INTERNATIONAL STANDARD

ISO 16496

First edition
2016-02-01

Laboratory glassware — Vacuum-jacketed vessels for heat insulation

Verrerie de laboratoire — Récipients à double enveloppe à vide pour isolation thermique

Reference number
ISO 16496:2016(E)

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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).

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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 48, *Laboratory equipment*.

Laboratory glassware — Vacuum-jacketed vessels for heat insulation

1 Scope

This International Standard recommends dimensions and specifies requirements and test methods for laboratory glassware manufactured from borosilicate glass 3.3 and provided with a vacuum jacket for thermal insulation. It covers Dewar vessels, vacuum-jacketed reaction vessels and vacuum-jacketed columns intended for laboratory use and laboratory related applications. Typical dimensions are given in Tables 1 to 5.

This International Standard does not apply to large scale production equipment and equipment operated with pressures of more than 0,1 bar above atmospheric pressure.

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 383, *Laboratory glassware — Interchangeable conical ground joints*

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

ISO 718, *Laboratory glassware — Thermal shock and thermal shock endurance — Test methods*

ISO 3585, *Borosilicate glass 3.3 — Properties*

ISO 4803, *Laboratory glassware — Borosilicate glass tubing*

ISO 4790, *Glass-to-glass sealings — Determination of stresses*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
Dewar flask
glass vessel with vacuum jacket for thermal insulation, designed for keeping substances at a controlled temperature within a range from -200 °C to +200 °C

Note 1 to entry: See 8.1 for restrictions on the use of Dewar flasks.

3.2
cryo vessel
vacuum jacketed vessel made of materials other than glass

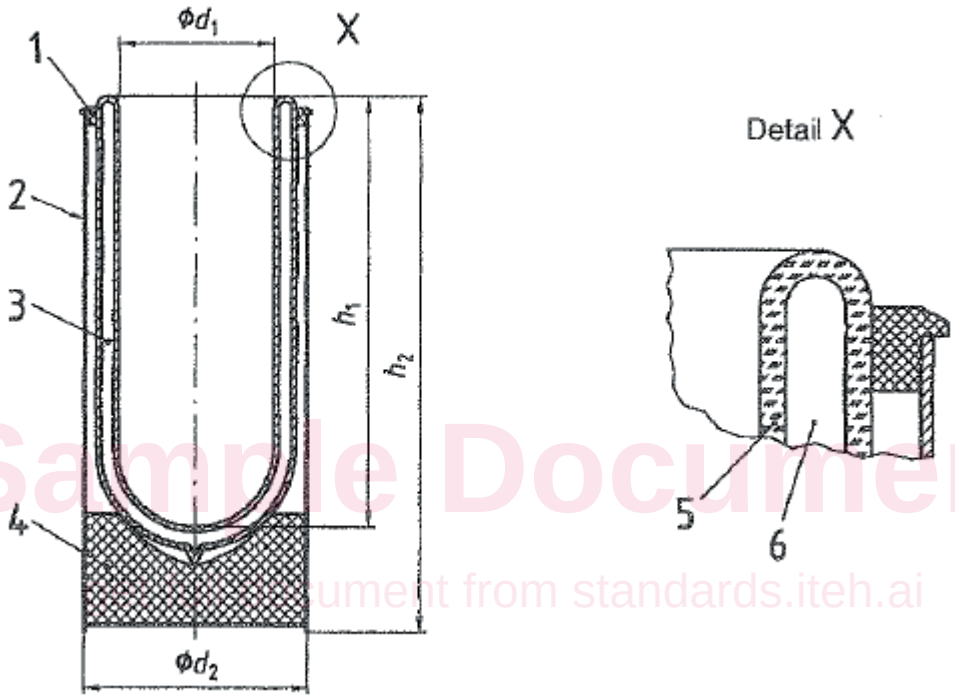
3.3
column
cylindrical vessel for the thermal separation of substances in a laboratory or pilot plant

4 Dimensions

The designs shown in Figures 1 to 5 are for illustrative purposes only. The dimensions given in Tables 1 to 5 are for guidance, other dimensions being permissible, provided the resulting capacities comply with the scope of this International Standard.

4.1 Dewar flasks

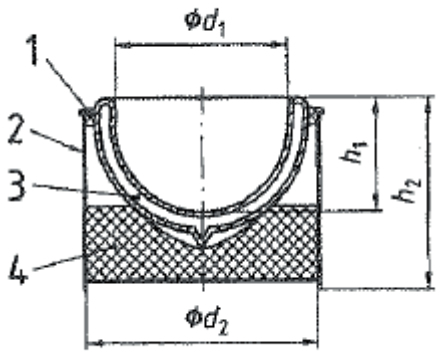
Dewar flasks may have a cylindrical, spherical or dished shape, as shown exemplarily in Figures 1 to 3. Other flask designs are permitted, e.g. flasks with flat bottom or rolled-on or integral flange.



Key

1 soft rubber spacer
2 protective housing
3 Dewar flask
4 plastic foam cushion
5 glass body
6 evacuated space

Figure 1 — Cylindrical Dewar flask



Key

1 soft rubber spacer
2 protective housing
3 Dewar flask
4 plastic foam cushion

Figure 2 — Dished Dewar flask