

# Flour Tortilla Processing



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# Flour Tortilla Process-Ingredients

## Establish realistic specifications

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- Flour
  - protein, ash, absorption, MTI, stability
- Baking Powder
  - DRR, gassing power, total CO2
- Receive “C of A”s on every delivery of every product received into the bakery

## Share flour analysis with manufacturing / quality

- make sure they understand the consequences of variances

## Reject out of specification material



# Understanding Customers Expectations

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Process is dictated by the style of tortilla desired.

One set up doesn't work for every tortilla type

# Tortilla variations and styles

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DESCRIBING



# Types of tortillas that can be made on a press line

Traditional Mexican, taqueria style, foodservice

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- Translucent, pliable, good burst strength
- Chewy, darker in color, looks fatty
- Light to heavy toast marks



# Traditional Tortilla in Mexico

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# Traditional Hispanic Retail

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## Average Hispanic retail tortilla

- Slightly translucent, 20 – 50%
- Lighter in color, less chewy
- Medium to heavy toast marks







# QSR's, Fluffy White Tortillas

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Average non-Hispanic  
retail tortilla

- No translucency, white
- Bread like texture





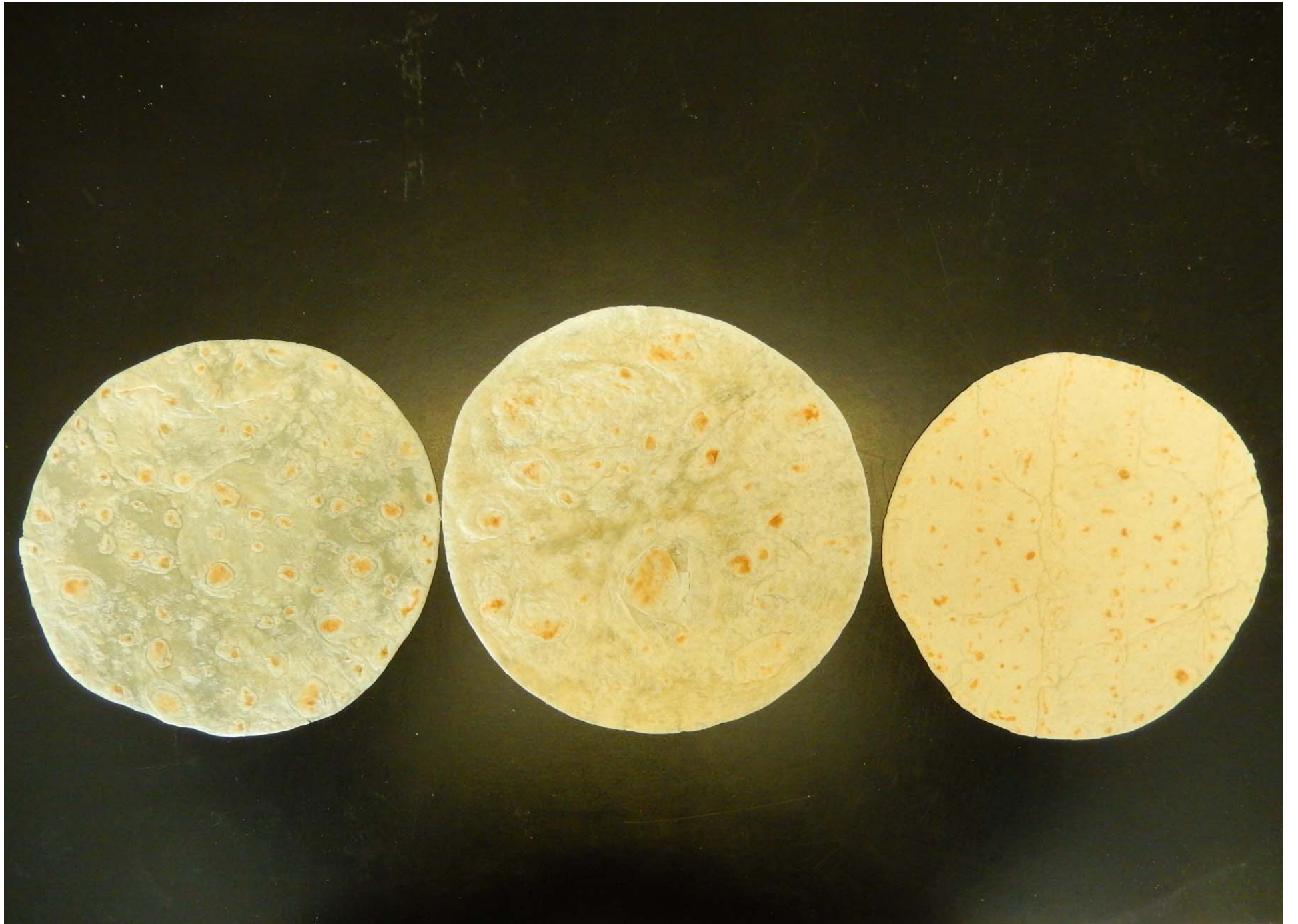
LIVE MÁS



Chipotle.







# Flour Tortilla Process- Mixing

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Mixing establishes the quality of the finished product.

- It also directly affects each following stage of the process

Mixing time is established by:

- 1) optimum development of the dough and
- 2) temperature at which the dough exits the mixer

Both items need to be accomplished simultaneously

TEAM -Management, QC, Production need to agree on:

- dough development, dough temperature
- mix time
- absorption

Deviations are necessary but should be agreed to by the team





# Mixer Type

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Horizontal Mixer

Spiral Mixer

High Speed



Key is to establish a “dough frequency” in which dough is processed within 15 minutes (4 doughs per hour)

Long process times >20 minutes leads to:

- small tortillas
- brittle edges
- flat edges -out of round
- increased translucency

# Dough Transfer Methods

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## Hand transfer

- least efficient but least damage to the dough

## Dough pump

- efficient but extremely abusive to the dough, de-mixing, de-gassing of dough, increase in dough temperature

## ✓ Trough Dump

## ✓ Chunker

- efficient, little damage or work imparted to the dough

# Flour Tortilla Process - Divider

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## Extruder divider

- dough is extruded by a series of augers into a uniform stream and is cut off by a blade.
- dough weights regulated by speed of extruders and the speed of the knife cuts.
- abusive to stiff doughs due the mixing action of the augers.



Herrera/Ayash Divider Rounder

# Flour Tortilla Process - Rounding

Method to get the dough into a symmetrical form (a dough ball) for consistent processing

## Rounder bars

- constant belt motion forces dough ball against an angled rounding bar-used with extruder dividers





# Flour Tortilla Process Divide and Round



## Methods to divide dough:

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### Piston

- dough is forced into the evacuated area of the manifold as the piston is pulled into the drum. The drum rotates and the dough is pushed out as the piston is pushed out of the drum.
- Less abusive than other methods of dividing.
- Most models are accurate.
- Stiff doughs tend to have scaling weight issues

# Rounder

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- **Sleeve and drum**

- dough is deposited into a reciprocating drum which is placed a stationary sleeve that contains cup sizes proportional to the required weights

# Intermediate Proof

## Proofer

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- a process whereby the dough balls rest and should become less elastic more pliable allowing for more consistent press characteristics.
  - Typically 5 to 10 min.'s
  - Heat and humidity added (60%RH ~80F) by equipment manufacturers
- **Dry Proof**
  - dry crust formation
- **Wet Proof**
  - sticking in cups and press





# Press

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The dough ball is transformed into its final shape while at the same time imparting heat to the tortilla

- plate temperatures
  - low as possible 375 / 390F,
  - initiates the baking powder reaction and greatly affects the finished bake characteristics
- dwell time
  - 1.0 - 1.3 seconds
  - determines the amount of heat penetration into the tortilla prior to baking.
- plate pressure measures the force imparted on the tortilla
  - 600 - 1400 psi is a good working range

# Flour Tortilla Process- Press

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If too much heat is transferred to the tortilla due to hot temperatures, extended dwell times or excessive plate pressures the product will have uneven blister formations and will have translucent spots.

The dough should be adjusted to accommodate the equipment instead of forcing a poorly developed dough to conform to specifications by excessive mechanical force.



# Oven

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Tortilla ovens are designed to impart a great amount of heat in a very short period of time.

Heat is transferred through conduction

- belt is heated by direct gas flame
- bakes and toasts the tortilla by direct contact of the tortilla on the superheated belt surface.

# Flour Tortilla Process - Bake

## Belt Configuration

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### Slatted belt

- less drying of the tortilla
- more conductive heating

### Mesh band or CB5 band

- open weave allows heat to dissipate faster, drying the side which is in contact with the belt.
- characteristic chicken scratch toast marks





# Oven Bake Profile

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A different baking profile should be established for every dough type:

- Normal formula
- High fat / sugar
- Heavy toast points
- Low carb
- Whole wheat
- Gordita

Each of these formulas will have a unique bake time and zone temperature setting



# Oven bake profile

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## Settings:

### Bake time

- 25 – 35 seconds

### Bake temperature

- Top Zone (bottom of tortilla)
  - 350-400°F
- Middle Zone
  - 375-450°F
- Bottom Zone
  - Lowest setting to get tortilla out without pillowing

# Issues with oven

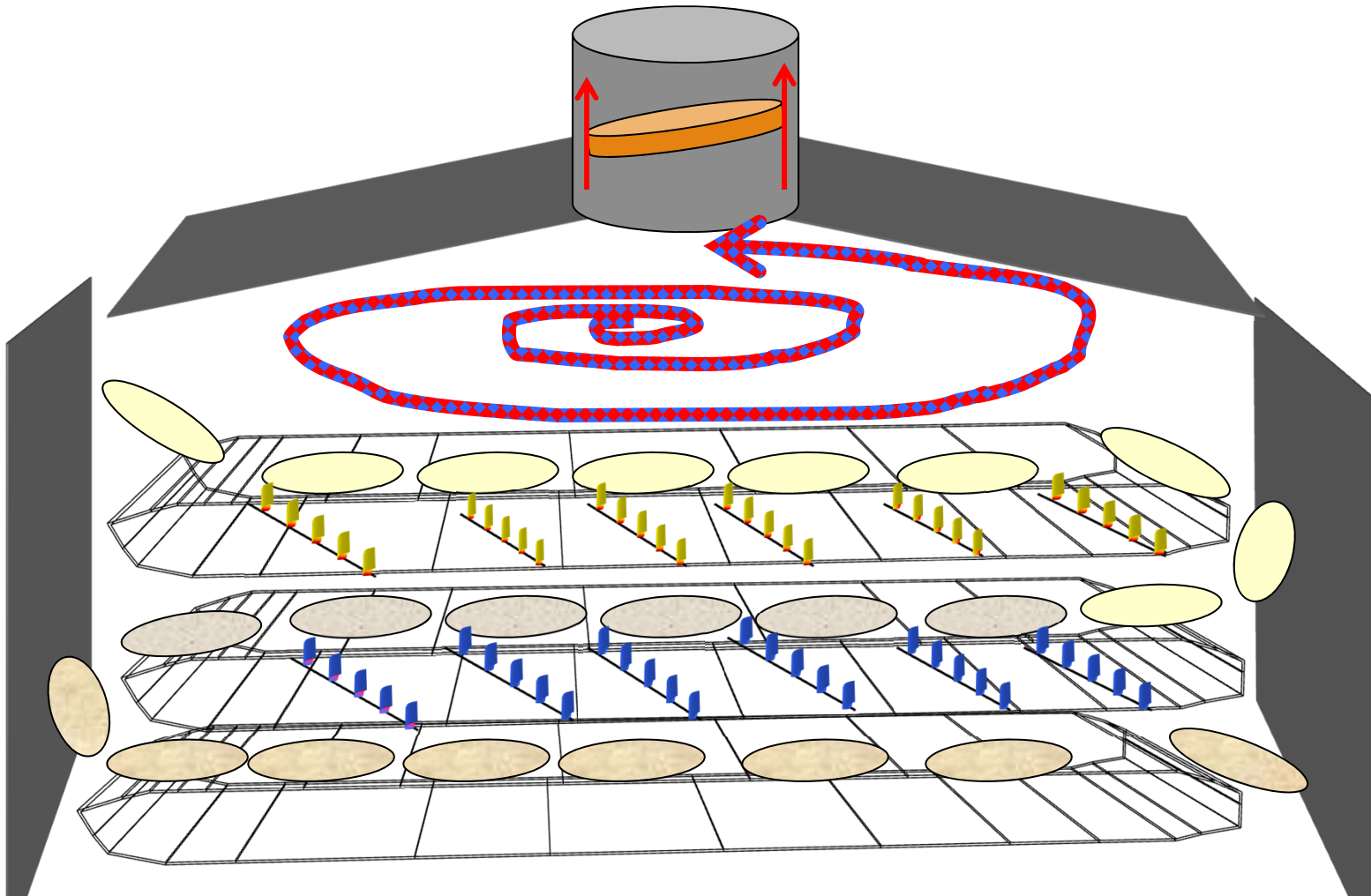
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Tortilla oven bakes using conductive heat

- Most efficient method for baking tortillas

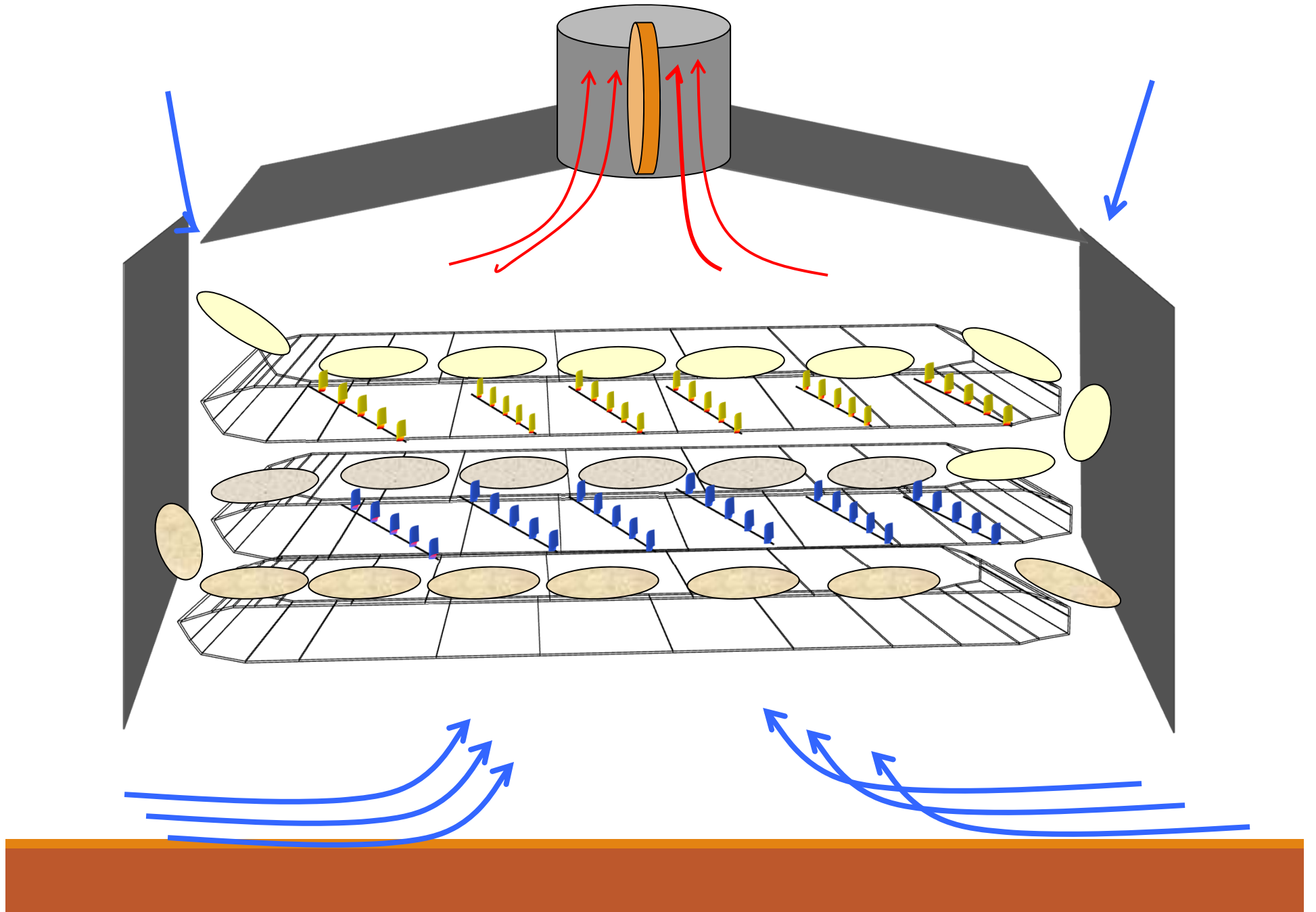
Other heat types are conductive and radiant.

Ideally a flour tortilla bake should be 100% conductive and 0% radiant or conductive



Negative air pressure increases humidity in the baking chamber as well as increases the latent heat (convective and radiant). Causes pillowing and increases surface moisture





# Cooling and packing

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Cooling room prepares the tortilla for packing

- Ideally tortillas should be packed  $\pm 10^{\circ}\text{F}$  room temperature
- Cooling room should have low humidity  $< 60\%$
- Adequate air flow to evaporate any surface moisture