



Designation: E205 – 96 (Reapproved 2022)

Standard Specification for Glass and Oxygen Combustion Flask¹

This standard is issued under the fixed designation E205; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers the flask and closure, with a fixed platinum sample holder, used in the original oxygen-flask combustion procedures (1, 2).²

NOTE 1—This specification was originally developed by the Committee on Microchemical Apparatus, Division of Analytical Chemistry, American Chemical Society (3). Specifications for types of apparatus that utilize electric (2, 4-7) or infrared (8) ignition are not included because of lack of experience with these.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.3 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*³

E920 Specification for Commercially Packaged Laboratory Apparatus

¹ This specification is under the jurisdiction of ASTM Committee E41 on Laboratory Apparatus and is the direct responsibility of Subcommittee E41.01 on Laboratory Ware and Supplies.

Current edition approved Jan. 1, 2022. Published February 2022. Originally approved in 1962. Last previous edition approved in 2016 as E205 – 96(2016). DOI: 10.1520/E0205-96R22.

² The boldface numbers in parentheses refer to the list of references appended to this specification.

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

E921 Specification for Export Packaged Laboratory Apparatus

E1133 Practice for Performance Testing of Packaged Laboratory Apparatus for United States Government Procurements

E1157 Specification for Sampling and Testing of Reusable Laboratory Glassware

3. Combustion Flasks

3.1 Combustion flasks shall be of borosilicate glass and shall conform to the requirements shown in Fig. 1 for the 300 and 500-ml sizes, respectively.

NOTE 2—Larger flasks (1000 and 2000-ml sizes) have been used, particularly when analyses are done on tissue.

4. Flask Closure

4.1 The flask closure, that is used with either size flask, shall be of borosilicate glass and shall be provided with a fixed platinum sample holder and shall conform to the requirements shown in Fig. 1. **Warning**—Although broad usage has shown oxygen flask combustion to be generally safe, precautions, such as use of gloves, goggles, shields, and so forth, should be taken when using these flasks for this purpose.

5. Sampling and Testing

5.1 Refer to Specification E1157.

6. Packaging

6.1 Select from one of Specification E920, Specification E921, or Practice E1133.

7. Keywords

7.1 combustion; flask; glass; oxygen

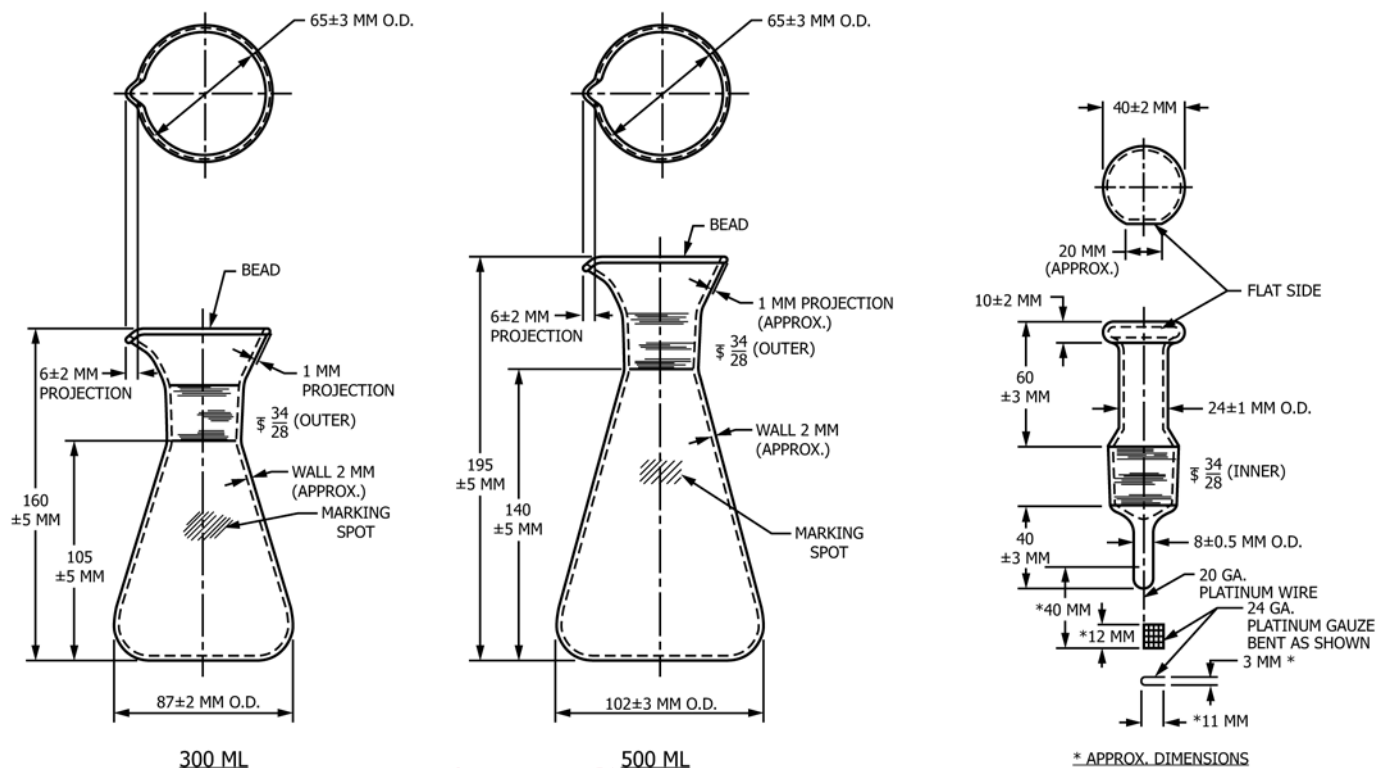


FIG. 1 Oxygen-Combustion Flasks and Closure

REFERENCES

- (1) Schöniger, W., "Eine mikroanalytische Schnellbestimmung von Halogen in organischen Substanzen," *Mikrochimica Acta*, Issue 1, 1955, p. 123. "Die mikroanalytische Schnellbestimmung von Halogenen und Schwefel in organischen Verbindungen," *Mikrochimica Acta*, Issues 1–6, 1956, p. 869.
- (2) Steyermark, Al, *Quantitative Organic Microanalysis*, 2nd Ed., Academic Press, New York, NY, 1961, p. 292.
- (3) Committee on Microchemical Apparatus, Division of Analytical Chemistry, American Chemical Society, "Report on Recommended Specifications for Microchemical Apparatus, Oxygen Flask Combustion," *Analytical Chemistry*, Vol 33, November 1961, p. 1789.
- (4) Cheng, F. W., and Smullin, C. F., "An Apparatus for the Flask Combustion of Organic Compounds Adaptable to Carbon Determination," *Microchemical Journal*, Vol 4, Issue 2, 1960, p. 213.
- (5) Juvet, R. S., and Chiu, J., "Determination of Carbon in Organic Substances by an Oxygen-Flask Method," *Analytical Chemistry*, Vol 32, January 1960, p. 130.
- (6) Martin, A. J., and Deveraux, H., "Electric Ignition in the Schöniger Oxygen Flask Method," *Analytical Chemistry*, Vol 31, December 1959, p. 1932.
- (7) Weir, H. E., "A Compact Igniter and Safety Shield for the Improved Schöniger Apparatus," *Microchemical Journal*, Vol 6, Issue 1, 1962, p. 109.
- (8) Ogg, C. L., Kelly, R. B., and Connelly, J. A., "Apparatus for Safe, Oxygen-Filled Flask Combustion," *Proceedings, 1961 International Symposium on Microchemical Techniques, Microchemical Journal, Symposium Series*, edited by Cheromis, N. D., Interscience Publishers, New York, NY, London, England, Vol II, 1962, p. 427.

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org). Permission rights to photocopy the standard may also be secured from the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, Tel: (978) 646-2600; http://www.copyright.com/