



HOW MANY PACKS SHOULD YOU TEST?

Sampling Guide for Modified Atmosphere Packaging

Why Sampling Matters

Testing pack atmosphere and seal integrity is only valuable when the results are representative of your production.

TESTING TOO FEW PACKS

- Missed defects
- Missed process issues
- False confidence

TESTING TOO MANY PACKS

- Wasted time
- Wasted resources
- Little added value

A structured sampling approach helps manufacturers obtain meaningful, defensible results without needing to test every pack.

Why There Is No Universal Sample Size

There is no fixed number. The appropriate sample size depends on three key factors:



For this reason quality systems use statistical sampling methods, rather than a fixed number.

Introduction to AQL Sampling

AQL stands for **Acceptance Quality Limit**. It is used within acceptance sampling to determine:

- How many packs to test
- How many defects are permitted
- When a batch should be accepted or rejected

AQL sampling provides a structured level of confidence without requiring every pack to be tested.

Commonly referenced standards include **ISO 2859-1** and **ANSI/ASQ Z1.4**.



Indicative Sampling Guide

For food manufacturing environments, the following ranges provide a practical starting point. The appropriate sample size will depend on the selected AQL, inspection level, product risk and quality requirements.

Daily production volume	Indicative sample size
Fewer than 500 packs	20–50 packs
500–5,000 packs	50–200 packs
More than 5,000 packs	125–315 packs

These ranges are indicative only and do not replace a formal sampling plan.

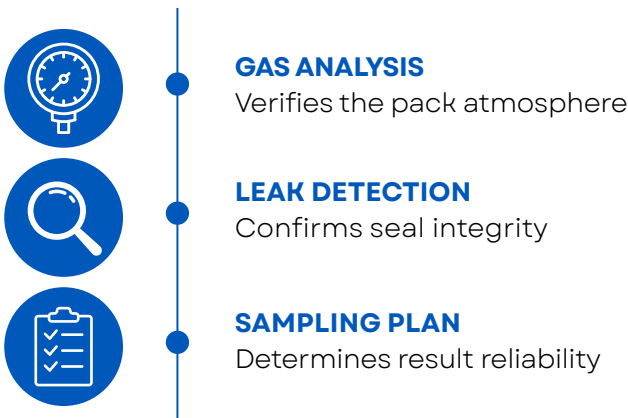
What These Numbers Mean

Sampling does not prove that every pack is defect-free. It provides confidence that the batch is likely to meet the selected quality level.

As the sample size increases:

- Confidence in the results increases
- The risk of missing defects decreases

MAP-Specific Considerations



Accurate instruments cannot provide meaningful quality assurance without adequate sampling.



Key Takeaway

A structured sampling approach:

- Improves confidence in product quality
- Supports QA documentation and audits
- Reduces the risk of undetected process failures

Sampling is not about testing every pack. It is about testing enough packs to make the results meaningful.

References & Further Reading

STANDARDS

- ISO 2859-1 – Sampling procedures for inspection by attributes
- ANSI/ASQ Z1.4 – Sampling procedures and tables for inspection by attributes

TECHNICAL REFERENCES

- Montgomery, D. C. (2019). Introduction to Statistical Quality Control
- NIST/SEMATECH Engineering Statistics Handbook – Acceptance Sampling

SUPPORTING RESOURCES

- Tools4Dev – Sample Size Guidance
- Tetra Inspection – AQL Sampling Methodology Overview

IMPORTANT NOTE

This guide provides general information only. Sampling requirements should be established within the manufacturer's approved quality system and applicable regulatory requirements.