

Three round loaves of dough are arranged horizontally across the frame. The central loaf is the largest and most prominent, showing a soft, slightly textured surface. The two loaves on either side are partially visible, framing the central one. A solid red horizontal band is superimposed over the middle of the image, containing the title and subtitle text.

# Dough Conditioners

An overview of which ones do what



# 1

## What are Dough Conditioners?

Since the beginning of fast-paced and high-volume bread production, dough conditioners have helped ensure product consistency and quality

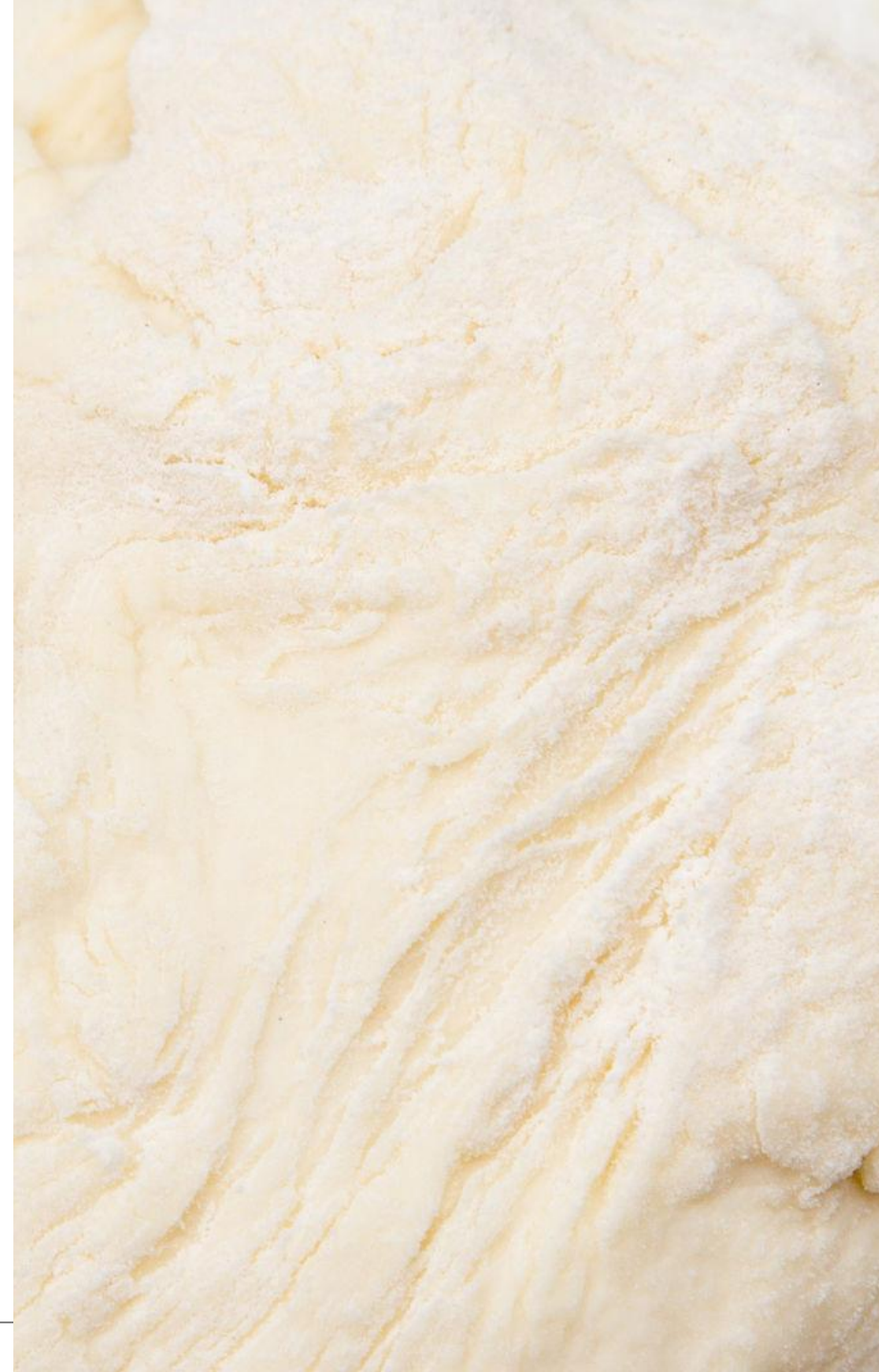
**They offer specific solutions to your product.**



## 2

# What Do They Do?

- ✓ Improve dough properties to help machinability
- ✓ Helps dough recover from high stress situations
- ✓ Cut down on hydration time through oxidizers
- ✓ Correct flour strength issues
- ✓ Reduce mixing times
- ✓ Create consistent outcome and quality
- ✓ Allow for mechanical dough processing
- ✓ Optimize the supply chain



# 3 Types of Dough Conditioners

There are a variety of ingredients in dough conditioners, used alone or in combination, depending on the desired outcome.

## Ingredients

- ❑ Oxidizing agents
- ❑ Reducing agents
- ❑ Yeast nutrients
- ❑ pH Regulators
- ❑ Crumb softening emulsifiers
- ❑ Dough strengthening emulsifiers
- ❑ Enzymes
- ❑ Sugars and malt flour



## 4

# Oxidizing Agents

Oxidizes the free sulfhydryl groups of gluten to form disulfide bonds, resulting in a more cross-linked protein structure.

EXAMPLES	EFFECTS
<ul style="list-style-type: none"><li>○ <u>Ascorbic acid</u></li><li>○ <u>Azodicarbonamide (ADA)</u></li><li>○ <u>Potassium iodate</u></li><li>○ <u>Potassium bromate</u></li></ul>	<ul style="list-style-type: none"><li>○ Stronger dough</li><li>○ Better resiliency</li><li>○ More gas retention capacity</li><li>○ Bigger volume</li><li>○ Tighter crumb</li></ul>



# Reducing Agents

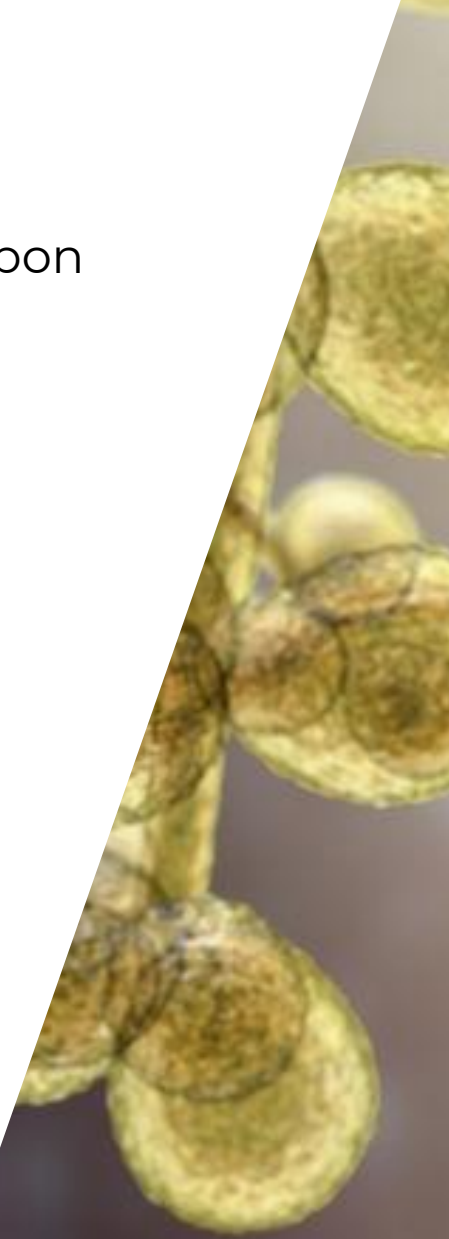
They have a reactive sulfhydryl group capable of cutting the disulfide bonds in gluten, making the proteins more extensible.

EXAMPLES	EFFECTS
<ul style="list-style-type: none"><li>○ <u>L-cysteine</u></li><li>○ Metabisulphite</li><li>○ Inactivated yeast</li><li>○ Modified gluten</li></ul>	<ul style="list-style-type: none"><li>○ Shorter mixing times</li><li>○ Extensible and flowy dough</li><li>○ Can create lower volume</li><li>○ Increased machinability</li><li>○ Improved pan flow</li></ul>

# Yeast Nutrients

Supports yeast growth, especially in sponge & dough and long fermentation processes, by brining minerals and nitrogen to the yeast. As a result, more carbon dioxide gas is produced.

EXAMPLES	EFFECTS
<ul style="list-style-type: none"><li>○ Ammonium sulphate</li><li>○ Ammonium chloride</li><li>○ Ammonium phosphate</li></ul>	<ul style="list-style-type: none"><li>○ Faster fermentation</li><li>○ Great for brews</li><li>○ Higher volume</li></ul>



# pH Regulators

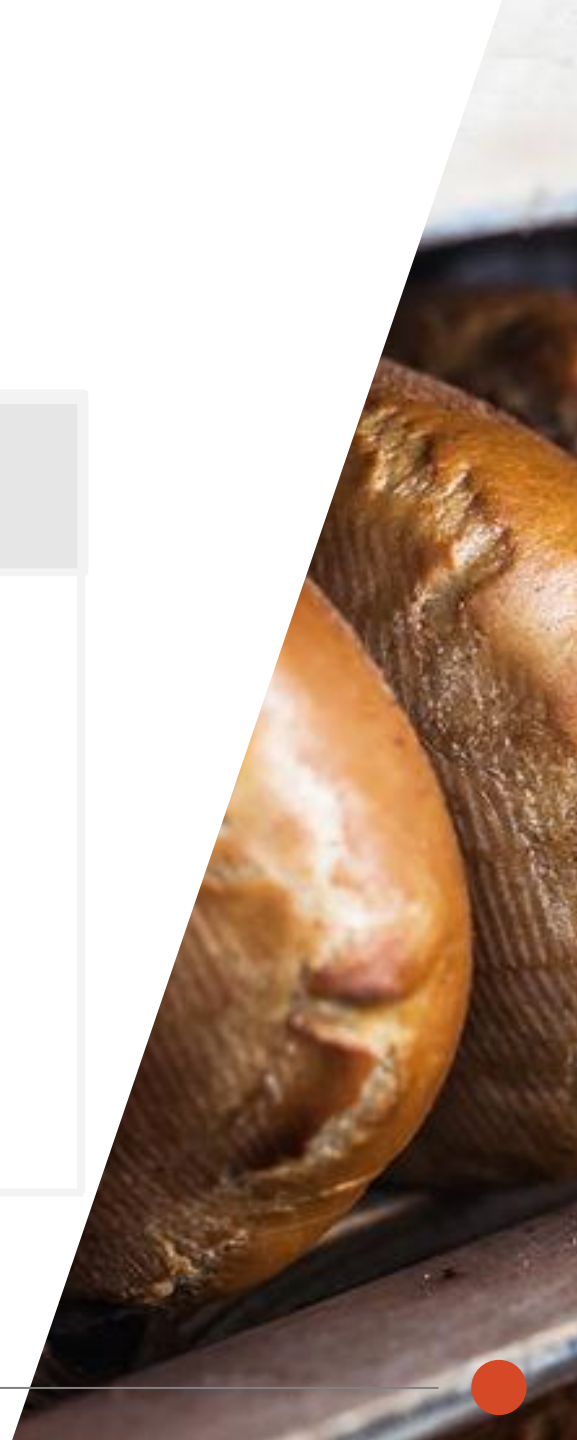
Adjusts the pH and mineral balance in water allowing for better gluten bounding or extending shelf life

EXAMPLES	EFFECTS
<ul style="list-style-type: none"><li>○ <u>Calcium carbonate</u></li><li>○ <u>Calcium sulfate</u></li><li>○ <u>Calcium phosphate</u></li><li>○ <u>Sodium phosphate</u></li><li>○ <u>Acids</u></li><li>○ <u>Vinegar</u></li></ul>	<ul style="list-style-type: none"><li>○ <b>Faster fermentation</b></li><li>○ <b>Higher volume</b></li><li>○ <b>Dough conditioner</b></li><li>○ <b>Extra yeast nutrient</b></li><li>○ <b>Texture and flavor enhancer</b></li></ul>

# 8 Crumb Softening Emulsifiers

These are surface active agents. This variety binds with the starch molecule, resulting in less starch retrogradation.

EXAMPLES	EFFECTS
<ul style="list-style-type: none"><li>○ <u>Mono-glycerides</u></li><li>○ <u>SSL</u></li><li>○ <u>CSL</u></li></ul>	<ul style="list-style-type: none"><li>○ Softer, fresher crumb</li><li>○ Fine crumb grain</li><li>○ Shorter bite</li></ul>



# Enzymes

Proteins from a biological source that typically break down specific substrate molecules of flour, changing properties of dough formation and bread properties.

EXAMPLES	EFFECTS
<ul style="list-style-type: none"><li>○ <u>Amylases</u></li><li>○ <u>Xylanases</u></li><li>○ <u>Lipases</u></li><li>○ <u>Proteases</u></li><li>○ <u>Oxidases</u></li></ul>	<ul style="list-style-type: none"><li>○ <b>Extensible, strong dough</b></li><li>○ <b>Higher volume</b></li><li>○ <b>Richer crust color</b></li><li>○ <b>Increased crumb freshness and softness</b></li></ul>



# Sugars & Malt Flour

Acts as yeast food, and helps in maillard browning and caramelization reactions.

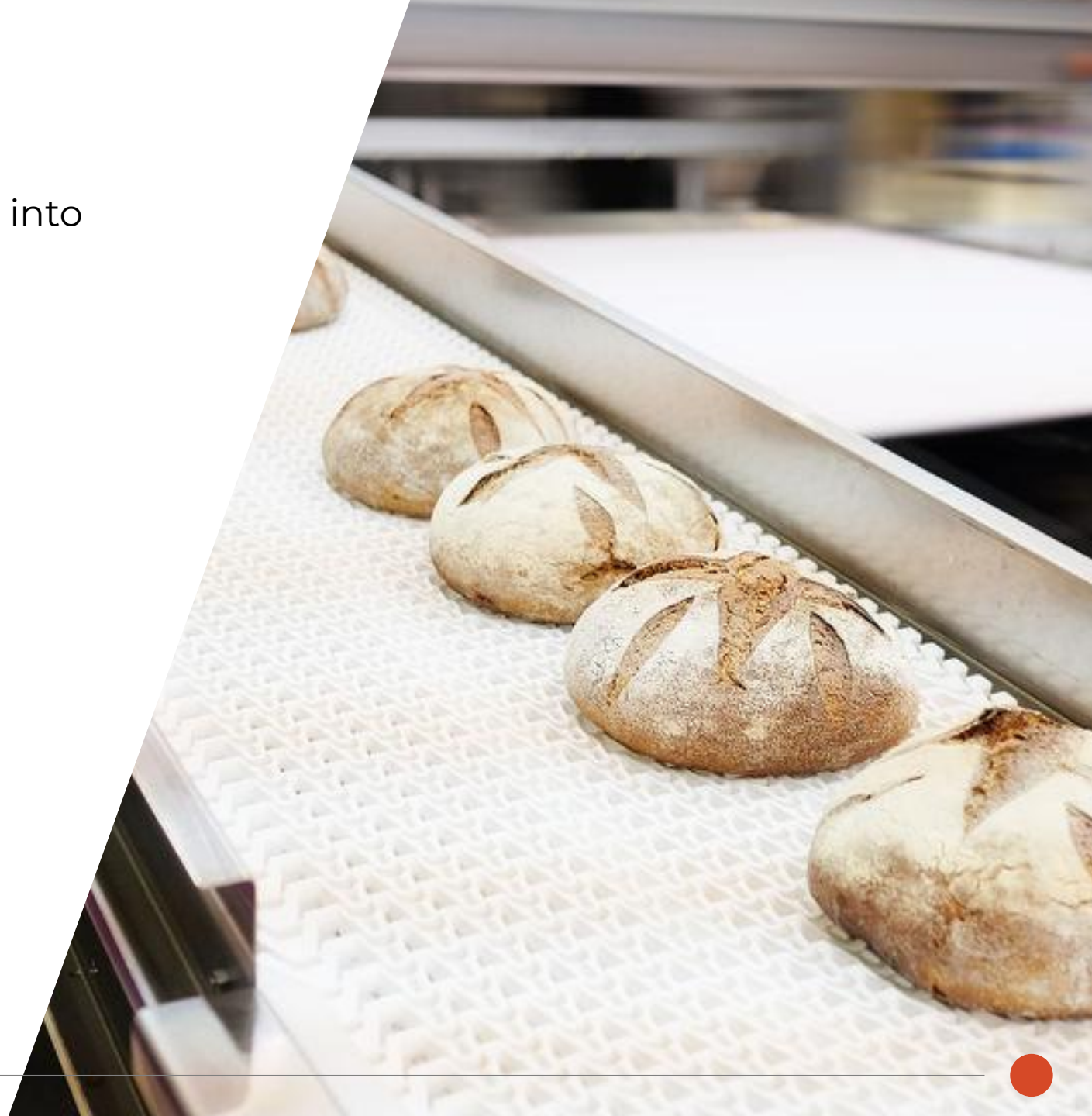
EXAMPLES	EFFECTS
<ul style="list-style-type: none"><li>○ <u>Sugar</u></li><li>○ <u>Lactose</u></li><li>○ <u>Malt flour</u></li></ul>	<ul style="list-style-type: none"><li>○ Quicker fermentation</li><li>○ Higher volume</li><li>○ Browner crust</li><li>○ Aromatics</li></ul>



# Other Ingredients

A few other ingredients are sprinkled into dough conditioners as functional ingredients or fillers.

- Vital wheat gluten
- Preservatives
- Oils
- Starches
- Salt



# 12 The Bottom Line

With a quality and consistent product, your customers are more likely to be happy and keep coming back. Many of these dough conditioners increase freshness and shelf life, another boost for sales.

**It will also optimize your entire process, cutting costs.**





# Podcast Ep 12: What are Enzymes?





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