

Raw Potato Load Quality Specification Document

Table of Contents

1. Introduction
2. Purpose
3. Scope
4. Model Overview
5. Quality Specifications
6. Variability & Variance
7. Cost Adjustment Curve
8. Historical Data Summary
9. Line Equipment Manuals
10. Maintenance Procedures & Error Codes
11. PSS Quality Specifications
12. Quality Management & Downgrading Protocols
13. Appendices

1. Introduction

This document delineates the detailed quality specifications and operational standards for raw potato loads supplied to our processing facilities. It aims to standardize expectations, ensure compliance, and optimize processing efficiency by clearly defining parameters such as dry matter content, defect tolerances, and processing equipment specifications.

2. Purpose

The purpose of this document is to provide comprehensive guidance for suppliers, quality assurance teams, and maintenance personnel regarding the expected quality parameters for raw potato loads. It also serves as a reference for detecting deviations, troubleshooting equipment errors, and implementing quality control measures tailored to variability in raw material quality.

3. Scope

This specification applies to all raw potato loads delivered to the processing plant over the next 12 months, with particular focus on:

- Potato varieties classified under SKU codes specified in the PSS documentation.
- Variability introduced from different farms and regions.
- Operational parameters for line equipment used in potato handling and processing.

Excluded are processed potato products and secondary raw materials not directly headed into the primary processing line.

4. Model Overview

The model identifier for this specification is **RPL-QS-2025**. It embodies the latest standards and incorporates technological insights from recent six-month performance data.

5. Quality Specifications

5.1. Dry Matter (DM) Content

Parameter	Target Range	Notes
Average Dry Matter	21.5%	Optimal for processing efficiency

Acceptance Tolerance	$\pm 0.3\%$	For SKUs specific to size and region
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5.2. Defects and Tolerance Bands

Defect percentages are critical in assessing load quality. Tolerance bands specify permissible deviations.

Defect Type	Maximum Tolerance	Comments
Misshapen Potatoes	2%	Based on visual inspection
Infected or Moldy Potatoes	0.5%	Mandatory rejection if exceeding this threshold
Broken or Shattered Potatoes	3%	Acceptable within limits for processing

5.3. Fry Color Range & Tolerance

Fry color assessments are conducted at the final processing stage with specific minimum and maximum acceptable ranges. Color is evaluated via standardized colorimeter readings:

- Target fry color index: 5.0 - 6.0 (on a scale 1-10)
- Tolerance: ± 0.5 units

5.4. SKU Targets and Variance

Specific SKUs (e.g., SC-9mm, SC-15mm) have defined target dry matter and defect tolerances:

SKU	Dry Matter %	Defects %	Fry Color Range
SC-9mm	$21.8\% \pm 0.3\%$	<2%	5.0 – 6.0
SC-15mm	$22.0\% \pm 0.2\%$	<1.5%	5.0 – 6.0

6. Variability & Variance

Dry matter content variability depends on the source farm's soil, weather

conditions, and harvest timing. An analysis of the last six months indicates the following:

- Average dry matter across all loads: ~21.5%
- Standard deviation: 0.4% to 0.6%
- Regional influences lead to shifts in the mean dry matter, notably:
 - Northern farms: tend to be 0.2% higher than southern farms.
 - Early harvest loads: slightly higher dry matter (~22%) compared to late harvest (~20.8%).

Understanding these variations helps in adjusting procurement and processing parameters proactively.

7. Cost Adjustment Curve Based on Dry Matter

This section details how costs per ton are adjusted regionally as dry matter exceeds the target threshold of 21%.

7.1. Cost Increase Factors

Dry Matter %	Additional Cost per Ton (USD)
21.0% – 21.5%	+0.00
21.6% – 22.0%	+5%
22.1% – 22.5%	+10%
22.6% – 23.0%	+15%
>23.0%	+20%

7.2. Regional Factors

Cost adjustments are further refined by regional factors, as shown below:

- Region A: +2% to the above percentages due to transportation costs.
- Region B: +3% due to storage and handling efficiencies.

7.3. Practical Application

Procurement teams should apply these adjustment factors during contract negotiations and invoice verifications. The formula for derived cost:

$$\text{Adjusted Cost} = \text{Base Cost} \times (1 + \text{Cost Increase Percentage} + \text{Regional Factor})$$

8. Historical Data Summary (Last 6 Months)

Data collected from continuous monitoring of raw potato loads highlights notable trends:

Date	Farm Region	Average Dry Matter (%)	Defect Rate (%)	Comments
2024-03-01	Northern	22.1	1.8	High-quality harvest; good weather
2024-02-15	Southern	20.8	2.5	Late harvest, slightly below average dry matter
2024-01-20	Northern	21.9	1.2	Excellent crop condition
2023-12-10	Eastern	21.2	2.0	Minor mold detected
2023-11-05	Western	20.9	2.2	Extended storage period impacted defect rate
2023-10-20	Southern	21.6	1.7	Average conditions

This data supports proactive quality management and predictive adjustments in processing standards.

9. Line Equipment Manuals & Specifications

9.1. Equipment Rated Throughput

Equipment Model	Rated Throughput (t/h)
CUT-2000	8.5
FRY-XL	6.0
PEEL-FAST	5.5
SORT-500	7.0

9.2. Efficiency Thresholds

- Minimum operational efficiency: 85%
- Optimal efficiency: 90% or higher for maximum throughput

9.3. Maintenance & Troubleshooting

Regular maintenance includes:

1. Lubrication at scheduled intervals
2. Calibration of sensors weekly
3. Cleaning of contact parts after every shift

Error codes encountered during operation include, but are not limited to:

Error Code	Description	Potential Cause	Resolution
DOW-PI-4500	Overload protection triggered	Potato load exceeds capacity or blockages	Stop line, clear obstruction, reset
DOW-PI-4520	Sensor malfunction	Dirty or misaligned sensors	Clean or realign sensors, recalibrate
DOW-PI-4560	Motor overload	Motor slipping or mechanical failure	Inspect motor, check mechanical parts

10. Maintenance Procedures & Error Code Handling

10.1. Routine Maintenance Schedule

- Daily:
 - Visual inspection of belts and blades
 - Sensor calibration check
 - Lubrication of moving parts
- Weekly:
 - Deep cleaning of contact surfaces
 - Electrical system inspection
- Monthly:
 - Replacement of wear parts
 - Full calibration of performance sensors

10.2. Troubleshooting Flowchart Example

Step 1: Identify Error Code

Check error code display or system logs for DOW-PI codes.

Step 2: Consult Manual for Code Description

Refer to error tables above to understand the cause.

Step 3: Determine Action

- If overload: clear obstructions and reset line.
- If sensor issue: clean or realign sensor.
- If motor overload: inspect and repair motor.

Step 4: Verify Operation

Restart equipment and monitor for errors.

If the problem persists beyond these steps, escalate to maintenance engineering.

11. PSS Quality Specifications Documentation

11.1. SKU Targets

SKU	Dry Matter %	Defect %	Fry Color Range
SC-9mm	21.8 ±0.3	<2%	5.0 – 6.0
SC-15mm	22.0 ±0.2	<1.5%	5.0 – 6.0
SC-20mm	22.2 ±0.2	<1.0%	5.0 – 6.0

11.2. Tolerance Bands & Downgrading Protocols

Loads exceeding defect thresholds or dry matter deviations beyond specified tolerance bands are downgraded as follows:

- **Minor deviations:** Acceptable with documentation and potential price adjustment.
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