



Designation: B830 – 97 (Reapproved 2003)

## Standard Specification for Uniform Test Methods and Frequency<sup>1</sup>

This standard is issued under the fixed designation B830; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This specification covers a standard basis for uniform testing and frequency to determine physical and electrical compliance for aluminum and copper drawing stock, and aluminum and copper conductors.

1.2 The values stated in inch-pound units are standard, with the exception of resistivity. The SI equivalents of inch-pound units may be approximate.

### 2. Referenced Documents

2.1 The following documents of the issue in effect on date of material purchase form a part of this specification to the extent referenced herein.

2.2 *ASTM Standards*:<sup>2</sup>

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

2.3 *Other Documents*:

National Bureau of Standards Handbook 100, Copper Wire Tables<sup>3</sup>

Canadian Standards Association CAN/CSA-ISO 9000-1-94 Quality Management Quality Assurance Standards Part 1: Guidelines for Selection and Use<sup>4</sup>

2.4 *ANSI Standards*:<sup>5</sup>

ANSI/ISO/ASQC A3534-1-1993 Statistics-Vocabulary and Symbols-Probability and General Statistical Terms

ANSI/ISO/ASQC A3534-2-1993 Statistics-Vocabulary and Symbols-Statistical Quality Control

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee B01 on Electrical Conductors and is the direct responsibility of Subcommittee B01.02 on Methods of Test and Sampling Procedure.

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<sup>2</sup> 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.

<sup>3</sup> Available from National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Rd., Springfield, VA 22161.

<sup>4</sup> Available from Canadian Standards Association (CSA), 178 Rexdale Blvd., Toronto, ON Canada M9W1R3.

<sup>5</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

ANSI/ISO/ASQC Q9004-1-1994 Quality Management and Quality System Elements-Guidelines

ANSI/ASQC C1-1996 Specification of General Requirements for a Quality Program

ANSI/ASQC Z1.4-1993 Sampling Procedures and Tables for Inspection by Attributes

### 3. Terminology

3.1 *Definitions of Terms Specific to This Standard*:

3.1.1 *acceptable quality level (AQL)*—the maximum percent nonconforming (or the maximum number of nonconformities per hundred units) that, for purposes of sampling inspection, can be considered as a process average.

3.1.2 *average outgoing quality (AOQ)*—the average quality of outgoing product, including all accepted lots or batches, plus all lots or batches not accepted after such lots or batches have been effectively 100 % inspected and all nonconforming units replaced by conforming units.

CPK—Process Performance Index.

3.1.3.1 *Discussion*—

*Capability in Relation to Spec Mean:*

USL	=	5.0
LSL	=	1.0
MEAN	=	2.0
Standard deviation ( $\sigma$ )	=	0.5

CPK tells the capability of a process based upon the worst case view of the data.

The equation is:

CPK = the lesser of:

$$\frac{(USL - MEAN)}{3\sigma} \text{ or } \frac{(MEAN - LSL)}{3\sigma} \quad (1)$$

For example:

$$CPK = \frac{(5.0-2.0)}{1.5} \text{ or } \frac{(2.0-1.0)}{1.5} \quad (2)$$

= 2.0 or 0.67

= 0.67

A negative value for CPK indicates that the mean is outside the specification limits. A CPK of zero indicates that the mean is equal to one of the specification limits. A CPK between 0 and 1.0 means that part of the 6 sigma limits falls outside the