



Designation: E211 – 82 (Reapproved 2022)

Standard Specification for Cover Glasses and Glass Slides for Use in Microscopy¹

This standard is issued under the fixed designation E211; 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 describes glass covers and slides for use in routine microscopy.

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. Glass

2.1 **Cover Glass**—Glass shall be colorless, transparent glass, sufficiently free of pits, bubbles, or cloudiness so as not to interfere with end-use performance. Such defects shall be regarded as major defects and limited accordingly. Inspection shall be by the unaided eye in a good light viewing a single cover glass at a time. Refractive index at sodium D line (589.3 nm) shall be 1.523 ± 0.005 .

2.2 **Glass Slides**—Glass slides covered by this specification shall consist of colorless, transparent glass which may have a slight greenish tint when viewed edgewise. It shall be sufficiently free of pits, nicks, bubbles, striae, scratches, and cloudiness when observed by the unaided eye so as not to impair end-use performance. Index of refraction at the sodium D line (589.3 nm) shall be 1.50 to 1.54.

COVER GLASSES

3. Dimensions

3.1 **General Use**—The dimensions of cover glass for general use shall be as follows:

3.1.1 **Square**—22 mm on a side.

3.1.2 **Rectangular**—22 by 30, 22 by 40, 22 by 50, or 22 by 60 mm and 24 by 30, 24 by 40, 24 by 50, and 24 by 60 mm.

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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3.1.3 **Thickness**—The thickness shall be as follows:

Number	Thickness, mm
1	0.13 to 0.17
1½ ^A	0.16 to 0.19
2	0.17 to 0.25

^A Specified as optimum by most microscope manufacturers.

3.2 **Limited Use**—The following sizes while recognized, find limited use and are generally not as readily available.

3.2.1 **Square**—18, 24 and 25 mm on a side.

3.2.2 **Rectangular**—24 by 55 mm, 35 by 50 mm, 45 by 50 mm, 20 by 26 mm and 20 by 40 mm.

3.2.3 **Circular**—18, 22 or 25 mm in diameter.

3.2.4 **Thickness**—Thickness Number 0, 0.08 to 0.13 mm.

3.3 **Tolerance**—Tolerance on dimensions other than thickness shall be ± 0.5 mm.

3.4 **Blood Counting Chambers**—The dimensions of cover glasses for blood counting chambers shall be as follows:

Length, mm ^A	width, mm ^A	Thickness, mm ^B
20	21	0.4 or 0.6
20	26	0.4 or 0.6
25	28	0.4 or 0.6

^A The tolerance on length and width shall be ± 1.0 mm.

^B The tolerance on thickness shall be ± 0.06 mm.

4. Planeness

4.1 **General Use**—Cover glass may be expected to pass the test as described in 14.1.

4.2 **Blood Counting Chambers**—Cover glass shall be plane within 0.002 mm on both sides and shall pass the planeness test as described in 16.2.

5. Corrosion Resistance

5.1 While no corrosion tests for cover glasses are hereby required, when desired for critical use, use the test in 14.2.

GLASS SLIDES

6. Dimensions

6.1 **General Use**:

6.1.1 **Size**—75.5 by 25.5 ± 0.8 mm.

6.1.2 **Thickness A**— 1.0 ± 0.15 mm.

Thickness B— 1.2 ± 0.15 mm.

6.2 **Darkfield and Interference Microscopy**: