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**Acceptance Sampling for Product Quality**

This document outlines the procedures for implementing acceptance sampling for assessing product quality within the context of food manufacturing under NIC Code 10101. Acceptance sampling is a statistical method used to determine whether a batch or lot of products meets predefined quality standards based on a sample inspection, rather than 100% inspection.

1. Defining Acceptance Criteria

Before implementing acceptance sampling, clear acceptance criteria must be defined. These criteria should specify:

* Acceptable Quality Level (AQL): The maximum percentage of defective units that is still considered acceptable in a lot. This should be determined based on risk assessment and cost considerations. Lower AQLs indicate stricter quality control.
* Lot Size: The number of units in a batch or lot to be sampled.
* Sample Size: The number of units to be randomly selected from the lot for inspection. Sample size is determined based on the lot size and the desired level of confidence.
* Acceptance Number (c): The maximum number of defective units allowed in the sample to accept the entire lot.
* Rejection Number (r): The minimum number of defective units in the sample to reject the entire lot. This is often one more than the acceptance number.

2. Sampling Plans

Several standardized sampling plans are available, such as those provided by military standards (MIL-STD-105E) or ANSI/ASQC Z1.4. The choice of sampling plan depends on the AQL, lot size, and the level of risk tolerance.

* Single Sampling Plan: A single sample is taken from the lot, and the decision to accept or reject is based on the number of defects in that sample.
* Double Sampling Plan: If the first sample is inconclusive, a second sample is taken and the decision is made based on the combined results of both samples.
* Multiple Sampling Plan: This involves taking multiple samples until a clear decision can be made.

3. Sampling Procedures

The sampling process must be random and representative to ensure unbiased results. This involves:

* Random Selection: Units should be selected randomly from the lot to avoid bias. This can be achieved using random number generators or other random selection methods.
* Clear Inspection Criteria: Inspectors must be clearly trained on the specific criteria for identifying defects. This often involves use of standardized checklists and visual aids.
* Accurate Record Keeping: All sampling activities, including sample size, date, inspector's name, and the number of defects found, must be meticulously documented.

4. Decision-Making and Corrective Actions

Based on the sampling results, a decision is made to either accept or reject the lot. If a lot is rejected:

* Investigation: A thorough investigation should be conducted to identify the root cause of the defects.
* Corrective Actions: Appropriate corrective actions must be implemented to prevent future defects.
* Re-inspection: The rejected lot may need to be re-inspected after corrective actions have been taken.

5. Compliance and Documentation

All acceptance sampling activities must be documented, including sampling plans used, sample results, decisions made, and any corrective actions taken. This documentation is essential for traceability and demonstrating compliance with quality standards.