

# BAKING UPDATE

## Pain au Levain

Practical technology from Lallemand Inc., parent of American Yeast Sales, producers and distributors of Eagle® yeast, fresh and instant.



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### Pain au Levain Production

**P**AIN AU LEVAIN is a traditional french bread type with a name that means literally “leavened bread.” It is a thick-crust, mildly sour, hearth bread that is best known in the U.S. as “sourdough.”

#### CHARACTERISTICS

Compared with the french baguette, pain au levain has a thicker and darker crust that can even include spots of burnt carbon. It also comes in more variations, with dusting flour and score marks used to give products from different bakers a distinctive appearance. The crumb is tan-colored, very open, and irregular with a tough, chewy texture. The aroma and taste of the bread should be mildly acidic without a strong vinegar smell.

Compared to other hearth breads, pain

au levain has a good shelf life even though it normally contains no sugar, fat, or emulsifiers.

#### PRODUCTION

Pain au levain is made with a preferment or levain step using a combination of yeast and bacteria. The traditional approach begins with a spontaneous starter or “chef,” while modern variations use commercial starter cultures.

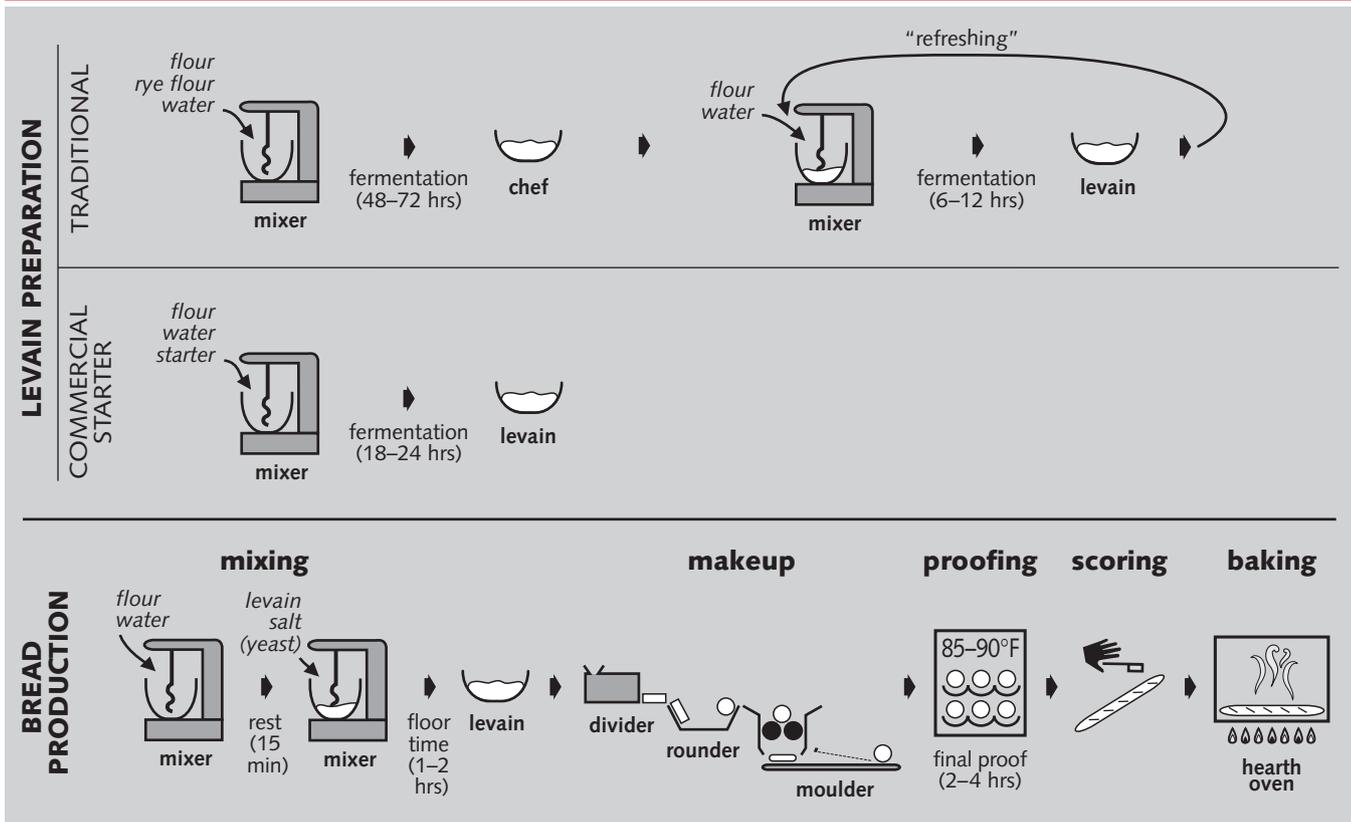
The chef is prepared by mixing flour, rye flour, or other ingredients with plain water, or the water from boiled potatoes, and allowing the dilute mixture to spontaneously ferment. After some time the naturally occurring yeast and bacteria from the ingredients or the air multiply and begin produc-

ing acid and carbon dioxide gas. Once gas production has stopped, flour is added to form a thick dough and fermentation begins again. After the dough has increased to two to four times its original size, the chef is ready.

The levain is first prepared from the chef by adding more flour and water to form a larger dough. After that the levain is maintained or “refreshed” by blending back a portion with flour and water to keep it active. Fermentation time varies with temperature, from about six hours at 86°F (30°C) to twelve hours at 68°F (20°C). A liquid levain is sometimes also used, containing about equal amounts of flour and water.

*Continued*

### PAIN AU LEVAIN PRODUCTION PROCESS



## Pain au Levain Production (Continued)

Commercial starter cultures can be used to eliminate the chef step and go directly to the final levain. The starters contain selected strains of bacteria or yeast and bacteria so that fermentation flavor and timing are more predictable. Both frozen and dried cultures are available, but the dried cultures are more stable and easier to use.

Levain conditions affect the balance between yeast and bacteria fermentation. Firm levains favor increased acid production while liquid levains produce more fermentation aromas. Similarly, warm temperatures (95°F/35°C) promote acid production by the bacteria and cooler temperatures (75°F/24°C) favor the more aromatic compounds produced by the yeast. A firm levain fermented at 80°F (27°C) represents a good compromise or starting point.

**Mixing** is usually done in a slow-speed spiral mixer using a two-step or “autolyze” process. The first step mixes flour and water just to the point of incorporation. After a 15 to 30 minute rest, the levain and salt are added, then mixed again for about two

### PAIN AU LEVAIN FORMULA

LEVAIN (PRE-FERMENT)	
Flour	100%
Water	55%
Culture: Levain OR Starter	15–25% 0.05–0.17%

DOUGH	
Flour	100%
Water	65%
Salt	2.5%
Levain	25–50%
Yeast	0–0.25%

minutes after dough cleanup.

**Floor time**, or the first bulk proof, takes about 1 to 2 hours at about 75° to 80°F (24° to 27°C).

**Makeup** involves dividing, rounding, a short rest, then moulding into round or oval shapes. Traditionally the dough pieces are

placed on bannetons, canvas-lined or wicker baskets, which support them while they proof.

**The final proof** takes 2 to 4 hours at 85° to 90°F (29° to 32°C). After proofing, the loaves are scored with a razor blade and (optionally) dusted with flour.

**Baking** takes place on the deck of a hearth oven with steam for about 30 to 50 minutes at about 400° to 470°F (204° to 243°C).

### INGREDIENTS

**Flour** should preferably be unbleached, winter wheat, about 11.5 to 12 percent protein, 0.5 percent ash content. Extensibility is more important than strength.

**Water** absorption is relatively high—60 to 70 percent in pain au levain. The desired crust and crumb texture require a “pate batarde” or slack dough that makes the high absorption necessary, especially when using high-quality American flour.

**Salt** level varies from 2 to 2.5 percent and is normally added at the second mixing stage, after the levain.

**Yeast** is used as an optional ingredient on the dough side. The addition level is kept low to avoid affecting the levain flavor.

**Other ingredients**, including ascorbic acid and inactive yeast (a natural source of glutathione), are sometimes used to adjust the oxidation level or improve dough extensibility. 

## Lallemand 1 Step™ Starters

**L**ALLEMAND 1 Step™ starters are blends of selected bacteria and yeast that can be used to enhance the flavor, texture, and shelf life of baked goods.

The yeast and bacteria strains in 1 Step™ starters were selected using the “free choice” flavor profiling technique to find optimal combinations for specific applications. They are grown in pure cultures then dried to 5 percent moisture and sealed in protective packaging to preserve their activity. DNA fingerprinting is used to make sure the strains remain pure and true to type, and bake testing is used to make sure they perform consistently.

Lallemand 1 Step™ starters have a broad range of potential applications. They can be used to replace the slow and difficult starter preparation process for traditional sourdough breads. They can also be used to add flavor and texture to common wholesale bread types by using existing sponge and dough or flour brew equipment. And they can be used to create distinctive new products with unique flavors and textures.

The combinations of bacteria and yeast available include:

**DV1-10** which produces a levain with mild acidity and fresh aromatic flavors, suited to Brioche and Panettone.

**DV1-11** which produces moderate acidity with complex fermentation and aromatic

notes, ideal for Pain au Levain and Ciabatta.

**DV1-12** which produces levains with good acidity supported by spicy fermentation notes, suited to Pain Campagne, Pain Rustique, and Pain au Levain.

Compared with traditional starter preparation, Lallemand 1 Step™ reduces labor, saves time, improves consistency, and eliminates risk. The same process that can take four days or more with traditional techniques can be done in one day with 1 Step™, and with better results.

Compared with frozen starters, Lallemand 1 Step™ is more concentrated, more stable, easier to store, and easier to use. With 1 Step™ all you do is open a pre-measured sachet, add warm water, and mix.

Compared with other bacteria-only starters, Lallemand 1 Step™ offers the benefits of unique bacteria/yeast blends. The result is a richer, more complex flavor that's more like a natural mixed culture. Different 1 Step™ blends can be used for specific results, and combinations of the blends allow for even more possibilities.

Lallemand Inc. is a major North American supplier of bakers yeast and related ingredients and an international leader in supplying specialty yeasts and bacteria. An experienced Technical Team is available to support 1 Step™ starters and all Lallemand products. 

### LALLEMAND BAKING UPDATE

*Lallemand Baking Update* is produced by Lallemand Inc. to provide bakers with a source of practical technology for solving problems. If you would like to be on our mailing list to receive future copies, or if you have questions or comments, please contact us at:

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