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.

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Standard Specification for Blood Sedimentation Tube, Wintrobe, Glass, Reusable[1]

This standard is issued under the fixed designation E961; 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 reusable blood sedimentation tubes suitable for determining sedimentation rates and the volume of packed red blood cells.

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 standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *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:*[2]

E438 Specification for Glasses in Laboratory Apparatus

E920 Specification for Commercially Packaged Laboratory Apparatus

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. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *reusable*—capable of being used again.

3.1.2 *Wintrobe*—the surname of the individual responsible for the design of the Wintrobe tube and the method of use.[3]

4. Classification

4.1 This specification covers a tube that is intended to be used until it is no longer considered a functional device for the purpose intended.

5. Materials

5.1 *Glass*—The tubes made to this specification shall be fabricated from borosilicate glass, Type I, Class B, or soda-lime glass, Type II, in accordance with Specification E438.

6. Dimensions and Graduations

6.1 *Dimensions*—The tube shall be made of tubing with an outside diameter (O.D.) of 7.0 to 8.0 mm with an inside diameter (I.D.) of 2.9 to 3.3 mm. The uniformity of the bore shall be ±0.1 mm throughout the tube. The tube shall be 110 to 117 mm long and have a graduated scale of 105 ± 0.25 mm from the inside bottom of the tube. The tube shall be legibly marked with the manufacturer's or vendor's name or mark and possess a frosted area for marking purposes.

6.2 *Graduation Scale*—The tube shall be graduated 105 ± 0.25 mm in 1-mm divisions and numbered every 1 cm with two sets of numerals. One set of graduation numerals shall be from 0 to 9 cm down the left side of the graduation scale and the other set of g (20 to 25 °C) for 15 min. Remove tube from the solution and thoroughly rinse in tap water followed by distilled water. Dry the tube by rubbing vigorously, 5 to 10 strokes, with a laboratory cloth or tissue. This appearance of the markings should be the same as before the test, when judged by eye under normal room lighting.

6.3 *Resistance to Centrifugal Force Test*—Fill the tube with water to the top graduation line and place in a centrifuge. The speed and dimensions of centrifuge headshall be such that the inside bottom of the tube is subjected to arelative centrifugal

[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.

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[2] 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.

[3] Wintrobe, Maxwell M., "Laboratory Evaluation of Erythrocytes," *Clinical Hematology*, Seventh Ed., 1974, pp. 109 –134.

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force of (RCF) not less than 2 500 gravities. Calculate the relative centrifugal force as follows:

RCF	=	relative centrifugal force in gravities,
RCF	=	$00001118 \times r \times N^2$ gravities,
r	=	rotating radius to inside or outside of tube in centimetre, and
N	=	rotating speed in revolutions per minute.

6.4 For additional sampling and testing data, see Specification E1157.

7. Packaging

7.1 For packaging, select from either Specification E920, Specification E921, or Practice E1133.

8. Keywords

8.1 blood; glass; reusable; sedimentation rate; wintrobe

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