Designation: D3715/D3715M – 98 (Reapproved 2019)

Standard Practice for Quality Assurance of Pressure-Sensitive Tapes[1]

This standard is issued under the fixed designation D3715/D3715M; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This practice contains uniform quality assurance provisions for pressure-sensitive tapes and establishes sampling plans and procedures for acceptance inspection.

1.2 *Limitations:*

1.2.1 This practice only includes procedures for when an upper or a lower specification limit is given. It does not provide for double, both minimum and maximum, specification limits.

NOTE 1—When double specification limits are given (applies to variables testing only), use may be made of Table C-3 and Example C-3 of ANSI/ASQC Z1.9.

1.2.2 The variables sampling plans apply to a single quality characteristic. Having obtained the sample and the responses to the physical property tests, acceptance is determined on one quality characteristic at a time. The process is repeated for each additional characteristic.

1.2.3 The variables sampling plans require that the response to each quality characteristic is normally distributed either directly or by transformation. If this is not known, the potential user of this practice should seek the counsel of someone with sufficient understanding of statistical techniques to provide that information.

1.3 The values stated in either SI or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system must be used independently, without combining values in any way.

1.4 *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.*

1.5 *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]

D996 Terminology of Packaging and Distribution Environments

2.2 *ANSI/ASQC Standards:*

ANSI/ASQC A2 Terms, Symbols, and Definitions for Acceptance Sampling[3]

ANSI/ASQC A3 Quality Systems Terminology[4]

ANSI/ASQC Q94 Quality Management and Quality System Elements—Guidelines[4]

ANSI/ASQC Z1.4 Sampling Procedures and Tables for Inspection by Attributes[4]

ANSI/ASQC Z1.9 Sampling and Tables for Inspection by Variables for Percent Defective

3. Terminology

3.1 *Definitions*—General terms in this practice are defined in Terminology D996, ANSI/ASQC A2, and ANSI/ASQC A3.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *acceptability criterion*—the comparison made between a factor, number, or constant found in the sampling plan and the examination or test result information from a single quality characteristic to determine if the lot should be accepted or rejected. For inspection by attributes the acceptability criterion is a comparison with the acceptability constant found in Table 1.

3.2.2 *acceptable quality level (AQL)*—a nominal value expressed in terms of percent defective or defects per hundred units, whichever is applicable, specified for a given group of defects of a product (see ANSI/ASQC A2).

[1] This practice is under the jurisdiction of ASTM Committee D10 on Packaging and is the direct responsibility of Subcommittee D10.14 on Tape and Labels.

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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] Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

[4] Available from American Society for Quality (ASQ), 310 West Wisconsin Ave., Milwaukee, WI 53203.

TABLE 1 Sampling Plans for Inspection by Variables[A] (Variability Unknown—Single Specification Limit)

Lot Size (100-m² [yd²] Units)			Sample Size	Acceptable Quality Levels (Normal Inspection)							Sample Size	Acceptable Quality Levels (Reduced Inspection)					
				.65	1.00	1.50	2.50	4.00	6.50	10.00		1.00	1.50	2.50	4.00	6.50	10.00
				k	*k*	*k*	*k*	*k*	*k*	*k*		*k*	*k*	*k*	*k*	*k*	*k*
1	to	300	3	I	↓	↓	0.587	0.502	0.401	0.296	3	I	0.587	0.502	0.401	0.296	0.178
301	to	500	4	I	0.651	0.598	0.525	0.450	0.364	0.276	3	I	0.587	0.502	0.401	0.296	0.178
				↓								I					
501	to	800	5	0.663	0.614	0.565	0.498	0.431	0.352	0.272	3	I	0.587	0.502	0.401	0.296	0.178
801	to	1 300	7	0.613	0.569	0.525	0.465	0.405	0.336	0.266	3	↓	0.587	0.502	0.401	0.296	0.178
1 301	to	3 200	10	0.755	0.703	0.650	0.579	0.507	0.424	0.341	4	0.598	0.525	0.450	0.364	0.276	0.176
3 201	to	8 000	15	0.792	0.738	0.684	0.610	0.536	0.452	0.368	5	0.565	0.498	0.431	0.352	0.272	0.184
8 001	to	22 000	25	0.815	0.779	0.723	0.647	0.571	0.484	0.398	7	0.525	0.465	0.405	0.336	0.266	0.189
				1.00	1.50	2.50	4.00	6.50	10.00	15.00							
				Acceptable Quality Levels (tightened inspection)													

[A] This table contains information extracted from Tables A-2 (inspection level I), C-1, and C-2 from ANSI/ASQC Z1.9.
↓ = Use the first sampling plan below arrow including the larger sample size and the *k* value.
k = Acceptability constant.

3.2.3 *defect*—any nonconformance of the unit of product to specified requirements; it is classified according to its seriousness.

3.2.4 *defects per hundred units—of any given quantity of units of product*, is the number of defects contained therein divided by the total number of units of product, the quotient multiplied by one hundred (one or more defects being possible in any unit of product). Expressed as an equation:

$$\text{Defects per hundred units} = \frac{\text{number of defects} \times 100}{\text{number of units inspected}} \quad (1)$$

3.2.5 *defective unit*—a unit of product that contains one or more defects.

3.2.6 *end item*—the actual product or commodity being sold under the material specification. It is in its most complete form and may be either packed for shipping or at a production stage just preceding packing. It may or may not be the same as the unit of product defined in 3.2.17.

3.2.7 *end-item examination*—the inspection of the roll of tape for those characteristics which are either easily discernible by visual inspection or can be simply measured by a hand rule (such as width). All characteristics of this type are considered as attributes.

3.2.8 *end-item testing*—the inspection of the unit of product that involves measurement of physical properties on a continuous scale. All characteristics of this type are considered as variables.

3.2.9 *inspection*—the process of measuring, examining, testing, gaging, or otherwise comparing the unit of product with the applicable requirements (see ANSI/ASQC A2).

3.2.10 *inspection by attributes*—inspection whereby either the unit of product is classified simply as defective or nondefective or the number of defects in the unit of product is counted, with respect to a given requirement or set of requirements (see ANSI/ASQC A2).

3.2.11 *inspection by variables*—inspection wherein a specified quality characteristic on a unit of product is measured on a continuous scale, such as pounds, inches, feet per second, etc., and a measurement is recorded (see ANSI/ASQC A2).

3.2.12 *inspection lot*—a collection of units of product from which a sample is drawn and inspected to determine compliance with the acceptability criteria.

3.2.13 *material specification*—that document covering a product or set of products and specifying the parameters that define the product(s) (see ANSI/ASQC A3).

3.2.14 *percent defective*—the number of defective units of product contained therein, divided by the total number of product, the quotient multiplied by one hundred (a unit being considered defective if it contains one or more defects). Expressed as an equation:

$$\text{Percent defective} = \frac{\text{number of defective units} \times 100}{\text{number of units inspected}} \quad (2)$$

3.2.15 *quality characteristic—for inspection*, that characteristic of a unit of product that is actually measured to determine conformance with a given requirement.

3.2.16 *specification limit(s)*—the requirement that a quality characteristic should meet. This requirement may be expressed as an upper specification limit, or a lower specification limit; called herein a single specification limit.

3.2.17 *unit of product*—the entity of product inspected in order to determine its measurable quality characteristic. For this practice the unit of product will usually be a roll of tape. The unit of product may or may not be the same as the unit of purchase, supply production, or shipment. It is also called sample unit in this practice.

4. Significance and Use

4.1 The quality of a tape product is determined by the quality systems of the tape producer, including all processes involved in the engineering and production of the product. It is recommended that appropriate sections of ANSI/ASQC Q94 be included in a producer's quality systems. This practice does not intend to standardize these systems. A producer's reputation, a producer's certification of conformance, or evidence of a producer's quality systems are often sufficient to ensure a purchaser or user of a consistent quality. Acceptance sampling is useful when an objective basis of contract or specification conformance is desired.