



Standard Specification for Microscope Objective Thread¹

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GENERAL AND HISTORICAL

1. Scope

1.1 This standard covers the screw thread used for mounting the objective assembly to the body or lens turret of microscopes. It is based on, and intended to be interchangeable with, the screw thread introduced and adopted many years ago by the Royal Microscopical Society of Great Britain, generally known as the “RMS thread” and now almost universally accepted as the basic standard for microscope objective mountings. Formal recognition, however, has been extremely limited.

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

2. Referenced Documents

2.1 *ASA Standard:*²

ASA B1.6–1944 Truncated Whitworth Threads

2.2 *ANSI Standard:*³

B1.7–1949 Nomenclature, Definitions, and Letter Symbols for Screw Threads

3. Terminology

3.1 The nomenclature, definitions, and letter symbols used in this standard are in conformance with ANSI B1.7–1949.

4. Truncated Whitworth Thread

4.1 Because of its British origin, the basic thread possesses the British Standard Whitworth form, having an included angle

of 55° and rounded crests and roots. This same full Whitworth form is also employed as the design, or maximum material, form by the British. The presence (American National) standard, however, the design thread form established in American War Standard ASA B1.6–1944, has been adopted.

5. Pitch Diameter Allowance and Tolerances

5.1 The pitch diameter allowance and tolerances promulgated in June 1924 for the RMS thread were subsequently applied by most American manufacturers to their truncated versions and found to be acceptable. Uniformity of practice with regard to the allowances and tolerances for the other diameters never materialized.

6. Attributes of Good Fit

6.1 Experience has established that the principal attributes of a good fit for microscope objective threads are:

6.1.1 Adequate clearance to afford protection against binding due to the presence of foreign particles or minor thread crest damage.

6.1.2 Sufficient depth of thread engagement to assure security in the short lengths of engagement commonly encountered.

6.1.3 Allowances for limited eccentricities so that centralization and squareness of the objective are not influenced by such errors in manufacture.

7. Need for Good Fit

7.1 The need for the above characteristics stems principally from the inherent longevity of optical equipment and the repeated use to which objective threads are subjected. The measures necessary to provide these properties precluded adoption of the allowances and tolerances recommended for threads of this pitch in the American War Standard ASA B1.6–1944. The more significant departures from the standard are:

7.1.1 A larger allowance on the pitch diameter of the external thread.

7.1.2 Smaller tolerances on the major diameter of the external thread and the minor diameter of the internal thread.

¹ This specification is under the jurisdiction of ASTM Committee E41 on Laboratory Apparatus and is the direct responsibility of Subcommittee E41.06 on Laboratory Instruments and Equipment.

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² Discontinued 1951, Available from National Institute of Standards and Technology (NIST), 100 Bureau Dr., Stop 1070, Gaithersburg, MD 20899-1070, <http://www.nist.gov>.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.