
INTERNATIONAL STANDARD



1684

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

Wire, bar and tube drawing dies — Specifications

Filières d'étirage et de tréfilage — Spécifications

First edition — 1975-03-15

Sample Document

get full document from standards.iteh.ai

UDC 621.778.073 : 003.62

Ref. No. ISO 1684-1975 (E)

Descriptors : tools, die plates, mechanical drawing, designation, marking, dimensions.

Price based on 14 pages

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.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 29 has reviewed ISO Recommendation R 1684 and found it technically suitable for transformation. International Standard ISO 1684 therefore replaces ISO Recommendation R 1684-1970 to which it is technically identical.

ISO Recommendation R 1684 was approved by the Member Bodies of the following countries :

Australia	Ireland	Spain
Czechoslovakia	Israel	Sweden
Egypt, Arab Rep. of	Italy	Thailand
France	Japan	Turkey
Germany	Netherlands	United Kingdom
Greece	Poland	U.S.S.R.
Hungary	Portugal	Yugoslavia
India	South Africa, Rep. of	

The Member Bodies of the following countries expressed disapproval of the Recommendation on technical grounds :

Austria	Switzerland
Belgium	U.S.A. *

The Member Bodies of the following countries disapproved the transformation of ISO/R 1684 into an International Standard :

Austria

* Subsequently, this Member Body approved the Recommendation.

CONTENTS

	Page
1 Scope and field of application	1
2 Designation	1
3 Marking	2
4 Wire drawing dies for steel (code-letter A) and wire drawing dies for non-ferrous metal (code-letter B)	3
5 Bar drawing dies for steel (code-letter C)	4
6 Bar drawing dies for non-ferrous metal (code-letter D)	5
7 Tube drawing dies for steel (code-letter E) and tube drawing dies for non-ferrous metal (code-letter F)	6
8 Shaped drawing dies for steel of square and flat section (code-letter L) and hexagon bar drawing dies for steel (code-letter R)	8
9 Shaped drawing dies for non-ferrous metal of square and flat section (code-letter N) and hexagon bar drawing dies for non-ferrous metal (code-letter S)	10
Annexes	
A — Comparison of the dimensions of bearing and bore for various types of drawing dies	13
B — French, English, German and Italian terminology	14

Sample Document

This page intentionally left blank

get full document from standards.iteh.ai

Wire, bar and tube drawing dies – Specifications

1 SCOPE AND FIELD OF APPLICATION

This International Standard, relating to wire, bar and tube drawing dies, lays down the main dimensions for a certain number of tool types, and specifies the codified designation of dies and the marking. Details not indicated are left to the discretion of the manufacturers or should be specified in national standards.

NOTE – It may be supplemented later by the standardization of several special profiles.

This International Standard includes, in annex A, a comparison of bearing and bore dimensions for various types of drawing dies, and, in annex B, a terminology, in several languages, for characteristic elements of pellets and cases.

Dimensions of hard metal rough pellets intended to be used in dies of application groups A to F are laid down in ISO 2804.

2 DESIGNATION

A short designation of an ISO tool is provided in the following order :

2.1 Reference letters of application :

Wire drawing dies for steel	A
Wire drawing dies for non-ferrous metal	B
Bar drawing dies for steel	C
Bar drawing dies for non-ferrous metal	D
Tube drawing dies for steel	E
Tube drawing dies for non-ferrous metal	F
Shaped drawing dies for steel of square and flat section	L
Shaped drawing dies for non-ferrous metal of square and flat section	N
Hexagon bar drawing dies for steel	R
Hexagon bar drawing dies for non-ferrous metal	S

2.2 Reference letters for the shape of the case :

Cylindrical shape	Z
Conical shape	K

2.3 Diameter of pellet d_2 in mm

2.4 Diameter of case d_3 in mm

2.5 Dimensions of bearing or bore

A to F : Diameters of bearing	d_1 in mm
L and N : Boring section	$a \times b$ in mm
R and S : Hexagon size	a in mm

NOTE – For countries using the inch system of measurement, the converted inch dimensions given in 2.3 to 2.5 can be substituted for the metric dimensions in the designation.

2.6 Drawing angle¹⁾ (in degrees) or radius²⁾ (in mm) 2α

2.7 Mark ISO

Examples of codified designations :

- For steel wire A, of cylindrical shape Z, diameter of pellet $d_2 = 14$ mm, diameter of case $d_3 = 28$ mm, diameter of bearing $d_1 = 3,5$ mm and drawing angle $2\alpha = 16^\circ$:

AZ 14/28/3.5/16¹⁾ ISO

- For non-ferrous metal bars D, of conical shape K, diameter of pellet $d_2 = 25$ mm, diameter of case $d_3 = 75$ mm, diameter of bearing $d_1 = 9$ mm, radius of the generator circle of the toric surface, R :

DK 25/75/9/99/ $R^{2)}$ ISO

- For non-ferrous metal of square and flat section N, of cylindrical shape Z, diameter of pellet $d_2 = 45$ mm, diameter of casing $d_3 = 100$ mm, boring section $a \times b = 15$ mm $\times$ 15 mm and drawing angle $2\alpha = 20^\circ$:

NZ 45/100/15 $\times$ 15/20 ISO

1) Where the bore profile is not specified, the user must supply details of the material to be drawn (for example : mild steel up to 0,4 % carbon; copper; aluminium alloys, etc.) together with the method of drawing (for example : dry or wet drawing; push-pointing; floating or fixed mandrels, etc.).

2) To replace the conical surface of the top angle 2α by a toric surface, angle 2α in the designation should be replaced by the symbol “99” accompanied by the radius value, in millimetres, of the generator circle of the toric surface.

3 MARKING

Wire, bar and tube drawings dies conforming to this International Standard shall carry the following details on their cases :

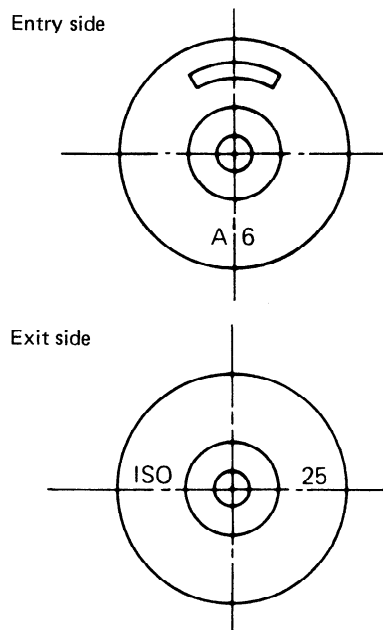
3.1 On the entry side

- manufacturer's trademark;
- short designation¹⁾ of the type of bar or wire drawing dies (Reference letter according to 2.1);
- dimensions of bearing or bore according to 2.5.

3.2 On the exit side

- the mark "ISO";
- the diameter of the pellet d_2 .

Example :

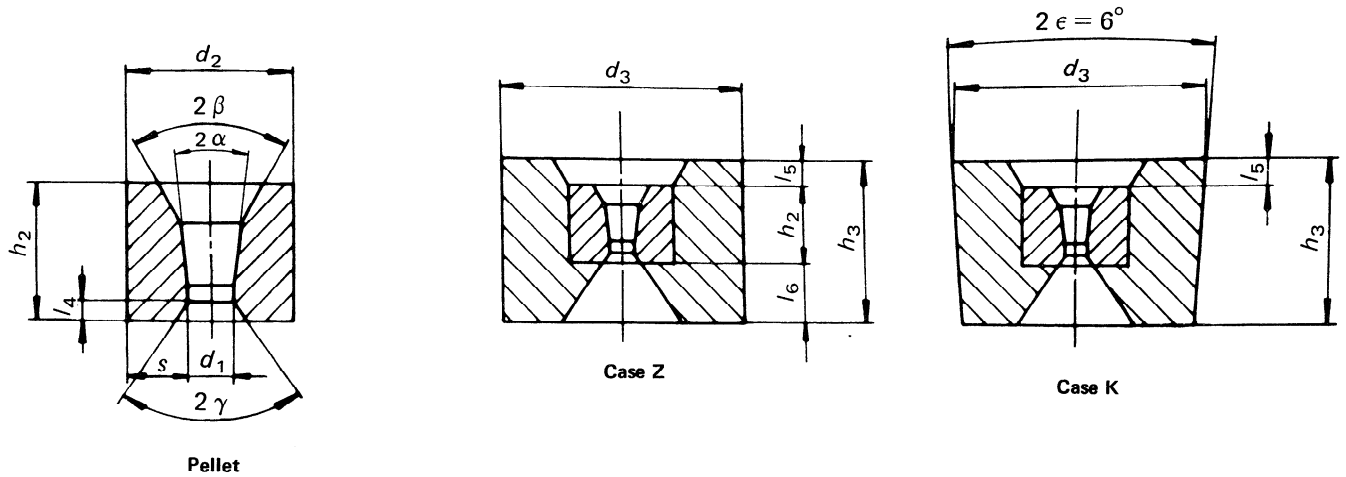


Sample Document

get full document from standards.iteh.ai

1) The short designations can be completed by adding details or special requirements.

4 WIRE DRAWING DIES FOR STEEL (CODE-LETTER A) AND WIRE DRAWING DIES FOR NON-FERROUS METAL (CODE-LETTER B)



Dimensions in millimetres

Pellet										Case				
d_2	h_2	Form A			Form B			l_4 max.	2β	2γ	d_3	h_3	l_5	$l_6^{3)}$
		d_1 min.	d_1 max.	$s_1^{1)}$ min.	d_1 min.	d_1 max.	$s_1^{1)}$ min.							
8	4	0,1	1	3,5	0,1	1,5	3,25	1	90°	90°	28	12	3	5
10	8	0,2	2	4	0,2	2,5	3,75	2				16		
12	10	0,3	3	4,5	0,3	3,5	4,25	2,5				20		
14	12	0,4	4	5	0,4	4,5	4,75	3	60°	75°	28 ²⁾	22	3	7
											43			
16	13	0,5	5	5,5	0,5	6	5	3,5			43	25	4	8
20	17	1,5	6,5	6,75	1,5	8	6	4,5	60°	60°	43	32	5	10
25	20	2,5	9	8	2,5	10,5	7,25	5			53	35		
											75 ²⁾			
30	24	3,5	12	9	3,5	13	8,5	6			75	40	6	

$$1) s_{\min} = \frac{d_2 - d_1 \max}{2}$$

- 2) The value 28 instead of 43 is more particularly recommended for wire drawing of copper wire.
The value 75 instead of 53 is more recommended for wire drawing of steel wires of higher resistance.

- 3) Only for information.

NOTES

- $d_1 \min$ = minimum and preferable diameter of bearing at the first application.
- $d_1 \max$ = maximum diameter of bearing which is recommended for drawing steel wire having a tensile strength up to 90 hbar in the drawn condition and for drawing wires of non-ferrous metal having a tensile strength up to 60 hbar in the drawn condition.
- The diameter of bearing d_1 required by the user should be chosen within the limits $d_1 \max$ and $d_1 \min$. The tolerance of bearing should be specified by the user.
- The case may be of straight (code-letter Z) or tapered form (code-letter K). When a tapered form is required, an included angle of $2\epsilon = 6^\circ$ will be provided, in which event d_3 is the diameter of the larger end of the taper.