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Ball point pens and refills

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Foreword

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Writing Instruments Manufacturers Association (JWIMA)/Japanese Standards Association (JSA) with a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act. This edition replaces the previous edition (**JIS S 6039**:2006), which has been technically revised.

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Ball point pens and refills

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 12757-1** : 2017, Edition 3 and **ISO 12757-2** : 1998, Edition 1 with some modifications of the technical contents to reflect the actual usage of the products in Japan.

The vertical lines on both sides and dotted underlines indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard specifies the requirements for ball point pens and refills for general and documentary use (hereafter referred to as ball point pens and refills, respectively).

NOTE The International Standards corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 12757-1 : 2017 *Ball point pens and refills — Part 1 : General use*

ISO 12757-2 : 1998 *Ball point pens and refills — Part 2 : Documentary use (DOC)* (overall evaluation : MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standards and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS K 0050 *General rules for chemical analysis*

JIS K 0116 *General rules for atomic emission spectrometry*

JIS K 0121 *General rules for atomic absorption spectrometry*

JIS K 6253-3 *Rubber, vulcanized or thermoplastic — Determination of hardness — Part 3 : Durometer method*

JIS K 8085 *Ammonia solution (Reagent)*

JIS K 8101 *Ethanol (99.5) (Reagent)*

JIS K 8180 *Hydrochloric acid (Reagent)*

JIS L 0804 *Grey scale for assessing change in colour*

NOTE Corresponding International Standard : ISO 105-A02 *Textiles — Tests*

for colour fastness — Part A02 : Grey scale for assessing change in colour

JIS L 0841 Test methods for colour fastness to daylight

JIS L 0843 *Test methods for colour fastness to xenon arc lamp light*

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

JIS P 8118 *Paper and board — Determination of thickness, density and specific volume*

NOTE Corresponding International Standard : ISO 534 *Paper and board — Determination of thickness, density and specific volume*

JIS P 8119 *Paper and board — Determination of smoothness by Bekk method*

NOTE Corresponding International Standard : ISO 5627 *Paper and board — Determination of smoothness (Bekk method)*

JIS P 8124 *Paper and board — Determination of grammage*

NOTE Corresponding International Standard : ISO 536 *Paper and board — Determination of grammage*

JIS P 8140 *Paper and board — Determination of water absorptiveness — Cobb method*

NOTE Corresponding International Standard : ISO 535 *Paper and board — Determination of water absorptiveness — Cobb method*

JIS P 8151 *Paper and board — Determination of roughness/smoothness (air leak methods) — Print-surf method*

NOTE Corresponding International Standard : ISO 8791-4 *Paper and board — Determination of roughness/smoothness (air leak methods) — Part 4 : Print-surf method*

JIS P 8252 *Paper, board and pulps — Determination of residue (ash) on ignition at 900 degrees C*

NOTE Corresponding International Standard : ISO 2144 : 1997 *Paper, board and pulps — Determination of residue (ash) on ignition at 900 degrees C*

JIS S 6060 Writing and marking instruments — Specification for caps to reduce the risk of asphyxiation

JIS Z 8703 Standard atmospheric conditions for testing

JIS Z 8803 Methods for viscosity measurement of liquid

3 Terms and definitions

For the purpose of this Standard, the following terms and definitions apply.

3.1

ball pen

pen with a writing fluid feeding system based on a rotatable ball writing tip integrated either within the pen itself or within a refill (see 3.4)

3.2

ball point pen ink

ink of high viscosity such that the difference between the viscosity during the rotation of the tip, i.e. writing, and that during resting, i.e., not writing is small

3.3

ball point pen

ball pen for writing using the ball point pen ink

3.4

refill

long and narrow container to the end of which a writing device is attached

It is an identifiable assembly of components, usually removable from a complete pen, with which it is possible to write independently of the complete pen, but which lacks either characteristics or components which should make it suitable for use as a pen.

4 Classification

4.1 Classification according to use and structure

The ball point pens shall be classified as shown in Table 1 according to their use and structure.

Table 1 Classification according to use and structure

Classification according to use and its code	Classification according to structure
For general use	Non-refillable Refillable
For documentary use (DOC)	Non-refillable Refillable
NOTE An example of documentary use is the preparation for documents that are required as evidence. For this purpose, in addition to the requirements for pens for general use, pens for documentary use are required to ensure legibility of lettering, be suitable for handling and storage of documents during long periods of time and thus be more resistant to modification (e.g. attempts to falsify a document) than those for general use. The symbol “DOC” is the abbreviation for “Documentary use”.	

4.2 Classification of refills according to shape and dimensions

Refills shall be classified into nine types (A1, A2, B, D to F, G1, G2 and H) according to their shapes and dimensions as specified in Clause 6.

4.3 Classification according to line width and ball diameter

Ball point pens and refills shall be classified as shown in Table 2 according to the line width and ball diameter.

Table 2 Classification according to line width and ball diameter

Unit: mm		
Classification according to line width	Code	Ball diameter
Extra fine	EF	Under 0.65
Fine	F	0.65 or over to and excl. 0.85
Medium	M	0.85 or over to and excl. 1.05
Broad	B	1.05 or over

5 Quality

5.1 Viscosity of ball point pen ink

When tested in accordance with 9.3.1, the apparent viscosity of ball point pen ink shall be not less than 1 000 mPa·s.

5.2 Quality of ball point pen and refill

When tested in accordance with 9.3, the quality of ball point pens and refills shall satisfy the requirements in Table 3.

Table 3 . Quality of ball point pen and refill

Performance	For general use	For documentary use	Test method specified in
Writing performance	Smooth writing shall start within 20 cm and the writing distance shall be at least 300 m without obvious starving or fluctuation of line intensity.		9.3.2
Strike through	No strike through shall be evident.		9.3.3
Drying time	Shall satisfy a) or b) : a) the line shall be found non-smearing; b) there shall be no sign of transfer of written lines.		9.3.4 a) 9.3.4 b)
Reproducibility	The reproduced line shall be visible.		9.3.5
Water resistance	The line shall remain visible.		9.3.6
Light resistance	The line shall remain visible.		9.3.7
Shelf life	The requirement for writing performance shall be met.		9.3.8
Erasure resistance	—	The surface of the testing paper shall show clear evidence of damage before the line is rendered invisible.	9.3.9
Ethanol resistance	—	The line shall remain visible.	9.3.10
Hydrochloric acid resistance	—	The line shall remain visible.	9.3.11
Ammonium hydroxide resistance	—	The line shall remain visible.	9.3.12
Bleaching resistance	—	The line shall remain visible.	9.3.13
Harmful materials a)	The ball point pen ink shall not contain more than : 60 mg/kg of antimony, 25 mg/kg of arsenic, 1 000 mg/kg of barium, 75 mg/kg of cadmium, 60 mg/kg of chromium, 90 mg/kg of lead, 60 mg/kg of mercury and 500 mg/kg of selenium.		9.3.14
Note a) Applies to products designed for or clearly only intended for children aged 14 years or younger.			

5.3 Safety requirements for caps

Ball point pens with caps shall satisfy the specifications for caps to reduce the risk of asphyxiation specified in **JIS S 6060**.

6 Shape, dimensions and structure of refill

The shape and dimensions of refills shall be as given in Table 4 to Table 7. Refills of other shapes and dimensions than given in these tables shall be categorized as Type H.

Rough sketches showing the structures of refill and tip (writing device at the pen extremity) are given in Figure 1 for information, with generally used names of each part.