

INTERNATIONAL  
STANDARD

**ISO**  
**2804**

Second edition  
1996-12-15

---

---

**Wire, bar or tube drawing dies —  
As-sintered pellets of hardmetal (carbide) —  
Dimensions**

*Filières de tréfilage et d'étirage — Noyaux bruts en carbures métalliques  
durs — Dimensions*



Reference number  
ISO 2804:1996(E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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.

International Standard ISO 2804 was prepared by Technical Committee ISO/TC 29, *Small tools*.

This second edition cancels and replaces the first edition (ISO 2804:1973), (clause 3) of which (designation) has been technically revised.

STANDARDSISO.COM : Click to view the full PDF of ISO 2804:1996

© ISO 1996

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Organization for Standardization  
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

## 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 select dimensions will improve the machining conditions of drawing tool manufacturers in order to obtain drawing dies in conformity with ISO 1684.

STANDARDSISO.COM : Click to view the full PDF of ISO 2804:1996

This page intentionally left blank

STANDARDSISO.COM : Click to view the full PDF of ISO 2804:1996

# Wire, bar or tube drawing dies — As-sintered pellets of hardmetal (carbide) — Dimensions

## 1 Scope

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 of hardmetal, for wire, bar and tube drawing dies. It also gives the designation of as-sintered pellets.

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 1684.

## 2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1684:1975, *Wire, bar and tube drawing dies with hardmetal (carbide) core — Specifications.*

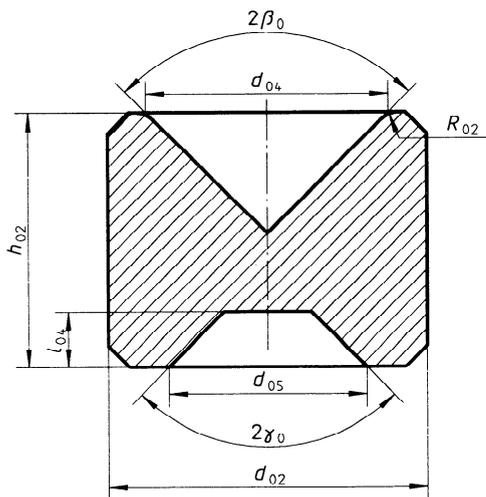
## 3 As-sintered pellets of hardmetal for steel wire drawing dies (code-letter A) for non-ferrous wire drawing dies (code-letter B)

### 3.1 Dimensions

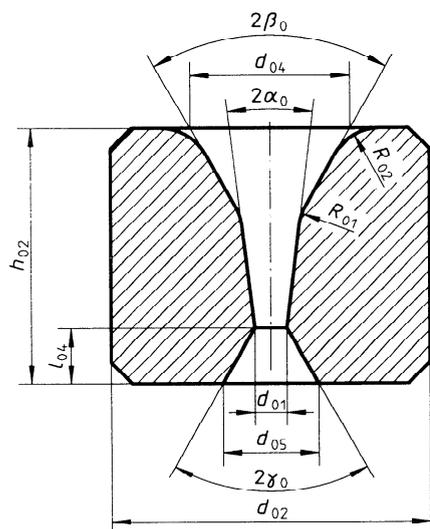
See figure 1 a), b) and c) and table 1.

Table 1 — Dimensions

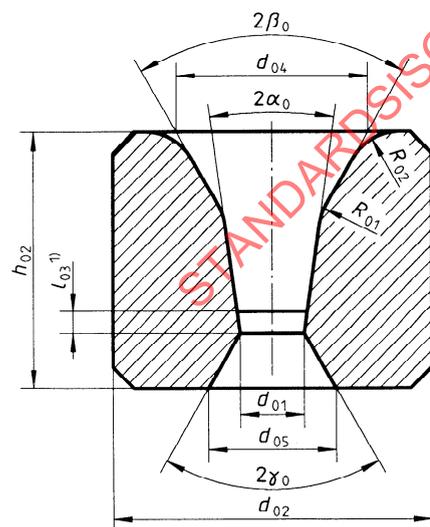
Type	$d_{02}$	$d_{01}$	$2\alpha_0$	$h_{02}$	$2\beta_0$	$2\gamma_0$	$d_{04}$	$d_{05}$
	mm	mm	degrees	mm	degrees	degrees	mm	mm
I	8	—	—	4	90	90	4,2	2,2
II	8	0,1	10	4	90	90	3,6	2,2
II	8	0,3	10	4	90	90	3,6	2,2
I	10	—	—	8	90	90	7,6	6,2
II	10	0,1	10	8	90	90	5,5	3,5
II	10	0,3	10	8	90	90	6	3,5
II	10	0,6	12	8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



a) Type I



b) Type II



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

c) Type III

NOTE — The values of dimensions  $l_{04}$ ,  $R_{01}$  and  $R_{02}$  shall be agreed by the customer and the supplier.

Figure 1 — As-sintered pellets for wire drawing dies

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

### 3.2 Tolerances to be applied to $d_{02}$ , $d_{01}$ and $h_{02}$

See tables 2, 3 and 4 respectively.

**Table 2 — Tolerances on  $d_{02}$**

Values in millimetres

$d_{02}$	Tolerances
$8 \leq d_{02} \leq 16$	+ 0,6 + 0,2
$20 \leq d_{02} \leq 30$	+ 0,7 + 0,2

**Table 3 — Tolerances on  $d_{01}$**

Values in millimetres

$d_{01}$	Tolerances
$0,1 \leq d_{01} < 0,3$	0 - 0,075
$0,3 \leq d_{01} < 0,5$	0 - 0,10
$0,5 \leq d_{01} < 2$	0 - 0,15
$2 \leq d_{01} < 4$	0 - 0,20
$4 \leq d_{01} < 6$	0 - 0,25
$6 \leq d_{01} < 10$	0 - 0,30

**Table 4 — Tolerances on  $h_{02}$**

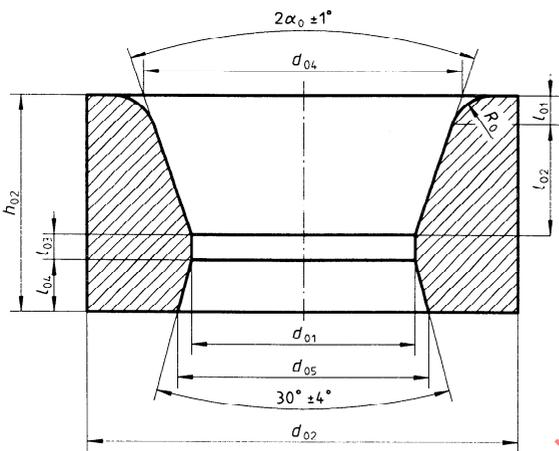
Values in millimetres

$h_{02}$	Tolerances
$4 \leq h_{02} \leq 10$	$\pm 0,2$
$12 \leq h_{02} \leq 17$	$\pm 0,3$
$20 \leq h_{02} \leq 24$	$\pm 0,4$

**4 As-sintered pellets of hardmetal 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)**

**4.1 Dimensions**

See figure 2 and tables 5 and 6.



**NOTES**

- 1 The values of  $2\alpha_0$  and  $R_0$  are not standardized.
- 2 The values of dimensions  $d_{04}$ ,  $d_{05}$ ,  $l_{01}$ ,  $l_{02}$  and  $l_{03}$  shall be agreed by the customer and the supplier.

**Figure 2 — As-sintered pellet for bar or tube drawing dies**

**Table 5 — Dimensions**

Values in millimetres

$d_{02}$	$d_{01}^{1)}$ such that, for finished drawing dies one obtains:						$h_{02}$	$l_{04}$
	Types of drawing dies							
	Code-letter							
	C		D		E and F			
	$d_1$		$d_1$		$d_1$			
	min.	max.	min.	max.	min.	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

$d_{02}$	Machine allowance on $d_{01}$
$25 \leq d_{02} \leq 80$	0,5
$85 \leq d_{02} \leq 100$	0,6
$105 \leq d_{02} \leq 150$	0,8

## 4.2 Tolerances to be applied to $d_{02}$ , $d_{01}$ and $h_{02}$

See tables 7, 8 and 9 respectively.

**Table 7 — Tolerances on  $d_{02}$**

$d_{02}$ mm	Tolerances	
	mm	%
$25 \leq d_{02} \leq 30$	+ 0,7 + 0,2	—
$35 \leq d_{02} \leq 150$	—	$\pm 1$

**Table 8 — Tolerances on  $d_{01}$**

Values in millimetres

$d_{01}$ <sup>1)</sup>	Tolerances
$d_{01} < 12$	0 - 0,3
$12 \leq d_{01} < 16$	0 - 0,35
$16 \leq d_{01} < 20$	0 - 0,4
$20 \leq d_{01} < 25$	0 - 0,45
$25 \leq d_{01} < 32$	0 - 0,5
$32 \leq d_{01} < 40$	0 - 0,6
$40 \leq d_{01} < 50$	0 - 0,75
$50 \leq d_{01} < 63$	0 - 0,9
$63 \leq d_{01} < 80$	0 - 1,1
$80 \leq d_{01} < 100$	0 - 1,3
$100 \leq d_{01} < 115$	0 - 1,5

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

**Table 9 — Tolerances on  $h_{02}$**

Values in millimetres

$h_{02}$	Tolerances
$20 \leq h_{02} \leq 27$	$\pm 0,4$
$30 \leq h_{02} \leq 40$	$\pm 0,5$