

ANSI/ASQC S1-1996

AMERICAN NATIONAL STANDARD

An Attribute Skip-Lot Sampling Program



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[Reaffirmation of ANSI/ASQC S1-1987]

*Prepared by
American Society for Quality Standards Committee
for
American National Standards Committee Z-1 on Quality Assurance*

An American National Standard Approved on January 11, 1996

An Attribute Skip-Lot Sampling Program provides procedures for reducing the inspection effort on products that satisfy supplier and production qualification criteria. The standard is to be used only with ANSI/ASQC Z1.4-1993.

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Foreword

(This Foreword is not part of the American National Standard ANSI/ASQC S1-1996, *An Attribute Skip-Lot Sampling Program*.)

This standard is a reaffirmation of ANSI/ASQC S1-1987. The purpose of this standard is to provide a procedure for reducing the inspection effort on products submitted by those suppliers who have demonstrated their ability to control, in an effective manner, all facets of product quality and consistently produce superior quality material. This procedure shall not be applied to the inspection of product characteristics which involve the safety of personnel. The skip-lot program is designed to be used with attribute lot-by-lot plans described in ANSI/ASQC Z1.4-1993.

The standard was designed to address four major issues:

- (1) The number of lots inspected prior to entering the skip-lot state.
- (2) The number of lots inspected in the skip-lot state between a shift in quality and the detection of the quality shift, with the results of detection being a switch to an interrupt state where lot-by-lot inspection is temporarily reinstated.
- (3) The characteristics of the interrupt state during which less stringent qualification requirements are used to reinstate full skip-lot inspection.
- (4) The management capabilities of the supplier. The last issue is important because a working skip-lot program requires confidence in the supplier's capabilities and honesty.

A series of enhancements to this standard (Annexes A, B, and C) augment the usability of the standard by outlining procedures for tailoring to the user's specific situation, by describing a simple method of random selection, and by providing criteria for deciding between skip-lot inspection and reduced inspection under ANSI/ASQC Z1.4.

Comments concerning this standard are welcome and will be considered in future standards development. They should be sent to the Standards Administrator, American Society for Quality Control, 611 East Wisconsin Avenue, P.O. Box 3005, Milwaukee, WI 53201-3005.

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An Attribute Skip-Lot Sampling Program

1.0 INTRODUCTION

This publication is intended to be used only in conjunction with ANSI/ASQC Z1.4-1993.¹ There are two restrictions on the use of the Z1.4 procedures in conjunction with this publication:

- (1) Multiple sampling plans are not to be used during states 2 and 3 of this publication, and
- (2) It is *strongly recommended* that sampling plans with acceptance numbers or zero not be used during states 2 and 3 of this publication.

1.1 Scope

The purpose of this publication is to provide procedures² for reducing the inspection effort on products submitted by those suppliers who have demonstrated their ability to control, in an effective manner, all facets of quality and who consistently produce lots which meet requirements. Inspection may take place at the supplier's or purchaser's locations or at an interface between operations of a production process. The skip-lot procedures are designed to be used with the attribute lot-by-lot plans described in ANSI Z1.4.

1.2 Field of Application

When specified by the purchaser, this standard may be referenced in a purchasing or specification contract, inspection instruction, or other contractual documents. The "responsible authority" and the "inspection agency" shall be designated in one of the above documents. The inspection agency may be the responsible authority or an organization delegated to conduct the inspection program.

This standard defines a generic attribute skip-lot sampling program. However, every product has its own environment and characteristics. Throughout this standard, options are provided in recognition of the fact that the supplier and responsible authority should select the appropriate options to meet the specific needs of the product and its environment.

All choices as a result of this tailoring should be specified in a written document. The options are noted in the text with default values. Annex A contains a summary to these options.

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

- a. End items such as complete units or sub-assemblies;
- b. Components and raw materials;
- c. Services;
- d. Materials in process;
- e. Supplies in storage;
- f. Data or records; and
- g. Administrative procedures.

These procedures are intended only for a continuing series of lots or batches and shall not be used for isolated lots. All lots in the series are expected to be of a similar quality and there should be reason to believe that the lots not inspected are of the same quality as the ones inspected.

This publication shall be used only for characteristics inspected by attributes as designated in publication ANSI Z1.4. Its application differs from that of reduced inspection in Z1.4. With respect to the inspection of multiple characteristics, the skip-lot procedures will follow the same principles used in the associated Z1.4 program.

NOTES:

1. *Reduced inspection* is a feature of Z1.4 permitting smaller sample sizes than used in normal inspection.
2. Reduced inspection may be used while the product is in the lot-by-lot inspection or skip-lot interrupt state, but may not be used during the skip-lot inspection or skip-lot interrupt states (see Sections 5.4 and 5.5).
3. Skip-lot sampling may be used in place of reduced inspection if it is more cost effective to do so (see Section 7.0).

¹ Referred to as ANSI Z1.4 or Z1.4 in the remainder of this standard.

² The skip-lot program described in this standard should be distinguished from Dodge's skip-lot plans. For a discussion of the Dodge plans, see references Dodge (1955), Dodge and Perry (1971), and Schilling (1982) cited in Section 9.