
INTERNATIONAL STANDARD



2804

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

Wire, bar or tube drawing dies — As sintered pellets of hard metal (carbide) — Dimensions

First edition — 1973-12-01

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UDC 621.778.1.073

Ref. No. ISO 2804-1973 (E)

Descriptors : tools, die drawing, wire drawing, cores, sintered products, dimensions.

FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

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 2804 was drawn up by Technical Committee ISO/TC 29, *Small tools*, and circulated to the Member Bodies in July 1972.

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

Belgium	Japan	Sweden
Czechoslovakia	Netherlands	Switzerland
France	New Zealand	Thailand
Germany	Poland	Turkey
Hungary	Portugal	United Kingdom
India	Romania	U.S.A.
Israel	South Africa, Rep. of	U.S.S.R.
Italy	Spain	

The Member Body of the following country expressed disapproval of the document on technical grounds :

Austria

Wire, bar or tube drawing dies – As sintered pellets of hard metal (carbide) – Dimensions

0 INTRODUCTION

The standardization of the dimensions of as sintered pellets has been carried out in order to improve co-operation between pellet manufacturers and drawing die manufacturers.

The selected dimensions will improve the machining conditions of drawing tool manufacturers in order to obtain drawing dies in conformity with ISO/R 1684.

1 SCOPE AND FIELD OF APPLICATION

This International Standard lays down a series of outside diameter sizes d_{02} , a range of bore sizes and certain internal dimensions with their tolerances, for as sintered pellets for wire, bar and tube drawing dies.

It is only concerned with as sintered pellets with cylindrical bores intended to be used for application groups A to F as defined in ISO/R 1684.

2 REFERENCES

ISO/R 1684, *Wire, bar and tube drawing dies – Designation – Marking – Dimensions.*

ISO⁴⁾

3 DESIGNATION

The designation of an as sintered pellet for wire, bar or tube drawing dies is composed of identification symbols listed in the following order :

3.1 Reference letter of application :^{1) 2)}

As sintered pellets for steel wire drawing dies :	A
As sintered pellets for non-ferrous wire drawing dies :	B
As sintered pellets for steel round bar drawing dies :	C
As sintered pellets for non-ferrous round bar drawing dies :	D
As sintered pellets for steel tube drawing dies :	E
As sintered pellets for non-ferrous tube drawing dies :	F

3.2 External diameter of as sintered pellet : d_{02} in millimetres

3.3 Bore diameter of as sintered pellet : d_{01} ³⁾

1) In conformity with ISO/R 1684.

2) A hard metal (carbide) as sintered pellet is designated by one letter; a hard metal (carbide) wire, bar or tube drawing die is designated by two letters (see ISO/R 1684).

3) For unbored as sintered pellets (type I of applications A and B) the indication shall be 00; dimension d_{01} shall be given in millimetres, to an accuracy of 0,1 mm, for applications A and B, and to an accuracy of 1 mm for applications C, D, E and F.

4) In preparation.

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3.4 Drawing angle or radius expressed in degrees or in millimetres (for types of application C, D, E and F) : $2\alpha_0$ or R_0

3.5 Group of application of hard metals (carbides) according to ISO

3.6 Number of this International Standard : ISO 2804

NOTE – The various elements of the designation, except the first two, shall be separated by dashes.

Examples of designation :

Designation of an as sintered pellet for steel wire drawing dies :

- external diameter : $d_{02} = 14$ mm

- bore diameter : $d_{01} = 0,6$ mm

- hard metal (carbide) grade according to application group : G 20¹⁾

A 14 – 0,6 – G 20 – ISO 2804

Designation of an as sintered pellet for steel bar drawing dies :

- external diameter : $d_{02} = 40$ mm

- bore diameter : $d_{01} = 14$ mm

- drawing angle : $2\alpha_0 = 16^\circ$

- hard metal (carbide) grade according to application group : G 20¹⁾

C 40 – 14 – 16 – G 20 – ISO 2804

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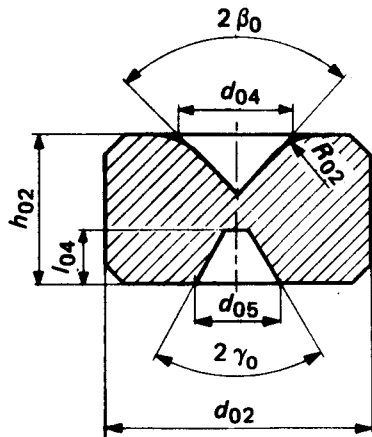
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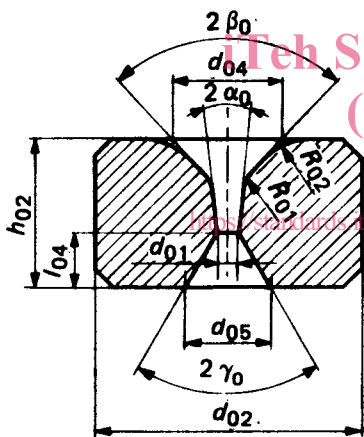
1) This designation, which at the moment has no formal character, is given as an example.

4 AS SINTERED PELLETS OF HARD METAL FOR STEEL WIRE DRAWING DIES (code-letter A) AND FOR NON-FERROUS WIRE DRAWING DIES (code-letter B)

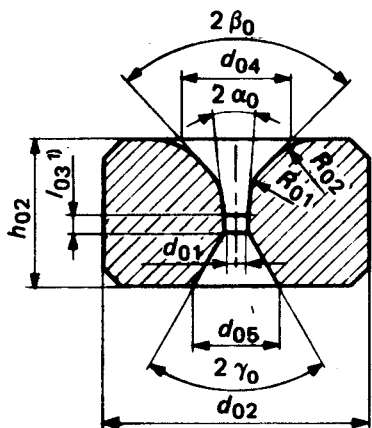
4.1 Dimensions



Type I



Type II



1) $l_{03} \approx 0,3 d_{01}$ Type III

TABLE 1 – Dimensions

Type	d_{02}	d_{01}	$2\alpha_0$ $\pm 1^\circ$	h_{02}	$2\beta_0$ $\pm 2^\circ$	$2\gamma_0$ $\pm 4^\circ$	d_{04}	d_{05}
	mm	mm	degrees	mm	degrees	degrees	mm	mm
I	8	—	—	4	90	90	4,2	2,2
II	8	0,1	10	4	90	90	3,6	2,2
II	8	0,3	10	4	90	90	3,6	2,2
I	10	—	—	8	90	90	7,6	6,2
II	10	0,1	10	8	90	90	5,5	3,5
II	10	0,3	10	8	90	90	6,0	3,5
II	10	0,6	12	8	90	90	6,0	4,0
II	10	1,0	12	8	90	90	6,0	4,0
II	10	1,5	12	8	90	90	6,0	4,5
II	12	0,2	10	10	90	90	7,0	4,5
II	12	0,6	12	10	90	90	7,0	4,5
II	12	1,0	12	10	90	90	7,0	5,0
II	12	1,4	12	10	90	90	7,0	5,0
II	12	1,8	12	10	90	90	8,0	5,0
II	14	0,2	10	12	60	75	7,0	5,0
II	14	0,6	12	12	60	75	7,0	5,0
II	14	1,0	12	12	60	75	7,0	5,0
II	14	1,4	12	12	60	75	7,0	5,0
II	14	1,8	12	12	60	75	8,0	5,5
II	14	2,4	14	12	60	75	8,0	6,0
II	16	0,3	10	13	60	75	8,0	5,0
II	16	0,6	12	13	60	75	8,0	5,0
II	16	1,0	12	13	60	75	8,5	5,0
II	16	1,4	12	13	60	75	9,0	5,5
II	16	1,8	12	13	60	75	9,0	6,0
II	16	2,2	14	13	60	75	9,5	6,5
II	16	2,6	14	13	60	75	9,5	6,5
II	16	3,0	14	13	60	75	9,5	7,0
II	20	1,0	12	17	60	60	8,5	6,0
II	20	1,6	12	17	60	60	8,5	6,5
II	20	2,2	14	17	60	60	10,0	6,5
II	20	2,8	14	17	60	60	10,0	7,0
II	20	3,4	14	17	60	60	11,0	8,0
II ¹⁾	20	4,0	16	17	60	60	12,0	8,5
II ¹⁾	20	4,6	16	17	60	60	12,5	9,0
II	25	2,0	12	20	60	60	11,5	7,0
II	25	2,7	14	20	60	60	12,0	7,5
II	25	3,4	14	20	60	60	13,0	8,0
II ¹⁾	25	4,1	16	20	60	60	13,5	8,5
II ¹⁾	25	4,8	16	20	60	60	14,0	9,0
II ¹⁾	25	5,5	16	20	60	60	14,5	10,0
III	25	6,5	16	20	60	60	15,5	11,0
II	30	3,0	14	24	60	60	15,0	9,0
II	30	3,7	14	24	60	60	16,0	9,0
II ¹⁾	30	4,5	16	24	60	60	17,0	10,0
II ¹⁾	30	5,5	16	24	60	60	18,0	10,0
III	30	6,5	16	24	60	60	18,0	12,0
III	30	8,0	16	24	60	60	19,0	13,5
III	30	9,5	16	24	60	60	20,0	16,0

1) When diameter d_{01} is greater than 4 mm, type II may be replaced by type III in national standards.

FIGURE 1 – As sintered pellets for wire drawing dies

4.2 Tolerances on dimensions d_{02} , d_{01} and h_{02}

4.2.1 Tolerances on d_{02}

TABLE 2

Values in millimetres

d_{02}		Tolerances
from (incl.)	to (incl.)	
8	16	+ 0,6 + 0,2
20	30	+ 0,7 + 0,2

4.2.2 Tolerances on d_{01}

TABLE 3

Values in millimetres

d_{01}		Tolerances
from (incl.)	to (excl.)	
0,1	0,3	0 - 0,075
0,3	0,5	0 - 0,10
0,5	2,0	0 - 0,15
2,0	4,0	0 - 0,20
4,0	6,0	0 - 0,25
6,0	10,0	0 - 0,30

4.2.3 Tolerances on h_{02}

TABLE 4

Values in millimetres

h_{02}		Tolerances
from (incl.)	to (incl.)	
4	10	± 0,2
12	17	± 0,3
20	24	± 0,4

5 AS SINTERED PELLETS OF HARD METAL FOR STEEL ROUND BAR DRAWING DIES (code-letter C), NON-FERROUS ROUND BAR DRAWING DIES (code-letter D), STEEL TUBE DRAWING DIES (code-letter E) AND NON-FERROUS TUBE DRAWING DIES (code-letter F)

5.1 Dimensions

TABLE 5 – Dimensions

Values in millimetres

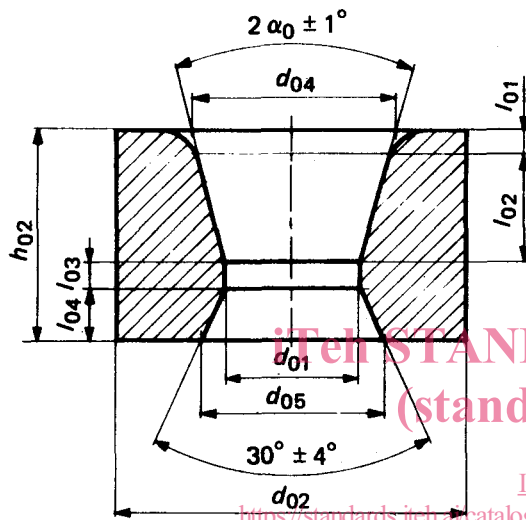


FIGURE 2 – As sintered pellet for bar or tube drawing die

NOTE – The values of dimensions d_{04} , l_{01} , l_{02} and l_{03} shall be fixed by agreement between user and manufacturer.

d_{02}	d_{01} ¹⁾ such that, for finished drawing dies one obtains :						h_{02}	l_{04}
	Types of drawing dies							
	Code-letter C		Code-letter D		Code-letters E and F			
	d_1 min.	d_1 max.	d_1 min.	d_1 max.	d_1 min.	d_1 max.		
25	—	—	9	12	10	12	20	5
30	9	13	11	14	11	14	24	5,5
35	12	16	13	18	13	18	24	5,5
40	15	19	17	21	17	22	24	5,5
45	18	22	20	25	21	26	25	6
50	21	25	24	28	24	30	25	6
55	24	28	27	32	28	34	27	6,5
60	27	31	30	36	32	38	27	6,5
65	29	34	34	40	36	42	27	6,5
70	32	37	38	44	40	45	30	7,5
75	35	41	42	48	43	50	30	7,5
80	39	45	46	52	48	55	30	7,5
85	43	49	50	56	53	58	33	8
90	47	53	54	60	56	62	33	8
95	—	—	58	64	60	67	33	8
100	51	61	62	68	65	70	35	8,5
105	—	—	65	72	68	75	35	8,5
110	—	—	—	—	73	78	38	8,5
120	—	—	—	—	74	88	38	9
130	—	—	—	—	84	97	40	9
140	—	—	—	—	93	106	40	9
150	—	—	—	—	102	115	40	9

1) d_{01} shall be determined when ordering, taking account of the minimum machining allowance : $d_{01} = d_1 - \text{machining allowance}$ (see table 6).

TABLE 6 – Machining allowance on d_{01}

Dimensions in millimetres

d_{02}		Machining allowance on d_{01}
from (incl.)	to (incl.)	
25	80	0,5
85	100	0,6
105	150	0,8

5.2 Tolerances to be applied to d_{02} , d_{01} and h_{02}

5.2.3 Tolerances on h_{02}

5.2.1 Tolerances on d_{02}

TABLE 7

Values in millimetres

d_{02}		Tolerances
from (incl.)	to (incl.)	
25	30	+ 0,7 + 0,2
35	150	± 1 %

TABLE 9

Values in millimetres

h_{02}		Tolerances
from (incl.)	to (incl.)	
20	27	± 0,4
30	40	± 0,5

5.2.2 Tolerances on d_{01}

TABLE 8

Values in millimetres

$d_{01}^{1)}$		Tolerances
from (incl.)	to (excl.)	
—	12	0 - 0,3
12	16	0 - 0,35
16	20	0 - 0,4
20	25	0 - 0,45
25	32	0 - 0,5
32	40	0 - 0,6
40	50	0 - 0,75
50	63	0 - 0,9
63	80	0 - 1,1
80	100	0 - 1,3
100	115	0 - 1,5

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1) The tolerance on d_{01} applies to the greatest measured value of d_{01} .