

In automatic cone winding the standard production per operative per 8 hours in 40s count is 332 kg., which gives 2.41 as the standard HOK for 40s (800/332). The conversion factors for different counts given in Table D in the Appendix are arrived at as follows :

$$\frac{\text{Standard automatic cone winding HOK in a given count}}{2.4}$$

The standard production per operative in automatic cone winding for the major counts is given in SITRA Combined Norms "Norms for Productivity in Spinning", 6th edition, 2003. The type of machines, drums assigned per tenter, machine efficiency, winding-on speed, breakage rates, creel package weights, full cone content, repeater %, cop rejection %, and the work load taken are also given in this publication.

The procedure for working out the Automatic Cone Winding HOK adjusted to 40s by a mill by applying the conversion factors is exactly similar to that for Conventional Cone Winding.

APPENDIX

Table A

Conversion Factors for Calculating Standardised Production in Spinning

Cotton Yarns *

Count	Prodn/ Spdle	Mix & Bl. Rm.	Cards	Drg	Fly Frames	Ring Spg	Total	Ring Spinning		
								Tenters	Doffers	Others
5s	0.111	0.95	0.93	0.76	1.25	0.49	0.70	0.56	0.75	0.16
6s	0.134	0.95	0.93	0.76	1.25	0.46	0.68	0.45	0.75	0.19
6s H	0.126	0.95	0.93	0.76	1.25	0.44	0.67	0.42	0.75	0.18
6s C	0.125	1.13	1.11	0.76	1.14	0.44	0.69	0.42	0.75	0.18
7s	0.158	0.95	0.93	0.76	1.25	0.50	0.70	0.53	0.75	0.23
8s	0.164	0.95	0.93	0.76	1.25	0.51	0.71	0.55	0.75	0.23
8s H	0.152	0.95	0.93	0.76	1.25	0.49	0.70	0.51	0.75	0.22
8s CH	0.135	1.13	1.11	0.76	1.14	0.46	0.70	0.45	0.75	0.19
9s	0.194	0.95	0.93	0.76	1.25	0.57	0.74	0.65	0.75	0.28
9s CH	0.158	1.13	1.11	0.76	1.14	0.50	0.73	0.53	0.75	0.23
10s	0.197	0.95	0.92	0.76	1.24	0.50	0.70	0.49	0.75	0.28
10s H	0.182	0.95	0.92	0.76	1.24	0.48	0.69	0.46	0.75	0.26
10s C	0.186	1.13	1.10	0.76	1.13	0.49	0.72	0.47	0.75	0.27
10s CH	0.162	1.13	1.10	0.76	1.13	0.45	0.70	0.41	0.75	0.23
12s	0.235	0.95	0.92	0.76	1.23	0.56	0.73	0.59	0.75	0.34
12s H	0.216	0.95	0.92	0.76	1.23	0.53	0.72	0.54	0.75	0.31
12s C	0.222	1.13	1.10	0.76	1.13	0.54	0.75	0.55	0.75	0.32
12s CH	0.193	1.13	1.10	0.76	1.13	0.50	0.72	0.48	0.75	0.28
13s CH	0.216	1.13	1.10	0.76	1.13	0.53	0.74	0.54	0.75	0.31
14s	0.274	0.95	0.92	0.76	1.23	0.62	0.77	0.68	0.75	0.39
14s H	0.250	0.95	0.92	0.76	1.23	0.58	0.75	0.63	0.75	0.36
14s HT	0.544	0.95	0.92	0.76	1.23	1.02	1.01	1.36	0.75	0.78
14s C	0.258	1.13	1.10	0.76	1.13	0.59	0.78	0.65	0.75	0.37
14s CH	0.223	1.13	1.10	0.76	1.13	0.54	0.75	0.56	0.75	0.32
15s	0.302	0.95	0.92	0.76	1.23	0.66	0.79	0.75	0.75	0.43
15s CH	0.246	1.13	1.10	0.76	1.13	0.57	0.77	0.61	0.75	0.35
16s	0.331	0.97	0.95	0.76	1.23	0.63	0.78	0.66	0.75	0.47
16s H	0.302	0.97	0.95	0.76	1.23	0.59	0.76	0.60	0.75	0.43
16s C	0.305	1.16	1.13	0.76	1.13	0.60	0.79	0.61	0.75	0.44
16s CH	0.269	1.16	1.13	0.76	1.13	0.55	0.77	0.54	0.75	0.38
17s	0.360	0.97	0.95	0.76	1.23	0.67	0.81	0.72	0.75	0.51
17s HT	0.724	0.97	0.95	0.76	1.23	1.13	1.08	1.45	0.75	1.03
18s	0.379	0.97	0.95	0.76	0.77	0.69	0.76	0.76	0.75	0.54
18s H	0.346	0.97	0.95	0.76	0.77	0.65	0.74	0.69	0.75	0.49
18s C	0.350	1.16	1.13	0.76	0.73	0.65	0.78	0.70	0.75	0.50

*** The above factors are for Market Yarn. Same Factors to be used also for warp/weft yarns produced in composite mills.**
H: Hosiery; HT: High Twist; C: Combed; CH: Combed Hosiery; CHT: Combed High Twist.

APPENDIX

Table A (contd.)

Conversion Factors for Calculating Standardised Production in Spinning

Cotton Yarns *

Count	Prodn/ Spdle	Mix & Bl. Rm.	Cards	Drg	Fly Frames	Ring Spg	Total	Ring Spinning		
								Tenters	Doffers	Others
18s CH	0.308	1.16	1.13	0.76	0.73	0.60	0.75	0.62	0.75	0.44
19s	0.411	0.97	0.95	0.76	0.77	0.73	0.79	0.82	0.75	0.59
19s H	0.373	0.97	0.95	0.76	0.77	0.68	0.76	0.75	0.75	0.53
19s C	0.359	1.16	1.13	0.76	0.73	0.67	0.79	0.72	0.75	0.51
20s	0.415	0.97	0.94	0.75	0.77	0.67	0.75	0.59	1.00	0.47
20s H	0.368	0.97	0.94	0.75	0.77	0.63	0.73	0.53	1.00	0.42
20s HT	0.829	0.97	0.94	0.75	0.77	1.06	0.99	1.18	1.00	0.95
20s C	0.364	1.15	1.12	0.75	0.73	0.62	0.76	0.52	1.00	0.42
20s CH	0.338	1.15	1.12	0.75	0.73	0.60	0.74	0.48	1.00	0.39
21s	0.444	0.97	0.94	0.75	0.77	0.70	0.77	0.63	1.00	0.51
21s H	0.394	0.97	0.94	0.75	0.77	0.65	0.74	0.56	1.00	0.45
21s C	0.391	1.15	1.12	0.75	0.73	0.65	0.77	0.56	1.00	0.45
22s	0.476	0.97	0.94	0.75	0.77	0.73	0.79	0.68	1.00	0.54
22s C	0.417	1.15	1.12	0.75	0.73	0.67	0.79	0.60	1.00	0.48
22s CH	0.388	1.15	1.12	0.75	0.73	0.65	0.77	0.55	1.00	0.44
23s	0.506	0.97	0.94	0.75	0.77	0.76	0.80	0.72	1.00	0.58
23s H	0.449	0.97	0.94	0.75	0.77	0.71	0.77	0.64	1.00	0.51
23s C	0.446	1.15	1.12	0.75	0.73	0.70	0.81	0.64	1.00	0.51
23s CH	0.412	1.15	1.12	0.75	0.73	0.67	0.79	0.59	1.00	0.47
24s	0.523	0.97	0.94	0.80	0.82	0.77	0.82	0.75	1.00	0.60
24s H	0.464	0.97	0.94	0.80	0.82	0.72	0.79	0.66	1.00	0.53
24s C	0.458	1.15	1.12	0.74	0.75	0.71	0.82	0.65	1.00	0.52
24s CH	0.425	1.15	1.12	0.74	0.75	0.68	0.80	0.61	1.00	0.49
25s	0.556	0.97	0.94	0.80	0.82	0.81	0.84	0.79	1.00	0.64
25s H	0.493	0.97	0.94	0.80	0.82	0.75	0.80	0.70	1.00	0.56
25s CH	0.452	1.15	1.12	0.74	0.75	0.71	0.81	0.65	1.00	0.52
26s	0.586	1.00	0.97	0.80	0.82	0.83	0.86	0.84	1.00	0.67
26s H	0.520	1.00	0.97	0.80	0.82	0.77	0.83	0.74	1.00	0.59
26s C	0.517	1.19	1.16	0.74	0.75	0.77	0.86	0.74	1.00	0.59
26s CH	0.477	1.19	1.16	0.74	0.75	0.73	0.83	0.68	1.00	0.55
27s	0.620	1.00	0.97	0.80	0.82	0.82	0.85	0.78	1.00	0.71
27s H	0.550	1.00	0.97	0.80	0.82	0.76	0.82	0.69	1.00	0.63
27s CH	0.505	1.19	1.16	0.74	0.75	0.72	0.83	0.63	1.00	0.58
28s	0.655	1.00	0.97	0.86	0.88	0.85	0.88	0.82	1.00	0.75
28s H	0.581	1.00	0.97	0.86	0.88	0.79	0.84	0.73	1.00	0.66

*** The above factors are for Market Yarn. Same Factors to be used also for warp/weft yarns produced in composite mills.**
H: Hosiery; HT: High Twist; C: Combed; CH: Combed Hosiery; CHT: Combed High Twist.

APPENDIX

Table A (contd.)

Conversion Factors for Calculating Standardised Production in Spinning

Cotton Yarns *

Count	Prodn/ Spdle	Mix & Bl. Rm.	Cards	Drg	Fly Frames	Ring Spg	Total	Ring Spinning		
								Tenters	Doffers	Others
28s C	0.574	1.19	1.16	0.80	0.81	0.78	0.87	0.72	1.00	0.66
28s CH	0.533	1.19	1.16	0.80	0.81	0.74	0.85	0.67	1.00	0.61
29s	0.690	1.00	0.97	0.86	0.88	0.88	0.90	0.86	1.00	0.79
30s	0.684	1.00	0.97	0.86	0.88	0.87	0.90	0.85	1.00	0.78
30s H	0.586	1.00	0.97	0.86	0.88	0.79	0.85	0.73	1.00	0.67
30s C	0.601	1.19	1.16	0.80	0.81	0.80	0.89	0.75	1.00	0.69
30s CH	0.538	1.19	1.16	0.80	0.81	0.75	0.85	0.67	1.00	0.61
31s	0.710	1.00	0.97	0.86	0.88	0.90	0.91	0.89	1.00	0.81
31s H	0.616	1.00	0.97	0.86	0.88	0.82	0.86	0.77	1.00	0.70
31s C	0.631	1.19	1.16	0.80	0.81	0.83	0.90	0.79	1.00	0.72
31s CH	0.565	1.19	1.16	0.80	0.81	0.77	0.87	0.71	1.00	0.65
32s	0.741	1.00	0.97	0.94	0.95	0.92	0.94	0.93	1.00	0.85
32s H	0.646	1.00	0.97	0.94	0.95	0.84	0.89	0.81	1.00	0.74
32s C	0.658	1.19	1.16	0.89	0.85	0.85	0.93	0.82	1.00	0.75
32s CH	0.593	1.19	1.16	0.89	0.85	0.80	0.89	0.74	1.00	0.68
33s	0.776	1.00	0.97	0.94	0.95	0.95	0.96	0.97	1.00	0.89
33s C	0.689	1.19	1.16	0.89	0.85	0.88	0.94	0.86	1.00	0.79
34s	0.811	1.00	0.97	0.94	0.95	0.98	0.98	1.01	1.00	0.93
34s H	0.684	1.00	0.97	0.94	0.95	0.87	0.91	0.86	1.00	0.78
34s C	0.721	1.19	1.16	0.89	0.85	0.91	0.96	0.90	1.00	0.82
34s CH	0.646	1.19	1.16	0.89	0.85	0.84	0.92	0.81	1.00	0.74
35s	0.847	1.00	0.97	0.94	0.95	1.02	1.00	1.06	1.00	0.97
35s C	0.753	1.19	1.16	0.89	0.85	0.93	0.98	0.94	1.00	0.86
35s CH	0.674	1.19	1.16	0.89	0.85	0.87	0.93	0.84	1.00	0.77
36s	0.884	1.00	1.00	0.94	0.95	0.92	0.94	0.88	1.00	0.88
36s H	0.745	1.00	1.00	0.94	0.95	0.82	0.88	0.75	1.00	0.75
36s C	0.785	1.19	1.19	0.89	0.85	0.85	0.93	0.79	1.00	0.79
36s CH	0.703	1.19	1.19	0.89	0.85	0.79	0.89	0.70	1.00	0.70
37s	0.895	1.00	1.00	0.94	0.95	0.92	0.95	0.89	1.00	0.89
37s H	0.754	1.00	1.00	0.94	0.95	0.82	0.88	0.75	1.00	0.75
37s C	0.795	1.19	1.19	0.89	0.85	0.85	0.93	0.80	1.00	0.80
37s CH	0.712	1.19	1.19	0.89	0.85	0.79	0.89	0.71	1.00	0.71
38s	0.931	1.00	1.00	1.00	1.00	0.95	0.97	0.93	1.00	0.93
38s H	0.785	1.00	1.00	1.00	1.00	0.85	0.91	0.78	1.00	0.78
38s HT	1.408	1.00	1.00	1.00	1.00	1.29	1.18	1.41	1.00	1.41

*** The above factors are for Market Yarn. Same Factors to be used also for warp/weft yarns produced in composite mills.**
H: Hosiery; HT: High Twist; C: Combed; CH: Combed Hosiery; CHT: Combed High Twist.

APPENDIX

Table A (contd.)

Conversion Factors for Calculating Standardised Production in Spinning

Cotton Yarns *

Count	Prodn/ Spdle	Mix & Bl. Rm.	Cards	Drg	Fly Frames	Ring Spg	Total	Ring Spinning		
								Tenters	Doffers	Others
38s C	0.828	1.19	1.19	0.94	1.01	0.88	0.97	0.83	1.00	0.83
38s CH	0.741	1.19	1.19	0.94	1.01	0.81	0.93	0.74	1.00	0.74
39s	0.963	1.00	1.00	1.00	1.00	0.97	0.98	0.96	1.00	0.96
39s H	0.816	1.00	1.00	1.00	1.00	0.87	0.92	0.82	1.00	0.82
39s C	0.856	1.19	1.19	0.94	1.01	0.90	0.98	0.86	1.00	0.86
39s CH	0.771	1.19	1.19	0.94	1.01	0.84	0.94	0.77	1.00	0.77
40s	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
40s H	0.847	1.00	1.00	1.00	1.00	0.89	0.93	0.85	1.00	0.85
40s HT	1.521	1.00	1.00	1.00	1.00	1.37	1.23	1.52	1.00	1.52
40s C	0.865	1.19	1.19	0.94	1.01	0.90	0.98	0.87	1.00	0.87
40s CH	0.756	1.19	1.19	0.94	1.01	0.82	0.93	0.76	1.00	0.76
40s CHT	1.439	1.19	1.19	0.94	1.01	1.31	1.23	1.44	1.00	1.44
41s	1.038	1.00	1.00	1.00	1.00	1.03	1.02	1.04	1.00	1.04
41s C	0.898	1.19	1.19	0.94	1.01	0.93	1.00	0.90	1.00	0.90
42s	1.076	1.00	1.00	1.00	1.00	1.05	1.03	1.08	1.00	1.08
42s H	0.907	1.00	1.00	1.00	1.00	0.93	0.96	0.91	1.00	0.91
42s C	0.931	1.19	1.19	0.94	1.01	0.95	1.01	0.93	1.00	0.93
42s CH	0.809	1.19	1.19	0.94	1.01	0.86	0.96	0.81	1.00	0.81
43s	1.114	1.00	1.00	1.00	1.00	1.08	1.05	1.11	1.00	1.11
43s C	0.964	1.19	1.19	0.94	1.01	0.97	1.03	0.96	1.00	0.96
43s CH	0.838	1.19	1.19	0.94	1.01	0.88	0.97	0.84	1.00	0.84
43s CHT	1.603	1.19	1.19	0.94	1.01	1.43	1.30	1.60	1.00	1.60
44s	1.154	1.00	1.00	1.00	1.11	1.11	1.08	1.15	1.00	1.15
44s C	0.998	1.19	1.19	0.94	1.01	1.00	1.04	1.00	1.00	1.00
44s CH	0.867	1.19	1.19	0.94	1.01	0.90	0.98	0.87	1.00	0.87
45s	1.193	1.00	1.00	1.00	1.11	1.14	1.10	1.19	1.00	1.19
45s CH	0.897	1.19	1.19	0.94	1.01	0.93	1.00	0.90	1.00	0.90
46s	1.233	1.00	1.00	1.00	1.11	1.17	1.11	1.23	1.00	1.23
46s C	1.067	1.19	1.19	0.94	1.01	1.05	1.07	1.07	1.00	1.07
47s	1.252	1.00	1.00	1.00	1.11	1.18	1.12	1.25	1.00	1.25
47s C	1.102	1.19	1.19	0.94	1.01	1.07	1.09	1.10	1.00	1.10
48s	1.292	1.00	1.00	1.03	1.17	1.21	1.15	1.29	1.00	1.29
48s C	1.137	1.19	1.19	0.97	1.08	1.10	1.11	1.14	1.00	1.14
48s CH	0.988	1.19	1.19	0.97	1.08	0.99	1.05	0.99	1.00	0.99
49s CH	1.019	1.19	1.19	0.97	1.08	1.01	1.06	1.02	1.00	1.02

*** The above factors are for Market Yarn. Same Factors to be used also for warp/weft yarns produced in composite mills.**
H: Hosiery; HT: High Twist; C: Combed; CH: Combed Hosiery; CHT: Combed High Twist.

APPENDIX

Table A (contd.)

Conversion Factors for Calculating Standardised Production in Spinning

Cotton Yarns *

Count	Prodn/ Spdle	Mix & Bl. Rm.	Cards	Drg	Fly Frames	Ring Spg	Total	Ring Spinning		
								Tenters	Doffers	Others
50s	1.342	1.04	1.07	1.03	1.17	1.25	1.18	1.34	1.00	1.34
50s C	1.171	1.23	1.27	0.97	1.08	1.12	1.14	1.17	1.00	1.17
50s CH	1.022	1.23	1.27	0.97	1.08	1.02	1.07	1.02	1.00	1.02
50s CHT	1.752	1.23	1.27	0.97	1.08	1.54	1.39	1.75	1.00	1.75
51s C	1.206	1.23	1.27	0.97	1.08	1.15	1.16	1.21	1.00	1.21
51s CH	1.053	1.23	1.27	0.97	1.08	1.04	1.09	1.05	1.00	1.05
52s	1.424	1.04	1.07	1.03	1.17	1.30	1.22	1.42	1.00	1.42
52s C	1.242	1.23	1.27	0.97	1.08	1.17	1.17	1.24	1.00	1.24
52s CH	1.078	1.23	1.27	0.97	1.08	1.06	1.10	1.08	1.00	1.08
53s CH	1.109	1.23	1.27	0.97	1.08	1.08	1.11	1.11	1.00	1.11
54s	1.506	1.04	1.07	1.16	1.28	1.36	1.27	1.51	1.00	1.51
54s C	1.314	1.23	1.27	1.10	1.17	1.23	1.22	1.31	1.00	1.31
54s CH	1.141	1.23	1.27	1.10	1.17	1.10	1.14	1.14	1.00	1.14
55s	1.505	1.04	1.07	1.16	1.28	1.36	1.27	1.51	1.00	1.51
55s C	1.351	1.23	1.27	1.10	1.17	1.25	1.23	1.35	1.00	1.35
55s CH	1.173	1.23	1.27	1.10	1.17	1.12	1.16	1.17	1.00	1.17
55s CHT	2.010	1.23	1.27	1.10	1.17	1.72	1.52	2.01	1.00	2.01
56s	1.538	1.04	1.07	1.16	1.28	1.39	1.29	1.54	1.00	1.54
56s C	1.388	1.23	1.27	1.10	1.17	1.28	1.25	1.39	1.00	1.39
56s CH	1.205	1.23	1.27	1.10	1.17	1.15	1.17	1.20	1.00	1.20
56s CHT	2.065	1.23	1.27	1.10	1.17	1.76	1.55	2.06	1.00	2.06
57s C	1.425	1.23	1.27	1.10	1.17	1.31	1.27	1.43	1.00	1.43
58s	1.622	1.04	1.07	1.16	1.30	1.45	1.33	1.62	1.00	1.62
58s C	1.463	1.23	1.27	1.10	1.24	1.33	1.29	1.46	1.00	1.46
58s CH	1.270	1.23	1.27	1.10	1.24	1.19	1.21	1.27	1.00	1.27
59s C	1.501	1.23	1.27	1.10	1.24	1.36	1.31	1.50	1.00	1.50
59s CH	1.303	1.23	1.27	1.10	1.24	1.22	1.22	1.30	1.00	1.30
60s	1.706	1.04	1.07	1.16	1.30	1.39	1.29	1.42	1.00	1.71
60s H	1.496	1.04	1.07	1.16	1.30	1.25	1.21	1.25	1.00	1.50
60s HT	2.417	1.04	1.07	1.16	1.30	1.85	1.57	2.01	1.00	2.42
60s C	1.539	1.23	1.27	1.10	1.24	1.28	1.26	1.28	1.00	1.54
60s CH	1.337	1.23	1.27	1.10	1.24	1.15	1.18	1.11	1.00	1.34
60s CHT	2.290	1.23	1.27	1.10	1.24	1.76	1.55	1.91	1.00	2.29
61s C	1.578	1.23	1.27	1.10	1.24	1.24	1.23	1.31	1.00	1.35
62s	1.792	1.04	1.07	1.16	1.30	1.37	1.28	1.49	1.00	1.54

*** The above factors are for Market Yarn. Same Factors to be used also for warp/weft yarns produced in composite mills.**
H: Hosiery; HT: High Twist; C: Combed; CH: Combed Hosiery; CHT: Combed High Twist.

APPENDIX

Table A (contd.)

Conversion Factors for Calculating Standardised Production in Spinning

Cotton Yarns *

Count	Prodn/ Spdle	Mix & Bl. Rm.	Cards	Drg	Fly Frames	Ring Spg	Total	Ring Spinning		
								Tenters	Doffers	Others
62s HT	2.539	1.04	1.07	1.16	1.30	1.82	1.55	2.12	1.00	2.18
62s C	1.617	1.23	1.27	1.10	1.24	1.26	1.25	1.35	1.00	1.39
62s CH	1.404	1.23	1.27	1.10	1.24	1.13	1.17	1.17	1.00	1.20
63s	1.836	1.04	1.07	1.16	1.30	1.39	1.29	1.53	1.00	1.57
63s C	1.656	1.23	1.27	1.10	1.24	1.28	1.26	1.38	1.00	1.42
63s CH	1.438	1.23	1.27	1.10	1.24	1.15	1.18	1.20	1.00	1.23
64s	1.879	1.04	1.07	1.21	1.45	1.42	1.33	1.57	1.00	1.61
64s C	1.696	1.23	1.27	1.10	1.27	1.31	1.28	1.41	1.00	1.45
64s CH	1.472	1.23	1.27	1.10	1.27	1.17	1.20	1.23	1.00	1.26
65s	1.924	1.04	1.07	1.21	1.45	1.45	1.35	1.60	1.00	1.65
66s	1.968	1.04	1.07	1.21	1.45	1.47	1.36	1.64	1.00	1.69
66s C	1.776	1.23	1.27	1.10	1.27	1.36	1.31	1.48	1.00	1.52
66s CH	1.542	1.23	1.27	1.10	1.27	1.22	1.22	1.28	1.00	1.32
67s C	1.816	1.23	1.27	1.10	1.27	1.38	1.33	1.51	1.00	1.56
67s CH	1.577	1.23	1.27	1.10	1.27	1.24	1.24	1.31	1.00	1.35
68s C	1.857	1.23	1.27	1.10	1.27	1.41	1.34	1.55	1.00	1.59
68s CH	1.613	1.23	1.27	1.10	1.27	1.26	1.25	1.34	1.00	1.38
70s	2.150	1.04	1.07	1.21	1.50	1.58	1.44	1.79	1.00	1.84
70s C	1.929	1.23	1.27	1.10	1.35	1.45	1.38	1.61	1.00	1.65
70s CH	1.675	1.23	1.27	1.10	1.35	1.30	1.28	1.40	1.00	1.44
71s CH	1.711	1.23	1.27	1.10	1.35	1.32	1.30	1.43	1.00	1.47
72s	2.243	1.08	1.17	1.21	1.50	1.64	1.49	1.87	1.00	1.92
72s C	2.012	1.28	1.40	1.10	1.35	1.50	1.43	1.68	1.00	1.72
73s C	2.055	1.28	1.40	1.10	1.35	1.53	1.44	1.71	1.00	1.76
73s CH	1.784	1.28	1.40	1.10	1.35	1.36	1.34	1.49	1.00	1.53
74s	2.337	1.08	1.17	1.21	1.50	1.70	1.52	1.95	1.00	2.00
74s C	2.097	1.28	1.40	1.10	1.35	1.55	1.46	1.75	1.00	1.80
74s CH	1.821	1.28	1.40	1.10	1.35	1.38	1.36	1.52	1.00	1.56
75s	2.384	1.08	1.17	1.21	1.50	1.72	1.54	1.99	1.00	2.04
75s CH	1.857	1.28	1.40	1.10	1.35	1.41	1.37	1.55	1.00	1.59
76s	2.432	1.08	1.17	1.21	1.50	1.75	1.56	2.03	1.00	2.08
76s C	2.182	1.28	1.40	1.10	1.35	1.60	1.49	1.82	1.00	1.87
77s C	2.226	1.28	1.40	1.10	1.35	1.63	1.51	1.85	1.00	1.91
77s CH	1.932	1.28	1.40	1.10	1.35	1.45	1.40	1.61	1.00	1.66
78s C	2.269	1.28	1.40	1.10	1.35	1.66	1.52	1.89	1.00	1.95

*** The above factors are for Market Yarn. Same Factors to be used also for warp/weft yarns produced in composite mills.**
H: Hosiery; HT: High Twist; C: Combed; CH: Combed Hosiery; CHT: Combed High Twist.

APPENDIX

Table A (contd.)

Conversion Factors for Calculating Standardised Production in Spinning

Cotton Yarns *

Count	Prodn/ Spdle	Mix & Bl. Rm.	Cards	Drg	Fly Frames	Ring Spg	Total	Ring Spinning		
								Tenters	Doffers	Others
78s CH	1.970	1.28	1.40	1.10	1.35	1.47	1.41	1.64	1.00	1.69
79s C	2.313	1.28	1.40	1.10	1.35	1.68	1.54	1.93	1.00	1.98
79s CH	2.008	1.28	1.40	1.10	1.35	1.50	1.43	1.67	1.00	1.72
80s	2.416	1.08	1.17	1.24	1.66	1.74	1.57	2.01	1.00	2.07
80s C	2.239	1.28	1.40	1.13	1.57	1.64	1.54	1.87	1.00	1.92
80s CH	1.942	1.28	1.40	1.13	1.57	1.46	1.43	1.62	1.00	1.66
81s C	2.281	1.28	1.40	1.13	1.57	1.66	1.56	1.90	1.00	1.96
81s CH	1.978	1.28	1.40	1.13	1.57	1.48	1.44	1.65	1.00	1.70
82s	2.507	1.08	1.17	1.24	1.66	1.80	1.61	2.09	1.00	2.15
82s C	2.324	1.28	1.40	1.13	1.57	1.69	1.57	1.94	1.00	1.99
82s CH	2.015	1.28	1.40	1.13	1.57	1.50	1.46	1.68	1.00	1.73
84s	2.600	1.08	1.17	1.24	1.66	1.86	1.64	2.17	1.00	2.23
84s C	2.409	1.28	1.40	1.13	1.57	1.74	1.60	2.01	1.00	2.06
84s CH	2.089	1.28	1.40	1.13	1.57	1.55	1.48	1.74	1.00	1.79
85s CH	2.127	1.28	1.40	1.13	1.57	1.57	1.50	1.77	1.00	1.82
86s C	2.495	1.28	1.40	1.13	1.66	1.79	1.64	2.08	1.00	2.14
86s CH	2.164	1.28	1.40	1.13	1.66	1.59	1.52	1.80	1.00	1.85
87s CH	2.202	1.28	1.40	1.13	1.66	1.61	1.54	1.83	1.00	1.89
88s C	2.583	1.28	1.40	1.13	1.66	1.85	1.68	2.15	1.00	2.21
88s CH	2.240	1.28	1.40	1.13	1.66	1.64	1.55	1.87	1.00	1.92
89s C	2.628	1.28	1.40	1.13	1.66	1.87	1.69	2.19	1.00	2.25
89s CH	2.279	1.28	1.40	1.13	1.66	1.66	1.57	1.90	1.00	1.95
90s	2.883	1.08	1.35	1.30	1.81	2.03	1.79	2.40	1.00	2.47
90s C	2.672	1.28	1.61	1.13	1.66	1.90	1.74	2.23	1.00	2.29
90s CH	2.317	1.28	1.61	1.13	1.66	1.68	1.61	1.93	1.00	1.99
91s C	2.717	1.28	1.61	1.13	1.66	1.93	1.75	2.26	1.00	2.33
91s CH	2.355	1.28	1.61	1.13	1.66	1.71	1.62	1.96	1.00	2.02
92s C	2.762	1.28	1.61	1.13	1.66	1.95	1.77	2.30	1.00	2.37
92s CH	2.394	1.28	1.61	1.13	1.66	1.73	1.64	2.00	1.00	2.05
92s CHT	4.106	1.28	1.61	1.13	1.66	2.77	2.26	3.42	1.00	3.52
93s C	2.806	1.28	1.61	1.13	1.66	1.98	1.79	2.34	1.00	2.41
93s CH	2.434	1.28	1.61	1.13	1.66	1.75	1.65	2.03	1.00	2.09
94s	3.077	1.08	1.35	1.30	1.81	2.14	1.86	2.56	1.00	2.64
94s C	2.852	1.28	1.61	1.13	1.66	2.01	1.80	2.38	1.00	2.44
94s CH	2.473	1.28	1.61	1.13	1.66	1.78	1.66	2.06	1.00	2.12

*** The above factors are for Market Yarn. Same Factors to be used also for warp/weft yarns produced in composite mills.**
H: Hosiery; HT: High Twist; C: Combed; CH: Combed Hosiery; CHT: Combed High Twist.

APPENDIX

Table A (contd.)

Conversion Factors for Calculating Standardised Production in Spinning

Cotton Yarns *

Count	Prodn/ Spdle	Mix & Bl. Rm.	Cards	Drg	Fly Frames	Ring Spg	Total	Ring Spinning		
								Tenters	Doffers	Others
95s	3.126	1.08	1.35	1.30	1.81	2.17	1.88	2.61	1.00	2.68
95s C	2.898	1.28	1.61	1.13	1.66	2.04	1.82	2.41	1.00	2.48
95s CH	2.513	1.28	1.61	1.13	1.66	1.80	1.68	2.09	1.00	2.15
96s C	2.943	1.28	1.61	1.14	1.77	2.06	1.85	2.45	1.00	2.52
96s CH	2.552	1.28	1.61	1.14	1.77	1.83	1.71	2.13	1.00	2.19
96s CHT	4.377	1.28	1.61	1.14	1.77	2.93	2.38	3.65	1.00	3.75
97s C	2.990	1.28	1.61	1.14	1.77	2.09	1.87	2.49	1.00	2.56
97s CH	2.593	1.28	1.61	1.14	1.77	1.85	1.72	2.16	1.00	2.22
98s	3.276	1.08	1.35	1.31	1.93	2.26	1.95	2.73	1.00	2.81
98s C	3.036	1.28	1.61	1.14	1.77	2.12	1.88	2.53	1.00	2.60
98s CH	2.633	1.28	1.61	1.14	1.77	1.88	1.74	2.19	1.00	2.26
99s CH	2.673	1.28	1.61	1.14	1.77	1.90	1.75	2.23	1.00	2.29
100s	3.376	1.08	1.35	1.31	1.93	2.32	1.98	2.81	1.00	2.89
100s C	3.129	1.28	1.61	1.14	1.77	2.18	1.92	2.61	1.00	2.68
100s CH	2.714	1.28	1.61	1.14	1.77	1.92	1.77	2.26	1.00	2.33
100s CHT	4.653	1.28	1.61	1.14	1.77	3.10	2.48	3.88	1.00	3.99
102s C	3.224	1.28	1.61	1.14	1.77	2.23	1.95	2.69	1.00	2.76
102s CH	2.796	1.28	1.61	1.14	1.77	1.97	1.80	2.33	1.00	2.40
103s C	3.272	1.28	1.61	1.14	1.77	2.26	1.97	2.73	1.00	2.80
104s C	3.319	1.28	1.61	1.14	1.77	2.29	1.99	2.77	1.00	2.84
105s C	3.367	1.28	1.61	1.14	1.77	2.32	2.01	2.81	1.00	2.89
105s CHT	5.007	1.28	1.61	1.14	1.77	3.31	2.61	4.17	1.00	4.29
107s C	3.464	1.28	1.61	1.14	1.77	2.38	2.04	2.89	1.00	2.97
108s C	3.512	1.28	1.61	1.14	1.77	2.41	2.06	2.93	1.00	3.01
110s C	3.610	1.28	1.85	1.20	1.85	2.47	2.14	3.01	1.00	3.09
112s C	3.709	1.28	1.85	1.20	1.85	2.53	2.17	3.09	1.00	3.18
114s C	3.809	1.28	1.85	1.20	1.85	2.59	2.21	3.17	1.00	3.26
115s C	3.860	1.28	1.85	1.20	1.85	2.62	2.23	3.22	1.00	3.31
120s C	4.114	1.28	1.85	1.20	1.85	2.77	2.32	3.43	1.00	3.53
120s CH	3.568	1.28	1.85	1.20	1.85	2.44	2.12	2.97	1.00	3.06
124s C	4.321	1.28	1.85	1.20	1.85	2.90	2.40	3.60	1.00	3.70
130s C	5.479	1.28	1.85	1.20	1.85	3.60	2.82	4.57	1.00	4.70
132s C	5.606	1.28	1.85	1.20	1.85	3.67	2.87	4.67	1.00	4.80
140s C	6.123	1.28	1.85	1.20	1.85	3.99	3.06	5.10	1.00	5.25
160s C	8.550	1.28	1.85	1.20	1.85	5.45	3.95	7.13	1.00	7.33

*** The above factors are for Market Yarn. Same Factors to be used also for warp/weft yarns produced in composite mills.**
H: Hosiery; HT: High Twist; C: Combed; CH: Combed Hosiery; CHT: Combed High Twist.

APPENDIX

Table A (contd.)

Conversion Factors for Calculating Standardised Production in Spinning

Viscose Staple Fibre Yarns

Count	Prodn/ Spdle	Mix & Bl. Rm.	Cards	Drg	Fly Frames	Ring Spg	Total	Ring Spinning		
								Tenters	Doffers	Others
10s	0.150	1.54	0.91	0.83	0.72	0.32	0.59	0.15	0.70	0.21
12s	0.193	1.54	0.91	0.83	0.72	0.36	0.61	0.19	0.70	0.28
15s	0.244	1.54	0.91	0.83	0.72	0.40	0.64	0.24	0.70	0.35
16s	0.268	1.54	0.94	0.83	0.72	0.42	0.65	0.27	0.70	0.38
18s	0.318	1.54	0.94	0.83	0.75	0.47	0.68	0.32	0.70	0.45
20s	0.322	1.54	0.94	0.83	0.70	0.51	0.70	0.32	0.92	0.37
24s	0.419	1.54	0.94	0.88	0.70	0.58	0.75	0.42	0.92	0.48
26s	0.470	1.54	0.97	0.88	0.68	0.62	0.77	0.47	0.92	0.54
28s	0.525	1.54	0.97	0.95	0.68	0.66	0.80	0.53	0.92	0.60
30s	0.560	1.54	0.97	0.95	0.68	0.66	0.80	0.51	0.92	0.64
31s	0.588	1.54	0.97	0.95	0.68	0.69	0.82	0.53	0.92	0.67
32s	0.617	1.54	0.97	1.04	0.68	0.71	0.83	0.56	0.92	0.70
34s	0.674	1.54	0.97	1.04	0.68	0.75	0.86	0.61	0.92	0.77
35s	0.704	1.54	0.97	1.04	0.68	0.77	0.87	0.64	0.92	0.80
36s	0.730	1.54	1.00	1.04	0.68	0.76	0.87	0.66	0.92	0.73
39s	0.824	1.54	1.00	1.10	0.77	0.82	0.92	0.75	0.92	0.82
40s	0.829	1.54	1.00	1.10	0.77	0.82	0.92	0.75	0.92	0.83
42s	0.892	1.54	1.00	1.10	0.77	0.87	0.95	0.81	0.92	0.89
45s	0.984	1.54	1.00	1.10	0.90	0.90	0.98	0.82	0.92	0.98
50s	1.152	1.54	1.06	1.14	0.94	1.01	1.06	0.96	0.92	1.15
50s HT	1.848	1.54	1.06	1.14	0.94	1.46	1.34	1.54	0.92	1.85
53s HT	2.017	1.54	1.06	1.14	0.94	1.57	1.40	1.68	0.92	2.02
60s	1.514	1.54	1.06	1.15	1.09	1.24	1.22	1.26	0.92	1.51
60s HT	2.415	1.54	1.06	1.15	1.09	1.82	1.58	2.01	0.92	2.42
62s	1.582	1.54	1.06	1.15	1.09	1.22	1.21	1.32	0.92	1.36
65s HT	2.723	1.54	1.06	1.21	1.22	1.91	1.64	2.27	0.92	2.33
70s HT	3.043	1.54	1.06	1.21	1.31	2.10	1.77	2.54	0.92	2.61
76s HT	3.443	1.54	1.17	1.21	1.31	2.34	1.93	2.87	0.92	2.95
80s	2.319	1.54	1.17	1.23	1.52	1.66	1.55	1.93	0.92	1.99

H: Hosiery; HT: High Twist.

APPENDIX

Table A (contd.)

Conversion Factors for Calculating Standardised Production in Spinning

100% Polyester Yarns

Count	Prodn/ Spdle	Mix & Bl. Rm.	Cards	Drg	Fly Frames	Ring Spg	Total	Ring Spinning		
								Tenters	Doffers	Others
4s	0.062	1.18	0.90	0.92	0.83	0.26	0.53	0.06	0.75	0.09
6s	0.084	1.18	0.90	0.92	0.83	0.28	0.54	0.08	0.75	0.12
8s	0.123	1.18	0.90	0.92	0.83	0.32	0.56	0.12	0.75	0.18
10s	0.166	1.18	0.90	0.92	0.83	0.35	0.59	0.17	0.75	0.24
12s	0.188	1.18	0.90	0.92	0.83	0.37	0.60	0.19	0.75	0.27
14s	0.233	1.18	0.90	0.92	0.83	0.41	0.62	0.23	0.75	0.33
15s	0.257	1.18	0.90	0.92	0.83	0.43	0.63	0.26	0.75	0.37
16s	0.252	1.18	0.93	0.92	0.83	0.42	0.63	0.25	0.75	0.36
18s	0.297	1.18	0.93	0.92	0.69	0.46	0.64	0.30	0.75	0.42
18s HT	0.483	1.18	0.93	0.92	0.69	0.62	0.74	0.48	0.75	0.69
19s	0.321	1.18	0.93	0.92	0.69	0.48	0.65	0.32	0.75	0.46
20s	0.315	1.18	0.93	0.92	0.69	0.52	0.68	0.31	1.00	0.36
20s H	0.306	1.18	0.93	0.92	0.69	0.51	0.67	0.31	1.00	0.35
21s	0.337	1.18	0.93	0.92	0.69	0.54	0.69	0.34	1.00	0.39
21s HT	0.565	1.18	0.93	0.92	0.69	0.71	0.79	0.57	1.00	0.65
22s	0.361	1.18	0.93	0.92	0.69	0.56	0.70	0.36	1.00	0.41
24s	0.410	1.18	0.93	0.98	0.74	0.59	0.73	0.41	1.00	0.47
24s H	0.397	1.18	0.93	0.98	0.74	0.58	0.72	0.40	1.00	0.45
26s	0.459	1.18	0.95	0.98	0.74	0.63	0.75	0.46	1.00	0.53
28s	0.510	1.18	0.95	1.05	0.79	0.67	0.79	0.51	1.00	0.58
29s	0.538	1.18	0.95	1.05	0.79	0.69	0.80	0.54	1.00	0.61
30s	0.529	1.18	0.95	1.05	0.79	0.66	0.78	0.48	1.00	0.60
30s H	0.511	1.18	0.95	1.05	0.79	0.65	0.78	0.46	1.00	0.58
30s HT	0.891	1.18	0.95	1.05	0.79	0.92	0.94	0.81	1.00	1.02
31s	0.555	1.18	0.95	1.05	0.79	0.68	0.80	0.50	1.00	0.63
32s	0.582	1.18	0.95	1.16	0.85	0.70	0.82	0.53	1.00	0.67
36s	0.691	1.18	0.98	1.16	0.85	0.75	0.85	0.63	1.00	0.69
38s H	0.725	1.18	0.98	1.23	0.90	0.78	0.88	0.66	1.00	0.73
39s	0.775	1.18	0.98	1.23	0.90	0.81	0.90	0.70	1.00	0.78
40s	0.734	1.18	0.98	1.23	0.90	0.78	0.88	0.67	1.00	0.73
40s H	0.708	1.18	0.98	1.23	0.90	0.76	0.87	0.64	1.00	0.71
40s HT	1.278	1.18	0.98	1.23	0.90	1.15	1.10	1.16	1.00	1.28
42s	0.786	1.18	0.98	1.23	0.90	0.82	0.90	0.71	1.00	0.79
42s H	0.757	1.18	0.98	1.23	0.90	0.80	0.89	0.69	1.00	0.76
42s HT	1.375	1.18	0.98	1.23	0.90	1.22	1.14	1.25	1.00	1.38

H: Hosiery; HT: High Twist.

APPENDIX

Table A (contd.)

Conversion Factors for Calculating Standardised Production in Spinning

100% Polyester Yarns

Count	Prodn/ Spdle	Mix & Bl. Rm.	Cards	Drg	Fly Frames	Ring Spg	Total	Ring Spinning		
								Tenters	Doffers	Others
44s	0.843	1.18	0.98	1.23	1.03	0.85	0.94	0.77	1.00	0.84
44s HT	1.475	1.18	0.98	1.23	1.03	1.28	1.20	1.34	1.00	1.47
45s	0.871	1.18	0.98	1.23	1.03	0.85	0.94	0.73	1.00	0.87
45s H	0.840	1.18	0.98	1.23	1.03	0.83	0.92	0.70	1.00	0.84
46s	0.901	1.18	0.98	1.23	1.03	0.87	0.95	0.75	1.00	0.90
46s HT	1.576	1.18	0.98	1.23	1.03	1.30	1.21	1.31	1.00	1.58
47s	0.930	1.18	0.98	1.23	1.03	0.88	0.96	0.78	1.00	0.93
48s	0.960	1.18	0.98	1.26	1.16	0.90	0.99	0.80	1.00	0.96
49s	0.985	1.18	0.98	1.26	1.16	0.92	1.00	0.82	1.00	0.99
50s	1.015	1.18	1.05	1.26	1.16	0.94	1.02	0.85	1.00	1.02
50s HT	1.787	1.18	1.05	1.26	1.16	1.44	1.32	1.49	1.00	1.79
51s	1.046	1.18	1.05	1.26	1.16	0.96	1.03	0.87	1.00	1.05
51s HT	1.830	1.18	1.05	1.26	1.16	1.47	1.34	1.53	1.00	1.83
54s	1.140	1.18	1.05	1.27	1.26	1.02	1.08	0.95	1.00	1.14
54s HT	1.994	1.18	1.05	1.27	1.26	1.57	1.41	1.66	1.00	1.99
55s	1.172	1.18	1.05	1.27	1.26	1.04	1.09	0.98	1.00	1.17
56s	1.204	1.18	1.05	1.27	1.26	1.06	1.10	1.00	1.00	1.20
56s HT	2.106	1.18	1.05	1.27	1.26	1.64	1.46	1.75	1.00	2.11
60s	1.335	1.18	1.05	1.27	1.33	1.15	1.16	1.11	1.00	1.33
60s HT	2.335	1.18	1.05	1.27	1.33	1.79	1.56	1.95	1.00	2.34
61s	1.368	1.18	1.05	1.27	1.33	1.11	1.14	1.14	1.00	1.17
62s	1.402	1.18	1.05	1.27	1.33	1.13	1.16	1.17	1.00	1.20
62s HT	2.453	1.18	1.05	1.27	1.33	1.77	1.54	2.04	1.00	2.10
63s	1.436	1.18	1.05	1.27	1.33	1.15	1.17	1.20	1.00	1.23
64s	1.463	1.18	1.05	1.34	1.41	1.17	1.19	1.22	1.00	1.25
65s	1.497	1.18	1.05	1.34	1.41	1.19	1.20	1.25	1.00	1.28
70s	1.673	1.18	1.05	1.34	1.55	1.29	1.28	1.39	1.00	1.43
71s	1.709	1.18	1.05	1.34	1.55	1.32	1.30	1.42	1.00	1.47
72s	1.746	1.18	1.15	1.34	1.55	1.34	1.32	1.45	1.00	1.50
76s	1.893	1.18	1.15	1.34	1.55	1.43	1.38	1.58	1.00	1.62
80s	2.044	1.18	1.15	1.37	1.75	1.52	1.46	1.70	1.00	1.75
80s HT	3.595	1.18	1.15	1.37	1.75	2.46	2.03	3.00	1.00	3.08

H: Hosiery; HT: High Twist.

APPENDIX

Table A (contd.)

Conversion Factors for Calculating Standardised Production in Spinning

Polyester Cotton (P/C) Blended Yarns

Count	Prodn/ Spdle	Mix & Bl. Rm.	Cards	Drg	Fly Frames	Ring Spg	Total	Ring Spinning		
								Tenters	Doffers	Others
6s	0.076	1.55	1.27	0.94	0.86	0.28	0.63	0.08	0.75	0.11
7s	0.093	1.55	1.27	0.94	0.86	0.29	0.64	0.09	0.75	0.13
10s	0.149	1.55	1.27	0.94	0.86	0.34	0.67	0.15	0.75	0.21
12s	0.179	1.55	1.27	0.94	0.86	0.36	0.68	0.18	0.75	0.26
14s	0.221	1.55	1.27	0.94	0.86	0.40	0.70	0.22	0.75	0.32
15s	0.244	1.55	1.27	0.94	0.86	0.42	0.71	0.24	0.75	0.35
16s	0.251	1.55	1.30	0.94	0.86	0.42	0.72	0.25	0.75	0.36
16s H	0.245	1.55	1.30	0.94	0.86	0.42	0.72	0.25	0.75	0.35
18s	0.298	1.55	1.30	0.94	0.69	0.46	0.73	0.30	0.75	0.43
20s	0.327	1.55	1.30	0.94	0.69	0.53	0.77	0.33	1.00	0.37
20s H	0.319	1.55	1.30	0.94	0.69	0.52	0.76	0.32	1.00	0.36
21s	0.352	1.55	1.30	0.94	0.69	0.55	0.78	0.35	1.00	0.40
22s	0.375	1.55	1.30	0.94	0.69	0.57	0.79	0.38	1.00	0.43
24s	0.425	1.55	1.30	1.00	0.76	0.61	0.82	0.43	1.00	0.49
24s H	0.415	1.55	1.30	1.00	0.76	0.60	0.82	0.41	1.00	0.47
26s	0.477	1.55	1.34	1.00	0.76	0.64	0.85	0.48	1.00	0.55
26s H	0.465	1.55	1.34	1.00	0.76	0.64	0.85	0.47	1.00	0.53
28s	0.533	1.55	1.34	1.07	0.82	0.69	0.89	0.53	1.00	0.61
30s	0.588	1.55	1.34	1.07	0.82	0.71	0.90	0.53	1.00	0.67
30s H	0.573	1.55	1.34	1.07	0.82	0.70	0.89	0.52	1.00	0.66
31s	0.617	1.55	1.34	1.07	0.82	0.73	0.91	0.56	1.00	0.71
32s	0.648	1.55	1.34	1.18	0.83	0.75	0.93	0.59	1.00	0.74
34s	0.684	1.55	1.34	1.18	0.83	0.78	0.95	0.62	1.00	0.78
34s H	0.667	1.55	1.34	1.18	0.83	0.76	0.94	0.61	1.00	0.76
35s	0.715	1.55	1.34	1.18	0.83	0.80	0.96	0.65	1.00	0.82
36s	0.745	1.55	1.38	1.18	0.83	0.79	0.96	0.68	1.00	0.75
36s H	0.726	1.55	1.38	1.18	0.83	0.78	0.95	0.66	1.00	0.73
38s	0.808	1.55	1.38	1.25	0.92	0.83	1.00	0.73	1.00	0.81
40s	0.823	1.55	1.38	1.25	0.92	0.84	1.01	0.75	1.00	0.82
40s H	0.796	1.55	1.38	1.25	0.92	0.82	1.00	0.72	1.00	0.80
42s	0.881	1.55	1.38	1.25	0.92	0.88	1.03	0.80	1.00	0.88
44s	0.945	1.55	1.38	1.25	1.05	0.92	1.07	0.86	1.00	0.94
45s	0.977	1.55	1.38	1.25	1.05	0.91	1.07	0.81	1.00	0.98
46s	1.010	1.55	1.38	1.25	1.05	0.94	1.08	0.84	1.00	1.01
48s	1.076	1.55	1.38	1.28	1.11	0.98	1.12	0.90	1.00	1.08

H: Hosiery; HT: High Twist.

APPENDIX

Table A (contd.)

Conversion Factors for Calculating Standardised Production in Spinning

Polyester Cotton (P/C) Blended Yarns

Count	Prodn/ Spdle	Mix & Bl. Rm.	Cards	Drg	Fly Frames	Ring Spg	Total	Ring Spinning		
								Tenters	Doffers	Others
50s	1.113	1.55	1.47	1.28	1.11	1.00	1.14	0.93	1.00	1.11
50s HT	1.652	1.55	1.47	1.28	1.11	1.35	1.35	1.38	1.00	1.65
51s	1.146	1.55	1.47	1.28	1.11	1.02	1.16	0.95	1.00	1.15
52s	1.180	1.55	1.47	1.28	1.11	1.05	1.17	0.98	1.00	1.18
54s	1.242	1.55	1.47	1.30	1.28	1.09	1.21	1.03	1.00	1.24
55s	1.277	1.55	1.47	1.30	1.28	1.11	1.23	1.06	1.00	1.28
55s HT	1.906	1.55	1.47	1.30	1.28	1.52	1.47	1.59	1.00	1.91
56s	1.311	1.55	1.47	1.30	1.28	1.13	1.24	1.09	1.00	1.31
58s	1.382	1.55	1.47	1.30	1.28	1.18	1.27	1.15	1.00	1.38
60s	1.378	1.55	1.47	1.30	1.28	1.17	1.27	1.15	1.00	1.38
60s H	1.337	1.55	1.47	1.30	1.28	1.15	1.25	1.11	1.00	1.34
60s HT	2.057	1.55	1.47	1.30	1.28	1.61	1.53	1.71	1.00	2.06
61s	1.413	1.55	1.47	1.30	1.28	1.14	1.25	1.18	1.00	1.21
62s	1.447	1.55	1.47	1.30	1.28	1.16	1.26	1.21	1.00	1.24
62s HT	2.161	1.55	1.47	1.30	1.28	1.59	1.52	1.80	1.00	1.85
63s	1.482	1.55	1.47	1.30	1.28	1.18	1.27	1.24	1.00	1.27
64s	1.518	1.55	1.47	1.37	1.43	1.20	1.31	1.26	1.00	1.30
64s HT	2.267	1.55	1.47	1.37	1.43	1.65	1.58	1.89	1.00	1.94
65s	1.553	1.55	1.47	1.37	1.43	1.22	1.32	1.29	1.00	1.33
66s	1.590	1.55	1.47	1.37	1.43	1.24	1.33	1.32	1.00	1.36
66s HT	2.360	1.55	1.47	1.37	1.43	1.71	1.61	1.97	1.00	2.02
67s	1.626	1.55	1.47	1.37	1.43	1.27	1.34	1.36	1.00	1.39
70s	1.736	1.55	1.47	1.37	1.58	1.33	1.40	1.45	1.00	1.49
72s	1.811	1.55	1.62	1.37	1.58	1.38	1.45	1.51	1.00	1.55
75s	1.926	1.55	1.62	1.37	1.58	1.45	1.49	1.60	1.00	1.65
76s	1.964	1.55	1.62	1.37	1.58	1.47	1.51	1.64	1.00	1.68
80s	2.110	1.55	1.62	1.40	1.69	1.56	1.57	1.76	1.00	1.81
80s H	2.047	1.55	1.62	1.40	1.69	1.52	1.55	1.71	1.00	1.75
84s	2.270	1.55	1.62	1.40	1.69	1.66	1.63	1.89	1.00	1.95
84s HT	3.389	1.55	1.62	1.40	1.69	2.33	2.04	2.82	1.00	2.90
90s	2.518	1.55	1.87	1.46	1.94	1.81	1.79	2.10	1.00	2.16
100s	2.949	1.55	1.87	1.47	1.94	2.07	1.95	2.46	1.00	2.53

H: Hosiery; HT: High Twist.

APPENDIX

Table A (contd.)

Conversion Factors for Calculating Standardised Production in Spinning

Polyester Viscose (P/V) Blended Yarns

Count	Prodn/ Spdle	Mix & Bl. Rm.	Cards	Drg	Fly Frames	Ring Spg	Total	Ring Spinning		
								Tenters	Doffers	Others
8s	0.095	1.24	0.90	0.92	0.85	0.29	0.56	0.09	0.75	0.14
10s	0.127	1.24	0.90	0.92	0.85	0.32	0.57	0.13	0.75	0.18
12s	0.152	1.24	0.90	0.92	0.85	0.34	0.59	0.15	0.75	0.22
14s	0.189	1.24	0.90	0.92	0.85	0.37	0.61	0.19	0.75	0.27
15s	0.208	1.24	0.90	0.92	0.85	0.39	0.62	0.21	0.75	0.30
16s	0.213	1.24	0.93	0.92	0.85	0.39	0.62	0.21	0.75	0.30
18s	0.251	1.24	0.93	0.92	0.70	0.42	0.62	0.25	0.75	0.36
20s	0.277	1.24	0.93	0.92	0.70	0.49	0.67	0.28	1.00	0.32
24s	0.360	1.24	0.93	0.98	0.75	0.56	0.71	0.36	1.00	0.41
26s	0.404	1.24	0.95	0.98	0.75	0.59	0.74	0.40	1.00	0.46
28s	0.449	1.24	0.95	1.05	0.79	0.62	0.77	0.45	1.00	0.51
29s	0.473	1.24	0.95	1.05	0.79	0.64	0.78	0.47	1.00	0.54
30s	0.495	1.24	0.95	1.05	0.79	0.64	0.78	0.45	1.00	0.57
31s	0.520	1.24	0.95	1.05	0.79	0.66	0.79	0.47	1.00	0.59
32s	0.546	1.24	0.95	1.16	0.85	0.68	0.81	0.50	1.00	0.62
34s	0.580	1.24	0.95	1.16	0.85	0.70	0.82	0.53	1.00	0.66
36s	0.628	1.24	0.98	1.16	0.85	0.71	0.83	0.57	1.00	0.63
38s	0.681	1.24	0.98	1.23	0.91	0.75	0.87	0.62	1.00	0.68
40s	0.714	1.24	0.98	1.23	0.91	0.77	0.88	0.65	1.00	0.71
40s H	0.665	1.24	0.98	1.23	0.91	0.73	0.86	0.60	1.00	0.66
42s	0.764	1.24	0.98	1.23	0.91	0.80	0.90	0.69	1.00	0.76
44s	0.819	1.24	0.98	1.23	1.03	0.84	0.94	0.74	1.00	0.82
45s	0.848	1.24	0.98	1.23	1.03	0.83	0.93	0.71	1.00	0.85
45s HT	1.435	1.24	0.98	1.23	1.03	1.21	1.16	1.20	1.00	1.44
46s	0.876	1.24	0.98	1.23	1.03	0.85	0.94	0.73	1.00	0.88
47s	0.905	1.24	0.98	1.23	1.03	0.87	0.95	0.75	1.00	0.90
48s	0.934	1.24	0.98	1.26	1.16	0.89	0.98	0.78	1.00	0.93
50s	0.988	1.24	1.05	1.26	1.16	0.92	1.01	0.82	1.00	0.99
50s HT	1.682	1.24	1.05	1.26	1.16	1.37	1.28	1.40	1.00	1.68
51s	1.017	1.24	1.05	1.26	1.16	0.94	1.02	0.85	1.00	1.02
52s	1.047	1.24	1.05	1.26	1.16	0.96	1.04	0.87	1.00	1.05
60s	1.298	1.24	1.05	1.27	1.33	1.12	1.16	1.08	1.00	1.30
60s HT	2.198	1.24	1.05	1.27	1.33	1.70	1.51	1.83	1.00	2.20
62s	1.364	1.24	1.05	1.27	1.33	1.11	1.15	1.14	1.00	1.17
64s	1.430	1.24	1.05	1.34	1.41	1.15	1.18	1.19	1.00	1.23

H: Hosiery; HT: High Twist.

APPENDIX

Table A (contd.)

Conversion Factors for Calculating Standardised Production in Spinning

Polyester Viscose (P/V) Blended Yarns

Count	Prodn/ Spdle	Mix & Bl. Rm.	Cards	Drg	Fly Frames	Ring Spg	Total	Ring Spinning		
								Tenters	Doffers	Others
65s	1.464	1.24	1.05	1.34	1.41	1.17	1.20	1.22	1.00	1.25
70s	1.537	1.24	1.05	1.34	1.55	1.21	1.24	1.28	1.00	1.32
76s	1.739	1.24	1.15	1.34	1.55	1.33	1.33	1.45	1.00	1.49
80s	1.878	1.24	1.15	1.37	1.75	1.42	1.40	1.56	1.00	1.61
90s	2.241	1.24	1.33	1.43	1.92	1.64	1.58	1.87	1.00	1.92

H: Hosiery; HT: High Twist.

APPENDIX
Table B
Number of Doffs and Production per Reeler in SHPR, DHCR and DHPR Systems and the Conversion Factors for Cotton, 100% Polyester and Blended Yarns

Count	SHPR		DHCR		DHPR		
	No. of Doffs	Prodn. per Reeler (Kg)	No. of Doffs	Prodn per Reeler (Kg)	No. of Doffs	Prodn. per Reeler (Kg)	Conversion Factor
6s	33	99.8	21	127.0	21	127.0	0.243
2/ 6s	27	163.3	17	205.6	17	205.6	0.150
7s	34	88.1	22	114.0	22	114.0	0.270
8s	36	81.6	24	108.9	23	104.3	0.295
2/ 8s	31	140.6	20	181.4	20	181.4	0.170
10s	38	68.9	27	98.0	27	98.0	0.314
2/ 10s	34	123.4	23	166.9	22	159.7	0.193
12s	42	63.5	29	87.7	29	87.7	0.351
2/ 12s	36	108.9	25	151.2	24	145.2	0.212
14s	44	57.0	30	77.8	30	77.8	0.396
2/ 14s	37	95.9	26	134.8	26	134.8	0.228
15s	45	54.4	31	75.0	31	75.0	0.411
16s	45	51.0	32	72.6	31	70.3	0.438
2/ 16s	39	88.5	27	122.5	27	122.5	0.251
17s	46	49.1	32	68.3	31	66.2	0.465
2/ 17s	41	87.5	27	119.5	27	115.3	0.267
18s	46	46.4	33	66.5	32	64.5	0.478
2/ 18s	40	80.6	29	116.9	28	112.9	0.273
20s	45	40.8	31	56.2	31	56.2	0.548
2/ 20s	41	74.4	30	108.9	29	105.2	0.293
21s	45	38.9	32	55.3	31	53.6	0.575
2/ 21s	43	74.3	30	103.7	29	100.2	0.307
22s	45	37.1	32	52.8	31	51.1	0.603
2/ 22s	44	72.6	30	99.0	30	99.0	0.311
23s	46	36.3	32	50.5	32	50.5	0.610
2/ 23s	44	69.4	31	97.8	30	94.7	0.325
24s	46	34.8	33	49.9	32	48.4	0.636
2/ 24s	45	68.0	31	93.7	31	93.7	0.329
25s	46	33.4	33	47.9	32	46.4	0.664
2/ 25s	45	65.3	32	92.9	31	90.0	0.342
26s	47	32.8	33	46.1	32	44.7	0.689
2/ 26s	45	62.8	32	89.3	31	86.5	0.356
27s	47	31.6	33	44.4	33	44.4	0.694
28s	47	30.5	34	44.1	33	42.8	0.720
2/ 28s	46	59.6	32	82.9	32	82.9	0.372

Conversion Factors for Carded Counts Apply to the Corresponding Combed Counts Also.

APPENDIX

Table B (Contd.)

Number of Doffs and Production per Reeler in SHPR, DHCR and DHPR Systems and the Conversion Factors for Cotton, 100% Polyester and Blended Yarns

Count	SHPR		DHCR		DHPR		
	No. of Doffs	Prodn. per Reeler (Kg)	No. of Doffs	Prodn per Reeler (Kg)	No. of Doffs	Prodn. per Reeler (Kg)	Conversion Factor
30s	48	29.0	34	41.1	33	39.9	0.772
2/ 30s	46	55.6	33	79.8	32	77.4	0.398
31s	48	28.1	34	39.8	34	39.8	0.774
2/ 31s	47	55.0	33	77.3	32	74.9	0.411
32s	48	27.2	35	39.7	34	38.6	0.798
2/ 32s	47	53.3	34	77.1	32	72.6	0.424
33s	48	26.4	35	38.5	34	37.4	0.824
34s	48	25.6	35	37.4	34	36.3	0.848
2/ 34s	47	50.2	34	72.6	33	70.3	0.438
35s	49	25.4	35	36.3	34	35.3	0.873
36s	49	24.7	35	35.3	35	35.3	0.873
2/ 36s	48	48.4	34	68.5	33	66.5	0.463
37s	49	24.0	35	34.3	35	34.3	0.898
38s	49	23.4	36	34.4	35	33.4	0.922
2/ 38s	48	45.8	35	66.8	34	64.8	0.475
39s	49	22.8	36	33.5	35	32.6	0.945
40s	47	21.3	36	32.7	34	30.8	1.000
2/ 40s	45	40.8	35	63.5	33	59.9	0.514
41s	46	20.4	36	31.9	34	30.1	1.023
2/ 41s	46	40.7	36	63.7	34	60.2	0.512
42s	47	20.3	36	31.1	34	29.4	1.048
2/ 42s	46	39.7	36	62.2	33	57.0	0.540
43s	47	19.8	37	31.2	34	28.7	1.073
44s	47	19.4	36	29.7	34	28.0	1.100
2/ 44s	46	37.9	37	61.0	35	57.7	0.534
45s	47	19.0	37	29.8	34	27.4	1.124
2/ 45s	46	37.1	37	59.7	35	56.4	0.546
46s	47	18.5	37	29.2	34	26.8	1.149
2/ 46s	46	36.3	37	58.4	35	55.2	0.558
47s	47	18.1	37	28.6	34	26.3	1.171
2/ 47s	46	35.5	37	57.1	34	52.5	0.587
48s	47	17.8	37	28.0	35	26.5	1.162
2/ 48s	46	34.8	37	55.9	34	51.4	0.599
49s	47	17.4	37	27.4	35	25.9	1.189
50s	47	17.1	37	26.9	35	25.4	1.213

Conversion Factors for Carded Counts Apply to the Corresponding Combed Counts Also.

APPENDIX

Table B (Contd.)

Number of Doffs and Production per Reeler in SHPR, DHCR and DHPR Systems and the Conversion Factors for Cotton, 100% Polyester and Blended Yarns

Count	SHPR		DHCR		DHPR		
	No. of Doffs	Prodn. per Reeler (Kg)	No. of Doffs	Prodn per Reeler (Kg)	No. of Doffs	Prodn. per Reeler (Kg)	Conversion Factor
2/ 50s	47	34.1	37	53.7	35	50.8	0.606
52s	47	16.4	37	25.8	35	24.4	1.262
2/ 52s	47	32.8	38	53.0	35	48.8	0.631
54s	48	16.1	37	24.9	35	23.5	1.311
2/ 54s	47	31.6	38	51.1	36	48.4	0.636
55s	48	15.8	38	25.1	35	23.1	1.333
2/ 55s	47	31.0	38	50.1	36	47.5	0.648
56s	48	15.6	38	24.6	35	22.7	1.357
2/ 56s	47	30.5	38	49.2	36	46.7	0.660
58s	48	15.0	38	23.7	35	21.9	1.406
2/ 58s	47	29.4	38	47.5	35	43.8	0.703
60s	49	14.8	39	23.6	36	21.8	1.413
2/ 60s	48	29.0	38	46.0	36	43.5	0.708
61s	49	14.6	39	23.2	36	21.4	1.439
2/ 61s	49	29.1	39	46.4	36	42.8	0.720
62s	49	14.3	39	22.8	37	21.7	1.419
2/ 62s	49	28.7	39	45.7	36	42.1	0.732
63s	49	14.1	39	22.5	37	21.3	1.446
64s	49	13.9	39	22.1	37	21.0	1.467
2/ 64s	49	27.8	39	44.2	36	40.8	0.755
65s	49	13.7	39	21.8	37	20.7	1.488
2/ 65s	49	27.4	39	43.5	36	40.2	0.766
66s	50	13.7	39	21.4	37	20.3	1.517
2/ 66s	49	26.9	39	42.9	37	40.7	0.757
70s	50	13.0	40	20.7	37	19.2	1.604
2/ 70s	49	25.4	39	40.4	37	38.4	0.802
72s	50	12.6	40	20.2	37	18.6	1.656
2/ 72s	49	24.7	39	39.3	37	37.3	0.826
73s	50	12.4	40	19.9	37	18.4	1.674
74s	50	12.3	40	19.6	37	18.1	1.702
2/ 74s	49	24.0	39	38.2	37	36.3	0.848
75s	50	12.1	40	19.4	37	17.9	1.721
2/ 75s	49	23.7	39	37.7	37	35.8	0.860
76s	50	11.9	40	19.1	37	17.7	1.740
2/ 76s	49	23.4	40	38.2	37	35.3	0.873

Conversion Factors for Carded Counts Apply to the Corresponding Combed Counts Also.

APPENDIX

Table B (Contd.)

Number of Doffs and Production per Reeler in SHPR, DHCR and DHPR Systems and the Conversion Factors for Cotton, 100% Polyester and Blended Yarns

Count	SHPR		DHCR		DHPR		
	No. of Doffs	Prodn. per Reeler (Kg)	No. of Doffs	Prodn per Reeler (Kg)	No. of Doffs	Prodn. per Reeler (Kg)	Conversion Factor
80s	50	11.3	40	18.1	37	16.8	1.833
2/ 80s	50	22.7	40	36.3	37	33.6	0.917
81s	50	11.2	40	17.9	37	16.6	1.855
82s	50	11.1	40	17.7	37	16.4	1.878
2/ 82s	50	22.1	40	35.4	37	32.7	0.942
84s	50	10.8	40	17.3	38	16.4	1.878
2/ 84s	50	21.6	40	34.6	38	32.8	0.939
86s	50	10.5	40	16.9	38	16.0	1.925
2/ 86s	50	21.1	40	33.8	38	32.1	0.960
2/ 88s	50	20.6	40	33.0	38	31.3	0.984
89s	50	10.2	41	16.7	38	15.5	1.987
2/ 89s	50	20.4	40	32.6	38	31.0	0.994
90s	50	10.1	41	16.5	38	15.3	2.013
2/ 90s	50	20.2	40	32.3	38	30.6	1.007
91s	50	10.0	41	16.3	38	15.2	2.026
92s	50	9.9	41	16.2	38	15.0	2.053
2/ 92s	50	19.7	40	31.6	37	29.2	1.055
93s	50	9.8	41	16.0	38	14.8	2.081
2/ 93s	50	19.5	40	31.2	37	28.9	1.066
94s	50	9.7	41	15.8	38	14.7	2.095
2/ 94s	50	19.3	40	30.9	37	28.6	1.077
96s	50	9.6	41	15.5	38	14.4	2.139
98s	51	9.4	41	15.2	38	14.1	2.184
2/ 98s	50	18.5	41	30.4	37	27.4	1.124
100s	51	9.3	41	14.9	38	13.8	2.232
2/100s	50	18.1	41	29.8	38	27.6	1.116
108s	51	8.6	41	13.8	38	12.8	2.406
2/108s	50	16.8	41	27.6	38	25.5	1.208
110s	51	8.4	41	13.5	38	12.5	2.464
2/110s	50	16.5	41	27.1	39	25.7	1.198
120s	51	7.7	42	12.7	38	11.5	2.678
2/120s	51	15.4	41	24.8	38	23.0	1.339
132s	52	7.1	42	11.5	39	10.7	2.879

Conversion Factors for Carded Counts Apply to the Corresponding Combed Counts Also.

APPENDIX

Table B (Contd.)

Number of Doffs and Production per Reeler in SHPR, DHCR and DHPR Systems and the Conversion Factors for Viscose Staple Fibre Yarns

Count	SHPR		DHCR		DHPR		
	No. of Doffs	Prodn. per Reeler (Kg)	No. of Doffs	Prodn per Reeler (Kg)	No. of Doffs	Prodn. per Reeler (Kg)	Conversion Factor
10s SF	37	87.3	24	113.2	23	108.5	0.284
2/ 10s SF	29	136.8	19	179.3	19	179.3	0.172
16s SF	41	60.4	28	82.6	27	79.6	0.387
2/ 16s SF	33	97.3	23	135.6	23	135.6	0.227
18s SF	42	55.0	29	76.0	28	73.4	0.420
2/ 18s SF	34	89.1	24	125.8	24	125.8	0.245
20s SF	41	48.4	28	66.0	27	63.7	0.484
2/ 20s SF	36	84.9	25	117.9	25	117.9	0.261
24s SF	42	41.3	29	57.0	28	55.0	0.560
2/ 24s SF	37	72.7	27	106.1	26	102.2	0.301
26s SF	43	39.0	29	52.6	29	52.6	0.586
2/ 26s SF	38	68.9	27	98.0	27	98.0	0.314
28s SF	43	36.2	30	50.5	29	48.9	0.630
2/ 28s SF	38	64.0	28	94.3	27	91.0	0.338
30s SF	44	34.6	30	47.2	30	47.2	0.653
2/ 30s SF	39	61.3	28	88.1	28	88.1	0.350
31s SF	44	33.5	31	47.2	30	45.7	0.674
2/ 31s SF	39	59.3	29	88.3	28	85.2	0.362
32s SF	44	32.4	31	45.7	30	44.2	0.697
2/ 32s SF	39	57.5	29	85.5	28	82.6	0.373
34s SF	44	30.5	31	43.0	30	41.6	0.740
2/ 34s SF	40	55.5	29	80.5	29	80.5	0.383
35s SF	45	30.3	31	41.8	31	41.8	0.737
2/ 35s SF	40	53.9	29	78.2	29	78.2	0.394
36s SF	45	29.5	31	40.6	31	40.6	0.759
2/ 36s SF	40	52.4	30	78.6	29	76.0	0.405
39s SF	45	27.2	32	38.7	31	37.5	0.821
2/ 39s SF	40	51.0	30	76.5	29	73.9	0.417
40s SF	43	25.4	32	37.7	30	35.4	0.870
2/ 40s SF	41	48.4	30	70.8	30	70.8	0.435
42s SF	43	24.1	32	35.9	30	33.7	0.914
2/ 42s SF	41	46.1	31	69.6	30	67.4	0.457
50s SF	44	20.8	33	31.1	31	29.2	1.055
2/ 50s SF	42	39.6	32	60.4	31	58.5	0.526
60s SF	46	18.1	35	27.5	33	25.9	1.189

APPENDIX

Table B (Contd.)

Number of Doffs and Production per Reeler in SHPR, DHCR and DHPR Systems and the Conversion Factors for Viscose Staple Fibre Yarns

Count	SHPR		DHCR		DHPR		
	No. of Doffs	Prodn. per Reeler (Kg)	No. of Doffs	Prodn per Reeler (Kg)	No. of Doffs	Prodn. per Reeler (Kg)	Conversion Factor
2/ 60s SF	43	33.8	33	51.9	32	50.3	0.612
62s SF	46	17.5	35	26.6	33	25.1	1.227
2/ 62s SF	43	32.7	33	50.2	32	48.7	0.632

APPENDIX
Table C
Number of Drums, Efficiency, Prodn. per Winder and Conversion Factors For Conventional Cone Winders for Cotton, Viscose Staple Fibre, 100% Polyester and Blended Yarns

Count	No.of Drums	Effici-ency (%)	Prodn/ Winder(Kg)	Conversion Factor
6s	10	60.5	157.2	0.618
2/ 6s	8	50.0	207.9	0.467
7s	10	69.0	153.7	0.632
8s	10	74.5	145.2	0.669
2/ 8s	8	66.0	205.8	0.472
10s	12	77.0	144.1	0.674
2/ 10s	8	75.0	187.1	0.519
12s	12	80.5	125.5	0.774
2/ 12s	8	79.5	165.3	0.587
14s	15	79.0	132.0	0.736
2/ 14s	12	73.0	195.1	0.498
15s	15	80.5	125.5	0.774
16s	15	81.5	119.1	0.815
2/ 16s	12	78.5	183.6	0.529
17s	15	82.5	113.5	0.856
2/ 17s	12	80.0	176.1	0.551
18s	20	73.0	126.5	0.768
2/ 18s	15	72.5	188.4	0.515
20s	24	59.5	111.3	0.872
2/ 20s	15	79.5	185.9	0.522
21s	24	62.0	110.5	0.879
2/ 21s	15	80.5	179.3	0.542
22s	24	64.5	109.7	0.885
2/ 22s	15	81.5	173.3	0.560
23s	24	66.5	108.2	0.897
2/ 23s	15	81.5	165.8	0.586
24s	24	69.0	107.6	0.902
2/ 24s	15	83.0	161.8	0.600
25s	24	71.5	107.0	0.907
2/ 25s	15	83.5	156.2	0.622
26s	24	73.5	105.8	0.918
2/ 26s	20	75.5	181.1	0.536
27s	24	76.0	105.3	0.922
28s	24	78.0	104.2	0.932
2/ 28s	20	80.0	178.2	0.545

Count	No.of Drums	Effici-ency(%)	Prodn/ Winder(Kg)	Conversion Factor
30s	24	81.0	101.0	0.961
2/ 30s	20	81.5	169.4	0.573
31s	24	81.5	98.4	0.987
2/ 31s	20	82.5	166.0	0.585
32s	24	82.0	95.9	1.013
2/ 32s	24	73.5	171.9	0.565
33s	24	82.5	93.6	1.037
34s	24	83.0	91.4	1.062
2/ 34s	24	77.5	170.6	0.569
35s	24	83.0	88.7	1.095
36s	24	83.5	86.8	1.119
2/ 36s	24	81.0	168.4	0.577
37s	24	84.0	85.0	1.142
38s	30	76.0	93.6	1.037
2/ 38s	24	84.0	165.4	0.587
39s	30	77.5	93.0	1.044
40s	30	83.0	97.1	1.000
2/ 40s	30	75.0	175.4	0.554
41s	30	83.5	95.3	1.019
2/ 41s	30	76.5	174.6	0.556
42s	30	83.5	93.0	1.044
2/ 42s	30	78.5	174.9	0.555
43s	30	84.0	91.4	1.062
44s	30	84.0	89.3	1.087
2/ 44s	30	81.5	173.3	0.560
45s	30	84.5	87.8	1.106
2/ 45s	30	82.0	170.5	0.570
46s	30	84.5	85.9	1.130
2/ 46s	30	82.5	167.8	0.579
47s	30	85.0	84.6	1.148
2/ 47s	30	83.0	165.2	0.588
48s	30	85.0	82.8	1.173
2/ 48s	30	83.0	161.8	0.600
49s	30	85.5	81.6	1.190
50s	40	73.5	91.7	1.059

Conversion factors for Carded counts apply to the corresponding Combed counts also.

APPENDIX

Table C (Contd.)

Number of Drums, Efficiency, Prodn. per Winder and Conversion Factors For Conventional Cone Winders for Cotton, Viscose Staple Fibre, 100% Polyester and Blended Yarns

Count	No.of Drums	Effici-ency(%)	Prodn/ Winder(Kg)	Conversion Factor
2/ 50s	30	83.5	156.2	0.622
52s	40	75.5	90.6	1.072
2/ 52s	30	84.0	151.1	0.643
54s	40	77.0	88.9	1.092
2/ 54s	30	84.5	146.4	0.663
55s	40	78.0	88.5	1.097
2/ 55s	30	85.0	144.6	0.672
56s	40	79.0	88.0	1.103
2/ 56s	30	85.0	142.0	0.684
58s	40	81.0	87.1	1.115
2/ 58s	30	85.0	137.1	0.708
60s	40	83.5	86.8	1.119
2/ 60s	30	85.5	133.3	0.728
61s	40	83.5	85.4	1.137
2/ 61s	30	85.5	131.1	0.741
62s	40	84.0	84.5	1.149
2/ 62s	30	86.0	129.8	0.748
63s	40	84.0	83.2	1.167
64s	40	84.0	81.9	1.186
2/ 64s	30	86.0	125.7	0.772
65s	40	84.5	81.0	1.199
2/ 65s	30	86.0	123.8	0.784
66s	40	84.5	79.9	1.215
2/ 66s	30	86.5	122.6	0.792
70s	40	85.0	75.7	1.283
2/ 70s	40	82.0	146.1	0.665
72s	40	85.5	74.1	1.310
2/ 72s	40	83.0	143.8	0.675
73s	40	85.5	73.0	1.330
74s	40	85.5	72.1	1.347
2/ 74s	40	83.5	140.8	0.690
75s	40	85.5	71.1	1.366
2/ 75s	40	83.5	138.9	0.699
76s	40	85.5	70.2	1.383
2/ 76s	40	83.5	137.0	0.709

Count	No.of Drums	Effici-ency(%)	Prodn/ Winder(Kg)	Conversion Factor
80s	60	66.0	77.2	1.258
2/ 80s	40	86.0	134.1	0.724
81s	60	66.5	76.8	1.264
82s	60	67.0	76.4	1.271
2/ 82s	40	86.0	130.8	0.742
84s	60	68.0	75.7	1.283
2/ 84s	40	86.5	128.5	0.756
86s	60	69.0	75.1	1.293
2/ 86s	40	86.5	125.5	0.774
2/ 88s	40	86.5	122.6	0.792
89s	60	70.0	73.6	1.319
2/ 89s	40	87.0	121.9	0.797
90s	60	70.5	73.3	1.325
2/ 90s	40	87.0	120.6	0.805
91s	60	71.0	73.0	1.330
92s	60	71.5	72.7	1.336
2/ 92s	40	87.5	118.6	0.819
93s	60	72.0	72.4	1.341
2/ 93s	40	87.5	117.4	0.827
94s	60	72.5	72.2	1.345
2/ 94s	40	87.5	116.1	0.836
96s	60	72.5	71.6	1.356
98s	60	74.0	70.6	1.375
2/ 98s	40	88.0	112.0	0.867
100s	60	80.0	74.8	1.298
2/100s	40	88.0	109.8	0.884
108s	60	82.0	71.0	1.368
2/108s	40	88.0	101.6	0.956
110s	60	82.0	69.7	1.393
2/110s	40	88.0	99.8	0.973
120s	60	82.5	64.3	1.510
2/120s	40	88.5	92.0	1.055
132s	60	83.0	58.8	1.651

Conversion factors for Carded counts apply to the corresponding Combed counts also.

APPENDIX
Table D
Number of Drums, Efficiency, Prodn. per Winder and Conversion Factors for Automatic Cone Winders for Cotton, Viscose Staple Fibre, 100% Polyester and Blended Yarns

Count	No.of Drums	Effici-ency(%)	Prodn/ Winder(Kg)	Conversion Factor
6s	15	52.0	442	0.751
2/ 6s	10	49.0	556	0.597
7s	15	60.5	441	0.753
8s	15	69.5	443	0.749
2/ 8s	10	65.0	553	0.600
9s	15	76.0	431	0.770
10s	15	77.0	393	0.845
2/ 10s	10	75.5	514	0.646
12s	20	77.5	439	0.756
2/ 12s	15	65.0	553	0.600
13s	20	79.0	413	0.804
14s	24	75.5	440	0.755
2/ 14s	15	76.0	554	0.599
15s	24	80.0	435	0.763
16s	30	69.0	440	0.755
2/ 16s	15	81.0	517	0.642
17s	30	74.0	444	0.748
2/ 17s	15	81.5	489	0.679
18s	30	78.0	442	0.751
2/ 18s	20	73.0	552	0.601
20s	30	65.0	332	1.000
2/ 20s	20	81.0	551	0.603
21s	30	68.5	333	0.997
2/ 21s	20	83.5	541	0.614
22s	30	71.5	332	1.000
2/ 22s	20	84.0	520	0.638
23s	30	75.0	333	0.997
2/ 23s	20	84.5	500	0.664
24s	30	78.0	332	1.000
2/ 24s	20	84.5	479	0.693
25s	30	81.5	333	0.997
2/ 25s	24	84.5	552	0.601
26s	30	82.0	322	1.031
2/ 26s	24	85.5	537	0.618
27s	30	82.5	312	1.064

Count	No.of Drums	Effici-ency(%)	Prodn/ Winder(Kg)	Conversion Factor
28s	30	82.5	301	1.103
2/ 28s	24	86.0	502	0.661
30s	40	73.0	331	1.003
2/ 30s	30	81.5	555	0.598
31s	40	75.5	331	1.003
2/ 31s	30	84.0	553	0.600
32s	40	78.0	332	1.000
2/ 32s	30	87.0	555	0.598
33s	40	80.5	332	1.000
34s	40	83.0	332	1.000
2/ 34s	30	87.0	522	0.636
35s	40	84.5	329	1.009
36s	40	84.5	319	1.041
2/ 36s	30	87.5	496	0.669
37s	40	84.5	311	1.068
38s	50	74.0	331	1.003
2/ 38s	40	77.5	555	0.598
39s	50	76.0	331	1.003
40s	50	78.0	332	1.000
2/ 40s	40	81.5	555	0.598
41s	50	80.0	332	1.000
2/ 41s	40	83.5	554	0.599
42s	50	82.0	332	1.000
2/ 42s	40	85.5	554	0.599
44s	50	86.0	332	1.000
2/ 44s	40	88.5	547	0.607
45s	50	87.0	329	1.009
2/ 45s	40	88.5	535	0.621
46s	60	75.0	333	0.997
2/ 46s	40	88.5	524	0.634
47s	60	76.5	332	1.000
2/ 47s	40	89.0	515	0.645
48s	60	78.0	332	1.000
2/ 48s	50	78.0	553	0.600
49s	60	80.0	333	0.997

Conversion factors for Carded counts apply to the corresponding Combed counts also.

APPENDIX

Table D (Contd.)

Number of Drums, Efficiency, Prodn. per Winder and Conversion Factors for Automatic Cone Winders for Cotton, Viscose Staple Fibre, 100% Polyester and Blended Yarns

Count	No.of Drums	Effici-ency(%)	Prodn/ Winder(Kg)	Conversion Factor
50s	60	81.0	331	1.003
2/ 50s	50	81.5	555	0.598
52s	60	84.5	332	1.000
2/ 52s	50	84.5	553	0.600
54s	60	87.5	331	1.003
2/ 54s	50	88.0	554	0.599
55s	60	87.5	325	1.022
2/ 55s	50	89.5	554	0.599
56s	60	87.5	319	1.041
2/ 56s	50	89.5	544	0.610
57s	60	87.5	313	1.061
58s	60	87.5	308	1.078
2/ 58s	50	89.5	525	0.632
59s	60	87.5	303	1.096
60s	60	88.5	301	1.103
2/ 60s	60	81.5	555	0.598
61s	60	89.0	298	1.114
2/ 61s	60	82.5	552	0.601
62s	60	89.0	293	1.133
2/ 62s	60	84.0	553	0.600
63s	60	89.0	288	1.153
64s	60	89.0	284	1.169
2/ 64s	60	86.5	552	0.601
65s	60	89.0	279	1.190
2/ 65s	60	88.0	553	0.600
66s	90	71.5	332	1.000
2/ 66s	60	89.5	554	0.599
70s	90	76.0	332	1.000
2/ 70s	60	90.5	528	0.629
72s	90	78.0	332	1.000
2/ 72s	60	90.5	513	0.647
74s	90	80.5	333	0.997
2/ 74s	60	90.5	499	0.665
75s	90	81.5	333	0.997
2/ 75s	60	90.5	493	0.673

Count	No.of Drums	Effici-ency(%)	Prodn/ Winder(Kg)	Conversion Factor
76s	90	82.5	332	1.000
2/ 76s	60	90.5	486	0.683
80s	90	86.5	331	1.003
2/ 80s	60	92.0	469	0.708
82s	90	89.0	332	1.000
2/ 82s	90	74.0	553	0.600
84s	90	90.0	328	1.012
2/ 84s	90	76.0	554	0.599
86s	90	90.5	322	1.031
2/ 86s	90	78.0	555	0.598
89s	90	90.5	311	1.068
2/ 89s	90	80.5	554	0.599
90s	90	90.5	308	1.078
2/ 90s	90	81.5	555	0.598
91s	90	90.5	304	1.092
92s	90	90.5	301	1.103
2/ 92s	90	83.0	552	0.601
93s	90	90.5	298	1.114
2/ 93s	90	84.0	553	0.600
94s	90	90.5	295	1.125
2/ 94s	90	85.0	554	0.599
96s	90	90.5	289	1.149
98s	120	80.0	333	0.997
2/ 98s	90	88.5	553	0.600
100s	120	81.5	333	0.997
2/100s	90	90.5	554	0.599
108s	120	88.0	333	0.997
2/108s	90	92.5	524	0.634
110s	120	89.5	332	1.000
2/110s	90	92.5	515	0.645
112s	120	90.5	330	1.006
115s	120	90.5	321	1.034
120s	120	90.5	308	1.078
2/120s	90	92.5	477	0.696
132s	120	91.0	281	1.182

Conversion factors for Carded counts apply to the corresponding Combed counts also.