Culinary Institute of America

Baking Boot Camp

Day 3: Stages of Breadmaking

Learning Objectives

- Identify the 12 steps in the breadmaking process.
- Describe the purpose and function of each step.
- Recognize how each stage affects the final breads texture, flavor, and structure.
- Distinguish between steps that develop gluten and those that influence fermentation.
- Define two types of fermentation.

12 Steps in Breadmaking

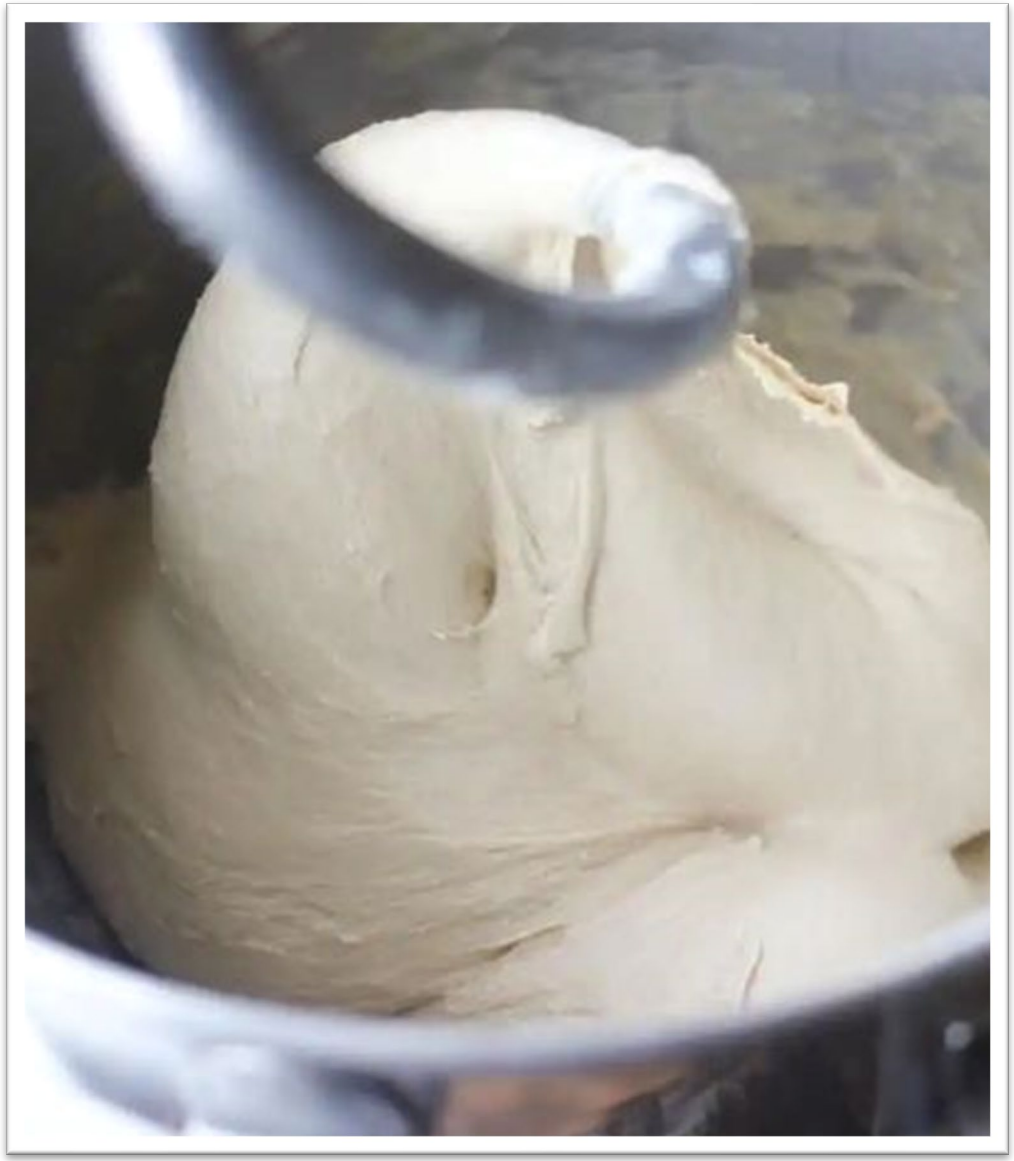
1. Scaling
2. Mixing
3. Bulk fermentation
4. Folding (punching down)
5. Dividing
6. Pre-shaping (rounding)
7. Benching (resting)
8. Shaping
9. Final Proofing
10. Scoring
11. Baking
12. Cooling & Storing

Scaling

- Accurately measure ingredients by weight
- Proportionately adjust the amount of each ingredient used to meet recipe yield needs
- **Importance:** consistency, recipe balance
- Sets the stage for proper gluten development

Mixing

- Combine the ingredients to form a cohesive dough
- Gluten forms when flour proteins combine with water and are worked through mixing or kneading
- Mixing activates yeast and allows fermentation to begin



How Gluten Develops

Hydration:
activates gluten forming proteins (glutenin + gliadin)

Resting:
(fermentation) allows further development

Mixing/kneading:
aligns and strengthens them into an elastic structure

What is Fermentation?

The process where yeast or bacteria break down sugars, producing gas CO_2, alcohol, and acids

Key factors:

- Time
- Temperature
- Hydration
- Sugar + salt levels

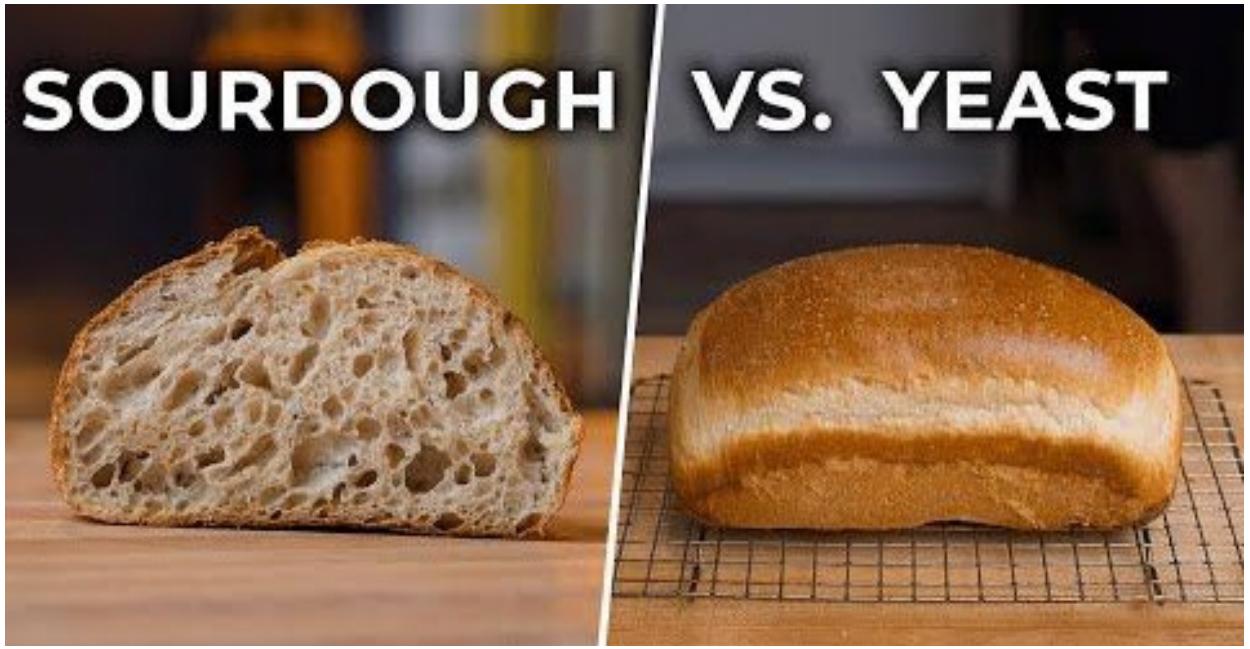
Why it matters?

- **Leavens:** dough (makes it rise)
- **Develops flavor:** more complex, slightly tangy
- **Improves texture:** stronger gluten, softer crumb

Types of Fermentation

Bacterial fermentation: uses good bacteria (like in sourdough) to make acid

Yeast fermentation: tiny living organisms (a kind of fungus) that eat sugar and burp out gas



Bulk Fermentation

- Dough rests and rises as yeast produces CO_2 and alcohol
- Beginning of the development of flavor and gluten structure of the bread

Bulk fermentation can last anywhere from 3.5 to 7 hours

Folding (Punching Down)

- Deflates gas, redistributes yeast and nutrients
- Expels CO_2 and allows oxygen into dough
- Strengthens gluten and balances temperature

Dip your hands in water before folding to prevent excessive sticking

Dividing

- Dough is portioned into equal weights to ensure even baking and uniform products
- Should be done quickly

Avoid any unnecessary cutting of numerous small pieces

- **Texture:** too many cuts disrupt gluten, leading to tougher/denser dough
- **Even baking:** uniform pieces rise and bake more consistently
- **Efficiency:** extra cuts create waste and toughen reworked dough

Pre-shaping (Rounding)

- The first step toward creating the desired shape for the dough
- Loosely shapes dough to relax gluten
- Prepares dough for final shaping
- A smooth finish is ideal to avoid exposed edges that dry out faster

Benching (Resting)

- After pre-shaping, the dough rests on the bench to keep fermenting
- Short rest (10-20 min) to allow gluten to relax before final shaping
- Dough should be kept covered to avoid getting a “skin”
- Skin is a dried, leathery layer that forms on dough as surface moisture evaporates, causing dehydration and a harder texture

Shaping

- The desired shape/ final form is created (loaf, baguette, roll, etc.)
- Important to expel some but not all the gasses
- Proper shaping ensures even rise and nice final appearance

Shaped dough is set on a pan, metal form, linen cloth, couche, or banneton based on the type of bread being made

Options for Proofing

Couche

Banneton

Metal baking form

Sheet tray

Final Proofing

- Dough must be kept covered or placed in a humidity-controlled proofing cabinet to prevent a “skin” from forming

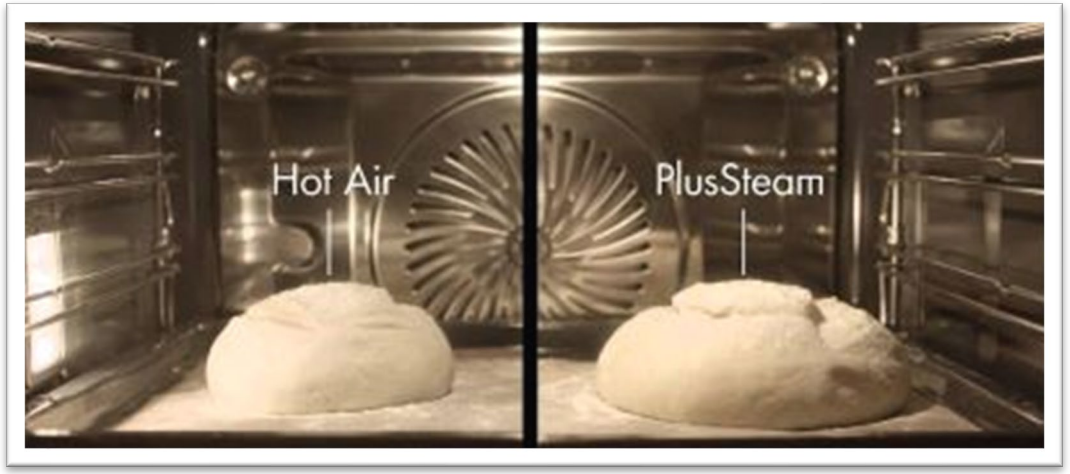
- The ideal temperature is 98˚F for the yeast
- Time of this step will vary greatly depending on ingredients, ratios, and mixing temperatures

Scoring

- Decorative and practical cuts in the dough
- Allow for even and controlled expansion during the initial bake
- Improves crumb texture by allowing for better expansion
- Applying a wash, such as egg or milk, is typically done at this stage

Baking

- Lean dough is given steam right after being placed in the oven
- Improves crust and allows for greater expansion
- Steam should be vented from oven
- Oven spring occurs in the first minutes of baking
- Crust forms and sugars caramelize



Cooling

- Important to allow residual moisture to dissipate
- Open wire racks or cooling screens are used
- Bread should never be wrapped until it has completely cooled
- Moisture will ruin the crust and can the bread to get soggy or misshapen

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Any Questions?