

ANSI/ASQC Standard Q3-1988

AMERICAN NATIONAL STANDARD

Sampling Procedures and Tables for Inspection of Isolated Lots by Attributes



AMERICAN SOCIETY FOR QUALITY
611 East Wisconsin Avenue
Milwaukee, Wisconsin 53202

ANSI/ASQC Standard Q3-1988

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U.S. TAG to ISO TC69 on Statistical Methods***

***(U.S. Technical Advisory Group for International Organization for Standardization Technical
Committee 69 on Applications of statistical methods)***

ABSTRACT

Sampling Procedures and Tables for Inspection of Isolated Lots by Attributes is an acceptance sampling system to be used when one or more lots that are isolated or separated from a continuous stream of lots are submitted for acceptance. For this purpose the quality levels referenced in this standard are indexed by Limiting Quality (LQ).

The LQ represents the quality of a lot the consumer does not wish to accept. The probability of acceptance of a lot which has a quality equal to or worse than the LQ is purposely low. Plans provide for the judgment of lots based on the percent nonconforming or the nonconformities per hundred items.

The procedures of this standard differ from those of ANSI/ASQC Z1.4 *Sampling Procedures and Tables for Inspection by Attributes* which is appropriate for a continuous stream of lots with an Acceptable Quality Level (AQL) specified.

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FOREWORD

(This foreword is not a part of American National Standard *Sampling Procedures and Tables for Inspection of Isolated Lots by Attributes*.)

This standard indexes tables by Limiting Quality (LQ) values, a quality level which a consumer wishes not to accept. The indexing by LQ values identified by the 0.5, 0.8, 1.25, 2.0, 3.15, and 5.0 series, which is different from the Acceptable Quality Level (AQL) values used in ANSI/ASQC Z1.4, helps to distinguish between LQ- and AQL-oriented specifications. The AQL represents a quality level for which the probability of lot acceptance is high, whereas LQ represents a quality level for which the probability of lot acceptance is low.

Many of the sampling plans and lot sizes are consistent with ANSI/ASQC Z1.4

This standard complements ANSI/ASQC Z1.4-1981, which applies primarily to a continuing stream of lots, but which, by means of Tables VIA and VIB, provides for inspection of isolated lots indexed by LQ values. Tables VIA and VIB of ANSI/ASQC Z1.4 have been difficult to apply due to the indexing method using the AQL and due to insufficient instructions on how to convert LQ values to AQL values.

The procedures and tables of this standard are similar to those presented in ISO 2859/2 (formerly ISO 7362) and are based on the work of the International Organization for Standardization Technical Committee 69, Applications of statistical methods, and the work presented in a paper entitled, "Single Sampling Plans Indexed by LQLs that Are Compatible with the Structure of MIL-STD 105D," by Acheson J. Duncan, August B. Mundel, A. Blanton Godfrey, and Valerie A. Partridge, in the *Journal of Quality Technology* 12, No. 1 (January 1980).

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Sampling Procedures and Tables for Inspection of Isolated Lots by Attributes

0. INTRODUCTION

When purchasing or accepting an isolated lot, the customer may specify a Limiting Quality (LQ). An LQ sampling plan specifies a quality the purchaser wishes to accept infrequently. Therefore, the risk of accepting a lot containing so many nonconforming units that the LQ obtains must be small.

There are certain precautions that a vendee must exercise in specifying an LQ, and there are likewise precautions that a vendor must exercise when accepting an order which specifies an LQ.

It must be recognized by both vendor and vendee that a lot containing a fraction nonconforming equal to or worse than the LQ has a very low probability of being accepted. To provide a satisfactory relationship between the producer and the purchaser, the lot shipped must have a very high probability of acceptance, (P_a). The lot must therefore be the result of a process in which the fraction nonconforming is small when compared to the specified LQ. For this reason, a summary of sampling plan properties for the sampling plans of Table A1 are given in Table A2. Table A2 contains the quality levels associated with $P_a = 95\%$ for each LQ indexed sampling plan.

A vendor who is producing a series of lots, one or a few of which are to be sent to a customer who will consider them as isolated lots, must also know the process levels that have a high probability of acceptance. Tables B are provided to present the AQL values (from ANSI/ASQC Z1.4) which have a high probability of acceptance as isolated lots shipped from a series of lots at specified LQ values.

1. PURPOSE

This publication establishes sampling plans and procedures for inspection of isolated lots by attributes. The sampling plans contained herein are indexed by the same lot sizes used in ANSI/ASQC Z1.4 *Sampling Procedures and Tables for Inspection by Attributes*. When specified by the responsible authority,* this publication shall be referenced in the specification,

contract, inspection instructions, or other documents, and the provisions set forth herein shall govern. The "responsible authority" shall be designated in one of the above documents, as agreed to by the purchaser and seller or producer and user.

2. SCOPE**2.1 Application**

Sampling plans designated in this publication are applicable, but not limited, to inspection of the following:

- a. end items
- b. components and raw materials
- c. services
- d. materials in process
- e. supplies in storage
- f. data or records
- g. administrative procedures

These plans are intended primarily for the inspection of isolated lots or batches. Type A lots are lots which both consumer and producer consider to be isolated. (Type A lots include mixed lots and lots with different date codes.) When Type A lots are to be sampled, Table A1 shall be used. Type B lots are lots which the producer considers or knows to be a lot or part of a lot from a continuous production series, but which the consumer receives as an isolated lot with no preceding or follow-on lots. When Type B lots are to be sampled, Tables B1-B10 shall be used, provided that acceptable evidence of process control is presented. When no such evidence is presented the vendee is advised to use the sampling plans of Table A1.

2.2 Inspection

Inspection is the process of measuring, examining, testing, or otherwise comparing the unit of product with the requirements.

*The responsible authority may be the contracting officer or his representative, or the purchaser's management as identified in a contract, agreement, or specification.