INTERNATIONAL STANDARD

ISO 14145-1

Second edition
2016-10-15

Roller ball pens and refills —

Part 1: General use

Stylos rollers et recharges —

Partie 1: Utilisation générale

Reference number
ISO 14145-1:2016(E)

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 10, *Technical product documentation*.

This second edition cancels and replaces the first edition (ISO 14145-1:1998), of which it constitutes a minor revision.

It also incorporates the Amendment ISO 14145-1:1998/Amd 1:2011.

ISO 14145 consists of the following parts, under the general title *Roller ball pens and refills*:

— *Part 1: General use*

— *Part 2: Documentary use (DOC)*

Introduction

This part of ISO 14145 is applicable to roller ball pens for general use. ISO 14145-2 is applicable to roller ball pens for documentary use.

For documentary use, some requirements, in addition to those for general use, are necessary

a) to assure the legibility of lettering, and

b) for the handling and storage of documents during long periods of time (these requirements are often discussed with the archivist).

An example of documentary use is the preparation of documents that are required as evidence.

Furthermore, pens which meet the requirements for documentary use produce lines which are more resistant to modification (e.g. attempts to falsify a document) than those for general use.

Roller ball pens and refills —

Part 1:
General use

1 Scope

This part of ISO 14145 establishes minimum quality requirements for roller ball pens (refillable and non-refillable) and refills for general use.

Additional requirements for roller ball pens for documentary use are given in ISO 14145-2.

2 Normative references

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

ISO 105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour*

ISO 105-B02, *Textiles — Tests for colour fastness — Part B02: Colour fastness to artificial light: Xenon arc fading lamp test*

ISO 534, *Paper and board — Determination of thickness, density and specific volume*

ISO 535, *Paper and board — Determination of water absorptiveness — Cobb method*

ISO 536, *Paper and board — Determination of grammage*

ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness)*

ISO 2144, *Paper, board and pulps — Determination of residue (ash) on ignition at 900 degrees C*

ISO 5627, *Paper and board — Determination of smoothness (Bekk method)*

ISO 6588, *Paper, board and pulps — Determination of pH of aqueous extracts*

ISO 12756, *Drawing and writing instruments — Ball point pens and roller ball pens — Vocabulary*

3 Terms and definitions

For the purposes of this document, the definitions given in ISO 12756 apply.

4 Requirements

4.1 Tip classification

Tips shall be classified according to the ball diameter (see Table 1).

Table 1 — Tip classification

Dimensions in millimetres

Tip classification (line width)	Tip code	Ball diameter
Extra fine	EF	Ø < 0,55
Fine	F	0,55 ≤ Ø < 0,75
Medium	M	0,75 ≤ Ø < 1,00
Broad	B	1,00 ≤ Ø

4.2 Shapes and dimensions of refills

Refills shall be classified into types A, B, C and D. The shapes and dimensions of types A to C are given in Figure 1 and Table 2. Refills with shapes and dimensions other than those specified in Figure 1 and Table 2 are designated type D.

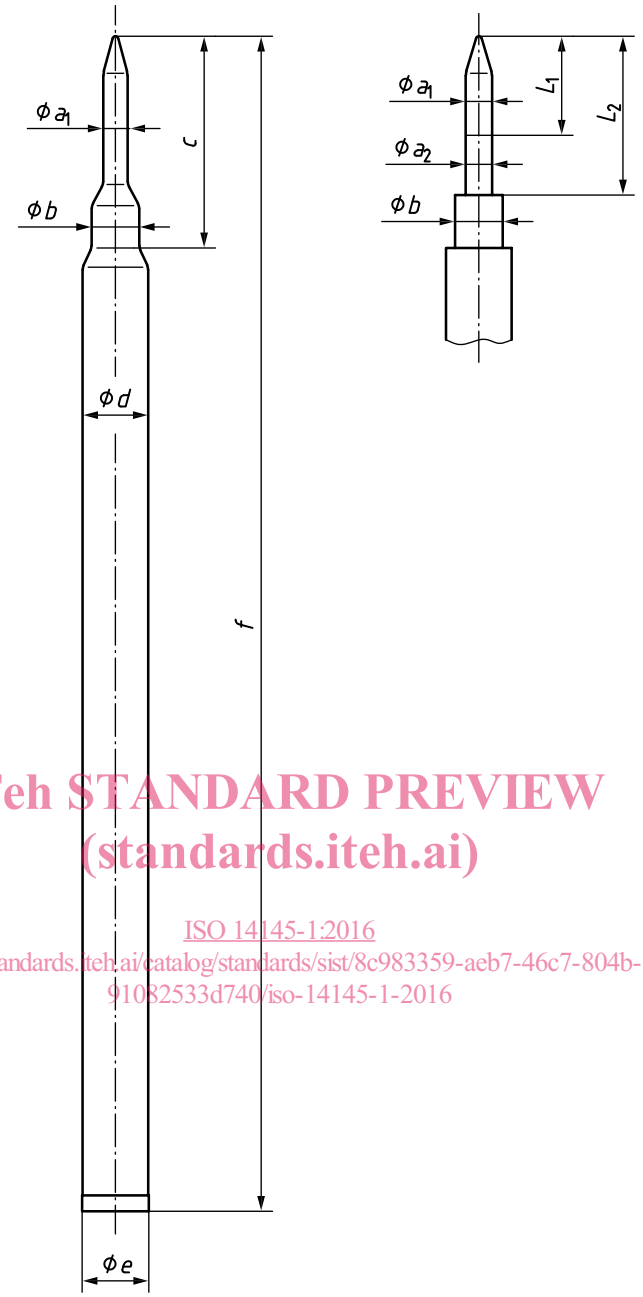

Figure 1 — Refill types A, B and C

Table 2 — Refill types A, B and C

Dimensions in millimetres

Type code	a_1[a]	L_1	a_2	L_2	b	c	d	e[b]	f
A	2,3 ± 0,1	—	—	—	4,5 ± 0,1	20 ±1	6,2 ± 0,1	6,3 ± 0,3	111 ± 2
B	2,3 ± 0,1	—	—	—	4,5 ± 0,1	20 ± 1	6,2 ± 0,1	6,3 ± 0,3	87 ± 2
C	2,5 ± 0,05	9 ± 0,5	$2,5\ ^{+0,60}_{-0,05}$	15 ± 0,5	4,5 ± 0,05	20 ± 0,5	6,3 ± 0,15	—	110 ± 1

[a] Denotes a diameter of a tip holder.

[b] Denotes outside diameter of an end plug.