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Technical product documentation (TPD) — Technical drawings for glassware

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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.

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 ISO documents 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 10, *Technical product documentation*, Subcommittee SC 6, *Mechanical engineering documentation,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/SS F01, *Technical drawings*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 6414:1982), which has been technically revised.

The main changes to the previous edition are as follows:

— structure updated according to the ISO/IEC Directives, Part 2;

— referenced documents and Bibliography updated;

— addition of transparency in terms of observation and jacketed vessel (see 4.2 and Figure 1);

— surface treatment indication that is not unique to glassware deleted;

— indication of interchangeable conical ground joints updated (see Figure 3);

— indication of interchangeable spherical ground joints and figure added (see 6.2 and Figure 4);

— indication of external and internal diameters for thin walls added;

— diameter indications for thin-walled glassware updated (see Figures 7 to 9);

— Figure 18 b), necessary transition line, added for comparison with Figure 18 a), simplified drawing;

— Figure 17 from the previous edition updated to amend the font size of proportions (see Figure 19).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

In this document the figures merely illustrate the text and should not be considered as design examples. For this reason the figures are simplified and are not to scale.

For uniformity, all figures in this document are in first angle projection. It should be understood that alternative projection methods could have been used without prejudice to the principles established.

Technical product documentation (TPD) — Technical drawings for glassware

1 Scope

This document establishes rules and conventions for particular use with technical drawings on glassware, for example, laboratory glassware or glassware used in other technical fields.

Optical parts are not, however, included herein.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 128-34:2001, *Technical product drawings — General principles of presentation — Part 34: Views on mechanical engineering drawings*

ISO 128-50:2001, *Technical drawings — General principles of presentation — Part 50: Basic conventions for representing areas on cuts and sections*

ISO 129-1:2018, *Technical product documentation (TPD) — Presentation of dimensions and tolerances — Part 1: General principles*

ISO 383, *Laboratory glassware — Interchangeable conical ground joints*

ISO 641, *Laboratory glassware — Interchangeable spherical ground joints*

ISO 4793, *Laboratory sintered (fritted) filters — Porosity grading, classification and designation*

ISO 10209, *Technical product documentation — Vocabulary — Terms relating to technical drawings, product definition and related documentation*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10209 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 General

4.1 As a general principle, all glassware shall be drawn as if it were non-transparent (opaque), according to ISO 128-34:2001, Clause 15.

4.2 In terms of observation of calibration, font and pointer, the outer glassware shall be drawn as a transparency. An example of an inner component and a jacket component glassware drawing is shown in