



CQE Training & Consultancy Plt (Reg. No. : LLP 0003668-LGN)

Registered Office : No. 46, Lorong Bintang, Taman Tasik Permai, 34000 Taiping, Perak. Malaysia.

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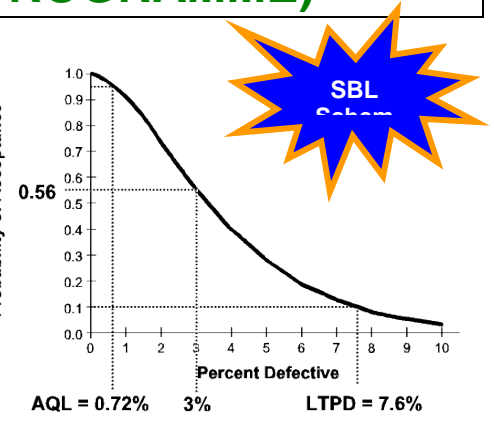
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ACCEPTANCE SAMPLING PLAN (ASP) (IN-HOUSE / PUBLIC TRAINING PROGRAMME)

Lot size	SAMPLE SIZE CODES						
	General Inspection Levels			Special Inspection Levels			
	I	II	III	S1	S2	S3	S4
2 to 8	A	A	B	A	A	A	A
9 to 15	A	B	C	A	A	A	A
16 to 25	B	C	D	A	A	B	B
26 to 50	C	D	E	A	B	B	C
51 to 90	C	E	F	B	B	C	C
91 to 150	D	F	G	B	B	C	D
151 to 280	E	G	H	B	C	D	E
281 to 500	F	H	J	B	C	D	E
501 to 1200	G	J	K	C	C	E	F
1201 to 3200	H	K	L	C	D	E	G
3201 to 10000	J	L	M	C	D	F	G
10001 to 35000	K	M	N	C	D	F	H
35001 to 150000	L	N	P	D	E	G	J
150001 to 500000	M	P	Q	D	E	G	J
500001 to over	N	Q	R	D	E	H	K

Sample size	SINGLE SAMPLING PLANS FOR NORMAL INSPECTION													
	Acceptable quality levels (normal inspection)													
	0.065	0.1	0.15	0.25	0.4	0.65	1.0	1.5	2.5	4.0	6.5	10	15	25
	Ac. Re	Ac. Re	Ac. Re	Ac. Re	Ac. Re	Ac. Re	Ac. Re	Ac. Re	Ac. Re	Ac. Re	Ac. Re	Ac. Re	Ac. Re	Ac. Re
A 2														
B 3														
C 5														
D 8														
E 13														
F 20														
G 32														
H 50														
J 80														
K 125														
L 200														
M 315														
N 500														
P 800														
Q 1,250														
R 2,000														



INTRODUCTION

Every organisation sure to have some methods for minimising the cost of inspection at incoming raw materials, in-process semi components and outgoing finished products; and at the same time would not want to jeopardise the quality of the raw materials / semi components / products reaching the next production section or customers and end-users. One of the alternatives that usually used by manufacturing industrials is what we called as Sampling Plan, also known as Acceptance Sampling.

The purpose of Acceptance Sampling is to determine and decide the acceptability of a lot or batch of raw materials / components / finished products based on results from one or more samples rather than from 100% inspection. Acceptance sampling is a method used to determine if you accept or reject a particular lot of products. This is done by first establishing an acceptance plan or sampling plan which sets the product acceptability criteria. This is known as the decision rule. The decision rule is a rule that explicitly states how many out-of-specification items (in a batch of arbitrary size) can be shipped to a customer. Depending on the type of sampling plan being utilized by the company, there could be more than one decision rule in effect (for double or multiple plans).

Sampling plans utilizing can be single, double, or multiple. Single sampling plan consists of a sample size n and an acceptance number c . The lot is rejected if there are more than c defective for the sample size. Single sampling plan is the most common plan to use although not the most efficient in terms of average number of samples needed. Double sampling plan involves taking a second sample if no decision can be made regarding the first sampling and combining the information obtained from both sampling to make a final decision. But sometimes both tests might be lead to contradictory results, therefore a multiple sampling plan would be used instead.

LEARNING OBJECTIVES

At the end of this training session, participants will be able to :-

- a) Institute an appropriate sampling system to enhance the quality assurance at any stages of in-coming, in-process and out-going quality level.



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- b) Understand the risks involved in any Sampling Plan, namely the Producer's Risk (α) and Consumer's Risk (β).
- c) Gain knowledge on the various performance curves of a sampling and their interpretation; Operating Characteristic (OC) Curves, AQL, AOQ, ATI and ASN Curves.
- d) Ability to choose the appropriate sampling plan for a given set of conditions.
- e) Ability to know and determine when to perform reduced and tightened sampling plan according to performance of manufacturing processes.

COURSE OUTLINE

Day 1

Fundamentals of Sampling

- ⇒ Definition of Acceptance Sampling
- ⇒ Necessity of Sampling
- ⇒ Sampling Principle & Precautions
- ⇒ Advantages and Disadvantages of Acceptance Sampling

Basic Sampling Terminology

- ⇒ Sampling terms (n, N, Ac, Re)
- ⇒ Type A and Type B Sampling
- ⇒ AQL (Acceptable Quality Level)
- ⇒ Operating Characteristic (OC) Curve
- ⇒ AOQ (Average Outgoing Quality)
- ⇒ AOQL (Average Outgoing Quality Limit)
- ⇒ ATI (Average Total Inspection)
- ⇒ Producer's Risk (α)
- ⇒ Consumer's Risk (β)

Day 2

Sampling Plan Standard

- ⇒ Construction of the Operating Characteristic (OC) Curve
 1. Binomial Distribution
 2. Poisson Distribution
 3. Hypergeometric Distribution
- ⇒ Parameters Affecting Acceptance Sampling Plan
- ⇒ Effect of Lot Size (N), Sample Size (n) and Acceptance Number (Ac) on OC Curve
- ⇒ Type of Risks
- ⇒ Classification of Defects / Defectives
- ⇒ Inspection Level
- ⇒ Common Attribute Plan - ANSI/ASQ Z1.4 or ISO2859-1 Sampling Tables
 1. Single Sampling
 2. Double Sampling
- ⇒ Switching Procedures - Normal, Reduced and Tightened Sampling Plan
- ⇒ Features of a good Acceptance Sampling Plan





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- ⇒ Common Variable Plan – ANSI/ASQ Z1.9 or ISO3951 Sampling Tables
- ⇒ Other types of Sampling Plan – Continuous Sampling Plan (CSP1 & CSP2), Chain Sampling and etc...

DURATION

2 Days

WHO SHOULD ATTEND

Managers and Engineers from Production and Quality Departments. Statistician, Purchasing and Marketing executives will also find this course relevant to their job function.

CLASS SIZE

Maximum 20~25

METHODOLOGY

- ⇒ Course Notes
- ⇒ OHP
- ⇒ Exercise
- ⇒ Lecturettes
- ⇒ Case Study

