INTERNATIONAL STANDARD

ISO 27668-2

First edition
2009-02-01

Gel ink ball pens and refills —

Part 2: Documentary use (DOC)

Stylos à bille à encre gel et recharges —

Partie 2: Utilisation documentaire (DOC)

Reference number
ISO 27668-2:2009(E)

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Published in Switzerland

Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

ISO 27668-2 was prepared by Technical Committee ISO/TC 10, *Technical product documentation*.

ISO 27668 consists of the following parts, under the general title *Gel ink ball pens and refills*:

— *Part 1: General use*

— *Part 2: Documentary use (DOC)*

Introduction

This part of ISO 27668 is applicable to gel ink ball pens for documentary use.

Part 1 of ISO 27668 is applicable to gel ink ball pens for general 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 over 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.

The International Organization for Standardization (ISO) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning aqueous gel ink-filled ballpoint pens.

The holder of this patent right has assured ISO that he is willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with ISO. Information may be obtained from:

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Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those identified above. ISO shall not be held responsible for identifying any or all such patent rights.

Gel ink ball pens and refills —

Part 2:
Documentary use (DOC)

1 Scope

This part of ISO 27668 establishes minimum quality requirements for gel ink ball pens (refillable or non-refillable) and refills for documentary use.

Basic requirements for gel ink ball pens for general use are given in ISO 27668-1.

2 Normative references

The following referenced documents are indispensable for the application of this document. 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 27668-1:2009, *Gel ink ball pens and refills — Part 1: General use*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 27668-1 apply.

4 Requirements

4.1 General requirements

See the general requirements given in ISO 27668-1:2009 (4.1 to 4.3.4, 4.3.7 and 4.3.8).

4.2 Erasure resistance

The surface of the testing paper shall show clear evidence of damage before the line is rendered invisible when tested as specified in 6.2.1.

4.3 Ethanol resistance

The line shall remain visible when tested as specified in 6.2.2.

4.4 Hydrochloric acid resistance

The line shall remain visible when tested as specified in 6.2.3.

4.5 Ammonium hydroxide resistance

The line shall remain visible when tested as specified in 6.2.4.

4.6 Bleaching resistance

The line shall remain visible when tested as specified in 6.2.5.

4.7 Water resistance

The line shall remain visible when tested as specified in 6.2.6.

4.8 Light resistance

The line shall remain visible when tested as specified in 6.2.7.

5 Test equipment, accessories and solutions

5.1 Test equipment and accessories

See ISO 27668-1.

5.2 Test solutions

5.2.1 Ethanol solution, 50 % aqueous solution (volume fraction).

5.2.2 Hydrochloric acid solution, 10 % aqueous solution (mass fraction).

5.2.3 Ammonium hydroxide solution, 10 % aqueous solution (mass fraction).

5.2.4 Bleaching solution, 3 % freshly made aqueous solution of chloramin T[1] (mass fraction).

6 Testing

6.1 General test

6.1.1 Sampling

See ISO 27668-1:2009, 6.1.

6.1.2 Climatic conditions

See ISO 27668-1:2009, 6.2.

6.1.3 General test procedure

See ISO 27668-1:2009, 6.3.

1) Standard designation: *N*-chloro-*p*-toluene sulfonamide sodium salt. IUPAC designation: *N*-chloro-4-metyl-benzene sulfonamide sodium salt.

6.2 Additional tests

6.2.1 Erasure resistance test

Keep a fresh machine-written test piece approximately 5 cm long from the sheet provided in 6.1.3 under the climatic conditions specified in 6.1.2 for 10 min (to allow to dry), and then erase a portion of line with the eraser specified in ISO 27668-1:2009, 5.3. Examine the surface of the erased section of the paper for compliance with 4.2.

6.2.2 Ethanol resistance test

Keep a machine-written test piece approximately 5 cm long from the sheet provided in 6.1.3 under the climatic conditions specified in 6.1.2 for 1 h (to allow to dry), and then immerse in the ethanol solution specified in 5.2.1 for 10 min. Remove and allow to air dry. Examine the written line of the test piece for compliance with 4.3.

6.2.3 Hydrochloric acid resistance test

Keep a machine-written test piece approximately 5 cm long from the sheet provided in 6.1.3 under the climatic conditions specified in 6.1.2 for 1 h (to allow to dry), then immerse in the hydrochloric acid solution specified in 5.2.2 for 24 h. Remove and immerse in distilled water or de-ionized water for 10 min and allow to air dry. Examine the written line of the test piece for compliance with 4.4.

6.2.4 Ammonium hydroxide resistance test

Keep a machine-written test piece approximately 5 cm long from the sheet provided in 6.1.3 under the climatic conditions specified in 6.1.2 for 1 h (to allow to dry), then immerse in the ammonium hydroxide solution specified in 5.2.3 for 24 h. Remove and immerse in distilled water or de-ionized water for 10 min and allow to air dry. Examine the written line of the test piece for compliance with 4.5.

6.2.5 Bleaching resistance test

Keep a machine-written test piece approximately 5 cm long from the sheet provided in 6.1.3 under the climatic conditions specified in 6.1.2 for 10 min (to allow to dry), then immerse in the bleaching solution specified in 5.2.4 for 5 min. Remove and immerse in distilled water or de-ionized water for 10 min and allow to air dry. Examine the written line of the test piece for compliance with 4.6.

6.2.6 Water resistance test

Keep a machine-written test piece approximately 5 cm long from the sheet provided in 6.1.3 under the climatic conditions specified in 6.1.2 for 2 h (to allow to dry), then immerse in distilled water or de-ionized water for 24 h. Remove and allow to air dry. Examine the written line of the test piece for compliance with 4.7.

6.2.7 Light resistance test

Expose a machine-written test piece approximately 5 cm long from the sheet provided in 6.1.3 to the light source of the apparatus specified in ISO 27668-1, 5.5, together with the blue wool references specified in ISO 105-B02 until the contrast between the unexposed and the exposed blue wool reference 5 becomes equal to grey scale grade 4 specified in ISO 105-A02. Examine the written line of the test piece for compliance with 4.8.

7 Designation and marking

7.1 Designation

The designation of a gel ink ball pen or refill shall comprise, in the given order, the following elements:

a) the description block (e.g. “gel ink ball pen” or “gel ink ball refill”);

b) the number of this part of ISO 27668 (i.e. ISO 27668-2);

c) the type classification code for refills (see 4.2 of ISO 27668-1:2009);

d) the tip classification code (UF, EF, F, M or B; see Table 1 of ISO 27668-1:2009); and

e) an additional indicator for documentary use (DOC).

EXAMPLE 1 A disposable gel ink ball pen complying with the requirements of this part of ISO 27668, with medium sized tip (M), shall be designated as follows:

Gel ink ball pen ISO 27668-2 M DOC

EXAMPLE 2 A gel ink ball refill complying with the requirements of this part of ISO 27668, type B, with a broad sized tip (B), shall be designated as follows:

Gel ink ball refill ISO 27668-2 B B DOC

7.2 Marking

For identification, disposable gel ink ball pens or refills shall be marked as follows:

a) the name of the manufacturer, supplier or trademark;

b) the designation in accordance with 7.1 [except 7.1 a), which is optional]; and

c) the date of manufacture (year/month, in full or coded) or the batch number.

8 Test report

The test report shall include the following information:

a) reference to this part of ISO 27668;

b) the date and place of test;

c) precise identification of the samples (see 7.2);

d) identification of the following variable or optional requirements:

   1) test atmosphere (see 6.2 of ISO 27668-1:2009),

   2) writing angle and writing pitch (see 5.1 of ISO 27668-1:2009),

   3) reproducibility apparatus (see 5.4 of ISO 27668-1:2009), and

   4) light test apparatus (see 5.5 of ISO 27668-1:2009);

e) the results in accordance with this part of ISO 27668, as well as a confirmation of permitted application for documentary use;

f) any deviations from the specified procedures (see Clauses 5 and 6); and

g) the identification and signature of the tester.