

PART 43—STANDARDS FOR SAMPLING PLANS

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SAMPLING PLANS

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DEFINITIONS

§ 43.101 Meaning of words.

Words used in this subpart in the singular form shall be considered to impart the plural, or vice versa, as the case may demand.

§ 43.102 Definitions.

Statistical and inspection or sampling terms and their respective definitions that are used in the sampling plans and operating characteristic curves of which are pertinent to the understanding of inspection by attributes follow:

Acceptable quality level (AQL). The AQL is expressed in terms of percent defective or defects per 100 units. Lots having a quality level equal to a specified AQL will be accepted approximately 95 percent of the time when using the sampling plans prescribed for that AQL.

Acceptance number (Ac). The number in a sampling plan that indicates the maximum number of defects or defectives permitted in a sample in order to consider a lot as meeting a specific requirement.

Acceptance sampling. The art or science that deals with procedures in which decisions to accept or reject lots or processes are based on the examination of samples.

Attributes. Refers to the measurement of a given factor noting and recording the presence or absence of some characteristic (attribute) in each of the units in the group under consideration.

Consumer's risk. The risk a consumer takes that a lot will be accepted by a sampling plan even though the lot does not conform to requirements. In the standards of this subpart this risk is nominally set at ten percent.

Consumer protection. The ability of a sampling plan to reject unacceptable supplies. This is measured as the complement of the probability of acceptance (Pa) for the Limited Quality (LQ) lots. The consumer protection is 90 percent in these standards.

Defect. A failure to meet a requirement imposed on a unit with respect to a single quality characteristic. A unit may contain more than one defect.

Defective. A defective unit; one containing one or more defects with respect to the quality characteristic(s) under consideration.

Inspection. The examination (including testing) of supplies (including, when appropriate, raw materials, components and intermediate assemblies).

(a) *Acceptance inspection.* An inspection to determine conformance of supplies to specified requirements in order to accept or reject the supplies.

(b) *Estimation inspection.* In dealing with attributes, an inspection to determine the amount of the supplies conforming to a specified requirement—usually expressed as a percentage.

Inspection by attributes. Inspection whereby either the sample unit is classified as defective or non-defective with respect to a requirement or set of requirements (when on a "defective" basis); or, inspection whereby the number of defects in each sample unit is counted with respect to a requirement or set of requirements (when on a "defect" basis).

Limiting quality (LQ). The LQ is expressed in terms of percent defective or defects per 100 units. Lots inspected under the standards of this subpart that have a ten percent probability of acceptance are referred to as a lot having a quality level equal to LQ.

Lot. A collection of units of the same size, type and style which has been

manufactured or processed under essentially the same conditions. The term shall mean "inspection lot," i.e., a collection of units of product from which a sample is to be drawn and inspected to determine conformance with the acceptability criteria. An inspection lot may differ from a collection of units designated as a lot for other purposes (e.g., production lot, shipping lot, etc.).

Lot size. The number of units in the lot.

Operating characteristic curve (OC curve). A curve that gives the probability of acceptance as a function of a specific lot quality level.

Probability of acceptance (Pa). For a given sampling plan and a given quality of inspection lots, is that percentage of inspection lots expected to be accepted.

Process capability. Performance of a process under normal operating conditions. The performance is measured with respect to specific characteristics.

Producer's risk. The risk that a producer takes that a lot will be rejected by a sampling plan even though the lot conforms to requirements. In the standards of this subpart this risk is nominally set at five percent.

Random sampling. A process of selecting a sample from a lot whereby each unit in the lot has an equal chance of being chosen. Ordinary haphazard choice is generally insufficient to guarantee randomness. Devices such as tables of random numbers are used to remove subjective biases inherent in personal choice.

Rejection number (Re). The number in a sampling plan that indicates the minimum number of defects or defectives permitted in a sample that will cause a lot to fail a specific requirement.

Sample. Any number of sample units which are to be used for inspection.

Sample size. The number of sample units which are to be included in the sample.

Sample unit. A container, the entire contents of a container, a portion of the contents of a container, a composite mixture of a product, or any other unit of container or commodity to be used for inspection.

Sampling. The act of drawing or selecting sample units from a given lot.

Sampling plan. A specific plan which states the sample size(s), acceptance number(s) and rejection number(s). In the standards of this subpart two types of sampling plans are provided:

(a) *Single sampling plan.* A sampling inspection scheme in which a decision to accept or reject an inspection lot is based on the inspection of a single sample. A single sampling plan consists of a single sample size with associated acceptance and rejection number(s).

(b) *Double sampling plan.* A sampling inspection scheme which involves use of two independently drawn but related samples, a first sample (n_1) and a second sample which is added to the first to form a total sample size (n_2). A double sampling plan consists of a first and total sample size with associated acceptance and rejection number(s). Inspection of the first sample leads to a decision to accept, to reject, or to take a second sample and the examination of a second sample, when required, always leads to a decision to accept or reject.

SAMPLING PLANS

§ 43.103 Purpose and scope.

(a) This subpart contains selected single and double sampling plans for inspection by attributes. They are to serve as a source of plans for developing sound specifications, standards, or sampling and inspection procedures.

(b) The sampling plans of this subpart and corresponding operating characteristic curves are indexed by acceptable quality level, AQL. The AQL's expressed in percent defectives or defects per hundred units are:

0.065	0.40	2.5	8.5
0.10	0.65	4.0	10.0
0.15	1.0	5.0	12.5
0.25	1.5	6.5	15.0

§ 43.104 Master table of single and double sampling plans.

(a) In the master table, a sampling plan is selected by first determining the sample size or sizes and AQL to be used. Then find the applicable acceptance (Ac) and rejection (Re) numbers at the intersection of the sample size(s) row and AQL column. These numbers together with the sample size or sizes constitute a sampling plan.