INTERNATIONAL STANDARD ISO 2566/I

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Steel — Conversion of elongation values — Part I : Carbon and low alloy steels

First edition — 1973-07-01

UDC 669.14 : 620.172

Ref. No. ISO 2566/I-1973 (E)

Descriptors : steels, unalloyed steels, low alloy steels, tests, tension tests, test specimens, elongation.

Price based on 22 pages

FOREWORD

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Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2566/I was drawn up by Technical Committee ISO/TC 17, *Steel*, and circulated to the Member Bodies in March 1972.

It has been approved by the Member Bodies of the following countries :

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Printed in Switzerland

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0 INTRODUCTION

Several different gauge lengths are commonly in use for the determination of percentage elongation of steels in tensile testing. In metric units, gauge lengths of 50, 100 and 200 mm are used, while in inch units, gauge lengths of 2, 4 and 8 in are used. Proportional gauge lengths of $k\sqrt{S_o}$ are also used for flat and round test pieces, where k may be one of a number of values, i.e. 4 – 5,65 – 8,16 – 11,3.

Discussion within ISO Technical Committee 17, *Steel*, has resulted in the adoption of $5{,}65\sqrt{S_o}$ as the internationally preferred proportional gauge length.

Arising from this agreement and the existence of specifications stipulating minimum percentage elongations on different gauge lengths, a growing need has been evident for an International Standard which could be used to convert test results into values based on the different gauge lengths. This document accordingly includes tables of conversion factors, tables of actual conversions for some of the more commonly used gauge lengths and elongation values, and charts which may also be used for such conversions. When using these conversions, however, note should be taken of the limitations on their applicability as stated in section 1.

While, as indicated, the conversions are considered to be reliable within the stated limitations and may generally be used for acceptance purposes, because of the various factors influencing the determination of percentage elongations, in cases of dispute the elongation shall be determined on the gauge length stated in the relevant material specification.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of converting percentage elongations after fracture obtained on various proportional and non-proportional gauge lengths to other gauge lengths.

The formula (see section 4) on which the conversions are based is considered to be reliable when applied to carbon, carbon manganese, molybdenum and chromium molybdenum steels within the tensile strength range 300 to 700 N/mm^2 and in the hot-rolled, hot-rolled and normalized or annealed condition, with or without tempering.

These conversions are not applicable to

a) cold reduced steels;

b) quenched and tempered steels;

c) austenitic steels;

nor should they be used where the gauge length exceeds $25\sqrt{S_o}$ or the width to thickness ratio of the test piece exceeds 20.

2 SYMBOLS

In this International Standard the following symbols are used :

Symbol	Description
A	Percentage elongation on gauge length L_o after fracture, obtained on test.
A_r	Percentage elongation on a different gauge length, required by conversion.
d	Diameter of test piece.
L_o	Original gauge length.
S_o	Original cross-sectional area of test piece.

3 DEFINITIONS

For the purposes of this International Standard, the following definitions apply :

3.1 gauge length : Any length of the parallel portion of the test piece used for measurement of strain. The term is hereafter used in this International Standard to denote the original gauge length L_o marked on the test piece for the determination of percentage elongation after fracture (A).

3.2 proportional gauge length : A gauge length having a specified relation to the square root of the cross-sectional area, for example, $5{,}65\sqrt{S_o}$.

3.3 non-proportional gauge length : A gauge length not specifically related to the cross-sectional area of the test piece, usually expressed as a given dimension, for example 50 mm or 2 in.

4 BASIC FORMULA

The data contained in this International Standard are based on the "Oliver" formula[1] which is now widely used for such elongation conversions.

The Oliver formula can, in a simplified form, be expressed as

$$A_r = 1{,}74A \left(\frac{\sqrt{S_o}}{L_o} \right)^{0,4}$$

where

A_r is the required elongation on gauge length L_o;

A is the elongation on a gauge length of $4\sqrt{S_o}$.

This formula gives a direct conversion of elongation on $4\sqrt{S_o}$ to the equivalent for a test piece of cross-sectional area S_o, and a gauge length L_o. Expressed in terms of $5{,}65\sqrt{S_o}$, which is now regarded as the internationally accepted standard gauge length, it becomes

$$A_r = 2A \left(\frac{\sqrt{S_o}}{L_o} \right)^{0,4}$$

where A is the elongation on a gauge length of $5{,}65\sqrt{S_o}$.

Tables 1 to 10 and Charts 1, 2 and 3 have been prepared on the basis of the above formulae.

5 CONVERSION FROM ONE PROPORTIONAL GAUGE LENGTH TO ANOTHER PROPORTIONAL GAUGE LENGTH

Simple multiplying factors based on the formula are used for such conversions, and the relationships between a number of the more widely used proportional gauge lengths are given in Table 1. Detailed conversions of elongations obtained on $4\sqrt{S_o}$ to $5{,}65\sqrt{S_o}$ are given in Table 4.

6 CONVERSION FROM ONE NON-PROPORTIONAL GAUGE LENGTH TO ANOTHER NON-PROPORTIONAL GAUGE LENGTH FOR TEST PIECES OF EQUAL CROSS-SECTIONAL AREA

The conversion of elongation values of different fixed gauge lengths on test pieces of equal cross-sectional area are also made by simple factors. Conversion factors for metric gauge lengths of 50, 100, 150, 200 and 250 mm, and for inch gauge lengths of 2, 4, 6, 8 and 10 in are given in Table 2.

7 CONVERSION FROM A PROPORTIONAL GAUGE LENGTH TO A NON-PROPORTIONAL GAUGE LENGTH

The conversion factors are variable according to the cross-sectional area of the non-proportional test piece. Table 3 gives the multiplying factors for conversion from elongation on $5{,}65\sqrt{S_o}$ to the equivalent on fixed metric gauge lengths of 50, 100, 150 and 200 mm, and fixed inch gauge lengths of 2, 4, 6 and 8 in for a range of cross-sectional areas. For conversions in the reverse direction, i.e. elongation on a fixed gauge length to the equivalent on $5{,}65\sqrt{S_o}$, the reciprocal of the factor is used.

Examples :

a) Elongation of 20 % on $5{,}65\sqrt{S_o}$ is equivalent to 20 × 1,139 = 22,78 % on a 25 mm wide test piece of 6 mm thickness with a 50 mm gauge length (see Table 3).

b) Elongation of 25 % on a 40 mm × 10 mm test piece of 200 mm gauge length is equivalent to 25 × 1/0,796 = 31,4 % on $5{,}65\sqrt{S_o}$ (see Table 3).

From the examples shown it will be seen that conversions involving other proportional gauge lengths can be obtained by prior or subsequent use of the factors shown in Table 1.

Tables 5, 6 and 7 can be used to obtain some of these conversions.

Similarly, Tables 8, 9 and 10 can be used for conversions to $4\sqrt{S_o}$.

8 CONVERSION FROM A NON-PROPORTIONAL GAUGE LENGTH TO ANOTHER NON-PROPORTIONAL GAUGE LENGTH FOR TEST PIECES OF DIFFERENT CROSS-SECTIONAL AREAS

It is preferable for this calculation to be made in two stages with an initial conversion to $5{,}65\sqrt{S_o}$.

Example :

Elongation of 24 % on 200 mm for a 40 mm × 15 mm test piece in terms of equivalent on a 30 mm × 10 mm test piece with gauge lengths equal to 200 mm, 100 mm and 50 mm.

24 × 1/0,863 = 27,8 % on $5{,}65\sqrt{S_o}$ (see Table 3).

and 27,8 × 0,752 = 20,8 % on 30 mm × 10 mm with 200 mm gauge length.

27,8 × 0,992 = 27,5 % on 30 mm × 10 mm with 100 mm gauge length.

27,8 × 1,309 = 36,1 % on 30 mm × 10 mm with 50 mm gauge length.

Elongation on other proportional gauge lengths can be obtained by using the factors given in Table 1.

9 USE OF CHARTS 1, 2 AND 3

9.1 Charts 1, 2 and 3 may be used as an alternative quick method to obtain elongation conversions.

1) D.A. Oliver, Proc, Inst. Mech. E., Vol. 11 (1928), page 827.

9.2 Charts 1 and 2 may be used for conversions between $5{,}65\sqrt{S_o}$ or $4\sqrt{S_o}$ respectively and 50 mm (2 in) and 200 mm (8 in) gauge lengths.

Example :

To find the equivalent elongation on $5{,}65\sqrt{S_o}$ and $4\sqrt{S_o}$ to an elongation of 21 % on a 200 mm (8 in) gauge length of a 25 mm (1 in) × 12,5 mm (0.5 in) test piece.

Cross-sectional area = 312,5 mm² (0.5 in²).

The intersection of this ordinate with the abscissa representing an elongation of 21 % on a 200 mm (8 in) gauge length lies on the sloping line representing an elongation of 28 % on $5{,}65\sqrt{S_o}$ on Chart 1 and at a position relative to the sloping lines on Chart 2 approximating to an elongation of 32,2 on $4\sqrt{S_o}$.

Abscissae representing elongations on a 50 mm (2 in) gauge length appear on the left-hand side of the charts.

9.3 Chart 3 may be used for the calculation of all elongation conversions.

The Oliver formula may be re-written as

$$A_2 = A_1 \left(\frac{K_1}{K_2}\right)^{0,4} = \lambda_{1,2} \times A_1$$

where K_1 and K_2 designate the proportionality ratios of any two test pieces.

$$\left[K_1 = \frac{L_1}{\sqrt{S_1}} \text{ and } K_2 = \frac{L_o}{\sqrt{S_2}} \right]$$

Chart 3 shows the values of $\lambda_{1,2} = \left(\frac{K_1}{K_2}\right)^{0,4}$

To use Chart 3 it is necessary to perform the following operations :

a) calculate the values of proportionality $K_1 = \frac{L_1}{\sqrt{S_1}}$, and $K_2 = \frac{L_2}{\sqrt{S_2}}$, for two test pieces;

b) read graphically the coefficient $\lambda_{1,2} = \left(\frac{K_1}{K_2}\right)^{0,4}$;

c) the elongation obtained is $A_2 = \lambda_{1,2} \times A_1$.

TABLE 1 – **Conversion factors : Proportional gauge lengths**

Conversion from	Factor for conversion to						
	$4\sqrt{S_o}$	$5{,}65\sqrt{S_o}$	$8{,}16\sqrt{S_o}$	$11{,}3\sqrt{S_o}$	$4d$	$5d$	$8d$
$4\sqrt{S_o}$	1,000	0,870	0,752	0,661	0,953	0,870	0,721
$5{,}65\sqrt{S_o}$	1,149	1,000	0,863	0,759	1,093	1,000	0,828
$8{,}16\sqrt{S_o}$	1,330	1,158	1,000	0,879	1,268	1,158	0,960
$11{,}3\sqrt{S_o}$	1,514	1,317	1,137	1,000	1,443	1,317	1,091
$4d$	1,050	0,916	0,790	0,694	1,000	0,916	0,758
$5d$	1,149	1,000	0,863	0,759	1,093	1,000	0,828
$8d$	1,389	1,207	1,042	0,918	1,319	1,207	1,000

TABLE 2 – **Conversion factors : Non-proportional gauge lengths**
(Provided cross-sectional areas are the same)

a) **Metric units**

Conversion from	Factor for conversion to				
	50 mm	100 mm	150 mm	200 mm	250 mm
50 mm	1,000	0,758	0,644	0,574	0,525
100 mm	1,320	1,000	0,850	0,758	0,693
150 mm	1,552	1,176	1,000	0,891	0,815
200 mm	1,741	1,320	1,122	1,000	0,915
250 mm	1,904	1,443	1,227	1,093	1,000

b) **Inch units**

Conversion from	Factor for conversion to				
	2 in	4 in	6 in	8 in	10 in
2 in	1.000	0.758	0.644	0.574	0.525
4 in	1.320	1.000	0.850	0.758	0.693
6 in	1.552	1.176	1.000	0.891	0.815
8 in	1.741	1.320	1.122	1.000	0.915
10 in	1.904	1.443	1.227	1.093	1.000

TABLE 3 – **Conversion factors from $5{,}65\sqrt{S_o}$ to non-proportional gauge lengths**
(See also Chart 1)

Factors shown under "Non-proportional gauge lengths" give the value of

$$2\left(\frac{\sqrt{S_o}}{L}\right)^{0,4}$$

To convert from values on a gauge length of $5{,}65\sqrt{S_o}$ to a non-proportional gauge length, multiply by the appropriate factor.

To convert from values on a non-proportional gauge length to $5{,}65\sqrt{S_o}$, divide by the appropriate factor.

a) **Metric units**

Cross-sectional area of test piece	Factor for non-proportional gauge length of			
mm^2	200 mm	150 mm	100 mm	50 mm
5	0,331	0,372	0,437	0,577
10	0,381	0,427	0,502	0,653
15	0,413	0,463	0,545	0,719
20	0,437	0,491	0,577	0,761
25	0,457	0,513	0,603	0,796
30	0,474	0,532	0,626	0,826
35	0,489	0,549	0,645	0,852
40	0,502	0,564	0,663	0,875
45	0,514	0,577	0,679	0,896
50	0,525	0,589	0,693	0,915
55	0,535	0,601	0,706	0,932
60	0,545	0,611	0,719	0,949
70	0,562	0,630	0,741	0,978
80	0,577	0,647	0,761	1,005
90	0,591	0,663	0,780	1,029
100	0,603	0,677	0,796	1,051
110	0,615	0,690	0,812	1,071
120	0,626	0,702	0,826	1,090
130	0,636	0,713	0,839	1,107
140	0,645	0,724	0,852	1,124
150	0,654	0,734	0,863	1,139
160	0,663	0,744	0,875	1,154
170	0,671	0,753	0,885	1,168
180	0,679	0,761	0,896	1,182
190	0,686	0,770	0,905	1,195
200	0,693	0,778	0,915	1,207
210	0,700	0,785	0,924	1,219
220	0,706	0,793	0,932	1,230
230	0,713	0,800	0,941	1,241
240	0,719	0,807	0,949	1,252
250	0,725	0,813	0,956	1,262
260	0,730	0,820	0,964	1,272
270	0,736	0,826	0,971	1,281
280	0,741	0,832	0,978	1,291
290	0,747	0,838	0,985	1,300

TABLE 3 (*continued*)

Cross-sectional area of test piece	Factor for non-proportional gauge length of			
mm^2	200 mm	150 mm	100 mm	50 mm
300	0,752	0,843	0,992	1,309
310	0,757	0,849	0,998	1,317
320	0,761	0,854	1,005	1,326
330	0,766	0,860	1,011	1,334
340	0,771	0,865	1,017	1,342
350	0,775	0,870	1,023	1,350
360	0,780	0,875	1,029	1,357
370	0,784	0,879	1,034	1,365
380	0,788	0,884	1,040	1,372
390	0,792	0,889	1,045	1,379
400	0,796	0,893	1,051	1,386
410	0,800	0,898	1,056	1,393
420	0,804	0,902	1,061	1,400
430	0,808	0,906	1,066	1,406
440	0,812	0,911	1,071	1,413
450	0,815	0,915	1,076	1,419
460	0,819	0,919	1,080	1,426
470	0,822	0,923	1,085	1,432
480	0,826	0,926	1,090	1,438
490	0,829	0,930	1,094	1,444
500	0,833	0,934	1,099	1,450
550	0,849	0,952	1,120	1,477
600	0,863	0,969	1,139	1,503
650	0,877	0,984	1,158	1,528
700	0,891	0,999	1,175	1,550
750	0,903	1,013	1,191	1,572
800	0,915	1,026	1,207	1,592
850	0,926	1,039	1,222	1,612
900	0,936	1,051	1,236	1,630
950	0,947	1,062	1,249	1,648
1 000	0,956	1,073	1,262	1,665
1 050	0,966	1,084	1,274	1,681
1 100	0,975	1,094	1,286	1,697
1 150	0,983	1,103	1,298	1,712
1 200	0,992	1,113	1,309	1,727
1 250	1,000	1,122	1,320	1,741
1 300	1,008	1,131	1,330	1,755
1 350	1,016	1,139	1,340	1,768
1 400	1,023	1,148	1,350	1,781
1 450	1,030	1,156	1,359	1,794
1 500	1,037	1,164	1,369	1,806
1 550	1,044	1,171	1,378	1,818
1 600	1,051	1,179	1,386	1,829
1 650	1,057	1,186	1,395	1,841
1 700	1,063	1,193	1,403	1,852
1 750	1,070	1,200	1,411	1,862
1 800	1,076	1,207	1,419	1,873
1 850	1,082	1,213	1,427	1,883
1 900	1,087	1,220	1,435	1,893
1 950	1,093	1,226	1,442	1,903

TABLE 3 (*continued*)

Cross-sectional area of test piece	Factor for non-proportional gauge length of			
mm^2	200 mm	150 mm	100 mm	50 mm
2 000	1,099	1,233	1,450	1,913
2 050	1,104	1,239	1,457	1,922
2 100	1,109	1,245	1,464	1,931
2 150	1,115	1,250	1,471	1,941
2 200	1,120	1,256	1,477	1,950
2 250	1,125	1,262	1,484	1,958
2 300	1,130	1,267	1,491	1,967
2 350	1,135	1,273	1,497	1,975
2 400	1,139	1,278	1,503	1,984
2 450	1,144	1,284	1,510	1,992
2 500	1,149	1,289	1,516	2,000
2 550	1,153	1,294	1,522	2,008
2 600	1,158	1,299	1,528	2,016
2 650	1,162	1,304	1,533	2,023
2 700	1,167	1,309	1,539	2,031
2 750	1,171	1,314	1,545	2,038
2 800	1,175	1,318	1,550	2,046
2 850	1,179	1,323	1,556	2,053
2 900	1,183	1,328	1,561	2,060
2 950	1,187	1,332	1,567	2,067
3 000	1,191	1,337	1,572	2,074

b) **Inch units**

Cross-sectional area of test piece	Factor for non-proportional gauge length of			
in^2	8 in	6 in	4 in	2 in
0.010	0.347	0.389	0.457	0.603
0.020	0.398	0.447	0.525	0.693
0.030	0.432	0.484	0.570	0.752
0.040	0.457	0.513	0.603	0.796
0.050	0.478	0.536	0.631	0.833
0.060	0.496	0.556	0.654	0.863
0.070	0.511	0.574	0.675	0.891
0.080	0.525	0.589	0.693	0.915
0.090	0.538	0.603	0.710	0.936
0.100	0.549	0.616	0.725	0.956
0.110	0.560	0.628	0.739	0.975
0.120	0.570	0.639	0.752	0.992
0.130	0.579	0.649	0.764	1.008
0.140	0.588	0.659	0.775	1.023
0.150	0.596	0.668	0.786	1.037
0.160	0.603	0.677	0.796	1.051
0.170	0.611	0.685	0.806	1.063
0.180	0.618	0.693	0.815	1.076
0.190	0.625	0.701	0.824	1.087
0.200	0.631	0.708	0.833	1.099

TABLE 3 (*continued*)

Cross-sectional area of test piece	Factor for non-proportional gauge length of			
in^2	8 in	6 in	4 in	2 in
0.210	0.637	0.715	0.841	1.109
0.220	0.643	0.722	0.849	1.120
0.230	0.649	0.728	0.856	1.130
0.240	0.654	0.734	0.863	1.139
0.250	0.660	0.740	0.871	1.149
0.260	0.665	0.746	0.877	1.158
0.270	0.670	0.752	0.884	1.167
0.280	0.675	0.757	0.891	1.175
0.290	0.680	0.763	0.897	1.183
0.300	0.684	0.768	0.903	1.191
0.310	0.689	0.773	0.909	1.199
0.320	0.693	0.778	0.915	1.207
0.330	0.697	0.782	0.920	1.214
0.340	0.702	0.787	0.926	1.222
0.350	0.706	0.792	0.931	1.229
0.360	0.710	0.796	0.936	1.236
0.370	0.714	0.801	0.942	1.242
0.380	0.717	0.805	0.947	1.249
0.390	0.721	0.809	0.952	1.256
0.400	0.725	0.813	0.956	1.262
0.410	0.728	0.817	0.961	1.268
0.420	0.732	0.821	0.966	1.274
0.430	0.735	0.825	0.970	1.280
0.440	0.739	0.829	0.975	1.286
0.450	0.742	0.833	0.979	1.292
0.460	0.745	0.836	0.983	1.298
0.470	0.749	0.840	0.988	1.303
0.480	0.752	0.843	0.992	1.309
0.490	0.755	0.847	0.996	1.314
0.500	0.758	0.850	1.000	1.320
0.550	0.772	0.867	1.019	1.345
0.600	0.786	0.882	1.037	1.369
0.650	0.799	0.896	1.054	1.391
0.700	0.811	0.909	1.070	1.411
0.750	0.822	0.922	1.084	1.431
0.800	0.833	0.934	1.099	1.450
0.850	0.843	0.945	1.112	1.467
0.900	0.852	0.956	1.125	1.484
0.950	0.862	0.967	1.137	1.500
1.000	0.871	0.977	1.149	1.516
1.050	0.879	0.986	1.160	1.531
1.100	0.887	0.996	1.171	1.545
1.150	0.895	1.004	1.181	1.559
1.200	0.903	1.013	1.191	1.572
1.250	0.910	1.021	1.201	1.585
1.300	0.917	1.029	1.211	1.597
1.350	0.924	1.037	1.220	1.609
1.400	0.931	1.045	1.229	1.621
1.450	0.938	1.052	1.237	1.633
1.500	0.944	1.059	1.246	1.644

TABLE 3 (*concluded*)

Cross-sectional area of test piece	Factor for non-proportional gauge length of			
in^2	8 in	6 in	4 in	2 in
1.550	0.950	1.066	1.254	1.655
1.600	0.956	1.073	1.262	1.665
1.650	0.962	1.080	1.270	1.675
1.700	0.968	1.086	1.277	1.685
1.750	0.974	1.092	1.285	1.695
1.800	0.979	1.099	1.292	1.705
1.850	0.985	1.105	1.299	1.714
1.900	0.990	1.111	1.306	1.723
1.950	0.995	1.116	1.313	1.732
2.000	1.000	1.122	1.320	1.741
2.050	1.005	1.128	1.326	1.750
2.100	1.010	1.133	1.332	1.758
2.150	1.015	1.138	1.339	1.766
2.200	1.019	1.144	1.345	1.775
2.250	1.024	1.149	1.351	1.783
2.300	1.028	1.154	1.357	1.790
2.350	1.033	1.159	1.363	1.798
2.400	1.037	1.164	1.369	1.806
2.450	1.041	1.168	1.374	1.813
2.500	1.046	1.173	1.380	1.821
2.550	1.050	1.178	1.385	1.828
2.600	1.054	1.182	1.391	1.835
2.650	1.058	1.187	1.396	1.842
2.700	1.062	1.191	1.401	1.849
2.750	1.066	1.196	1.406	1.856
2.800	1.070	1.200	1.411	1.862
2.850	1.073	1.204	1.416	1.869
2.900	1.077	1.209	1.421	1.875
2.950	1.081	1.213	1.426	1.882
3.000	1.084	1.217	1.431	1.888
3.050	1.088	1.221	1.436	1.894
3.100	1.092	1.225	1.440	1.901
3.150	1.095	1.229	1.445	1.907
3.200	1.099	1.233	1.450	1.913
3.250	1.102	1.236	1.454	1.919
3.300	1.105	1.240	1.459	1.925
3.350	1.109	1.244	1.463	1.930
3.400	1.112	1.248	1.467	1.936
3.450	1.115	1.251	1.472	1.942
3.500	1.188	1.255	1.476	1.947
3.550	1.122	1.258	1.480	1.953
3.600	1.125	1.262	1.484	1.958
3.650	1.128	1.265	1.488	1.964
3.700	1.131	1.269	1.492	1.969
3.750	1.134	1.272	1.496	1.974
3.800	1.137	1.276	1.500	1.980
3.850	1.140	1.279	1.504	1.985
3.900	1.143	1.282	1.508	1.990
3.950	1.146	1.286	1.512	1.995
4.000	1.149	1.289	1.516	2.000

TABLE 4 – **Elongation values on 5,65 $\sqrt{S_o}$ corresponding to those obtained on 4 $\sqrt{S_o}$ gauge length**
(Factor 0,87; rounded to nearest whole number)

Actual per cent elongation measured on 4 $\sqrt{S_o}$	0	1	2	3	4	5	6	7	8	9
	Corresponding per cent elongation on 5,65 $\sqrt{S_o}$									
10	9	10	10	11	12	13	14	15	16	17
20	17	18	19	20	21	22	23	23	24	25
30	26	27	28	29	30	30	31	32	33	34
40	35	36	37	37	38	39	40	41	42	43
50	43	44	45	46	47	48	49	50	50	51

TABLE 5a) — **Elongation values on 5,65 $\sqrt{S_0}$ corresponding to those obtained on 50 mm gauge length**

(Rounded to the nearest whole number)

Actual per cent elongation on 50 mm gauge length	Corresponding per cent elongation on 5,65 $\sqrt{S_0}$ gauge length if cross-sectional area in square millimetres is :																					
	5	10	20	40	60	80	100	150	200	250	300	400	500	600	700	800	900	1 000	1 200	1 500	2 000	2 500
18	31	27	24	21	19	18	17	16	15	14	14	13	12	12	12	11	11	11	10	10	9	9
19	33	29	25	22	20	19	18	17	16	15	15	14	13	13	12	12	12	11	11	11	10	10
20	35	30	26	23	21	20	19	18	17	16	15	14	14	13	13	13	12	12	12	11	10	10
21	36	32	28	24	22	21	20	18	17	17	16	15	14	14	14	13	13	13	12	12	11	11
22	38	33	29	25	23	22	21	19	18	17	17	16	15	15	14	14	13	13	13	12	12	11
23	40	35	30	26	24	23	22	20	19	18	18	17	16	15	15	14	14	14	13	13	12	12
24	42	36	32	27	25	24	23	21	20	19	18	17	17	16	15	15	15	14	14	13	13	12
25	43	38	33	29	26	25	24	22	21	20	19	18	17	17	16	16	15	15	14	14	13	13
26	45	39	34	30	27	26	25	23	22	21	20	19	18	17	17	16	16	16	15	14	14	13
27	47	41	35	31	28	27	26	24	22	21	21	19	19	18	17	17	17	16	16	15	14	14
28	49	42	37	32	30	28	27	25	23	22	21	20	19	19	18	18	17	17	16	16	15	14
29	50	44	38	33	31	29	28	25	24	23	22	21	20	19	19	18	18	17	17	16	15	15
30	52	45	39	34	32	30	29	26	25	24	23	22	21	20	19	19	18	18	17	17	16	15
31	54	47	41	35	33	31	30	27	26	25	24	22	21	21	20	19	19	19	18	17	16	16
32	55	48	42	37	34	32	30	28	27	25	24	23	22	21	21	20	20	19	19	18	17	16
33	57	50	43	38	35	33	31	29	27	26	25	24	23	22	21	21	20	20	19	18	17	17
34	59	51	45	39	36	34	32	30	28	27	26	25	23	23	22	21	21	20	20	19	18	17
35	61	53	46	40	37	35	33	31	29	28	27	25	24	23	23	22	21	21	20	19	18	18
36	62	54	47	41	38	36	34	32	30	29	28	26	25	24	23	23	22	22	21	20	19	18
37	64	56	49	42	39	37	35	32	31	29	28	27	26	25	24	23	23	22	21	20	19	19
38	66	57	50	43	40	38	36	33	31	30	29	27	26	25	25	24	23	23	22	21	20	19
39	68	59	51	45	41	39	37	34	32	31	30	28	27	26	25	24	24	23	23	22	20	20
40	69	60	53	46	42	40	38	35	33	32	31	29	28	27	26	25	25	24	23	22	21	20
41	71	62	54	47	43	41	39	36	34	32	31	30	28	27	26	26	25	25	24	23	21	21
42	73	63	55	48	44	42	40	37	35	33	32	30	29	28	27	26	26	25	24	23	22	21
43	75	65	56	49	45	43	41	38	36	34	33	31	30	29	28	27	26	26	25	24	22	22
44	76	66	58	50	46	44	42	39	36	35	34	32	30	29	28	28	27	26	25	24	23	22
45	78	68	59	51	47	45	43	39	37	36	34	32	31	30	29	28	28	27	26	25	24	23
46	80	69	60	53	48	46	44	40	38	36	35	33	32	31	30	29	28	28	27	25	24	23
47	81	71	62	54	50	47	45	41	39	37	36	34	32	31	30	30	29	28	27	26	25	24

TABLE 5b) – **Elongation values on 5,65 $\sqrt{S_o}$ corresponding to those obtained on 2 in gauge length**
(Rounded to the nearest whole number)

Actual per cent elongation on 2 in gauge length	Corresponding per cent elongation on 5,65 $\sqrt{S_o}$ gauge length if cross-sectional area in square inches is :																					
	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.60	0.70	0.80	0.90	1.0	1.2	1.4	1.6	1.8	2.0	3.0	4.0
18	22	19	17	16	16	15	15	14	14	14	13	13	12	12	12	11	11	11	11	10	10	9
19	23	20	18	17	17	16	15	15	15	14	14	13	13	13	13	12	12	11	11	11	10	9
20	24	21	19	18	17	17	16	16	15	15	15	14	14	13	13	13	12	12	12	12	11	10
21	25	22	20	19	18	18	17	17	16	16	15	15	14	14	14	13	13	13	12	12	11	10
22	26	23	21	20	19	18	18	17	17	17	16	16	15	15	15	14	14	13	13	13	12	11
23	28	24	22	21	20	19	19	18	18	17	17	16	16	15	15	15	14	14	13	13	12	11
24	29	25	23	22	21	20	20	19	19	18	18	17	17	16	16	15	15	14	14	14	13	12
25	30	26	24	23	22	21	20	20	19	19	18	18	17	17	17	16	15	15	15	14	13	12
26	31	27	25	24	23	22	21	21	20	20	19	18	18	18	17	17	16	16	15	15	14	13
27	32	28	26	25	24	23	22	21	21	20	20	19	19	18	18	17	17	16	16	16	14	13
28	34	29	27	26	24	24	23	22	22	21	20	20	19	19	19	18	17	17	16	16	15	14
29	35	30	28	26	25	24	24	23	22	22	21	21	20	20	19	18	18	17	17	17	15	14
30	36	31	29	27	26	25	24	24	23	23	22	21	21	20	20	19	19	18	18	17	16	15
31	37	32	30	28	27	26	25	25	24	24	23	22	21	21	20	20	19	19	18	18	16	15
32	38	33	31	29	28	27	26	25	25	24	23	23	22	22	21	20	20	19	19	18	17	16
33	40	34	32	30	29	28	27	26	26	25	24	23	23	22	22	21	20	20	19	19	17	16
34	41	36	33	31	30	29	28	27	26	26	25	24	23	23	22	22	21	20	20	20	18	17
35	42	37	34	32	30	29	28	28	27	27	26	25	24	24	23	22	22	21	21	20	19	17
36	43	38	35	33	31	30	29	29	28	27	26	26	25	24	24	23	22	22	21	21	19	18
37	44	39	36	34	32	31	30	29	29	28	27	26	26	25	24	24	23	22	22	21	20	18
38	46	40	37	35	33	32	31	30	29	29	28	27	26	26	25	24	23	23	22	22	20	19
39	47	41	38	36	34	33	32	31	30	30	29	28	27	26	26	25	24	23	23	22	21	19
40	48	42	39	36	35	34	33	32	31	30	29	28	28	27	26	25	25	24	23	23	21	20
41	49	43	40	37	36	34	33	33	32	31	30	29	28	28	27	26	25	25	24	24	22	20
42	50	44	40	38	37	35	34	33	33	32	31	30	29	28	28	27	26	25	25	24	22	21
43	52	45	41	39	37	36	35	34	33	33	31	30	30	29	28	27	27	26	25	25	23	21
44	53	46	42	40	38	37	36	35	34	33	32	31	30	30	29	28	27	26	26	25	23	22
45		47	43	41	39	38	37	36	35	34	33	32	31	30	30	29	28	27	26	26	24	22
46		48	44	42	40	39	37	36	36	35	34	33	32	31	30	29	28	28	27	26	24	23
47		49	45	43	41	39	38	37	36	35	34	33	32	32	31	30	29	28	28	27	25	23