

Flour Tortilla Troubleshooting Guide

THE CHALLENGE

	Undermixing	Less Water Addition	Reducing Agent – SMB-less	Overmixing	More Water Addition	Reducing Agent – SMB-more	Floor Time	Hot-Press – Pressure	Proofing Time	High Oven Temperature	Low Oven Temperature	Baking Time	Dough Ball Weight	Rounding of Dough	Distance Between the Platens	Dwell Time	Shortening Quality (Shelf Life)	Cooling Temperature	Poor Packaging – No Partition	Drastic Hot Press Conditions	Overpacking	pH of Tortilla	Moisture Content	Plant GMP/Sanitation
THE PROBLEM																								
Tough Dough / Hard Dough Process: Difficult to press; rough, broken edges	•	•	•																					
Sticky Dough Process: Sticks to hot plate; broken edges, lacing				•	•	•	•	•															•	
Off-Shaped Tortilla Poor appearance		•						•					•	•	•								•	
Under / Over Baked Tortilla Under: No toast point, high moisture, microbial growth Over: Burnt, pillowing, low yield, low moisture, staling											•	•				•								
Tortilla Crack / Break Cracking and breaking	•																		•		•	•		
Tortilla Sticking / Zippering Cracking and breaking				•															•		•	•		
Moldy Tortilla Mold contamination, safety issues											•							•	•	•			•	•
Pillowing Sticking, peeling off										•														
Burnt Tortilla Unacceptable										•		•			•									
Staling Rollability, hardening										•									•					
Off-Flavored Tortilla Unacceptable																	•							
Translucent Tortilla Based on formula, yes or no			•																					

QUICK TROUBLESHOOTING GUIDE

Have you checked the following?

- ✓ Source of:
 - Water
 - Ingredients
 - Flour
- ✓ Water Temperature & Quality
- ✓ Time & Temperature During:
 - Mixing
 - Proofing
 - In the Oven
 - Cooling
 - Packaging
- ✓ Correct Order of Addition
- ✓ Hot Press Conditions:
 - Pressure
 - Temp
 - Dwell Time
- ✓ Belt Speed
- ✓ Batch Pack Changes
 - Formulation Change
 - Ingredient Source
 - Vendor Change



Flour Tortilla Glossary

QUALITY CONCERNS

BREAKING

Tortilla with tears or cracked edges, due to poor flexibility/extensibility

CRACKING

Dry tortilla with broken/crack surfaces



LACING / BROKEN EDGES

When the edges of the tortillas almost appear to have a lace pattern, as opposed to the rounded edges we expect to see.

EXTENSIBILITY

Ability of tortilla to fold/roll and stretch without cracks or tears



FOLDABILITY

Ability of tortilla to fold with no cracks or tears



TORTILLA ROLLABILITY SCORE

Sensory score used to measure the rollability of tortilla using 1 cm dowel. Measured on scale of 1-5: 1 when tortilla breaks at several points on rolling; 5 when no cracks and tears appear during rolling of tortilla.



PILLOWING

Swelling of the tortilla due to steam and gas production from baking and leavening actions. The top layer separates from the bottom layer during baking, making it look like a 'pillow' instead of a flat tortilla when it comes out of the oven. Pillowing leads to peeling and sticking.



STICKING

Two or more tortillas in a stack that will not separate without causing tearing, after being packaged for any length of time.



PEELING

When a layer of the tortilla begins to pull away from the other, causing a tear in the tortilla.

ZIPPERING

Zippering sound produced when two tortillas are separated, an indication that sticking will start soon

OPACITY

Whiteness of tortilla, due to inability to allow light to pass through the tortilla

ANALYTICAL TESTS AND EQUIPMENT:

ALVEOGRAPH

Measures gluten strength

FARINOGRAPH

An instrument used for measuring dough and gluten properties of a flour sample

FN (FALLING NUMBER)

Time (sec) required for a viscometer stirrer to fall a given distance through hot flour undergoing liquefaction, which indicates amylase activity/sprout damage. The greater the amylase activity, the faster stirrer will fall. If the falling number is too low, enzymes cannot be removed from the flour or wheat, a serious problem that makes the flour unusable.

GLUTAMATIC

Measures wet gluten content, which is responsible for elasticity and extensibility characteristics of dough

MIXOGRAPH

Measures dough gluten strength and dough mixing characteristics

MIXOLAB

Predicts flour quality, measures characteristics of dough during mixing, as well as quality of starch and protein

MTI (MIXING TOLERANCE INDEX)

Degree of softening during mixing, expressed in Brabender units (B.U.). Strong flour has MTI <30 B.U.; weak flour has MTI >50 B.U.

NV (NEUTRALIZING VALUE)

The amount of baking soda that will be neutralized (fully gassed) by the leavening acid

$NV = (QTY \text{ of base} / QTY \text{ of acid}) \times 100$

ROR (RATE OF REACTION)

Rate at which reactants are converted into products. Temperature determines ROR for leavening acids; a leavening acid with slower ROR gives a coarser cell structure to baked good.

RVA (RAPID VISCO ANALYZER)

Used to assess pasting properties of flour or starch. The majority of cereal-based products are based on cooking starch in excess water, making it important to study the rheology of paste during heating-cooling cycles of starch.

SEDIMENTATION VOLUME

Provides information on baking quality of wheat flour, measured by a physico-chemical test based on the suspension of flour in a dilute alcohol and acid solution which causes flour particles to sediment. Slow settling (higher sedimentation values) indicates high protein quantity and/or stronger gluten protein. Rapid settling indicates low protein content and/or poor gluten strength.

TPA (TEXTURE PROFILE ANALYZER)

Measures textural characteristics of food. Measurement is based on compressing a product to a set distance and analyzing the force it takes for the product to deform.

WATER ABSORPTION CAPACITY (%)

Amount of water required to get desired consistency of dough; e.g., 50% means 50 kg of water required to hydrate 100 kg of flour