

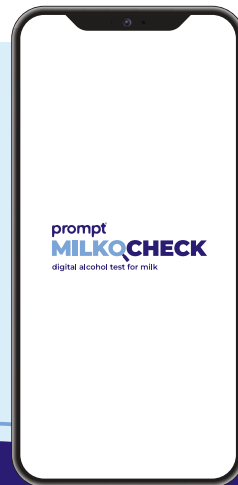
Assessing Milk Heat Stability Before It Impacts Production

prompt[®]
MILKQCHECK
digital alcohol test for milk

Current Challenges

The alcohol test in dairy is a quick quality control test used primarily to assess the heat stability of milk proteins, which indirectly reflects milk freshness and suitability for processing—especially heat processing like pasteurization or UHT treatment.

The alcohol test is done by mixing equal parts of raw milk and ethanol (usually ethanol with conc. 68%–70%–72%) and observing whether the milk curdles or remains stable



Different factors leading to positive alcohol test

● Microbial spoilage:

Microbes produce lactic acid → increased acidity → destabilizes proteins

● Mastitis:

Inflammation leaks excess Ca^{2+} , Na^+ , Cl^- into milk → destabilizes protein micelles

● High titratable acidity (TA):

High titratable acidity, often resulting from bacterial souring (developed acidity) or high natural acidity, makes milk more prone to coagulation in the alcohol test. Increased acid levels reduce the buffering capacity, leading to protein instability

Limitations of Manual Alcohol Test:

- Subjective interpretation.
- Requirement of alcohol reagent (Recurring cost).
- Needs safe handling/storage of flammable alcohol

Presenting

prompt MILKQCHECK

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Digital Alcohol Test for Milk Quality Assessment

The test utilizes the principle of transmittance spectroscopy in UV-VIS range to detect the instability of protein due to acidity or salt imbalance. The measured absorption values correlate with PASS or FAIL status of alcohol test. Also, the device is able to classify raw milk in two Somatic Cell Group: Less than 300,000 cells/ml and more than 300,000 cells/ml

The instrument is designed to perform alcohol test without adding alcohol in the milk sample (No consumable), geotagging the location of the test, history of the previous tests. Digitization of the data and removes subjectivity in declaring results. The test is noninvasive hence no need to discard sample after test. The same device also classifies SCC in two groups.



KEY FEATURES

Digital Alcohol Test with SCC Classification

Performs alcohol stability testing and classifies milk into two SCC groups

Spectroscopy-Based Detection

Uses UV-VIS transmittance spectroscopy for objective, repeatable results

High Accuracy

93% accuracy for alcohol test
90% accuracy for SCC classification

Fast Test Cycle

Delivers results in approximately 20 seconds

Non-Consumable, Non-Invasive Testing

No alcohol added to milk; no sample wastage

Clear Visual Output

Backlit LCD display for easy PASS / FAIL interpretation

Factory Calibrated

Supports remote calibration for long-term accuracy

IoT-Enabled Device

Real-time data transfer to mobile application and web dashboard

Traceability & Data Logging

Test history, timestamps, and geotagging for audit and quality tracking

Portable & Rugged Design

Fiberglass housing with detachable borosilicate test tube

TECHNOLOGY HIGHLIGHTS

Milkocheck is built on a data-driven detection architecture that removes subjectivity from milk quality decisions.

- UV-VIS spectroscopic analysis detects protein instability caused by acidity or salt imbalance
- Digital interpretation eliminates visual judgment errors
- SCC classification into two actionable groups:
 - Below 300,000 cells/ml
 - Above 300,000 cells/ml
- BLE-based connectivity enables seamless integration with digital milk procurement systems

BENEFITS

For Dairy Processors

- Prevents coagulation during heating
- Reduces equipment fouling and CIP downtime
- Protects batch yield and product consistency

For Procurement & Quality Teams

- Early rejection of unstable milk
- Objective, standardized testing across locations
- Reduced quality disputes and rechecks

For Operations & Management

- Lower processing losses
- Improved plant efficiency
- Data-backed quality governance

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