INTERNATIONAL STANDARD

ISO 16124

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Steel wire rod — Dimensions and tolerances

Fil machine en acier — Dimensions et tolérances

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Foreword

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 16124 was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 17, *Steel wire rod and wire products*.

This first edition cancels and replaces ISO 8457-1:1989, which has been technically revised.

Steel wire rod — Dimensions and tolerances

1 Scope

This International standard specifies dimensions and tolerances to the dimensions applicable to steel wire rod as defined in ISO 6929.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6929:1987, *Steel products — Definitions and classification*

3 Dimensions and tolerances on dimensions

3.1 General

The dimensions and tolerances applicable to the dimensions of hot-rolled steel wire rod shall be as specified in 3.2 to 3.5.

3.2 Round wire rod

The preferred nominal diameters and tolerances on diameters shall be as specified in Table 1 and Table 2 respectively. Three levels of tolerance are standardized T1, T2 and T3.

The permissible out-of-round for all sizes, measured as the difference between the maximum and minimum diameters at any cross-section, shall be 80 % of the total tolerance specified on the diameter (see Table 2).

3.3 Square wire rod

The nominal width of side and tolerance on width of side shall be as specified in Table 3 and Table 4 respectively.

The permissible out-of-square for all sizes, measured as the difference of the distances between faces in the same cross-section, shall be 80 % of the total tolerance specified on the width of side (see Table 4).

3.4 Hexagonal wire rod

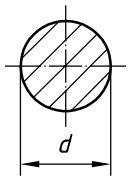
The normal thickness, measured as the width across opposite flat faces, and tolerance on thickness shall be as specified in Table 5 and Table 6 respectively.

The permissible out-of-hexagon for all sizes, measured as the difference between the widths across the flats at any cross-section, shall be 80 % of the total thickness tolerance (see Table 6).

3.5 Rectangular wire rod

The nominal size, defined as width b by thickness d, and tolerance on size shall be as specified in Table 7 and Table 8 respectively.

Table 1 — Preferred diameter, nominal section and nominal mass of round wire rod



Preferred diameter, d mm	**Cross-sectional area,** S [a,b] mm^2	**Mass per unit length** [a,c] kg/m
5	19,63	0,154
5,5	23,76	0,187
6	28,27	0,222
6,5	33,18	0,260
7	38,48	0,302
7,5	44,18	0,347
8	50,26	0,395
8,5	56,74	0,445
9	63,62	0,499
9,5	70,88	0,556
10	78,54	0,617
10,5	86,59	0,680
11	95,03	0,746
11,5	103,9	0,816
12	113,1	0,888
12,5	122,7	0,963
13	132,7	1,04
13,5	143,1	1,12
14	153,9	1,21
14,5	165,1	1,30
15	176,7	1,39
15,5	188,7	1,48
16	201,1	1,58
16,5	213,8	1,68
17	227,0	1,78
17,5	240,5	1,89
18	254,5	2,00
18,5	268,8	2,11
19	283,5	2,23
19,5	298,6	2,34
20	314,2	2,47
21	346,3	2,72
22	380,1	2,98
23	415,5	3,26
24	452,4	3,55
25	490,9	3,85
26	530,9	4,17

Table 1 (*continued*)

Preferred diameter, d mm	**Cross-sectional area,** S [a,b] mm^2	**Mass per unit length** [a,c] kg/m
27	572,6	4,49
28	615,7	4,83
29	660,5	5,18
30	706,9	5,55
31	754,8	5,92
32	804,2	6,31
33	855,3	6,71
34	907,9	7,13
35	962,1	7,55
36	1 017,9	7,99
37	1 075,2	8,44
38	1 134,1	8,90
39	1 194,6	9,38
40	1 256,6	9,86
41	1 320,3	10,36
42	1 385,4	10,88
43	1 452,2	11,40
44	1 520,5	11,94
45	1 590,4	12,48
46	1 661,9	13,05
47	1 734,9	13,62
48	1 809,6	14,21
49	1 885,7	14,80
50	1 963,5	15,41

[a] For information only.

[b] $S = 0{,}785\,4\,d^2$.

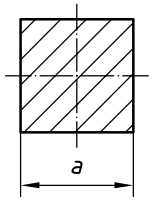
[c] Mass/m = 0,007 85 S.

Table 2 — Tolerances on nominal diameter and out-of-round of round wire rod

Nominal diameter, d mm	**Tolerances** mm			**Out-of-round** ($\leqslant$) mm		
	T1[a]	**T2**	**T3**	**T1**	**T2**	**T3**
$5{,}00 \leqslant d \leqslant 10{,}00$	± 0,30	± 0,25	± 0,15	0,48	0,40	0,24
$10{,}00 < d \leqslant 15{,}00$	± 0,40	± 0,30	± 0,20	0,64	0,48	0,32
$15{,}00 < d \leqslant 25{,}00$	± 0,50	± 0,35	± 0,25	0,80	0,56	0,40
$25{,}00 < d \leqslant 40{,}00$	± 0,60	± 0,40	± 0,30	0,96	0,64	0,48
$40{,}00 < d \leqslant 50{,}00$	± 0,80	± 0,50	—	1,28	0,80	—

[a] For the size range 5,00 mm $\leqslant d \leqslant$ 10,00 mm, larger values for the tolerance may be agreed upon between the parties.

Table 3 — Width of side, nominal section and nominal mass of square wire rod



Preferred width, a mm	**Cross-sectional area** [a] mm^2	**Mass per unit length** [a] kg/m
15	225,0	1,77
16	256,0	2,01
17	289,0	2,27
18	324,0	2,54
19	361,0	2,83
20	400,0	3,14
21	441,0	3,46
22	484,0	3,80
23	529,0	4,15
24	576,0	4,52
25	625,0	4,91
26	676,0	5,31
27	729,0	5,72
28	784,0	6,15
29	841,0	6,60
30	900,0	7,06
31	961,0	7,54
32	1 024,0	8,04

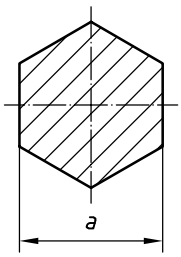
[a] For information only.

Table 4 — Width tolerances and out-of-square of square wire rod

Nominal width, a mm		**Width tolerance** mm	**Out-of-square** ($\leqslant$) mm
over	up to and including		
8,5	15	$\pm$ 0,4	0,64
15	25	$\pm$ 0,5	0,80
25	32	$\pm$ 0,6	0,96

NOTE Limited corner radii are permissible.

Table 5 — Thickness, nominal section and nominal mass of hexagonal wire rod



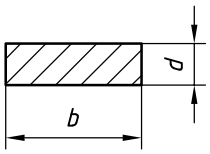
Preferred thickness, a mm	**Cross-sectional area** [a] mm^2	**Mass per unit length** [a] kg/m
15	194,9	1,53
16	221,7	1,74
17	250,3	1,96
18	280,6	2,20
19	312,6	2,45
20	346,4	2,72
22	419,2	3,29
23	458,1	3,60
24	498,8	3,92
25	541,3	4,25
26	585,4	4,60
27	631,3	4,96
28	679,0	5,33
29	728,3	6,37
30	779,4	6,81
31	832,2	7,28
32	886,8	7,76
33	943,1	8,25
34	1 000,1	8,76
35	1 060,8	9,28
36	1 122,3	9,82
37	1 185,5	10,37
38	1 250,5	10,94
39	1 317,2	11,52
40	1 385,6	12,12

[a] For information only.

Table 6 — Thickness tolerances and out-of-hexagon of hexagonal wire rod

Nominal width, a mm		**Thickness tolerance** mm	**Out-of- hexagon** ($\leqslant$) mm
over	up to and including		
8,5	15	$\pm$ 0,4	0,64
15	25	$\pm$ 0,5	0,80
25	40	$\pm$ 0,6	0,96
NOTE Limited corner radii are permissible.			

Table 7 — Size, nominal section and nominal mass of rectangular wire rod



Preferred $b \times d$ mm	**Cross-sectional area** [a] mm^2	**Mass per unit length** [a] kg/m
18 × 10	180,0	1,41
18 × 12	216,0	1,70
20 × 10	200,0	1,57
20 × 12	240,0	1,88
20 × 14	280,0	2,20
22 × 8	176,0	1,38
22 × 10	220,0	1,73
22 × 12	264,0	2,07
22 × 14	308,0	2,42
25 × 8	200,0	1,57
25 × 10	250,0	1,96
25 × 12	300,0	2,36
25 × 14	350,0	2,75
25 × 16	400,0	3,14
28 × 8	224,0	1,76
28 × 10	280,0	2,20
28 × 12	336,0	2,64
28 × 14	392,0	3,08
28 × 16	448,0	3,52
30 × 6	180,0	1,41
30 × 8	240,0	1,88
30 × 10	300,0	2,36
30 × 12	360,0	2,83
30 × 14	420,0	3,30
30 × 16	480,0	3,77

[a] For information only.

Table 8 — Tolerances of rectangular wire rod

Nominal width, b **or nominal thickness**, d mm		**Width tolerance** mm	**Thickness tolerance** mm
over	up to and including		
—	8	—	± 0,3
8	14	± 0,4	± 0,4
14	22	± 0,5	± 0,4
22	30	± 0,6	—

NOTE Limited corner radii are permissible.

4 Inspection on the cross-sectional dimensions

In cases of dispute, the cross-sectional dimensions shall be measured at a distance from the end of wire rod greater than those included in Table 9.

Table 9 — Measured distance from the end of the coil

Nominal diameter (or dimension), d mm	**Distance from the end of the coil** mm
$5 \leqslant d \leqslant 7$	5 000
$7 < d \leqslant 13$	4 000
$13 < d \leqslant 18$	3 000
$18 < d \leqslant 23$	2 000
$23 < d \leqslant 28$	1 500
$28 < d \leqslant 50$	1 000

5 Mass of coils

Mass and tolerance on mass of individual coils may be agreed upon between manufacturer and customer.

It is permitted that a maximum of 5 % of the number of coils may be supplied with a mass less than the specified minimum mass.

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Price based on 7 pages