20 LEAN BREADS

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LEAN BREADS

Mantuan bread is named for the city of Mantua in Lombardy, Italy, and it is traditionally made by rolling up dough before proofing and scoring. For more on the technique we used to make this multicolored version, see Mantuan Bread, page 90.

All the breads in this book include flour, water, salt, and a leavener. But what makes one bread different from another? How do the same four ingredients make both a crispy French-style baguette and a sourdough? For this book, we classified hundreds of different breads—new and old, from all over the globe—into a handful of categories to create our recipe chapters. Lean breads were the obvious starting point.

So, what are lean breads? They are low in fat and typically don't contain sugar. But a lean bread can be made with any kind of flour. It can be white or whole wheat, and it can use any kind of grain. Similarly, it can be made with either commercial yeast or levain. That makes for quite a bit of variety. In this chapter, we'll explore six types of bread that fall under our lean bread umbrella: French lean breads, sourdoughs, ancient grain breads, country-style breads, 100% whole wheat breads, and high-hydration breads.

To us, the epitome of lean bread is the French baguette, a loaf many people in France eat every day and one that people all over the world recognize. In this chapter, we'll show you how you can make a good, straightforward baguette in an afternoon, and we'll also introduce you to the A-Plus Baguette, a 5-hour excursion that will take you to a place of crackly, chewy baguette bliss. We'll explore some variations on the theme, including everything from Vietnamese banh mi (page 53), the bread for which the sandwich is named, to loaves made with vegetable purees and fruit gels (pages 3·392 and 51).

Next, we'll move on to sourdoughs. For these, you'll start with the same basic ingredients, but instead of commercial yeast, the leavener used for most lean relatives of the baguette, you'll use levain, which is a living brew of wild yeast and bacteria that imparts both a sour quality and a depth of flavor you don't typically get with commercial yeast (see The Properties of Levain, page 3·44). We'll introduce you to some new ideas, including Second-Chance Sourdough (page 70) and breads that stretch the traditional boundaries of sourdough, such as Pressure-Caramelized Potato Broth Sourdough (page 84) and Matcha Green Tea Sourdough (page 74).

The next three types of bread in this chapter can seem very different. So-called ancient grains are growing in popularity, and we were eager to explore how these grains work. We discovered some unique flavor notes and developed a number of recipes that include up to 40% flour from other (nonwheat) grains, such as spelt, barley, and emmer (see pages 125–133). But we also found that we needed to employ a few tricks to get the most out of these low-gluten or gluten-free flours. The same goes for 100% whole wheat lean breads. Bran and germ generally interfere with gluten development, but we found some effective ways to deal with that. On page 137, we'll give you the low-down on how to make a crusty whole wheat bread.

Next, we'll move on to country-style breads. To many people, "country-style bread" means rustic bread, but what does "rustic" really mean? We came up with a specific, though admittedly somewhat arbitrary, definition. Our country breads contain 21%–30% nonbread (i.e., nonwheat) flour. We'll get more into the origin of this term, too, and look at some iconic examples (see page 96). We've also created some unique versions of this style of bread, including Brown Rice Country Bread (see page 111).

Finally, we'll discuss high-hydration breads, which are made with a large percentage of water. These breads are often characterized as "traditional," involving a bread-baking ethic that's a throwback to times past. But we'll tell you why we believe high-hydration loaves were actually among the first Modernist breads (see The Recent Origin of Ciabatta, page 1·129). Ciabatta is a well-known example, and it is our master recipe for this section. We'll also tell you about tricks you can use to wrangle this sometimes difficult dough (page 3·144).

There are, of course, breads that we don't include in this chapter. Rye is a big one. Certainly, many rye breads could be called lean doughs due to their lack of fat, but true ryes are mixed differently and have much different results than lean doughs. You'll find ryes in two places: a chapter devoted to rye starts on page 328, and a chapter devoted to brick-like breads starts on page 410. You'll also find additional whole-grain bread recipes there, covering dense whole-grain loaves. Focaccia is another bread you'll learn about elsewhere—at first blush, it seems to have a lot in common with a baguette, but because it's flat and enriched with a small percentage of oil, we included focaccia with our flatbreads on page 5·76.

Throughout this process, we had a lot of fun wrestling with these lines of demarcation. We also realized we were wading into a deep well of entrenched opinions—after all, bread has been around for thousands of years, and to say there are some firmly held beliefs as to what defines certain types of bread is to put it lightly. As you begin trying some of these recipes, we encourage you to think beyond dogmatic definitions while keeping an open mind.

We've outlined the steps to producing good bread—from ingredient functionality to the use and care of preferments, and from mixing and shaping to dividing and baking—in volume 3. In the chapters that follow, we'll put all that background to use as we introduce you to the hundreds of recipes we developed for this book. You'll soon be well down the path to baking a wide variety of wonderful breads!

LEAN BREAD INGREDIENTS

When you think about what makes a lean bread, start by considering "the big four": flour, water, salt, and a leavener (the last of which, depending on the bread you're making, could be commercial yeast and/or levain). Flour is the primary component of bread and provides the structure that anchors the other ingredients in the baked loaf. Baguettes, the most iconic example, are typically made with refined white flour, but there's no law saying you can't make them with other kinds of flour. If you choose to use any of those other kinds, such as ancient grains or whole wheat, just remember that flours vary in bran, germ, and protein content, which will affect the composition of the dough and the characteristics of the baked loaf. Our country-style breads use 21%–30% of these types of flours (see page 96). Bread flour with 11.5%–12% protein is the easiest flour to work with, but you can experiment by adding small amounts of other flours (up to 30%) with little to no effect on loaf volume.

For more information on ingredient functions in bread, see chapter 8 on Flour, page 2·192; Yeast and Leavening, page 2·266; and Other Bread Ingredients, page 2·354.

Water comes next. How much water you use will affect the bread's texture, fermentation, and enzymatic activity. In our lean breads, the percentage of water ranges from just under half the weight of the flour all the way up to 120% of it (see page 165). Salt should be about 2% of the total flour content in most of these breads. (Breads that are 90% hydration and above will need about 2.5% salt because of their higher water content.) We use commercial yeast in our French lean bread recipes—often in the form of a poolish—while our sourdoughs, ancient grain breads, whole wheat breads, and nearly all our country-style breads use levain as a preferment.

So given only these basic four ingredients, what do you get? Since you're using mostly white wheat flour, you'll get a bread with a straightforward toasted wheat flavor that's almost buttery, with a chewy crumb and a crackling crust. If the recipe calls for a high percentage of water, you'll get a more open-textured crumb bread with larger holes. Long fermentation times and the use of levain have significant effects, too: compared with commercial yeast, levain will generally result in deeper and more sour flavors, as well as darker browning. We also have some recipes, such as Second-Chance Sourdough (page 70), that make use of both commercial yeast and inactive levain, giving you full-flavored bread that doesn't tie up the refrigerator for hours on end. Other sourdoughs, like our 48-Hour Sourdough (page 374), use a combination of levains and cold-proofing to maximize the flavor in the bread.

Beyond the basics, we have some variations. Even though the breads in this chapter all qualify as lean breads, we'll sometimes call for just a small amount of fat in a recipe. Adding fat can tenderize the crumb by making it seem more moist than it actually is, and it also delays staling a bit. That said, there are trade-offs when you start increasing the amount of fat in a dough. We'll explore that more in the chapter on Enriched Breads (beginning on page 184).

We use fruit and vegetable purees to create flavor variations for each of our master recipes, and we also include some breads that are made with a little sugar or honey. Sometimes, we'll use malt syrup to darken the crust. In any case, the amounts are usually quite small and won't make the bread noticeably sweet. For the most part, you'll be playing with "the big four" ingredients and then building on those. And what you'll wind up with is a surprising amount of variation.

Common shapes for lean breads include baguette, epi, bâtards, various sizes of boules, and rolls. For more on shaping these breads, see chapter 14 on Shaping, page 3·130.

THE ART OF

Dalí's Bread Sculpture

Salvador Dalí (born May 11, 1904; died January 23, 1989, in Figueres, Spain) is the best-known painter of the surrealist style, a movement started in the 20th century by André Breton. Dalí was a prolific artist who had an instantly identifiable trademark style.

Dalí was continually on the lookout for inspiration, and he experimented with media beyond paint and canvas. In 1969, he asked Parisian baker Lionel Poilâne (see his profile, page 3·244) to create pieces of bread in artistic shapes that Dalí specified. Among other things, the resulting collaboration produced an entire bedroom with furnishings and decorative items made out of bread. According to Poilâne, "Dalí . . . imagined situations in the future, apocalyptic visions where furniture made out of bread would gain value and become indispensable consumer goods. He was certain that the possibility of eating furniture . . . would save millions of lives over the centuries."

Dalí also incorporated bread into many of his paintings and sculptures. One sculpture, titled *Retrospective Bust of a Woman* (1933), portrays a woman balancing a baguette and an inkwell on her head while wearing two ears of dried corn and a scarf around her neck. Ants crawl on her face.

We reinterpreted Dalí's idea by using a laser cutter to etch the image of the woman (without the baguette and inkstand) into Plexiglas (see photo below). We added a well-made baguette, rotating it 90° relative to the original so that the attractive top of the loaf faces forward.

We made our own interpretation of the iconic *Retrospective Bust of a Woman* (*above*). The Dalí Theater-Museum (*right*) in Figueres, Spain, is covered in sculptures of tricorn bread buns.

PARAMETRIC RECIPE

LEAN BREADS

Whether you're exploring the crust-forward texture of leaf-shaped fougasse or the wide-open alveoli of ciabatta, there's a process to follow when making lean breads. Most of the recipes in this chapter have the same general steps. Some have variants, such as the recipes that call for adding inclusions (see page 2·358) or those that use a levain or other preferment (for which you'll have to plan ahead). You can speed up levain-based breads by adding a little commercial yeast, but the depth and quality of flavor won't be exactly the same (see page 54). Our whole wheat lean breads also require some additional steps, which you'll see in the recipes starting on page 137.

When baking, it's important to measure your ingredients precisely—and when we say "measure," we want you to *weigh* the ingredients because measuring by volume is imprecise. A kitchen scale is an inexpensive investment that can significantly improve your bread. If you don't have one already, we highly encourage you to get one.

The amount of each ingredient shows the range of values we've defined in our research. Note that the figures are stated as baker's percentages. In baker's math, the total weight of all the flours equals 100%, and the other ingredients should be measured relative to that 100% (see page 2·68). Sometimes, we recommend adding the liquid in two stages. If that's the case, set aside the appropriate amount indicated in the recipe.

Treat this template as a general guideline. For more details on any of these steps, see our technique chapters and the master recipes. We'll point you to those in the relevant steps below.

1 Select the kind of bread you want to make.

2 Feed or build the preferment as indicated (see pages 3·20–27 and 3·54). If you're making levain-based bread, you'll need to plan ahead—if you're starting a levain from scratch, it will take at least 5 days to ripen. (If you are using only commercial yeast, skip this step.)

3 Weigh the flour(s).

4 Weigh the commercial yeast and fat (if applicable), keeping the ingredients separate.

5 Weigh the salt and set aside.

6 Weigh the water. The water should be at room temperature. (If you're baking on a large scale, see Desired Dough Temperature, page 3·92.)

7 If indicated, set aside the appropriate portions of your weighed water and oil. You will add the reserved liquid during final mixing.

8 Mix all ingredients except for any reserved liquid, salt, and inclusions (if any) until the dough becomes a shaggy mass.

9 Turn off the mixer, and cover the dough with a clean plastic sheet. Autolyse for 20–30 minutes (see page 2·53).

10 Add salt and any reserved liquid. Mix to incorporate, and then add the fat and mix to medium gluten development (see page 3·89). Mix any inclusions into the dough, if applicable, on low speed until fully incorporated (about 1 minute).

11 Place the dough in a well-oiled plastic tub with a lid or in a well-covered bowl, and leave it to bulk ferment at room temperature (21 °C / 70 °F) for the time indicated, folding at regular intervals as detailed.

12 Divide the dough into pieces (see page 3·136).

13 Preshape the dough as indicated on pages 3·152–157.

Best Bets for Lean Bread Mixing and Baking

Breads	Preferment (%)	Bread flour (%)	Other flour (%)	Commercial yeast (%)	Fat (%)	Hydration (%)	Reserve liquid from initial mix (%)
French lean	66 poolish	100	n/a	0.2–0.5	n/a	68	5
sourdough	40 levain	>80	<20	n/a	n/a	72	n/a
country-style	29–30 levain	70–79	21–30	n/a	n/a	78	5
ancient grain	37 levain	60–70	30–40	n/a	n/a	77	5
whole wheat	40	100 (14% bran; 2.5% germ)	n/a	n/a	n/a	86	n/a
high-hydration	14 levain / 71 poolish	100	n/a	0.3–0.5	≤3	87	5–10

French lean bread

Sourdough

Ancient grain

Whole wheat

Country-style

High-hydration

14 If making French lean dough or sourdough, let the dough rest on the counter for the time indicated, then shape it.

15 Proof or cold-proof the dough (see pages 3·212–329).

16 Bake at 218–260 °C / 425–500 °F (see pages 32, 67, 103, 129, 141, and 159). You should wind up with an open crumb and firm crust.

17 Cool completely on a wire rack or metro shelf. This should take at least 1–2 hours. The larger the loaf, the longer it will take to cool (see Cooling, page 3·394).

Liquid added during final mix	Bulk ferment (h)	Divide	Shape	Bench rest (min)	Proof or cold-proof (°C)	Proof or cold-proof (°F)	Proof or cold-proof (h)	Bake (min)
reserved water	1½	350 g	baguette	15–20	n/a	n/a	1–2	15–20
n/a	3–4*	850 g	boule or bâtard	15–20	13 °C	55 °F	14	25–30
reserved water	3–4*	2 kg	miche	15–20	13 °C	55 °F	14	50–60
reserved water	3–4*	850 g	boule or bâtard	15–20	13 °C	55 °F	14	25–30
n/a	3–4*	850 g	boule or bâtard	15–20	13 °C	55 °F	14	25–30
reserved water at start of mix; reserved oil at end of mix	2½	1 kg	divide into square or rectangle	n/a	n/a	n/a	1–2	20–25

*If mixing by hand

WHERE TO START

Use this list to choose the bread you want to make—French lean bread, sourdough, or ciabatta—depending on how much time you have and what kind of bread you'd like to add to your repertoire. Our sourdough bread recipes, for example, feature signature inclusions, such as chocolate and cherries or blackberries and lemon verbena. These recipes also afford beginning bakers the opportunity to choose from direct dough, Van Over, or no-knead preparation methods.

I need tonight

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I have time

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Surfer Sourdough

Direct Ciabatta

Ciabatta with Gelatin

Modernist

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From left to right: Niçoise Olive French Lean Bread, Pumpkin Pie Filling French Lean Bread, Soy Sauce French Lean Bread, and Huitlacoche and Yellow Corn Sourdough

PROFILE

Steven Kaplan

A man considered by some to be the world's leading authority on French bread is a retired American university professor with a big personality—and some very strong opinions. (The French newspaper *Le Figaro* once called him "the ayatollah of bread.") But bread expert Steven L. Kaplan can also be quite funny.

"This is an abomination," he sighed after examining a baguette from a well-known Manhattan bakery on a tasting tour for *New York* magazine. "It looks like it has eczema," he said of another loaf, whose crust was pimpled and therefore—to Kaplan's mind—horribly flawed.

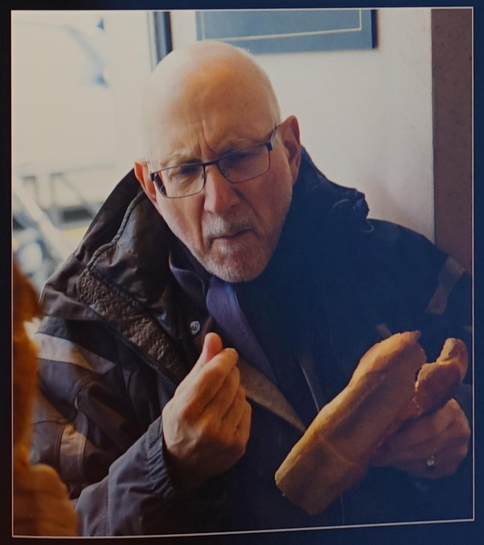
But he knows bread. Kaplan got hooked on French bread while studying in Paris in the 1960s and working in a bakery to learn the baking craft. Since then, he's used bread as a vehicle for studying history. To Kaplan, bread can reflect changing public tastes and cultural mores; from his perspective, it can also be an economic indicator and a focal point for political upheaval (see page 1·64). The French government named him a Chevalier de l'Ordre du Mérite in recognition of his work.

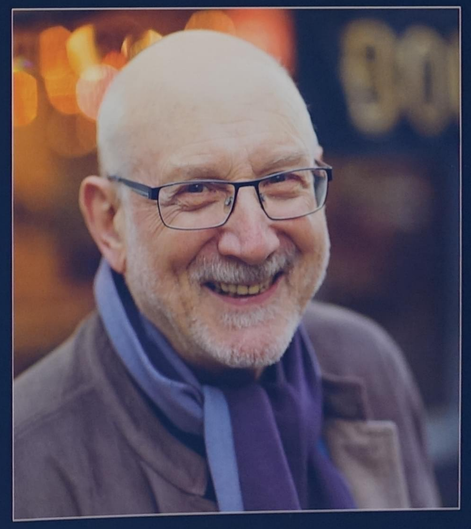
Kaplan taught history at Cornell University in Ithaca, New York, and is now a professor emeritus. He is the author of many books, including *Good Bread Is Back*, in which he traces French bread's nearly 100-year decline in quality and, ultimately, its resurrection. Well, its partial resurrection, anyway—alas, even Paris, the world's epicenter of baguettes, has plenty of duds. "DOA," Kaplan said of some of the examples he tasted on a Paris bakery tour. "Dead on arrival."

To Kaplan, bread is a living thing. He even equates bread with sex. In an appearance on the American talk show *Late Night with Conan O'Brien*, he scored some very compelling—and very funny—points trying to convince the program's flabbergasted host of this point. "One inseminates the flour with a fermenting agent . . . Bread swells; it has a gestational period. It mimics something of the experience of reproduction."

Bread should be "given the same majesty of tasting [as wine]," Kaplan says. He developed his own tasting scale that ranks bread on six qualities, ranging from aroma to mouthfeel to appearance. Like a wine expert, he spits instead of swallows when tasting. The differences between a good wine and an excellent wine, he believes, come from the care and time that a winemaker takes to ensure each step of the process is executed flawlessly. The same goes for bread.

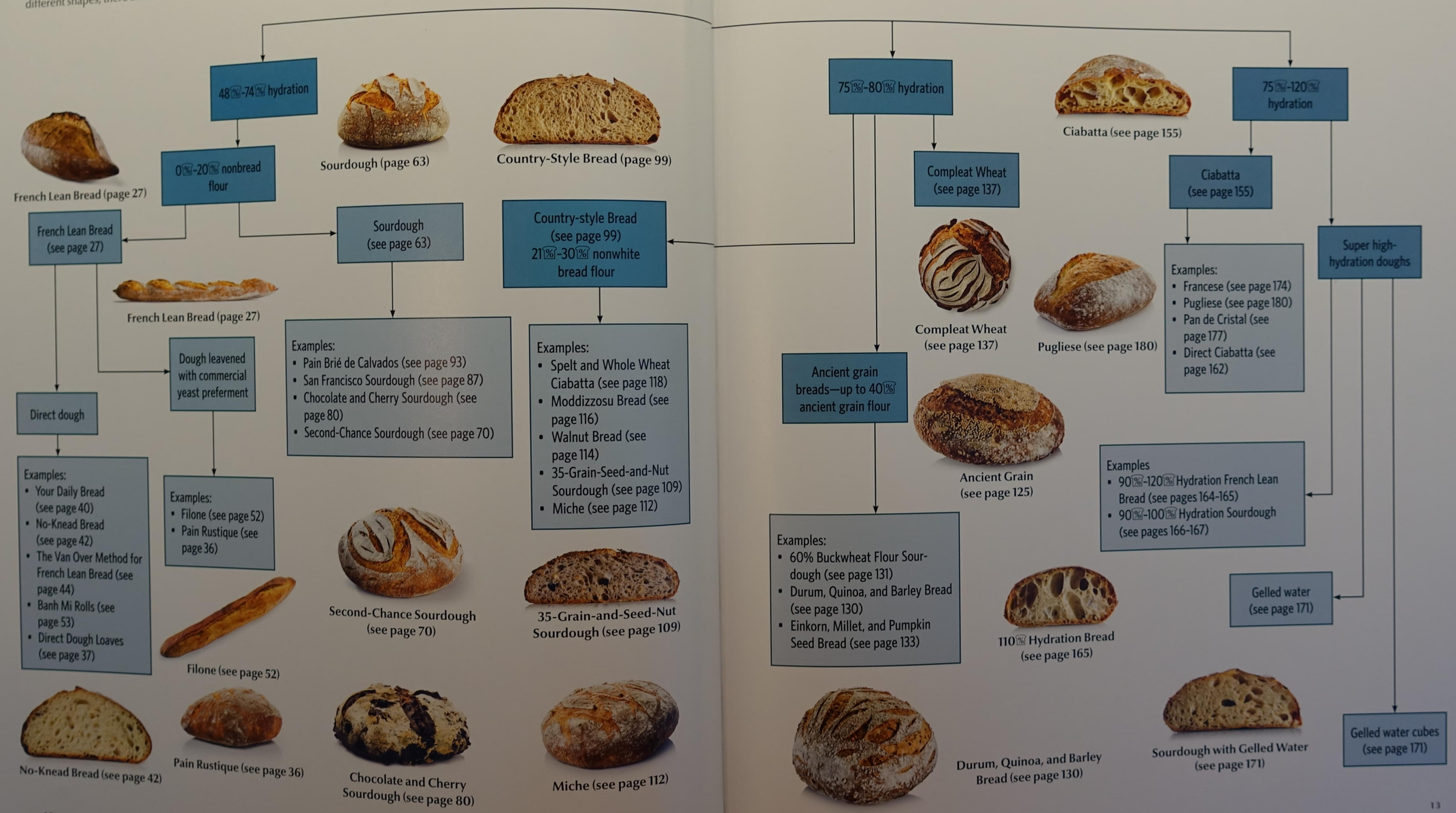
When he dines out, Kaplan carries a preferred loaf, just in case. Even at the finest restaurant, he won't hesitate to pull his baguette and knife from his briefcase if the bread isn't good enough. He claims that he's had chefs thank him for alerting them to their problematic bread. Maybe so. But some may also be cursing him under their breath.





LEAN BREADS AT A GLANCE

Which bread do you want to make? It's worth taking more than just flavor into consideration. Although French lean breads are perhaps the most straightforward and can be made into many different shapes, there are limitations: a traditional baguette (page 18), for example, is too long to fit in a home oven, and a traditional 2 kg/4.4 lb miche-sized loaf won't fit on a home baking stone. If you have a regular home oven and you're looking for these flavors, you should make a short baguette (page 3·156) or a boule (page 3·152) instead. And although sourdoughs have an interesting sour flavor, starting and feeding a levain is a bit complex and takes extra time and space. Similarly, although high-hydration breads are texturally interesting, you may fumble at first when trying to shape the unwieldy dough. Use this table as a handy reference to choose what's going to work best for you.



FRENCH LEAN BREADS

In bakers' vernacular, the term "baguette" often refers to a dough used to make a variety of breads. Historically, however, "baguette" refers to a shape: namely a long, thin stick. That's how we're using the term.

Baguettes are so ubiquitous that it feels like they must have a centuries-long history. In fact, the baguette wasn't introduced until after the First World War, when white flour became more widely available (see The Modern History of the Baguette, page 1·117).

If you make a French lean dough with 68% water, which is a common hydration level, it will have large alveoli. If you make that same dough into a miche-sized loaf, however, the alveoli will be much smaller. That's because miche loaves have less surface area; therefore, less of the dough comes into direct contact with the heat source. Large loaves take longer to spring in the oven, whereas small, thin loaves expand faster and more dramatically (see Surface Area versus Volume, page 3·348).

You already know you need just four ingredients to make French lean breads: flour, water, salt, and yeast. Simple, right? That's why we recommend this chapter as a good starting place for new bakers. Yet in France, these four elemental ingredients have been elevated to such a degree of refinement and elegance that the question of whose lean bread is best has long been a matter of intense debate. Techniques have been established, exported, and adapted—and some have been embraced globally. We've looked closely at many French lean breads and tested traditional and modern versions alike in an effort to determine what methods work best. In this chapter, we'll show you step by step how to make some really great bread.

The breads in this subchapter are considered "lean" because they contain a nominal amount of fat, if any, and are made mostly with white wheat flour. They're also made with commercial yeast rather than levain (you'll find levain-based breads in the next subchapter). In most of the lean recipes, we use commercial yeast to make a preferment called a poolish, which imparts a slightly tangy flavor and a nice finished appearance to the bread. We also include an even simpler recipe that calls for adding the yeast directly (see Direct Dough, page 37).

The best examples of French lean breads have a crusty exterior, a light yellow–beige crumb that yields to the teeth, a mild flavor that goes with nearly everything, and an aroma that will make you want to inhale deeply through your nose. The crust should crackle and shatter when you squeeze it gently. If it bends silently, it's too soft, and that wimpy crust will deprive the eater of that special acoustic pleasure that comes from a satisfying crunch. If you can't budge the crust without using force, or if it scrapes the inside of your mouth as you chew, it's too hard—which probably means it was overbaked. The crumb of a well-made lean French bread may be wide open or moderately open, with air pockets of varying size scattered throughout. Those pockets (or alveoli) make the crumb feel light and airy.

A common problem you might encounter is a crumb that's too white, which is a sure sign of excessive oxidation due to overmixing (see page 3·101). Fortunately, this won't necessarily affect the flavor—at least, not unless it's severely overmixed and you get a cotton-like crumb. If the bread sticks to your palate, it likely was insufficiently baked or baked in a low-temperature oven.

In this chapter, we include recipes for popular French lean breads using commercial yeast, including the method Charles van Over used to make French lean bread (see page 44) and Jim Lahey's

French lean breads can be made simply and beautifully with just four ingredients, or they can be given the Modernist treatment, with added ingredients such as purified powders (see page 2·300), techniques such as vacuum autolyse (see page 3·108), or new flavors such as this French lean bread sunchoke puree (*above and next page*).

No-Knead Bread (see page 42). From there, we jump off to explore our own Modernist creations.

It used to be that if you wanted to make a French lean bread, you'd have to set aside a block of time—allowing no interruption from mixing to baking—but we discovered that you can pop the dough in the refrigerator to slow the process down. Cold-proofing allows the baker more flexibility (see page 3·226). This practice is common with sourdoughs, but cold-proofing commercial yeast-based doughs works well, too.

In terms of bread shapes, there are many options, but the most iconic is the long, slender baguette (see page 1·117). We expect you'll want to give this comely shape a try, but be forewarned—it isn't the easiest to master. It's not unusual for new staffers at bakeries to spend months doing nothing but shaping baguettes before they get the process down. Just think of it this way: you may not get there on your first try, but it'll be worth the time and practice.

Purees offer a nearly endless way to add flavor and color to a finished loaf. It is important to consider the consistency of the puree and how it will affect the hydration of the dough (see page 2·396).

Pumpkin Pie Filling French Lean Bread (see page 50)

Raspberry Puree French Lean Bread (see page 50)

KEYS TO SUCCESSFULLY EXECUTING FRENCH LEAN BREADS

- You can cold-proof the master French lean dough in the refrigerator (4°C/39°F). For 50–250 g pieces, cold-proof for 2 hours. For 350–500 g pieces, cold-proof for 2½–3 hours. For 1–2 kg doughs, cold-proof for 3½–4 hours (or longer if desired). This will also allow you to easily score them as cold dough is easier to cut through than warm dough.
- If your dough starts to get too bubbly and gassy during bulk fermentation and the gluten has not yet fully developed after the final fold, refrigerate the dough in its tub for the remainder of the bulk fermentation. As the dough cools, fermentation will slow down.
- Most home ovens are too small for baking a baguette or epi. Our remedy for this situation is simply to roll out the dough to a shorter length, approximately 30 cm/12 in. For the same reason, we do not recommend baking a miche-sized loaf (2 kg) in a home oven.
- For breads that are baked with a lid in a home oven, the lid must be removed during venting.
- Your proofing setup could include a wooden board lined with a lightly floured couche or the back of a sheet pan lined with a floured kitchen towel, a floured banneton, or lightly floured linen-lined wicker baskets. If you're proofing at room temperature, place the dough in an enclosed environment, such as a plastic tub with a lid or a clean cardboard box (see page 3·219). Alternatively, try our method for using a clean plastic bag to prevent the skin of the dough from drying out (see page 3·213). If you're using a proofer, leave the dough uncovered and set the relative humidity to 65%.
- Keep dough covered when proofing at room temperature.
- Multiply the recipe by two for a miche.

LEAN BREAD INGREDIENTS

The water content of the French lean breads in this chapter varies the most. You can find breads that range from 57% to 74% hydration while the yeast and salt remain relatively constant in proportion to the flour. Our minimum cutoff for high-hydration breads is 75% hydration—you can find recipes for these in High-Hydration Breads beginning on page 144.

THE ATTRIBUTES OF A WELL-MADE BAGUETTE

The baguette is the yardstick by which bakers and bakeries are often measured. What exactly are the characteristics of a good one? A well-executed baguette has a crispy crust and a wide-open and irregular crumb; it was clearly mixed, shaped, proofed, and baked with great care and attention to detail. There are competitions in which baguettes are evaluated based not just on taste but also on texture/mouthfeel, aroma, visual appeal, weight, and the sound made when they're eaten (see The Fight for the Best Baguette, page 22). In France, there are even laws governing what constitutes a traditional baguette.

As the recipes in this chapter demonstrate, there are many ways to produce a stellar baguette-shaped bread from French lean dough. It can be as simple as throwing together a quick direct dough that emerges from the oven just 4 hours after you start (see page 37). Whatever method you choose, the goal is to hit certain quality standards that make the difference between a merely good baguette and an excellent baguette. Detailed here are the standards we use to judge a baguette's quality.

Shape and Size

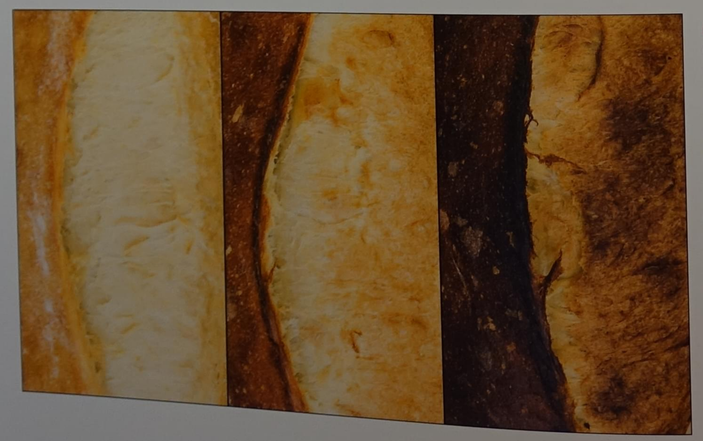
According to France's Centre National de Ressources Textuelles et Lexicales, a baguette should weigh 300 g/10.5 oz.

The loaf is typically 55–70 cm/22–28 in long and 5–6 cm/2–3 in across.

Baked baguettes weigh 250–400 g/9–14 oz on average, though this varies from region to region.

A well-baked baguette arches upward at both ends, leading to tips that can be tapered, pointy, or blunt.

Flavor: what tastes best is a matter of opinion; still, there are parameters. The flavor is determined largely by the flour—almost always refined wheat flour—and the preferment, if any. People use reference points like butter, toasted corn (popcorn), and toasted wheat to describe the flavor. Baguettes that include a sourdough preferment contain acidic notes (thanks to the secretions of lactic acid bacteria), as well as somewhat grassy flavors.



Darker crusts: loaves baked *bien cuit* ("well done") indicate a deeper, more complex flavor that some people prefer. You might assume the color of the crust is an indicator of its thickness, too, but that's not necessarily the case: darker colors can be achieved via a short baking time in a very hot oven, which helps keep the crust from becoming overly thick. (The pitfall is that a hot oven can scorch the bottom or create flecks of burnt flour or semolina.) Conversely, a light color is no guarantee of a thin crust.

Ear: a scored loaf will produce a pronounced **ear** (see page 3·238). A baguette classically has five ears, although we found that the number of ears doesn't have a bearing on flavor or texture. Whether there are five ears or just one, they should be well-defined. The quality of a baguette's ears may seem like a picayune detail, but it's important—the lift and sharpness are visual cues that the baguette was masterfully executed.

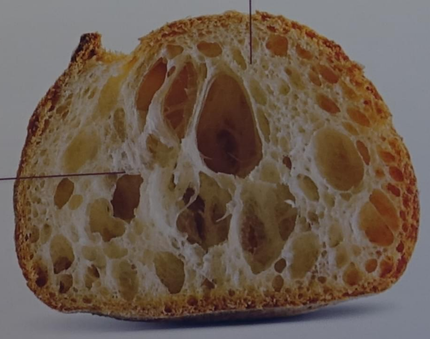
Score: scoring a baguette seems simple—just make cuts in the top of the dough—but it's not. The practiced hand of an experienced baker knows exactly how deep to cut and at what angle to make even scores on the surface. Those scores serve a purpose: namely, letting steam escape from the crumb.

Crust: a baguette's crust should shatter when it's cut or broken. It should be amber-brown and pleasantly crusty, with a texture that directly contrasts the chewy interior. It shouldn't be so brittle that it is hard to eat or cuts the inside of your mouth. Also, a tough, thick crust leaves too little crumb to chew on.

Aroma: the baguette's aroma should remind you of popcorn, hazelnuts, grilled food, beer, or caramel. It should express the quality of the flour that was used, as well as notes of its fermentation.

Color: a very light-yellow interior is more appetizing than a stark white crumb. The light-yellow color also indicates gentle mixing and a respect for the dough and the fermentation time needed to produce a great loaf of bread.

Alveoli formation: slice open a good baguette, and you'll see large empty chambers within the crumb. These are called alveoli. Bubbles start forming during mixing (see page 3·82), and baking enlarges them to produce a light and open texture. The crumb should be a combination of small, medium, and large alveoli, without too many of any one size concentrated in a single area. The baker's main control over alveoli formation is the water content of the dough: higher hydration yields a more open crumb. Just adding more water won't automatically produce the holy grail of open-crumb baguettes, however, because too much hydration undermines the integrity of the loaf's shape. Ultimately, there is an inherent tension between obtaining the ideal baguette shape *and* the coveted delicate, open-crumb structure.



Other Bakers' Baguettes

Lean doughs have little to zero fat content and are almost always made from white wheat flour. But bakers often vary the hydration of their doughs or include a preferment to boost the flavor of the finished baguette. The lean dough recipes we chose for this table are from renowned bakers. We broke them down by type of flour, type and amount of preferment, and percentages of hydration, salt, and yeast. The preferment percentage is based on 100% flour in a final recipe, not net content. Preferments in and of themselves are not listed in the net contents of a recipe because they are broken down and included as their component ingredients (water, flour, yeast). The water, salt, and yeast are percentages of the net contents of their recipes. These recipes were chosen because the bakers who formulated them have a proven track record with this type of dough.

Dough type: French lean dough; most common use: baguette	Flour mix	% Preferment (from final recipe)	% Hydration (net content)	% Salt (net content)	% Yeast, instant (net content)
French Lean Bread (page 27)	100% bread flour	poolish: 66	68	2	0.49
Eric Kayser (baguette from *Le Larousse de Pain*)	100% T65 flour	levain: 20	68.18	1.81	0.18
Michel Suas (baguette from *Advanced Bread and Pastry*)	100% bread flour	poolish: 99	68	2	0.5
Raymond Calvel (lean dough with poolish from *The Taste of Bread*)	100% "flour" (unspecified, but likely T65)	poolish: 50	68	2	1.2
Edward Behr (baguette from *The Art of Eating Cookbook*)	100% all-purpose flour		80	2	0.4
Didier Rosada (lean dough for baguette)	100% flour (unspecified)	poolish: 86	68	2	0.48
Chad Robertson (baguette from *Tartine Bread*)	65% all-purpose flour; 35% bread flour	poolish: 40 levain: 40	64.28	1.71	0.21*

*Percentage is for active dry yeast; instant yeast equivalent = 0.16%

A-Plus Baguette

Le Larousse de Pain

Advanced Bread and Pastry

The Taste of Bread

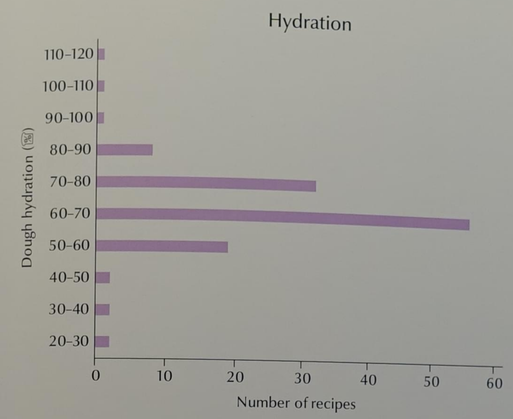
The Art of Eating Cookbook

Didier Rosada

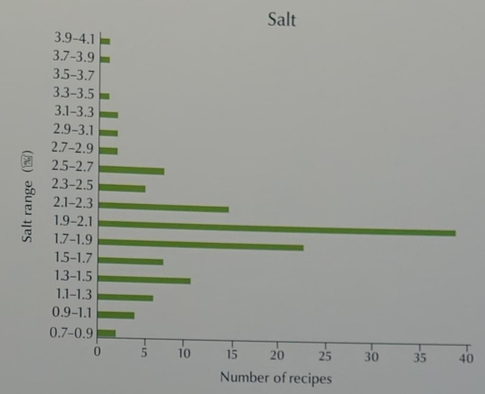
Tartine Bread

A BAGUETTE BY ANY OTHER NAME

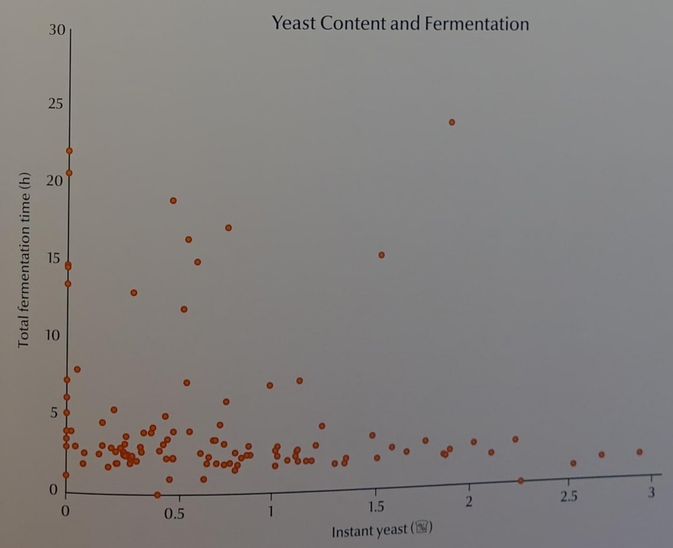
We've defined the attributes of a well-made baguette (see page 18) and will show you how to get those results (page 27). But we wanted to see how other bakers have approached the baguette, too. Since making a baguette is part art and part science, we went after this context with scientific rigor, gathering 125 baguette recipes and inputting them into our vast recipe database (see page 2·40). We found many widely varied notions of what constitutes a baguette. Some made sense to us, and some didn't. Seeds? Rye? Soft crust? Not by our standards. Even the recipes that fit our definition of a baguette involved various approaches to produce the desired results: using different ingredient proportions, fermentation times, and temperatures. Some of these recipes can turn out fine baguettes; others are less successful. Our conclusion is that aside from places such as France, where laws govern how baguettes are made, there is no *one* baguette.



Our baguette is 68% hydration, and most baguette recipes in our survey are close to that percentage. But there are some pretty extreme outliers. A few are even in the extremely dry 20%–30% range, and others are above 100% hydration. The recipes in the latter category have more in common with ciabatta.



How much salt goes into a baguette? According to our recipe survey, most bakers agree it should be around 2%. That's what our recipe calls for, too.



You might expect that adding a lot of yeast to a dough would equate to a short fermentation time. We found this to be generally true, although there was still a wide range of variation for fermentation times among various amounts of yeast. Some of the anomalies can be explained rationally; one recipe calls for a long cold-proof, while another uses a short proof in a warm proofer. Dots that represent 0% instant yeast signal recipes that use only a sourdough starter for leavening.

THE LAWS OF

Bakers, Vacations, and Bread

Hate your company's vacation policy? At least you probably get to choose when you go. Until recently, the government regulated when Parisian bakers could take their vacations. After all, if too many bakers closed up shop at once, how would Parisians get their daily bread?

The law was written during the time of the French Revolution, when many people got most of their daily calories from bread, and the price of bread was so key to daily survival that people rioted when they felt it was unfair. The vacation law has been regularly updated for more than two centuries. The law divided bakers in Paris and its suburbs into two groups: one group could vacation in July, the other in August. Bakers who violated the law could be fined.

In 2015, however, the government finally relented, opting to "simplify" business regulations by dropping the bakery vacation rules. Fears of a "baguette crisis" swept the city, yet somehow the population has survived.

THE FIGHT FOR

The Best Baguette in France

The French take their baguettes very seriously: for more than 20 years, bakers have been competing to be crowned the winner of the *Grand Prix de la Baguette de Tradition Française de la Ville de Paris*. (In English, basically, that's the competition for the best baguette in Paris.) Several hundred baguettes are entered each year.

The winner gets a cash prize, as well as the honor of supplying the president of France with 40 baguettes each morning for a year. Winners also receive great publicity, so it's not uncommon to see lines snaking out the doors of the winning establishments as people clamor for a taste of the judges' top choice. The contest helped establish the reputations of better-known bakers including Jean-Noël Julien (the 1995 winner) and Philippe Gosselin (who won in 1996).

What does it take to win? Entries must meet the regulations for *baguette de tradition française*, a legal standard prohibiting ingredients other than flour, water, salt, and yeast. The loaves are judged on five criteria: appearance, crust, crumb, aroma, and flavor. There are also strict rules for the size of the baguette: it must weigh 250–300 g / 9–11 oz, measure 55–65 cm / 22–25 in long, and contain no more than 1.8% salt. It's an indicator of the challenges inherent in baking bread that scores of entries get thrown out every year for failing to meet the size standards. Most years, the top prize has gone to a baker of French heritage, but there have been some surprises—in 2013, Ridha Khadher, a Tunisian-born baker who moved to France as a teen, won the grand prize, and in 2010 and again in 2015, Djibril Bodian, a Senegalese-born baker, took home the prize.

THE COMPETITION AMONG

The World's Best Bakers

Soccer has the World Cup. Baseball has a World Series. Baking has its own world championship: the *Coupe du Monde de la Boulangerie*, sometimes known as the World Cup of Baking, or the Bread Olympics.

The competition was created by master French baker Christian Vabret in 1992, at a time when French baking was dominated by "businessmen, not artists," Vabret told *The Wall Street Journal*. The event was conceived as a way to restore baking—in particular, French baking—to its rightful status.

The contest pits 12 teams from around the globe against one another. It's a challenging 3-day competition that some teams spend years preparing for. Organizers invite teams from different nations to compete, so over time, a broad variety of cultures has been represented. Each team has three bakers who make a wide array of breads that are judged on several qualities, including flavor, appearance, and texture. They compete for over 4 days in several categories: baguettes and breads of the world, Viennoiserie (pastries), and "artistic creations," which are more like elaborate sculptures than something you'd actually eat.

In 2016, South Korea took the gold, with Taiwan and France finishing second and third, respectively. Some well-known U.S. bakers, including Harry Peemoeller and Craig Ponsford, are veterans of the competition. The United States won this competition in 1999 and 2005.

Where can you find the best baguettes in Paris? Judging by the number of bakeries that have taken home the top prize in the annual *Grand Prix de la Baguette de Tradition Française de la Ville de Paris* competition, your best bet is the Montmartre district: Montmartre bakers won in 2007, 2008, 2010, 2011, 2012, and 2015. The district also has a plethora of bakeries that have placed in the top 10. Here's a map of the top-10 finishers from the past several years (*bottom right*). The top two photos show breads baked at the *Coupe de Monde de Boulangerie* in 2014.

Durum sourdough, also called *u pani ri casa*, maintains its shape and scoring during baking due to its low hydration. For more on this bread, see Durum Sourdough, page 94.

THE BATTLE OVER

Syracuse Stretch Bread

A distinguishing feature of stretch bread is that although the crust is crispy, the bread stretches when you pull on it. Its real claim to fame, though, may come from being the subject of a lawsuit. Laura Holland developed the recipe in the 1990s before reportedly selling it to the owner of Pastabilities in Syracuse, New York. Former employees of Pastabilities went to work at a new restaurant called La Piazza several years later and began selling stretch bread under a different name.

The owner of Pastabilities sued. Although the competing restaurant didn't call its bread "stretch bread," she believed it was the same recipe as the original. In the suit, she alleged that the former employees took the recipe with them to their new job, thereby violating a confidentiality agreement. The lawsuit was settled after a few months, and the La Piazza employees were fired.

THE STORY OF

The Baguette du Perche

In a bucolic landscape about 2 hours from Paris, in a region known as Le Perche, you'll find a baguette with a very interesting history.

More than a century ago, the region was a prime horse-breeding area, but when machines began replacing the horse and plow, Le Perche started to decline. In 1979, some members of the community began a campaign to save the ailing region without sacrificing its natural landscape and culture. Part of the aim was to support artists and craftspeople while encouraging tourism and agriculture. They petitioned the French government to designate the region a *parc naturel régional* (PNR, meaning a "natural regional park")—and in 1998, their request was granted. The designation has helped Le Perche simultaneously rejuvenate and hold on to its traditions, especially its agriculture.

One of Le Perche's key crops is wheat. As the region regained prosperity, farmers there began growing wheat using natural fertilizers and without chemical pesticides. Two men restored a centuries-old mill, where they started to grind grain that would be used in specially created baguettes sold under the seal of the PNR system. In 2005, the region's baguette was officially designated with an *appellation d'origine contrôlée* (AOC), meaning that only breads made in this region by following certain rules can be labeled as baguettes du Perche. It's the same label given to true Bordeaux wines and Roquefort cheeses. The baguettes in Le Perche are made to exacting specifications and must use the wheat grown in the region; the bakers there are creating a much-coveted bread that makes Le Perche a renowned destination for those who appreciate good food.

THE STATE OF

French Bread Today

France is a bread culture, and French bread is undeniably iconic. Over the past several decades, it has been a daily—or even twice-daily—ritual for many people: pick up a baguette in the morning and another one on the way home from work to have with dinner. It's not unusual for Parisian bakers to bake several rounds of baguettes a day to ensure they're fresh all day long. But the cultural significance of bread goes beyond mere culinary tradition (as well as the relatively modern invention of the baguette) and reaches into broader aspects of daily life. In fact, bread has played such an important role in French history that rising bread prices and riots helped spark the French Revolution (see "Let Them Eat Cake," page 1·63). Even today, there are more than 1,000 artisanal bakeries in Paris.

But from a consumption standpoint, bread has actually been on the decline in France. In 1880, the French consumed an estimated 900 g/32 oz of bread a day per person. That dropped to 600 g/21 oz at the turn of the century and 450 g/16 oz in 1950. Today, the average is 185 g/7 oz, though women and children consume less than half that. With the youngest generation eating even less than their parents, there is cause for alarm among bakers, who see the vitality of their tradition diminishing.

Part of this change has to do with diversified diets and a faster pace of life, but it's also about the quality of bread itself—people complain about practices like parbaking and using additives. But some say the problem dates back to the two world wars, when high-quality flour became more difficult to obtain. When the wars ended, bakers may have realized they could still sell bread made with lower-quality flour and wind up with greater profits.

Which leads us to another issue at play: economics. Bread prices used to be regulated, so even though that's no longer the case, people in France are accustomed to bread that's relatively inexpensive. One Parisian baker we consulted said that if he prices his baguettes at 1 euro (about $1.15), they sell out, but if he prices them at 1.50 euros ($1.73), they don't. He sells his baguettes as a loss leader. In comparison, people will pay more for the house-made baguettes at Costco warehouse stores in the United States—where they cost about $2.50 each—than they'll pay for many of the baguettes in France.

Low selling prices aside, baking is a labor-intensive process. That economic squeeze has led some bakers to innovate and change various steps in the process. Some corner bakeries have installed machines to cut the dough, for

example, while others don't even shape the dough after cutting it—they just proof the rectangular slabs, score them with a single slash, and put them in the oven.

Some French bakers have opted against making the traditional *baguette à l'ancienne*, which is heavily regulated and thus more expensive to make; instead, they opt to sell the simpler *baguette ordinaire*. Some have even stopped making baguettes at all—they would rather make their own artisanal loaves because they can charge a higher price for those loaves and thus cover the cost of their labor. Poilâne, a well-known and long-standing bakery in Paris, has never carried baguettes (see page 3·244).

Some say that baguettes in the United States are now fancier than those in France. Costco bakers, for example, take pains to score their baguettes lavishly, but for many Parisian bakers, a single slash will do. Saving time on scoring means saving money. And besides, appearance isn't everything—innovations such as automated scoring don't necessarily affect flavor. In our own tests, in fact, we found that the number of scores has no relation to flavor (see page 3·250).

Authorities in France have been aware of the declining reputation of their bread for some time. In 1993, the French government issued the *décret pain*, or the "bread law," to strictly regulate the production of traditional breads. Since then, to sell traditional breads, bakers must follow stringent guidelines for levains, parbaking, and allowable ingredients.

More recently, these changes have prompted France's national Observatory of Bread to create the Coucou campaign, which promotes bread as a health food. ("*Coucou, tu as pris le pain?*" asks the ad. Meaning, "Hi, have you picked up bread?") The campaign's aims are more than economic—it also hopes to help preserve a culture.

Though demand for bread is waning in France, some bakeries are finding new markets by exporting their products and doughs to cities like Hong Kong and Tokyo, where the popularity of French breads is growing rapidly.

master recipe

FRENCH LEAN BREAD

The baguette is not only a loaf by which many bakers are measured, but it is also the quintessential example of French lean bread. Although the word "baguette" has a number of meanings (including a stick or concertmaster's baton), surely its most common meaning is this long, slender loaf. One of its distinctions is the crispy crust achieved by incorporating steam in the baking process (see page 3·296). The dough is versatile enough to work when formed into boules, bâtards, and other shapes.

TOTAL TIME
Active 27 min
Inactive 5 h 59 min

DDT
24–26 °C / 75–78 °F

DIFFICULTY
Easy: mixing
Advanced: shaping (baguette)

OVENS
★Deck Combi Convection Home

YIELD / SHAPES
1 lg boule/bâtard
2 sm boules/bâtards
3 baguettes
4 ficelles
20 rolls

INGREDIENTS		WEIGHT	VOLUME	%
	For the Poolish			
	Bread flour	160 g	1¼ cups	100
	Water	160 g	¾ cup	100
	Instant dry yeast	0.16 g	1/16 tsp	0.1
	For the Dough			
①	Water	15 g	1 Tbsp	3.09
	Fine salt	13 g	2⅛ tsp	2.68
②	Water	265 g	1¼ cups	54.64
	Instant dry yeast	3 g	1⅛ tsp	0.62
③	Bread flour	485 g	3½ cups	100
	Poolish	320 g	all from above	65.98
	Yield	~1.00 kg		

NET CONTENTS

Ingredients	Weight	%
Flour	645 g	100
Water	440 g	68.22
Salt	13 g	2.02
Yeast	3.16 g	0.49

For salt, flours, and other notes, see pages viii–xi.
For notes on substitutions, see pages viii–xi.
For measuring small amounts, see pages viii–xi.

Multiply this recipe by two for a miche.

GENERAL DIRECTIONS

		PROCEDURE						NOTES	TIME active / inactive
PREP	preferment	mix poolish 12 h before using; ferment in an airtight container						see Poolish, page 3·20	12 h
MIX	by hand*	stir together ① in a bowl, and set aside; combine ② in a bowl, and stir to dissolve yeast; add ③, and mix to a shaggy mass; autolyse 30 min; add ①, and mix until homogeneous; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap, see Hand Mixing, page 3·116							5 min / 30 min
	by machine*	stir together ① in a bowl, and set aside; combine ② in a mixer's bowl, and stir to dissolve yeast; add ③, and mix on low speed to a shaggy mass; autolyse 20–30 min; add ①, and mix on medium speed to medium gluten development; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap						see Machine Mixing options, page 29	38–44 min
BULK FERMENT	by hand*	3½ h total; 3 folds (1 fold every hour after the first hour), 30 min rest after final fold						see How to Perform a Four-Edge Fold, page 3·129, and Gluten Development, page 3·89	5 min / 3½ h
	by machine*	1½ h total; 2 folds (1 fold just after mixing, a second after 45 min), 45 min rest after final fold							5 min / 1½ h
DIVIDE/ SHAPE	divide	lg boule/ bâtard	sm boule/ bâtard	baguette/ sh baguette	ficelle	roll	miche	see How to Divide Your Dough, page 3·136	0–7 min
		do not divide	500 g	350 g	250 g	50 g	do not divide		
	preshape	boule/bâtard	boule/bâtard	baguette	baguette	roll	boule	see shaping boules, bâtards, baguettes, ficelles, pages 3·152–158, and rolls, page 3·176	1–7 min
	rest	20 min	20 min	20 min	20 min	20 min	20 min		20 min
	shape	boule/bâtard	boule/bâtard	baguette	ficelle	roll	boule		1–7 min
FINAL PROOF	27 °C / 80 °F 65% RH	1¼–1½ h	1–1¼ h	45 min–1 h	30–45 min	30–45 min	1½–2 h	see Final Proofing Methods, page 3·212, and Calling Proof, page 3·220	30 min–2½ h
	21 °C / 70 °F	1½–2 h	1¼–1½ h	1–1½ h	45 min–1 h	45 min–1 h	2–2½ h		
SCORE		for scoring options, see page 3·250							30 s–1 min
BAKE		see French Lean Bread Baking Times and Temperatures, page 32; crispy crust requires steam							10–55 min
TOTAL TIME								by hand by machine	32 min / 7¼ h 27 min / 5 h 59 min

**Choose by hand or machine*

Alternatives

The Van Over Method for French Lean Bread, page 44
A-Plus Baguette, page 34
74% Hydration French Lean Bread, page 75

Flavors

Toasted Flour French Lean Loaf, page 51
Soy Sauce French Lean Bread, page 51
Niçoise Olives French Lean Bread, page 50

Fun Facts

The Modern Invention of the Baguette, page 1·117
Steam and Baking: Fact or Fiction, page 3·294

Techniques

Shaping a baguette, page 3·156
Intermittent autolyse, page 2·53
Scoring a baguette, page 3·250

Related Breads

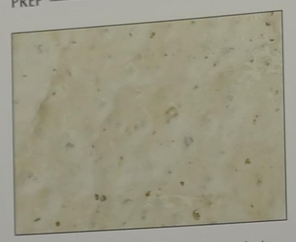
Sourdough, page 54
Country-style breads, page 96
High-hydration breads, page 144
Gluten-free breads, page 252

Our Take

Modernist French Lean Bread, page 33
Vacuum autolyse, page 3·108

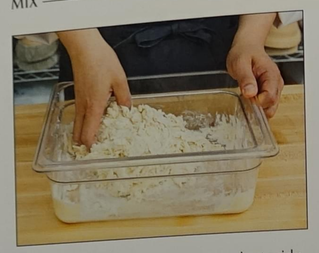
HAND MIXING

PREP



1 Combine all poolish ingredients, and mix to a homogeneous mass. Transfer the poolish to an airtight container and let it ripen at 21–24 °C / 70–75 °F for 12–16 h before mixing it into the dough (see page 3·20).

MIX

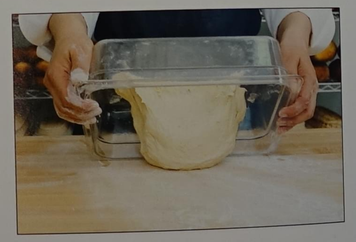


2 Stir the salt in 5% of the water, and set aside. Dissolve the yeast in the remaining water, then add the poolish and the flour; mix to a shaggy mass. Autolyse 30 min, then add the salt solution, and mix until homogeneous.

3 Transfer the dough to a lightly oiled plastic tub, and give it a four-edge fold (see page 3·129).

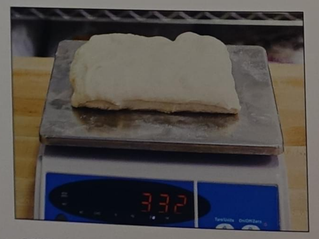
BULK FERMENT

4 Bulk ferment for 3½ h, performing 3 four-edge folds, one every hour after the first hour. Cover the dough between folds. Let the dough bulk ferment for 30 min after the last fold.



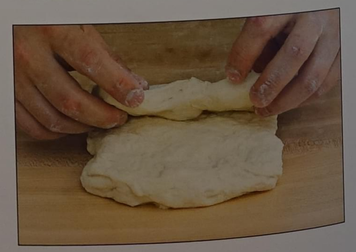
5 Transfer the dough by gently turning it out of the tub onto a well-floured work surface. Handle the dough carefully to help preserve the CO_2 pockets that have formed inside it.

DIVIDE



6 Divide the dough to the desired weight (see page 3·136). Do not divide for a large boule or bâtard or for a miche.

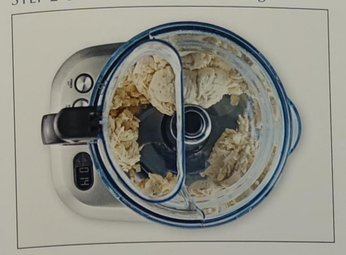
PRESHAPE



7 Preshape the dough as desired (see page 3·156).

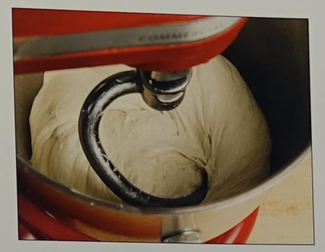
8 Rest the dough for 20 min.

STEP 2 OPTIONS: Machine Mixing



Food Processor*

Weight:
1 kg: bowl capacity for most home food processors
1.2 kg: Robot Coupe; industrial-sized food processors: capacity will vary
Initial mix: place all the dry ingredients in the bowl, then add the poolish. Turn the food processor on, and pour the water into the bowl in a steady stream. When all the water has been added, mix for 45 s.
*Mostly recommended for the Van Over Method recipe, see page 44.



Stand Mixer

Weight:
4.5 qt bowl: 1–1.5 kg maximum
8 qt bowl: 1.5–2.5 kg maximum; multiply this recipe by 2, but do not exceed 2.5
Initial mix: disperse the salt in 5% of the water, and set aside; in the mixer's bowl, dissolve the yeast in the remaining water, then add the poolish and flour; mix on low speed to a shaggy mass, about 2 min.
Autolyse: 20–30 min
Final mix: mix on low speed for 8 min; add the salt solution, and mix on low speed until the solution is fully incorporated, about 2 min. Finish mixing on medium speed to medium gluten development, about 2 min.

Spiral Mixer

Weight: depends on the capacity of the mixer; at least 8 kg recommended; multiply this recipe by at least 8
Initial mix: disperse the salt in 5% of the water, and set aside; in the mixer's bowl, dissolve the yeast in the remaining water, then add the poolish and flour; mix on low speed to a shaggy mass, about 3 min.
Autolyse: 20–30 min
Final mix: mix on low speed for 3 min; add the salt solution, and mix on medium speed to medium gluten development, about 2 min.

Notes on Machine Mixing

- Withhold 5% of the water, and stir in the salt; the mixture helps distribute the salt more evenly throughout the dough. The withheld water-and-salt mixture is poured slowly into the mixer after autolyse. This step is referred to as the final mix.
- The initial mix is to a shaggy mass; use the mixer's lowest speed.
- Autolyse should last 20–30 min, but more time won't hurt the dough.
- The final mix time at higher speeds may vary from machine to machine. The goal is to achieve medium gluten development. Consider our suggested times as guidelines. Let your visual assessment determine the dough's stage of gluten development.
- For an 8 qt stand mixer, multiply this recipe by 1.5 or up to 2.5. Unless you use a 4.5 qt stand mixer, the 1 kg recipe is not enough mass for the hook to catch and mix all the ingredients to make a uniform dough. Even with a 4.5 qt bowl, with only 1 kg of dough, it may be best to start the mix using a paddle attachment; switch to a hook after autolyse.
- For a planetary mixer with a 12 qt bowl, multiply this recipe by 4 or up to 6. For a 20 qt bowl, multiply this recipe by 6 or up to 8. Do not increase the recipe by more than 8 times.
- For a spiral mixer, multiply this recipe by at least 8; the maximum capacity will depend on the specific model. The larger the yield, the more time the dough will take to mix.

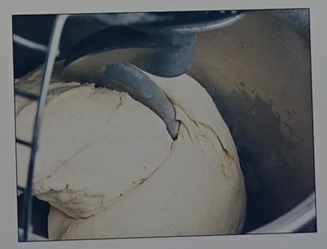
TECHNIQUE VARIATION:
Machine Mixing

1 Combine all ingredients for the poolish, and mix to a homogeneous mass. Transfer the poolish to an airtight container, and let it ferment at 21–24 °C / 70–75 °F for 12–16 h before mixing it into the dough.

2 Follow the Machine Mixing options above.

3 Transfer the mixed dough to a lightly oiled plastic tub, and give it a four-edge fold. Bulk ferment for 1½ hours, covered, performing a fold after 45 min. Let the dough bulk ferment for 45 min after the final fold.

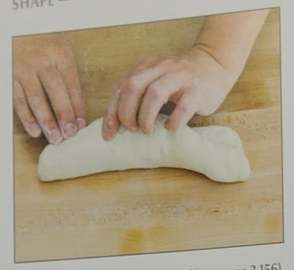
4 Follow steps 6–16 for Hand Mixing on pages 28–31.



Planetary Mixer

Weight:
12 qt bowl: 4–6 kg maximum; multiply this recipe by 4, but do not exceed 6
20 qt bowl: 6–8 kg maximum; multiply this recipe by 6, but do not exceed 8
Initial mix: disperse the salt in 5% of the water, and set aside; in the mixer's bowl, dissolve the yeast in the remaining water, then add the poolish and flour; mix on low speed to a shaggy mass, about 2 min.
Autolyse: 20–30 min
Final mix: mix on low speed for 6 min; add the salt solution and mix on low speed until the salt solution is fully incorporated, about 2 min. Finish mixing on medium speed to medium gluten development, about 2 min.

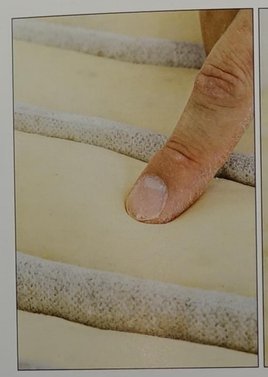
SHAPE

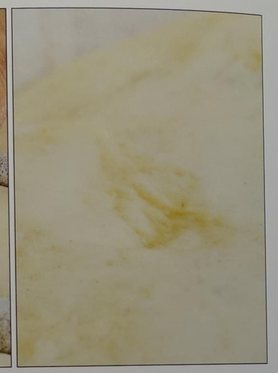


9 Shape the dough as desired (see page 3·156).

FINAL PROOF

10 Transfer the dough to your preferred proofing setup (see page 3·216–219), and proof according to the directions on page 27.





11 Proof the dough following the times and temperatures in the General Directions table for the French Lean Bread master recipe on page 27. Test for proof by applying gentle pressure with your index finger; the dough should feel bubbly inside and spring back very slowly. If it springs back quickly, it needs more time to proof (check it every 30 min).

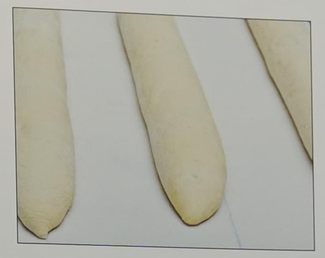
Most home ovens are too small for baking a baguette or epi. Our remedy for this situation is simply to roll out the dough to a shorter length, approximately 30 cm / 12 in. For the same reason, we do not recommend baking a miche-sized loaf (2 kg) in a home oven. For breads that are baked with a lid in a home oven, remove the lid during venting.

If mixing by hand and your dough starts to get too bubbly and gassy during bulk fermentation and the gluten has not yet fully developed after the sixth fold, refrigerate the dough in its tub for the remainder of the bulk fermentation. As the dough cools, fermentation will slow down.

Alternatively, you can cold-proof the dough in the refrigerator (4 °C / 40 °F). For 50–250 g pieces, cold-proof for 2 h. For 350–500 g pieces, cold-proof for 2½–3 h. For 1–2 kg doughs, cold-proof for 3½–4 h (or longer if desired).

Your proofing setup could include a wooden board lined with a lightly floured couche or the back of a sheet pan lined with a floured kitchen towel, a floured banneton, or lightly floured linen-lined wicker baskets. If you're proofing at room temperature, place the dough in an enclosed environment, such as a plastic tub with a lid or a clean cardboard box (see page 3·219). Alternatively, try our method for using a clean plastic bag to prevent the skin of the dough from drying out (see page 3·213). If you're using a proofer, leave the dough uncovered and set the relative humidity to 65%.

SCORE



12 Carefully transfer the fully proofed dough, seam side down, onto a peel or loader (see page 3·338).

13 Score the surface of the dough (see page 3·250).

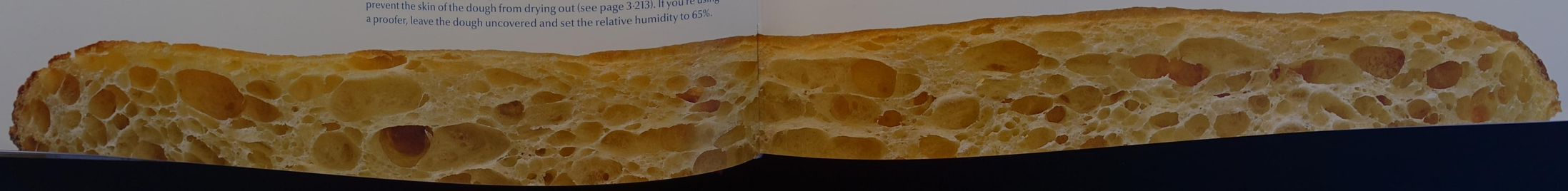
BAKE

14 Immediately after scoring, load the dough into a preheated oven.

15 Bake the dough. For more on baking, see the French Lean Bread Baking Times and Temperatures table, page 32. Use a peel to remove the bread from the oven; let it cool completely on a wire rack.

COOL

16 Consume within 1 d, or freeze for up to 2 mo.



French Lean Bread Baking Times and Temperatures

Shape	Weight	Type of oven	Steam	Baking temperature	Initial baking time (min)	Vent time (min)	Total bake time (min)
large boule / bâtard	1 kg	home using cast-iron combination cooker	n/a	245 °C / 470 °F	45 (lid on)	10 (lid off)	55
		home using a baking stone and lid*	n/a	245 °C / 470 °F	30 (lid on)	10 (lid off)	40
		combi	every minute for the first 5 min of the bake	245 °C / 470 °F, lowest fan speed	15	10	25
		convection	after closing the oven door	245 °C / 470 °F, lowest fan speed	20	15	35
		deck	after closing the oven door	245 °C / 470 °F	20	10	30
small boule / bâtard	500 g	home using cast-iron combination cooker	n/a	245 °C / 470 °F	30 (lid on)	10 (lid off)	40
		home using a baking stone and lid*	n/a	245 °C / 470 °F	25 (lid on)	10 (lid off)	35
		combi	before loading and after loading, plus 1 burst every minute for the first 3 min of the bake	245 °C / 470 °F, lowest fan speed	15	10	25
		convection	after closing the oven door	245 °C / 470 °F, lowest fan speed	20	15	35
		deck	after closing the oven door	245 °C / 470 °F	20	10	30
baguette (includes short baguette)	350 g	home using cast-iron combination cooker (short baguette)	n/a	n/a	n/a	n/a	n/a
		home using baking stone and lid (short baguette)	n/a	245 °C / 470 °F	15 (lid on)	10 (lid off)	25
		combi	1 burst every minute for the first 2 min of the bake	245 °C / 470 °F, lowest fan speed	10	5	15
		convection	after closing the oven door	245 °C / 470 °F, lowest fan speed	20	5	25
		deck	after closing the oven door	245 °C / 470 °F	15	10	25
ficelle	250 g	home using cast-iron combination cooker	n/a	n/a	n/a	n/a	n/a
		home using baking stone and lid	n/a	245 °C / 470 °F	15 (lid on)	10 (lid off)	25
		combi	1 burst every minute for the first 2 min of the bake	245 °C / 470 °F, lowest fan speed	10	5	15
		convection	after closing the oven door	245 °C / 470 °F, lowest fan speed	20	5	25
		deck	after closing the oven door	245 °C / 470 °F	10	5	15
roll	50 g	home using cast-iron combination cooker	not recommended	n/a	n/a	n/a	n/a
		home using baking stone and lid	n/a	245 °C / 470 °F	10 (lid on)	5 (lid off)	15
		combi	before loading and after loading, plus 1 burst every minute for the first 2 min of the bake	245 °C / 470 °F, lowest fan speed	10	5	15
		convection	after closing the oven door	245 °C / 470 °F, lowest fan speed	10	5	15
		deck	after closing the oven door	245 °C / 470 °F	10	5	15
miche	2 kg	home	not recommended (too large)	n/a	n/a	n/a	n/a
		combi	1 burst every minute for the first 5 min of the bake; a bâtard is recommended because of the space constraints of this oven	245 °C / 470 °F, lowest fan speed	20	10	30
		convection	after closing the oven door	245 °C / 470 °F, lowest fan speed	30	15	45
		deck	after closing the oven door	245 °C / 470 °F	30	10	40

*Lid must be large enough so that the bread will not expand into it during baking.

modernist variation

MODERNIST FRENCH LEAN BREAD

This variation improves on the excellent master recipe by adding a few incremental steps. A small amount of fat increases loaf volume (see page 2·317), and polydextrose makes the crust even crispier (see page 2·348). The technique of pulling a vacuum on the dough forces the flour to hydrate more quickly, so the dough requires less mixing time and therefore oxidizes less—which results in a creamier-colored crumb.

TOTAL TIME
Active 34 min
Inactive 5¾ h

DDT
24–26 °C / 75–78 °F

DIFFICULTY
Easy: mixing
Advanced: shaping (baguette)

OVENS
★Deck Combi Convection Home

YIELD / SHAPES
1 lg boule/bâtard
2 sm boules/bâtards
3 baguettes
4 ficelles
20 rolls

	INGREDIENTS	WEIGHT	VOLUME	%
①	Bread flour	585 g	4⅓ cups	100
	Fine salt	12 g	2¼ tsp	2.05
	Polydextrose	5.85 g	1 tsp	1
	Vegetable shortening	5.85 g	⅛ tsp	1
	Instant dry yeast	4.1 g	1¾ tsp	0.7
②	Water, 43–49 °C / 110–120 °F	430 g	1¾ cups	73.5
	Yield	~1.00 kg		

For salt, flours, substitutions, and other notes, see pages viii–xi.

NET CONTENTS

Ingredients	Weight	%
Flour	585 g	100
Water	430 g	73.5
Salt	12 g	2.05
Polydextrose	5.85 g	1
Fat	5.85 g	1
Yeast	4.1 g	0.7

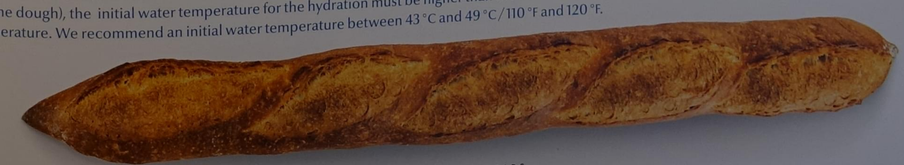
For a step-by-step guide to vacuum sealing, see How to Perform an Autolyse (and Mix) by Pulling a Vacuum on the Dough, page 3·108.

GENERAL DIRECTIONS

		PROCEDURE					NOTES	TIME active / inactive
MIX	by hand	combine ① in a bowl; add ②, and mix to a shaggy mass; place the dough in a vacuum chamber, and pull a vacuum for 30 s; check for full gluten development using the windowpane test					see Hand Mixing, page 3·116	5-7 min
BULK FERMENT		1½ h total; 2 folds (1 fold just after mixing, a second after 45 min), 45 min rest after final fold; keep covered throughout					see How to Perform a Four-Edge Fold, page 3·129	5 min / 1½ h
DIVIDE / SHAPE	divide	large boule/bâtard	sm boule/bâtard	baguette/sh baguette	ficelle	roll	see How to Divide Your Dough, page 3·136	0–7 min
		do not divide	500 g	330 g	250 g	50 g		
	preshape	boule/bâtard	boule / bâtard	baguette	ficelle	roll	see shaping boules, batards, baguettes, ficelles, pages 3·152–158, and rolls, page 3·176	1–7 min
	rest	20 min	20 min	20 min	20 min	20 min		20 min
	shape	boule/bâtard	boule/bâtard	baguette	ficelle	roll		1–7 min
FINAL PROOF	27 °C / 80 °F 65% RH	1¼–1½ h	2– 2½ h	1–1½ h	45 min–1 h	45 min–1 h	see Final Proofing Methods, page 3·212, and Calling Proof, page 3·220; keep dough covered when proofing at room temperature	45 min–3 h
	21 °C / 70 °F	1½–2 h	2½–3 h	1½–2 h	1–1¼ h	1–1½ h		
SCORE		for scoring options, see page 3·250						30 s–1 min
BAKE		see French Lean Bread Baking Times and Temperatures, page 32; crispy crust requires steam						10–55 min
TOTAL TIME							by hand	34 min / 5¾ h

Consume within 1 d, or freeze for up to 2 mo.

Because the vacuum chamber cools the dough (as opposed to the friction factor from a mixer that heats the dough), the initial water temperature for the hydration must be higher than the desired dough temperature. We recommend an initial water temperature between 43 °C and 49 °C / 110 °F and 120 °F.



ingredient variation

A-PLUS BAGUETTE

As a variation on the master French lean dough, this version uses corn flour in addition to the bread flour, half of which is toasted before using. Untoasted, the corn flour has an effect similar to that of polydextrose, boosting the crispiness of the loaf's crust. The toasted corn flour lacks that functionality but adds a wonderful, slightly nutty flavor. Together, the two forms of the flour help elevate this bread to its A-Plus status.

TOTAL TIME
Active 27 min
Inactive 5 h 59 min

DDT
24-26 °C / 75-78 °F

DIFFICULTY
Advanced: mixing
Advanced: shaping (baguette)

OVENS
★Deck
Combi
Convection
Home

YIELD / SHAPES
1 lg boule/ bâtard
2 sm boules/ bâtards
3 baguettes
4 ficelles
20 rolls

INGREDIENTS	WEIGHT	VOLUME	%
For the Poolish			
Bread flour	150 g	1 cup	100
Water	150 g	⅔ cup	100
Instant dry yeast	0.15 g	1/16 tsp	0.1
For the Dough			
① Water	14 g	1 Tbsp	3.18
Fine salt	11.4 g	1 Tbsp + 1 tsp	2.59
② Water	266 g	1¼ cups	60.45
Instant dry yeast	2.1 g	⅛ tsp	0.5
③ Bread flour	420 g	3 cups	95.45
Poolish	215 g	all from above	48.86
Liquid levain, mature see page 3-54	45 g	3 Tbsp	10.23
Corn flour	10 g	1 Tbsp + 1 tsp	2.27
Toasted corn flour	10 g	1 Tbsp + 1 tsp	2.27
Yield	~1.00 kg		

For salt, flours, substitutions, and other notes, see pages viii–xi.

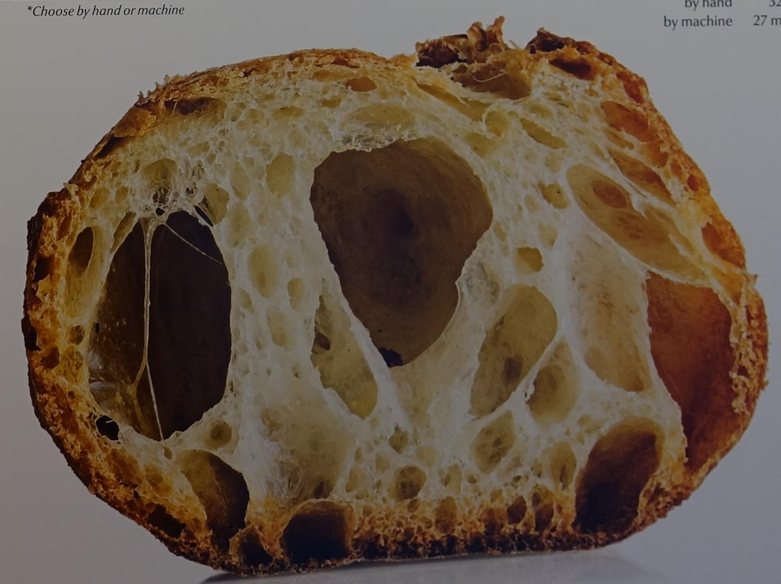
NET CONTENTS

Ingredients	Weight	%
Flour	593 g	96.73
Corn flour	10 g	1.63
Toasted corn flour	10 g	1.63
Water	452 g	73.74
Salt	11.4 g	1.86
Yeast	0.21 g	0.03

Consume within 1 d, or freeze for up to 2 mo.

GENERAL DIRECTIONS

		PROCEDURE						NOTES	TIME active / inactive
PREP	preferment	mix poolish 12 h before using; ferment in an airtight container; toast corn flour in a 175 °C / 350 °F oven for approximately 20 min, until aromatic, or pressure-cook corn flour in a mason jar for 1½ h						see Poolish, page 3-20	5 min / 13 h 50 min
MIX	by hand*	stir together ① in a bowl, and set aside; combine ② in a bowl, and stir to dissolve yeast; add ③, and mix to a shaggy mass; autolyse 30 min; add ①, and mix until homogeneous; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap						see Hand Mixing, page 3-116	5 min / 30 min
	by machine*	stir together ① in a bowl, and set aside; combine ② in mixer's bowl, and stir to dissolve yeast; add ③, and mix on low speed to a shaggy mass; autolyse 20–30 min; add ①, and mix on medium speed to medium gluten development; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap						see Machine Mixing options, page 29	38–44 min
BULK FERMENT	by hand*	3½ h total; 3 folds (1 fold every hour after the first hour), 30 min rest after final fold; check for full gluten development using the windowpane test						see How to Perform a Four-Edge Fold, page 3-129, and Gluten Development, page 3-89	5 min / 3½ h
	by machine*	1½ h total; 2 folds (1 fold just after mixing, a second after 45 min), 45 min rest after final fold; check for full gluten development using the windowpane test							5 min / 1½ h
DIVIDE / SHAPE	divide	lg boule/ bâtard	sm boule/ bâtard	baguette	ficelle	roll	miche	see How to Divide Your Dough, page 3-136	1–7 min
		do not divide	500 g	330 g	250 g	50 g	do not divide		
	preshape	boule	boule	baguette	baguette	roll	boule	see shaping boules, bâtards, baguettes, ficelles, pages 3-152–158, and rolls, page 3-176	1–7 min
	rest	20 min	20 min	20 min	20 min	20 min	20 min		20 min
	shape	boule/bâtard	boule/ bâtard	baguette	ficelle	roll	boule		1–7 min
FINAL PROOF	27 °C / 80 °F 65% RH	1½–2 h	1¼–1½ h	45 min–1 h	30–45 min	1–1¼ h	1½–2 h	see Final Proofing Methods, page 3-212, and Calling Proof, page 3-220	30 min–2½ h
	21 °C / 70 °F	2–2½ h	1½–2 h	1–1½ h	45 min–1 h	1¼–1½ h	2–2½ h		
SCORE		for scoring options, see How to Score Round Shapes, page 3-240, and How to Score Oval and Elongated Shapes, page 3-248							30 s–1 min
BAKE		see French Lean Bread Baking Times and Temperatures, page 32; crispy crust requires steam							15–55 min
TOTAL TIME	*Choose by hand or machine							by hand	32 min / 7¾ h
								by machine	27 min / 5 h 59 min



technique variation

PAIN RUSTIQUE (RUSTIC BREAD) INSPIRED BY RAYMOND CALVEL

The aptly named pain rustique, developed by Raymond Calvel in 1983 (see page 3-100), inspired this recipe. It uses a preferment—*pâte fermentée*, the simplest of all preferments—and later steps require minimal effort. The quality of the resulting bread isn't diminished because of its simplicity. The efficient process makes it ideal for scaled-up production.

TOTAL TIME	DDT	DIFFICULTY	OVENS	YIELD / SHAPES
Active 6 min Inactive 4 h 10 min	24-26 °C / 75-78 °F	Easy	★Deck ★Home Convection Combi	1 lg loaf; 2 med loaves; 4 sm loaves

INGREDIENTS	WEIGHT	VOLUME	%
For the Pâte Fermentée*			
Bread flour	90 g	¾ cup	100
Water	60 g	¼ cup	66.67
Instant dry yeast	0.6 g	¼ tsp	0.67
Fine salt	1.8 g	¼ tsp	2
For the Dough			
① Water	340 g	1½ cups	68
Instant dry yeast	3 g	1 tsp	0.6
② Bread flour	500 g	3¾ cups	100
③ Fine salt	10 g	2 tsp	2
④ Pâte fermentée	150 g	all from above	30
Yield	~1.00 kg		

NET CONTENTS

Ingredients	Weight	%
Flour	590 g	100
Water	400 g	67.8
Salt	11.8 g	2
Yeast	3.6 g	0.61

For salt, flours, substitutions, and other notes, see pages viii–xi.
**If you have a piece of dough harvested from a previously made batch (in this case 150 g), you can use that instead.*

Consume within 1 d, or freeze for up to 2 mo.

GENERAL DIRECTIONS

		PROCEDURE			NOTES	TIME active / inactive
PREP	preferment	mix all pâte fermentée ingredients 4 h before using; ferment in an airtight container				4 h
MIX	by machine	combine ① in mixer's bowl, and stir to dissolve yeast; add ②, and mix on low speed to shaggy mass; autolyse 20–30 min; add ③, and mix on medium speed to medium gluten development; add ④, and mix until full gluten development; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap			see Machine Mixing options, page 3-29, and Gluten Development, page 3-89	5 min / 30 min
BULK FERMENT		45 min; no folds; keep covered throughout			see Bulk Fermentation, page 3-126	45 min
DIVIDE/SHAPE		lg loaf	med loaves	sm loaves	see note, next page	a few seconds
		do not divide	500 g	250 g		
FINAL PROOF	27 °C / 80 °F 65% RH	1–1½ h	30–45 min	30–45 min	see Final Proofing Methods, page 3-212, and Calling Proof, page 3-220	30 min–2 h
	21 °C / 70 °F	1½–2 h	1–1½ h	1–1½ h		
SCORE		optional single score diagonally across the top			see Scoring, page 3-230	30 s–1 min
BAKE		see French Lean Bread Baking Times and Temperatures, page 32; crispy crust requires steam				10–55 min
TOTAL TIME					by machine	6 min / 4 h 10 min

**If the pâte fermentée was refrigerated, allow it to temper 1–2 h before mixing it into the dough; if it is too cold, it will lower the dough's temperature, thus slowing down fermentation, too.*

Shaping pain rustique is very simple. After the dough is mixed and has bulk fermented in a square or rectangular tub, turn it out onto a floured surface, and divide it into the desired weights (or visually divide the dough in half or quarters). Any pieces you might need to add to adjust the weight should go on top of each piece of dough; do not attempt to bind them. Transfer the portioned pieces of dough onto a wooden board or the back of a sheet pan lined with a floured couche or clean kitchen towel; position with the flat, smooth side down. (If you've added pieces of dough to adjust the weight, that side of the dough will be on top.) Cover the dough well so that it doesn't dry out. Proof the dough.

After proofing, and when the dough is ready to bake, gently turn the dough onto a peel or loader so that the smooth side is now facing up. Make a single diagonal score on top, and slide the dough into the oven or a cloche.

Shaping this dough will depend on how gently you can treat it. At each stage (dividing, portioning, moving from the work surface to a couche or wooden board), the key is to be as gentle as possible; the goal is to get the most even pieces from the dough while also preventing it from degassing.

home variation

DIRECT DOUGH LOAVES

While preferments have a number of benefits, as discussed on page 3-7, sometimes there's no time to make one when the desire to bake hits. You can follow the steps in the General Directions table for the French Lean Bread master recipe on page 27 to make this bread. But in much less time overall, this commercial yeast–based dough produces very satisfying loaves.

INGREDIENTS	WEIGHT	VOLUME	%
① Water	20 g	4 tsp	3.42
Fine salt	12 g	2¼ tsp	2.05
② Water	380 g	1⅔ cups	64.96
Instant dry yeast	4.1 g	1¾ tsp	0.7
③ Bread flour	585 g	4⅓ cups	100
Yield	1.00 kg		

NET CONTENTS

Ingredients	Weight	%
Flour	585 g	100
Water	400 g	68.38
Salt	12 g	2.05
Yeast	4.1 g	0.7

** For salt, flours, substitutions, and other notes, see pages viii–xi.*

Follow the instructions for French Lean Bread on page 27.

THE KEY TO MAKE-AHEAD BREAD

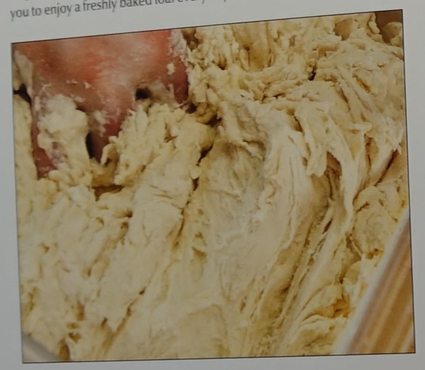
Modern lifestyles don't always make it easy to produce our proverbial daily bread. We were inspired by an undemanding daily baking routine by Jeff Hertzberg, M.D., and Zoë François. Starting with 2007's *Artisan Bread in Five Minutes a Day*, Hertzberg and François showcased the make-ahead bread technique and made it the centerpiece of a best-selling series of cookbooks. They demonstrated how a large batch of dough for almost any type of bread can be stored long-term in the refrigerator, with the baker harvesting a loaf's worth of dough every day for up to 14 days.

Hertzberg and François have refined their methods over time, and we have modified their recipe with our own improvements while keeping its low-maintenance schedule. We add ascorbic acid to strengthen the dough's gluten network and to reduce oxidation, which eventually would otherwise make the dough turn gray in the refrigerator. We also added some vital wheat gluten, which further strengthens the gluten network, increasing the volume of all the doughs we tested. Polydextrose is included in our mix to produce a very crispy crust.

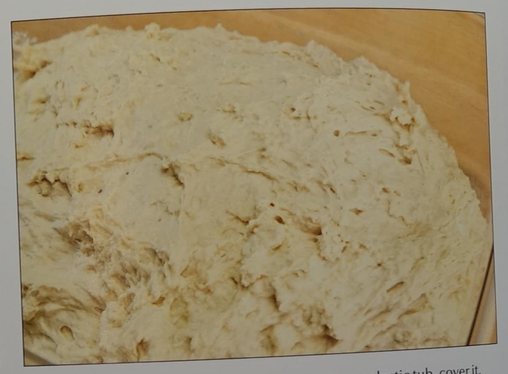
Because we believe this dough should proof longer than the time recommended in the original technique, we have added a few options for how to proof or cold-proof it after shaping. If you have made your first large batch of dough, you can harvest the 500 g / 18 oz (or 1 kg / 2.2 lb) piece, shape it into a boule or bâtard, and then proof it. Alternatively, you can shape the dough, place it in a proofing basket, and let it cold-proof in refrigeration for 10–12 hours. This approach works well for shaping your dough in the morning, before you go to work, and then baking it when you get home. Accounting for proofing time, the recipe takes more than 5 minutes of effort per day, but, calculated in that context, so does the original.

HOW TO Make Your Daily Bread

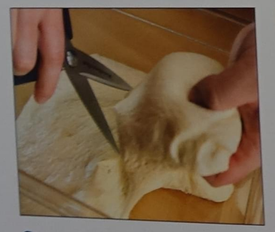
It's surprising how often you can bake a fresh loaf using just one large 7 kg / 15.4 lb batch of dough. This step-by-step guide will easily allow you to enjoy a freshly baked loaf every day for 2 weeks.



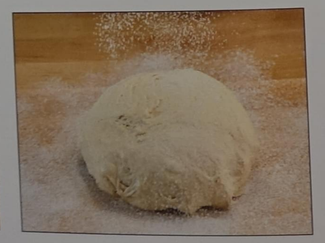
1 Mix all the ingredients to a shaggy mass.



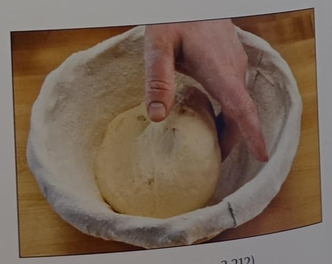
2 Before refrigerating the dough, transfer it into a plastic tub, cover it, and let it rest for 1 h. Refrigerate the dough for 24 h before harvesting any of it.



3 Harvest approximately 500 g / 18 oz of dough when it's ready to bake.



4 Shape the dough into a boule (see page 3·152 for shaping instructions).



5 Proof for 2–4 h (see page 3·212).

6 Once the dough is properly proofed, perform the fingertip test (see page 3·223) to determine if it's ready for baking.

7 Place the dough, seam side down, on a peel before transferring it to a cast-iron combination cooker or donabe (pictured).

8 Score the dough, and then cover it with a lid and bake it.

9 The look and taste of the finished loaf using dough from 2 wk before is comparable to a dough mixed and baked on the same day.

YOUR DAILY BREAD INSPIRED BY JEFF HERTZBERG AND ZOE FRANÇOIS

This recipe is our take on the recipe developed by Jeff Hertzberg and Zoë François for *The New Artisan Bread in Five Minutes a Day*. Their approach is to make one extralarge batch of dough and bake about 500 g of it daily for up to 14 days. After our own positive experiments, we took steps to strengthen the gluten network, create a crispier crust, and modify the proofing process. The ascorbic acid dramatically reduces oxidation, which can be an issue for dough held this long (see page 2·334).

TOTAL TIME
Active 9 min
Inactive 28 h 57 min

DDT
24-26 °C / 75-78 °F

DIFFICULTY
Easy: mixing

OVENS
★Home ★Deck Combi Convection

YIELD / SHAPES
4 lg boules/bâtards
8 sm boules/bâtards

INGREDIENTS	WEIGHT	VOLUME	%
Bread flour	2.23 kg	16¾ cups	100
Water, room temperature	1.65 kg	7¼ cups	73.99
Vital wheat gluten	67 g	½ cup	3
Fine salt	61 g	3 Tbsp + 1½ tsp	2.74
Polydextrose	23 g	2 tsp	1.03
Ascorbic acid	5 g	½ tsp + ⅛ tsp	0.22
Instant dry yeast	25 g	3 Tbsp	1.12
Yield	~4.06 kg		

For salt, flours, substitutions, and other notes, see pages viii–xi.

NET CONTENTS

Ingredients	Weight	%
Flour	2.23 kg	100
Water	1.65 kg	73.99
Vital wheat gluten	67 g	3
Salt	61 g	2.74
Polydextrose	23 g	1.03
Ascorbic acid	5 g	0.22
Yeast	25 g	1.12

GENERAL DIRECTIONS

		PROCEDURE		NOTES	TIME active / inactive
MIX	by hand*	combine all ingredients in a bowl, and mix to a shaggy mass; transfer to a lightly oiled tub, and cover with a lid		see Hand Mixing, page 3·116	5 min
	by machine*	combine all ingredients in mixer's bowl, and mix on low speed to a shaggy mass; transfer to a lightly oiled tub, and cover with a lid		see Machine Mixing, page 3·102	2 min
BULK FERMENT		24 h; no folds; cover, and proof at room temperature for 1 h; uncover, cover the surface directly with plastic wrap, cover, then refrigerate for 23 h or until you are ready to bake		see Bulk Fermentation, page 3·126	5 min / 24 h
DIVIDE / SHAPE	divide	lg boule/bâtard	sm boule/bâtard	see How to Divide Your Dough, page 3·136	1 min
		do not divide	500 g		
	shape	boule/bâtard	boule/bâtard	see shaping boules and bâtards, pages 3·152–155; transfer to a lightly floured basket or banneton	1–2 min
FINAL PROOF**	27 °C / 80 °F 65% RH	3 h	2 h	see Final Proofing Methods, page 3·212, and Calling Proof, page 3·220	2–4 h
	21 °C / 70 °F	4–5 h	3–4 h		
SCORE		for scoring options, see page 3·230			30 s–1 min
BAKE		see French Lean Bread Baking Times and Temperatures, page 32			15–55 min
TOTAL TIME				by hand	14 min / 28 h 55 min
				by machine	9 min / 28 h 57 min

**Choose by hand or machine*
***Proofing time (not cold-proofing time) might increase on a daily basis, especially toward the end of the 14-day period.*

We learned that if a piece of dough made with commercial yeast is overproofed, simply reshaping it can revive it (see Dough CPR, page 3·224). This is also true for this type of dough. Since it is leavened with commercial yeast which is incredibly resilient, the dough can be reshaped into a tight boule or bâtard to degas it—and it will continue to proof very well, even through day 14.

The yield of this recipe is 4 kg. If you want a 500 g loaf of bread every day for 14 days, you will have to make 7 kg of dough. That means you must determine if there's room in your refrigerator to hold this much dough. With a 4 kg yield, you can make eight 500 g loaves or four 1 kg loaves. And yes, you can make a loaf on the day after making this dough and up to 14 days later. The key questions to consider are how much dough you want to make and how frequently you'll need a whole loaf of freshly baked bread.

Consume within 1 d, or freeze for up to 2 mo.

PROFILE

Jeff Hertzberg and Zoë François

In 2000, a physician in Minneapolis named Jeff Hertzberg—who'd grown up savoring European and ethnic breads in New York City—called *The Splendid Table* radio show with an unusual question: how could an "unknown" like himself break into the publishing world with a bread recipe he had spent 12 years developing? "I'll be a little immodest and I'll say that it is a revolutionary concept," Hertzberg told radio host Lynne Rossetto Kasper.

Serendipitously, a book editor heard the show and asked Hertzberg to put together a book proposal for the "superfast" bread recipe he had talked about on the show. Nothing came of that request, though, until another twist of fate occurred: Hertzberg met Zoë François, one of New York City's top pastry chefs, at a preschool music class their children were attending. The doctor and the baker began talking about bread, and their conversation led to one of the most successful bread-book publishing ventures of all time: the *Artisan Bread in Five Minutes a Day* phenomenon.

The method they developed for their eventual book was similar to but also different from what later came to be known as no-knead dough. Hertzberg and François had determined that they could cold-proof their bread dough (which was made using a short mix and warm water) for up to 14 days in the refrigerator and yet still produce delicious, tender flavor and texture. More important, the process was so simple that even novice home bakers could make the dough. The blend of a home baker's perspective and a pastry chef's experience turned out to be a winning combination.

It was also a path neither author would have anticipated in their early years. Hertzberg, now also a consultant in medical informatics and a medical school professor, had loved bread and pizza ever since he'd been a kid growing up in New York City. For years, he had dabbled in cookies and cakes, but he didn't start baking yeasted bread until he began his medical residency and his wife, Laura, showed him the traditional method. Given his busy work life, developing a dough storage technique seemed like the only way to make daily bread possible. Long before his books were published, he used his custom techniques to bake regularly for family and friends.

François had been an art student at the University of Vermont (UVM), though she moonlighted for a while making ice cream cakes for Ben & Jerry's. She eventually started her own gourmet cookie company and, after graduating from UVM, traveled through Europe with her husband. As she says, her goal was to "consume as much art and pastry as possible." Initially, they moved to Minneapolis, but then, having discovered the world of baking and pastry, she decided to get formal training and enrolled at The Culinary Institute of America in Hyde Park, New York. Before finishing her degree, however, she was hired away to be Andrew Zimmern's pastry assistant (and, soon after, pastry chef) in Minneapolis. She worked at a number of fine restaurants and earned raves from restaurant critic and food writer Rick Nelson of the *Minneapolis Star Tribune*. He described her desserts as "the best in town" and "endlessly delicious."

Hertzberg and François's first book, *Artisan Bread in Five Minutes a Day*, came out in November 2007. It quickly became the best-selling bread book ever on Amazon.com. Between the original version and a revised and expanded version published in 2013 (*The New Artisan Bread in Five Minutes a Day*), it has over 450,000 copies in print. In 2009, they published their second book, *Healthy Bread in Five Minutes a Day*, which has about 125,000 copies in print. *Artisan Pizza and Flatbread in Five Minutes a Day* hit the shelves in 2011. Meanwhile, gluten-free bread—which had not even been on the radar in their initial book discussions—became enough of a phenomenon for them to adapt their methods into *Gluten-Free Artisan Bread in Five Minutes a Day*, published in 2014. The publishing juggernaut continues with a new edition of their second book published in 2016, *The New Healthy Bread in Five Minutes a Day*, and an upcoming volume on holiday and celebration breads. Early adopters of social media, Hertzberg and François keep in close contact with readers online, answering questions, sharing new projects, and taking the pulse of baking trends. They now consult, teach, and speak all over the world on diverse topics, including one they know particularly well: thinking outside the box.

Jeff Hertzberg and Zoë François embraced the concept of no-knead bread and simplified the idea with a series of books beginning with *Artisan Bread in Five Minutes a Day*.

home variation

NO-KNEAD LEAN BREAD ADAPTED FROM JIM LAHEY

This revelatory technique reintroduced to the world by Jim Lahey (see next page) emphasizes time, allowing the ingredients to naturally coalesce, rather than effort. The resulting dough needs little more than shaping before the final proof and baking. This method is an interesting counterpoint to the quick and vigorous Van Over method detailed on page 44. Because of this dough's slack consistency, it is shaped into a large boule and baked inside a cast-iron skillet or clay pot with a lid.

TOTAL TIME	DDT	DIFFICULTY	OVENS	YIELD / SHAPE
Active 6 min Inactive 20 h 55 min	24-26°C / 75-78°F	Easy	★Home ★Deck Combi Convection	1 lg boule

INGREDIENTS	WEIGHT	VOLUME	%
① Bread flour	565 g	4¼ cups	100
Fine salt	11 g	2 tsp	2
Instant dry yeast	1.5 g	¼ tsp	0.27
② Water	425 g	2 cups	75.22
Yield	~1.00 kg		

NET CONTENTS

Ingredients	Weight	%
Flour	565 g	100
Water	425 g	75.22
Salt	11 g	2
Yeast	1.5 g	0.27

GENERAL DIRECTIONS

		PROCEDURE	NOTES	TIME active/inactive
MIX	by hand	stir ① together in a bowl; add ②, and mix to a homogeneous mass; round the dough out gently without stressing it ; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap	see How to Mix with the No-Knead Method, page 3·124	5 min
BULK FERMENT		12–18 h; no folds; keep covered throughout	see Bulk Fermentation, page 3·126	12–18 h
PRESHAPE		transfer to a well-floured surface, and gently give it a rounded shape (as if preshaping a boule, see page 3·152); keep seam side down		1 min
SHAPE		flour a kitchen towel well, transfer the gently rounded dough onto the towel with the seam facing down; dust a fine layer of flour on the surface; close the towel up by folding it gently over the dough, making sure to leave some room for the dough to expand	see How to Preshape and Shape a Boule, page 3·152	n/a
FINAL PROOF	20–24°C / 68–75°F	1–2 h	see Final Proofing Methods, page 3·212, and Calling Proof, page 3·220	1–2 h
BAKE		see French Lean Bread Baking Times and Temperatures, page 32; crispy crust requires steam	carefully flip the dough onto a hot cast-iron skillet or pot so that it is seam side up; you won't need to score it because the seam acts as a score; place the lid on the skillet or pot immediately	30–55 min
TOTAL TIME				by hand 6 min / 20 h 55 min

Jim Lahey used this technique for his *stirato* (see page 24 to learn more about this "stretched" bread).

Jim Lahey's method calls for using a hot skillet, but we discovered that you can proof and bake this in a cold skillet with nearly great results. Using a cold skillet can help prevent overhandling and potential burns. If you use a cold skillet, place the dough in the pan seam side up.

Consume within 1 d, or freeze for up to 2 mo.

PROFILE

Jim Lahey

Jim Lahey, the founder of Sullivan Street Bakery in New York City, is known the world over for reigniting interest in no-knead bread, a method that launched countless home-baking careers.

In college, Lahey studied sculpture. He did not finish the program, but his passion for making art extended to baking, and after leaving school, he traveled around Italy to learn about bread. There, in the picturesque Tuscan town of San Gimignano, Lahey learned to soak leaves in water to release the wild yeast living on them. With that yeast, he made the starter he has been using ever since.

When Lahey moved to New York, he struggled to find a steady income; he estimates that in 1 year he held nearly 40 different jobs. But he built his culinary skills through brief stints at restaurants like Amy's Bread and Orso, and he taught himself to bake. Lahey was ultimately able to secure financial backing to open his own space, and in 1994, he launched Sullivan Street Bakery.

Lahey's bread—deeply caramelized, with an assertive crust and pillowy crumb—soon became a standard that other local bakers strove for (or outright imitated). Demand grew, and in 2000, Lahey moved the shop to a larger space and added Roman-style pizza and Italian pastries to the menu. Four years later, the bakery's annual revenue had soared to $4.5 million.

But it was a 2006 article by Mark Bittman in *The New York Times* that catapulted Lahey to international fame when the food journalist introduced Lahey's no-knead method for bread making. While the process is mostly hands-off, it takes about 24 hours to make the bread. ("Time does almost all the work," Bittman explained.) A large amount of water (about 75%) gives the bread a crispy crust and structured crumb. "The dough is so sticky that you couldn't knead it if you wanted to," Bittman wrote.

The article caused a worldwide craze for no-knead bread and inspired countless novice bakers to try making bread for the first time. Bittman's article also became the basis for Lahey's first cookbook: *My Bread: The Revolutionary No-Work, No-Knead Method*, published in 2009.

The same year, Lahey opened Co., a pizza restaurant that was an instant success. At Co., he used a no-knead method for making pizza dough. That inspired a second cookbook: *My Pizza: The Easy No-Knead Way to Make Spectacular Pizza at Home*.

For a while, Lahey was using the no-knead method to make all his breads, but in recent years, he has turned his attention to all-natural fermentation. Is a new book far behind? No word yet, but Lahey's continued innovation and influence make him a prominent baker in the world of bread. In fact, in 2015, he took home the first-ever James Beard Award for Outstanding Baker. In 2017, he opened Sullivan Street Bakery in Miami and published *The Sullivan Street Bakery Cookbook*.

The concept of no-knead bread has been around for well over 100 years (see page 1·136). But when *The New York Times* wrote about Jim Lahey's no-knead bread in 2006, it was an instant sensation.

home variation

THE VAN OVER METHOD FOR FRENCH LEAN BREAD INSPIRED BY CHARLES VAN OVER

We tend to associate artisan-style breads with slow processes. This method, developed by Charles van Over (see next page), takes advantage of high-speed food processor blades to drastically reduce the time needed for gluten development. Direct leavening further shortens preparation time. This approach may not produce our favorite loaf of bread—the tight crumb lacks the airiness of other French lean breads—but a loaf made with less than 1 minute's mixing time is worth exploring.

TOTAL TIME	DDT	DIFFICULTY	OVENS	YIELD / SHAPES
Active 27 min Inactive 4½ h	24-26.5°C/ 75-80°F	Easy	★Deck ★Home Combi Convection	1lg boule/bâtard; 2 sm boules/bâtards; 3 baguettes/short baguettes; 4 ficelles; 20 rolls

INGREDIENTS	WEIGHT	VOLUME	%
Bread flour	605 g	4½ cups	100
Fine salt	12 g	2¼ tsp	1.98
Instant dry yeast	4 g	1½ tsp	0.66
Water	395 g	1¾ cups	65.29
Yield	~1.00 kg		

NET CONTENTS

Ingredients	Weight	%
Flour	605 g	100
Water	395 g	65.29
Salt	12 g	1.98
Yeast	4 g	0.66

For salt, flours, substitutions, and other notes, see pages viii–xi.

GENERAL DIRECTIONS

		PROCEDURE					NOTES	TIME active / inactive
MIX	by machine	combine dry ingredients in the food processor bowl; turn on, and add water in a steady stream, process for 45 s; turn off, and take dough temperature, should be at least 24 °C / 75 °F; if DDT is too low, process for 5 s more, and retake temperature (continue until DDT is between 24–26.5 °C / 75–80 °F); check for gluten development using the windowpane test (see page 3·89); transfer to a lightly oiled plastic tub, and cover with a lid						5 min
BULK FERMENT		1–1½ h, no folds; keep covered throughout					see Bulk Fermentation, page 3·126	1½ h
DIVIDE/ SHAPE	divide	lg boule/bâtard	small boule/ bâtard	baguette/ sh baguette	ficelle	roll	see How to Divide Your Dough, page 3·136	0–7 min
		do not divide	500 g	350 g	250 g	50 g		
	preshape	boule/bâtard	boule/bâtard	baguette	baguette	roll	see shaping boules, bâtards, baguettes, ficelles, pages 3·152–158, and rolls, page 3·176	1–7 min
	rest	20 min	20 min	20 min	20 min	20 min		20 min
	shape	boule/bâtard	boule/bâtard	baguette	baguette	roll		1–7 min
FINAL PROOF	27 °C / 80 °F 65% RH	1–1¼ h	45 min–1 h	45 min–1 h	30–45 min	30–45 min	see Final Proofing Methods, page 3·212, and Calling Proof, page 3·220	30 min–1¾ h
	21 °C / 70 °F	1½–1¾ h	1¼–1½ h	1¼–1½ h	1–1¼ h	1–1¼ h		
SCORE		for scoring options, see page 2·230						30 s–1 min
BAKE		see French Lean Bread Baking Times and Temperatures, page 32						10–55 min
TOTAL TIME								

If your flour temperature is 21 °C / 70 °F, the water must be 16 °C / 60 °F. With this formula, the final DDT should be 24–26.5 °C / 75–80 °F. The friction created inside the food processor bowl produces very high temperatures, which makes calculating the water temperature crucial—and slightly different from how we typically calculate it (see page 3·93). If the DDT goes over 24–26.5 °C / 75–80 °F, you can refrigerate the dough for the first 30 min of bulk fermentation to cool it.

This recipe can be made in a standard-sized food processor (3 qt / 12 cups), but it can also be scaled up for larger quantities. In fact, numerous commercial bakeries use this method and scale up the recipe many times. The largest Robot Coupe food processor bowl is 63 qt (or 252 cups / 60 L), which means it could potentially hold up to 20 kg of dough at a time.

Consume within 1 d, or freeze for up to 2 mo.

PROFILE

Charles van Over

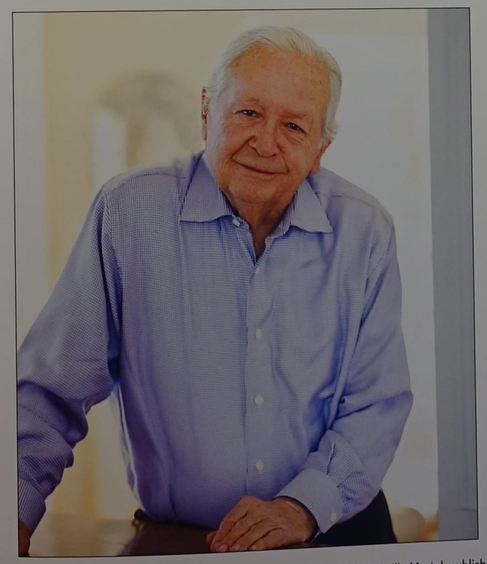
Charles van Over helped revolutionize home baking with his 1997 book, *The Best Bread Ever: Great Homemade Bread Using Your Food Processor.* As *The New York Times* writer Mark Bittman wrote in 2013, "Van Over makes the best home baguettes of anyone I've ever met."

Van Over began his career as a restaurant consultant. In 1979, he and his wife, Priscilla Martel, opened Restaurant du Village in Chester, Connecticut. Looking to re-create the feel of a family-owned restaurant in the French countryside, they used local ingredients and baked their breads and pastries in-house. Van Over's bread soon became so popular that he and Martel opened a wholesale bakery. As he puts it, "The bread became the essence of the restaurant."

The couple sold Restaurant du Village in 1990 to focus on their bakery and consulting business. A few years later, when Van Over attended a party thrown by the founder of Cuisinart, someone at the party suggested that the baker try mixing his bread dough in a food processor. Van Over rose to the challenge and spent several years perfecting the technique, which he detailed in *The Best Bread Ever* (cowritten with Martel). The book advocated several unorthodox methods: not proofing the yeast, using temperature-adjusted cool water instead of warm, mixing the dough in a food processor for a mere 45 seconds instead of kneading it by hand, and letting the dough rise in a cool place instead of a warm one.

Van Over patented his food-processor mixing method in 1998. As the patent application explains, a food processor is preferable to an electric mixer for bread making because mixers add too much air to the bread dough, resulting in oxidation that "leaches out some of the color, flavor, and nutrients in the dough . . . thereby causing the bread to be feather-light and bland." Mixers also heat the dough significantly, he explained, causing some of the yeasts to die and thus impairing the rise.

Today, Van Over and Martel do consulting work through their firm, All About Food, and have worked with businesses such as W. R. Grace and McDonald's on cooking sous vide, menu development, and management. Van Over also worked with Cuisinart to develop the PowerPrep Plus food processor for the company's 25th anniversary (the machine has since been discontinued). He and Martel are currently working on a revised electronic version of *The Best Bread Ever.*



Mixing dough in a food processor? Charles van Over and his wife, Priscilla Martel, published *The Best Bread Ever,* describing his patented method that's quick, easy, and really does make good bread.

submaster recipe

ENGLISH MUFFINS

The origins of English muffins date at least to the mid-18th century (see next page). Griddle-cooked with a flat surface on both sides, these have a distinctly open crumb that nicely captures the butter and jam commonly spread onto it after toasting. The long cold-proofing not only develops flavor but also creates a firm dough that can be cleanly cut into rounds.

TOTAL TIME	DDT	DIFFICULTY			COOK	YIELD / SHAPE
Active 15 min Inactive 20 h 54 min	24-26 °C / 75-78 °F	Moderate: dough handling	Moderate: shaping	Moderate: cooking	★ Griddle ★ Skillet	8 English muffins

INGREDIENTS	WEIGHT	VOLUME	%
For the Poolish			
Bread flour	140 g	1 cup	100
Water	140 g	½ cup	100
Instant dry yeast	0.14 g	1/16 tsp	0.1
For the Dough			
① Water	250 g	1 cup	55.55
Instant dry yeast	3 g	1 tsp	0.66
② Poolish	280 g	all from above	57.78
Stiff levain, mature see page 3-54	90 g	⅓ cup + 1 Tbsp	20
③ Bread flour	450 g	3⅓ cups	100
④ Fine salt	12 g	2¼ tsp	2.66
Cornmeal	as needed		
Clarified butter see page 202	as needed		
Yield	~1.00 kg		

NET CONTENTS

Ingredients	Weight	%
Flour	625 g	100
Water	425 g	68
Yeast	3.14 g	0.5
Salt	12 g	1.92

Consume within 1 d, or freeze for up to 2 mo.

GENERAL DIRECTIONS

		PROCEDURE	NOTES	TIME active / inactive
PREP	preferment	mix poolish 12 h before using; ferment in an airtight container	see Poolish, page 3·20	12 h
MIX	by hand*	combine ① in a bowl, and stir to dissolve yeast; stir in ②; add ③, and mix to a shaggy mass; autolyse 20–30 min; add ④, and mix to medium gluten development; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap	see Hand Mixing, page 3·116	5 min / 20–30 min
	by machine*	combine ① in mixer's bowl, and stir to dissolve yeast; stir in ②; add ③, and mix on low speed to a shaggy mass; autolyse 30 min; add ④, and mix on medium speed to medium gluten development; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap	see Machine Mixing options, page 29	38–44 min
BULK FERMENT		2½ h total; 3 folds (1 fold immediately, then 1 every hour), 30 min rest after final fold; check for full gluten development using the window-pane test; press into 2½ cm / 1 in thick sheet; cold-proof 12–16 h	see How to Perform a Four-Edge Fold, page 3·129, and Gluten Development, page 3·89	10 min / 14½–18½ h
DIVIDE/SHAPE		muffin		3–5 min
		125 g; cut into 7½ cm / 3 in rounds; place on a sheet pan lined with parchment paper and dusted with cornmeal		
FINAL PROOF	27 °C / 80 °F 65% RH	45 min–1 h	see Final Proofing Methods, page 3·212, and Calling Proof, page 3·220	45 min–1½ h
	21 °C / 70 °F	1–1½ h		
COOK		cook on a buttered griddle for 4 min per side		8–10 min
TOTAL TIME			consume within 24 h	by hand 20 min / 20 h 40 min by machine 15 min / 20 h 54 min

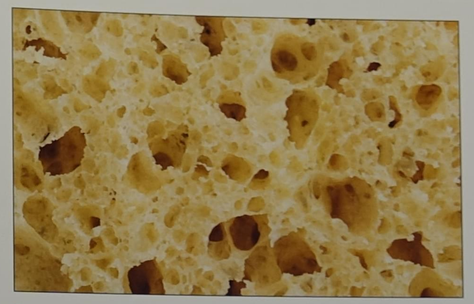
*Choose by hand or machine

30% WHOLE WHEAT ENGLISH MUFFINS

Replace 190 g of the bread flour in ① with whole wheat flour, such that whole wheat flour makes up 30% of the net flour content

If the hook attachment doesn't catch the dough initially, use a paddle attachment to mix the ingredients uniformly. Once you have a homogeneous mass (the dough is sticky and wet, but without visible clumps or uncorporated water), switch to a hook attachment.

If your dough is starting to get too bubbly and gassy after the final fold during bulk fermentation, and its gluten has not yet been fully developed, refrigerate for the remainder of the bulk fermentation. As the dough cools, fermentation will slow down.



You can make English muffins with a variety of doughs, including our favorites:
Ciabatta (see page 155)
Sourdough (see page 63)
Country-Style Bread (see page 99)
Ancient Grain Bread (see page 125)

THE ORIGIN OF

English Muffins

To explain the history of English muffins, we'll start with something more basic: muffins. These round, yeast-leavened breads were commonly made on a griddle and date back to at least the 1700s. This style of muffin was often toasted before it was served to diners, who then pulled it apart with their fingers to reveal the muffin's spongy interior. In 1747, it was common to slather the honeycombed crumb with butter.

In the Victorian era, door-to-door vendors known as muffin men would walk the streets of English towns during teatime, ringing a bell and hawking this style of muffin. These English muffins are cousins to the crumpet (see page 49), but the crumpet is made a little differently, and its holes are on the outside rather than on the inside.

In the late 1800s, an English baker named Samuel Bath Thomas immigrated to the United States, opening his own bakery in New York City in 1880. He developed a recipe for a round, griddle-cooked yeast bread of the sort sold by the muffin men. His version took off, ultimately becoming a well-known U.S. brand: Thomas' English Muffins. The brand touted the muffins' "nooks and crannies" and became a popular breakfast food, as vital to bacon-and-egg sandwiches as it is to eggs Benedict. The company is now owned by Bimbo Bakeries USA.

American-style muffins are very different from English muffins—the former are typically sweet, baked in cup-shaped tins, sometimes studded with fresh fruits such as blueberries, and made with baking powder.

Modernist English Muffin (see page 48)

modernist variation

MODERNIST ENGLISH MUFFINS

For this Modernist update on the classic English muffin, the addition of polydextrose contributes to a crispier crust on the muffins. And we have added glycerin to achieve larger and more abundant bubbles in the crumb, all the better to hold little pools of the butter you'll be spreading on after toasting. Since glycerin is a humectant, its inclusion also produces a moister crumb.

TOTAL TIME	DDT	DIFFICULTY			COOK	YIELD / SHAPE
Active 15 min Inactive 20 h 54 min	24-26 °C / 75-78 °F	Moderate: dough handling	Moderate: shaping	Moderate: cooking	★ Griddle ★ Skillet	8 English muffins

	INGREDIENTS	WEIGHT	VOLUME	%
	For the Poolish			
	Bread flour	140 g	1 cup	100
	Water	140 g	½ cup	100
	Instant dry yeast	0.14 g	1/16 tsp	0.1
	For the Dough			
①	Water	250 g	1 cup	55.55
	Instant dry yeast	3 g	1 tsp	0.66
	Glycerin	12 g	1 Tbsp + 1 tsp	2.66
②	Poolish	280 g	all from above	57.78
	Stiff levain, mature see page 3-54	90 g	⅓ cup + 1 Tbsp	20
③	Bread flour	450 g	3⅓ cups	100
	Polydextrose	6 g	1 Tbsp	1.33
④	Fine salt	12 g	2¼ tsp	2.66
	Cornmeal	as needed		
	Clarified butter see page 202	as needed		
	Yield	~1.00 kg		

NET CONTENTS

Ingredients	Weight	%
Flour	625 g	100
Polydextrose	6 g	0.96
Glycerin	12 g	1.92
Water	425 g	68
Yeast	3.14 g	0.5
Salt	12 g	1.92

Follow the instructions for the English Muffins recipe on page 46.

technique variation

CRUMPETS

A crumpet may seem similar to an English Muffin, but it definitely has its own character. The "dough" is a loose batter, which cooks within a metal ring and resembles a thick pancake. Also, crumpets are cooked primarily (in some cases, fully) on just one side, so the bottom is smooth while the surface is dotted with cavities from popped bubbles. If the batter is too thick, bubbles won't surface, and you'll be left with what is called a blind crumpet.

TOTAL TIME	DDT	DIFFICULTY	COOK	YIELD / SHAPE
Active 40 min Inactive 1 h 20 min	24-26 °C / 75-78 °F	Advanced: cooking	★ Griddle ★ Skillet	8 English muffins

	INGREDIENTS	WEIGHT	VOLUME	%
①	Bread flour	460 g	3⅔ cup	100
	Sugar	3 g	¾ tsp	0.65
	Cream of tartar	3 g	¾ tsp	0.65
②	Water, 38 °C / 100 °F	510 g	2½ cups	110.87
	Instant dry yeast	5 g	2 tsp	1.09
③	Fine salt	10 g	2 tsp	2.17
④	Milk	140 g	⅔ cup	30.43
	Baking soda	3 g	½ tsp	0.65
	Clarified butter see page 202	as needed		
	Yield	~1.13 kg		

NET CONTENTS

Ingredients	Weight	%
Flour	460 g	100
Water	633 g	137.69
Fat	4.55 g	0.99
Sugar	10 g	2.19
Salt	10 g	2.17
Yeast	5 g	1.09
Baking soda	3 g	0.65
Cream of tartar	3 g	0.65

Consume within 1 d, or freeze for up to 2 mo.

GENERAL DIRECTIONS

		PROCEDURE	NOTES	TIME active / inactive
MIX	by hand	sift together ①; in a separate bowl, dissolve ②; whisk ② into ① to make a smooth batter; cover well with plastic wrap	see Hand Mixing, page 3-116	5 min
BULK FERMENT		ferment 1 h (the batter will rise, then fall); whisk in ③; rest, covered, for 20 min; combine ④ in a bowl, stir to dissolve, then gently stir into the batter	see Bulk Fermentation, page 3-126	5 min / 1 h 20 min
COOK		place a well-oiled 9½ cm / 3¾ in tart ring on a buttered 165 °C / 325 °F griddle or nonstick pan; ladle 50 g of batter into the ring (about two-thirds full to allow for some expansion); cook 10–12 min, flip over, and cook for 2–3 min on the other side; transfer to a wire rack to cool		24–30 min
TOTAL TIME			by hand	40 min / 1 h 20 min

Always make a test crumpet before you cook the rest of the batter. If you haven't made crumpets before, make smaller batches to practice.

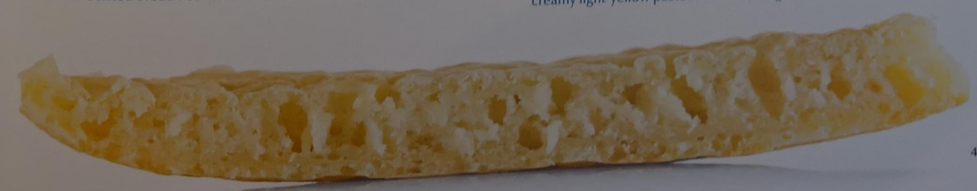
A loose batter is preferred over a thick batter. The latter will produce what are called blind crumpets, meaning crumpets without holes.

If the crumpet doesn't start to form holes soon after the batter is poured into the ring, thin the batter by adding more lukewarm water (15 g at a time). If the batter gets too thin, however, it will run out from under the ring mold. Add more sifted bread flour to thicken the batter if this occurs.

If you would like to create a nontraditional crumpet variation, try substituting our Injera recipe (see page 5-153). The injera dough will be a little denser, so it may take longer to cook.

Classic crumpets are not flipped over when they are cooked in a pan, but we recommend flipping to evenly cook both sides.

Cooking may take longer than 12–15 min, depending on your griddle and the tart ring you are using. Before turning the crumpets over, make sure that the batter has gone from raw to cooked (the color of the batter changes from a creamy light-yellow paste to a white, set gel).



FRENCH LEAN BREAD PUREE VARIATIONS

With the Direct Lean Bread recipe on page 37 as a starting point, the variations below create striking loaves characterized by each fruit or vegetable puree. These purees contain different amounts of water, so the recipe for each is tailored accordingly. With the exception of the Niçoise olives version, the purees are simply added to the water portion of the dough.

INGREDIENTS	WEIGHT	VOLUME	%
Bread flour	585 g	4⅓ cups + 1 tsp	100
Puree see tables below	X	X	X
Water see tables below	Y	Y	Y
Instant dry yeast	4.09 g	1½ tsp	0.7
Fine salt	12 g	2¼ tsp	2

For salt, flours, substitutions, and other notes, see pages viii–xi.

1. Pressure-Caramelized Sunchoke French Lean Bread

INGREDIENTS	WEIGHT	VOLUME	%
X Sunchoke puree	295 g	1¼ cup + 1¾ tsp	50.43
Y Water	270 g	1 cup + 3 Tbsp	46.15

1 Place 300 g (2¼ cups) of sliced sunchokes in a pressure cooker with an additional 150 g (½ cup + 3 Tbsp) of water. Add 2.25 g (¼ tsp) of baking soda to the sunchokes, and mix thoroughly.
2 Pressure-cook the sunchokes for 1 h from the point when pressure builds up in the pot.
3 Allow the pressure cooker to cool down naturally, and then remove the sunchokes from the pot; puree them until smooth.
4 Cool the sunchokes to room temperature before mixing into the dough.

2. Niçoise Olives French Lean Bread

INGREDIENTS	WEIGHT	VOLUME	%
X Niçoise olives (pitted)* **	120 g	½ cup	20.51
Y Water	305 g	1⅓ cup + 1 tsp	52.14

**Puree the Niçoise olives in a blender until smooth.*
***The olive puree inhibits gluten formation if it is added when mixing the dough begins. Instead, mix the dough to medium gluten development, add the olive puree, and then mix on low speed until it is just incorporated into the dough.*

3. Pumpkin Pie Filling French Lean Bread

INGREDIENTS	WEIGHT	VOLUME	%
X Pumpkin pie filling (canned)*	235 g	1 cup + 2 tsp	40.17
Y Water	235 g	1 cup + 1½ tsp	40.17

**You can use fresh pumpkin puree if desired (see page 2-393).*

4. Candied Chestnut Puree French Lean Bread

INGREDIENTS	WEIGHT	VOLUME	%
X Candied chestnut puree*	295 g	¾ cup + 2 Tbsp	50.43
Y Water	435 g	1 ¾ cups + 3 Tbsp	74.36

**See Resources, pages 5-XXXVIII–XLIII.*

5. Raspberry Puree French Lean Bread

INGREDIENTS	WEIGHT	VOLUME	%
X Raspberry puree*	120 g	½ cup	20.51
Y Water	320 g	1⅓ cups + 1 Tbsp + 2 tsp	54.7

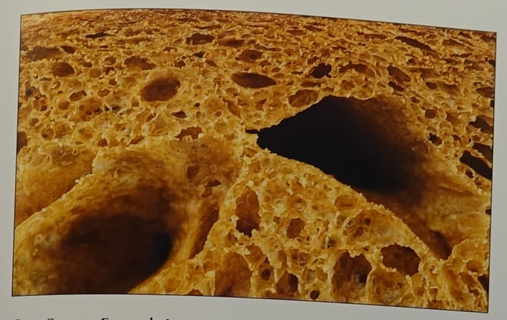
**Use frozen raspberry puree; thaw before using.*

6. Poi French Lean Bread

INGREDIENTS	WEIGHT	VOLUME	%
X Frozen poi*	295 g	1⅓ cup	50.43
Y Water	275 g	1 cup + 3 Tbsp + 2 tsp	47.01

**Poi is cooked taro and can be found in the frozen foods section of most Asian grocery stores. Place the poi in the water portion of the dough, and break it apart with your fingers before mixing it with the rest of the ingredients. The poi will easily break apart into very small pieces, which makes pureeing it unnecessary.*

FLAVOR VARIATIONS



Soy Sauce French Lean Bread

Reduce the water amount in the French Lean Bread master recipe (see page 27) by 45 g, and add 39 g of soy sauce. Eliminate the salt in the master recipe completely. Add the soy sauce with the water portion of the dough. There is no need to autolyse this dough.

Comté Cheese Water and Bacon French Lean Bread

INGREDIENTS	WEIGHT	VOLUME	%
For the Crème Fraîche Swirl			
Bacon, thinly sliced	60 g	3 slices	7.5
Sweet onion, thinly sliced	90 g	1 cup	11.25
Chives, sliced	10 g	¼ cup	1.25
Crème fraîche	140 g	⅔ cup	17.5
Lean dough made with Comté water see page 5-XXI	800 g		100

1 Render the bacon in a nonstick pan over medium heat until crispy, 3–5 min.
2 Remove the bacon from the pan, and add the onion. Cook over low heat until translucent and with no color, 5–7 min.
3 Remove the onion from the heat, and allow to cool to room temperature. Combine with the crème fraîche, chives, and rendered bacon.
4 Preshape 500 g of dough made from the French Lean Bread master recipe into a boule, and rest for 20 min.
5 Lightly flatten the boule with your fingertips.
6 Spread the crème fraîche swirl over the dough, leaving a 6 mm / ¼ in border at the edges.
7 Shape the dough into a bâtard (see page 3-154), being careful not to squeeze the crème fraîche filling out of the dough.
8 Proof, score, and bake the loaf according to the instructions in the General Directions table for the French Lean Bread master recipe on page 27.

Lean Dough with Raspberry Fluid Gel Swirl

1 Lightly flatten a 500 g boule made from French Lean Bread (see page 27) with your fingertips.
2 Spread 50 g (¼ cup) of Raspberry Fluid Gel (see page 5-XXVII) in the center of the dough, leaving a 2.5 cm / 1 in border at the edges.
3 Shape the dough into a bâtard (see page 3-154), being careful not to squeeze the raspberry fluid gel out of the dough.
4 Proof, score, and bake the loaf according to the instructions in the General Directions table for French Lean Bread master recipe on page 27.

Toasted Flour Loaf

We wanted to create a finished bread that would taste like toast. Toasting 20% of the flour amount in the French Lean Bread master recipe (see page 27) in the oven before mixing the dough results in a fully aromatic loaf of bread that smells completely like toast. It also has a tighter crumb because toasted flour doesn't act like raw flour; it is essentially an inclusion. And you can toast this toasted loaf!

1 Preheat your oven to 175 °C / 350 °F.
2 Spread the flour in an even layer on a sheet pan, and place in the oven.
3 Toast the flour until it is golden brown, stirring every 10 min so that it toasts evenly.
4 Cool the flour to room temperature before using.

French Lean Bread with Orange Juice

Replace the water in the French Lean Bread master recipe (see page 27) with orange juice.

20% Whole Wheat French Lean Bread

Substitute whole wheat flour for 20% of the bread flour in the French Lean Bread master recipe (see page 27).

Seeded French Lean Bread

Shape your dough and put it on a damp towel, smooth side down (as with fougasse). Roll the moist surface in the seed mixture. Proof, score, and bake the loaf according to the instructions in the master French Lean Bread General Directions table on page 27. We recommend using sesame seeds, flaxseeds, or everything seed mix (see page 5-185), but you can choose virtually any seed or seed mixture that you like.

ingredient variation

FILONE

Filone is another Italian bread that is sometimes compared with the baguette. As with pane francese (see page 174), however, the dough is in the high-hydration spectrum, so it has a more rustic character than the baguette. *Filone* loaves are often a bit shorter and broader than the slender French loaf. This dough uses protein-rich durum flour, which contributes its distinctive flavor and yellowish hue to the bread.

TOTAL TIME — Active 21 min; Inactive 4 h 54 min

DDT — 24–26 °C / 75–78 °F

DIFFICULTY — Easy: dough; Advanced: shaping (baguette)

OVENS — ★Deck, Combi, Convection, Home

YIELD / SHAPES — 3 baguettes or short baguettes; 4 ficelles

INGREDIENTS	WEIGHT	VOLUME	
For the Poolish			
Bread flour	170 g	1¼ cups	100
Water	170 g	¾ cup	100
Instant dry yeast	0.17 g	1/16 tsp	0.1
For the Dough			
① Water	260 g	1¼ cups	65
Instant dry yeast	3 g	1⅛ tsp	0.75
② Bread flour	315 g	2½ cups	78.75
Poolish	340 g	all from above	85
Durum flour	85 g	½ cup	21.25
③ Fine salt	11 g	2 tsp	2.75
Yield	1.00 kg		

For salt, flours, substitutions, and other notes, see pages viii–xi.

NET CONTENTS

Ingredients	Weight	
Flour	485 g	84.26
Durum flour	85 g	15.74
Water	430 g	75.44
Salt	11 g	1.93
Yeast	3.17 g	0.55

Consume within 1 d, or freeze for up to 2 mo.

GENERAL DIRECTIONS

		PROCEDURE		NOTES	TIME active / inactive
PREP	preferment	mix poolish 12 h before using; ferment in an airtight container		see Poolish, page 3·20	12 h
MIX	by hand*	combine ① in a bowl, stir to dissolve yeast; add ②, and mix to a shaggy mass; autolyse 20–30 min; add ③, and mix until homogeneous; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap		see Hand Mixing, page 3·116	5 min / 20–30 min
	by machine*	combine ① in mixer's bowl, stir to dissolve yeast; add ②, and mix on low speed to a shaggy mass; autolyse 20–30 min; add ③, and mix on medium speed to medium gluten development; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap		see Machine Mixing, page 3·102	38–44 min
BULK FERMENT	by hand*	3½ h total; 3 folds (1 fold every hour after the first hour), 30 min rest after final fold; check for full gluten development		see How to Perform a Four-Edge Fold, page 3·129, and Gluten Development, page 3·89	5 min / 3½ h
	by machine*	2 h total; 2 folds (1 fold every hour after the first hour), 30 min rest after final fold; check for full gluten development			5 min / 2 h
DIVIDE/SHAPE	divide	baguette/short baguette	ficelle	see How to Divide Your Dough, page 3·136	3–5 min
		350 g	250 g		
	preshape	baguette	baguette	see shaping baguettes and ficelles, pages 3·156–158	3–5 min
	rest	20 min	20 min		20 min
	shape	baguette	ficelle		3–5 min
FINAL PROOF	27 °C / 80 °F 65% RH	45 min–1 h	30–45 min	see Final Proofing Methods, page 3·212, and Calling Proof, page 3·220	30 min–1½ h
	21 °C / 70 °F	1–1½ h	45 min–1 h		
SCORE		single score down the center		see Scoring, page 3·230	30 s–1 min
BAKE		see French Lean Bread Baking Times and Temperatures, page 32; crispy crust requires steam			10–20 min
TOTAL TIME				by hand	26 min / 6 h 10 min
				by machine	21 min / 4 h 54 min

**Choose by hand or machine*

BANH MI ROLLS

Banh mi is one echo of the French colonization of Vietnam. The term translates literally as "wheat bread" and refers to a baguette-like loaf or smaller roll that has a slightly softer crust and tighter crumb than French baguettes. Banh mi has also become synonymous with a sandwich made with pickled vegetables, cilantro sprigs, fresh chilies, and meat or tofu.

TOTAL TIME — Active 27 min; Inactive 3 h 48 min

DDT — 24–26 °C / 75–78 °F

DIFFICULTY — Easy: mixing; Advanced: shaping

OVENS — ★Deck ★Combi ★Convection Home

YIELD / SHAPE — 4 baguette rolls

INGREDIENTS	WEIGHT	VOLUME	
① Water	345 g	1½ cup	57.5
Instant dry yeast	7 g	2½ tsp	1.17
② Bread flour	600 g	4½ cups	100
Sugar	20 g	2 tsp	3.33
③ Fine salt	6 g	1⅛ tsp	1
④ Shortening or lard, melted and cooled	100 g	½ cup	16.67
Yield	1.00 kg		

For salt, flours, substitutions, and other notes, see pages viii–xi.

NET CONTENTS

Ingredients	Weight	
Flour	600 g	100
Water	345 g	57.5
Sugar	20 g	3.33
Fat	100 g	16.67
Yeast	7 g	1.17
Salt	6 g	1

Consume within 1 d, or freeze for up to 2 mo.

GENERAL DIRECTIONS

		PROCEDURE	NOTES	TIME active / inactive
MIX	by hand*	combine ① in a bowl, and stir to dissolve yeast; add ②, and mix to a shaggy mass; autolyse 30 min; add ③, and mix to low gluten development; add ④, and mix to full gluten development; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap	see Hand Mixing, page 3·116	10–12 min / 30 min
	by machine*	combine ① in a mixer's bowl, and stir to dissolve yeast; add ②, and mix on low speed to a shaggy mass; autolyse 20–30 min; add ③, and mix on medium-low speed to low gluten development; add ④, and mix on medium speed to full gluten development; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap	see Machine Mixing, page 3·102	36–38 min
BULK FERMENT		1 h; 1 book fold after the first 30 min; 30 min rest after fold	see Folding, page 3·128	5 min / 1 h
DIVIDE/SHAPE	divide	short baguette	see How to Divide Your Dough, page 3·136	5–7 min
		250 g		
	preshape	baguette	see How to Preshape and Shape a Baguette, page 3·156	5–7 min
	rest	15–20 min		15–20 min
	shape	20 cm / 8 in baguette		5–7 min
FINAL PROOF	27 °C / 80 °F 65% RH	30–45 min	see Final Proofing Methods, page 3·212, and Calling Proof, page 3·220	30 min–1½ h
	21 °C / 70 °F	1–1½ h		
SCORE		refrigerate the dough for 10 min, uncovered, before baking; single score down the center		30 s–1 min
BAKE		see filone entry in French Lean Bread Baking Times and Temperatures, page 32; crispy crust requires steam		10–20 min
TOTAL TIME	**Choose by hand or machine*		by hand	39 min / 3 h 40 min
			by machine	27 min / 3 h 48 min

Our version of banh mi is soft crumbed and crispy crusted, just like all the bahn mi we have tasted. It is hard to tell this bread apart from the Mexican bolillo (pronounced "bo-lee-yo") that is used for making the classic Mexican sandwich called a torta. In fact, we would suggest using them for the same purpose.

We highly recommend mixing this dough with a machine rather than by hand because it is a rather firm dough and requires full gluten development. (Achieving that by hand is time-consuming.) For an 8 qt stand mixer, we recommend doubling this recipe so that there is enough dough for the mixer to catch all the ingredients.

SOURDOUGHS

Like a French lean bread, a sourdough needs just a few ingredients: flour, water, salt, and a leavener. But an additional factor is baked into the sourdough that really makes the final product distinct: time.

Here's what we mean. In a regular French lean bread, we use commercial yeast to make the dough rise, and commercial yeast acts quickly—from start to finish, the process can be as fast as a few hours. But for a sourdough, we use levain, a combination of flour and water that must be mixed and fermented well in advance of baking, as well as tended regularly (see Making a Basic Levain, page 60). In a levain, naturally occurring yeasts (*Saccharomyces cerevisiae*) and a whole lot of lactic acid bacteria (LAB) feast on sugars and expel gas bubbles, creating a kind of thick, frothy, fermented soup (see The Science of Sourdough, page 2·284). When a levain is added to the dough in amounts from 15% to 60%, it can help the dough ferment and rise. Some bakers might start a levain over the course of 5 days, but other bakers keep feeding and using the same levain for months or even years. This fermentation process is slower than with commercial yeast, but the resulting bread has a flavor that is deep, complex, and, yes, sour. You can't really replicate that flavor with commercial yeast.

If this process sounds complex, it is. But it's also the way bread was made for thousands of years, before commercial yeast was introduced in the 19th century. The ancient Egyptians were the first to use levain in the bread-making process, and they probably stumbled on it by accident, noting that bowls of flour and water seemed to bubble to life overnight. Before that, ancient bakers made risen breads using barm, a fermented byproduct of beer- and wine-making processes (see page 2·274). Or they made flatbreads that didn't require a leavening agent.

There is no single type of sourdough bread, but perhaps the most well-known is the San Francisco Sourdough (see page 87). You can form this kind of dough into many shapes or bake it in a pan. It can have varying hydration percentages, too. Not everyone has the same affinity for that mouth-puckering sour flavor that characterizes American sourdoughs, but adjustments are possible. Want even more sour flavor? Try cold-proofing it (see page 3·226). Want less? Cut the levain fermentation time or use less preferment.

There are various myths surrounding levain to keep in mind. Some stalwart levain tenders have fed their cultures for years, sometimes sharing portions with others. But research has shown that once you put that levain in a new home and feed it on a new schedule, it's going to change, picking up different yeasts and bacteria. That's going to result in different flavors. In other words, if you're keeping a levain in your kitchen in the United States that your grandmother brought over from Italy, it's not going to bake exactly like your grandmother's bread (see Do Sourdoughs Depend on Terroir?, page 2·289). You might have *received* your grandmother's levain, but you don't have your grandmother's levain anymore. Now you have your own.

That brings up another point. The biggest challenge in making the breads in this chapter is starting a levain, setting a schedule, and sticking to it. But let's say you're intent on sourdough but don't want to commit to feeding it every day. Luckily, there are several options for storing your levain so that you can revive it later without having to start from scratch—for one thing, you can kick-start the fermentation with commercial yeast. Second-Chance Sourdough (see page 70) is one example of this, and using commercial yeast is a way to resuscitate inert levain to give your bread that sour flavor without the time commitment. You can also freeze your levain and revitalize it later (see Freezing a Preferment, page 3·40).

Once you get the hang of caring for a levain and making sourdough bread, check out some of our variations, including Chocolate and Cherry Sourdough (see page 80) or one of our unique creations like Huitlacoche and Yellow Corn Sourdough (see page 72). Truly, the variations are limitless.

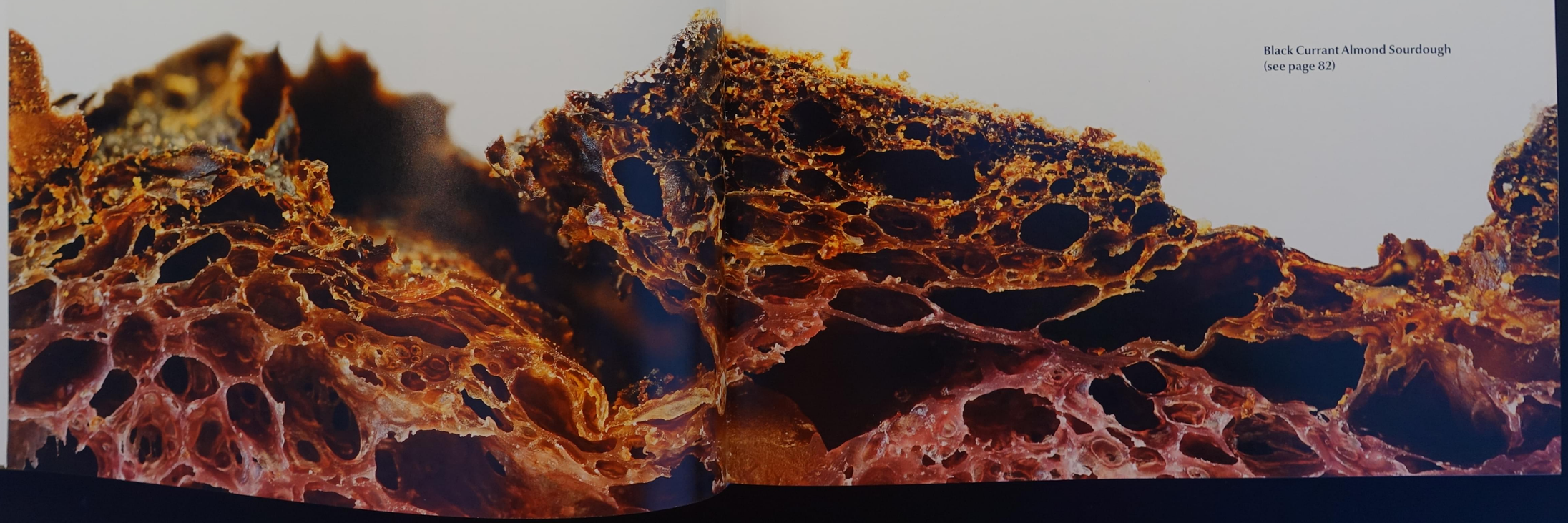
For dough, as with many things, terminology is sometimes open to interpretation. We use the term "levain" to refer to a fermented mixture of flour and water, but some people refer to this mixture as a "sourdough starter" or even simply a "sour." Others also use "levain" to refer to the type of bread they make with it—that is, sourdough bread.

If you're a home baker, chances are you're not going to be baking bread every day. If that's the case, just make enough levain to bake your bread and feed your levain. You can always freeze leftover levain (if any) for up to 2 weeks or use it as a flavoring component in our Second-Chance Sourdough (see page 70).

The flavor of a sourdough can improve with age—in fact, some aficionados say these breads taste best 3 days after baking. The acidity of the levain also helps delay the staling process (see page 3·405).

Commercial yeast is generally more active than the levain used in sourdough bread, so fermentation happens much more quickly. That said, commercial yeast produces less flavorful bread than the combination of wild yeast and bacteria in a levain does.

Although fresh levains are preferred, it is possible to buy ready-to-use sourdough flavorings. They're sometimes used by commercial bakers, but the flavors aren't as complex as the real thing.



Black Currant Almond Sourdough
(see page 82)

THE ATTRIBUTES OF A WELL-MADE SOURDOUGH LOAF

One of the interesting things about sourdough bread is that even if you use the same recipe, each loaf may be a little different depending on where you make it. That's because the levain is a collection of yeasts and bacteria from the local surroundings and from the flour used to make and feed it. Still, as detailed here, there are general quality characteristics that are common to well-executed sourdoughs.

Sourdough (see page 63)

Crust: it should be firm, but not as brittle as that of a baguette—when you press down on a well-baked loaf of sourdough, the crust crackles and yields yet has some hesitation and resistance. The crust color is usually a dark amber-brown (though it can vary). Through long fermentation, however, there's a chance that the yeasts and lactic acid bacteria (LAB) will eat all the sugars in the dough—and if yeasts have nothing to eat, they will starve and die. That's why bakers often add diastatic malt powder (DMP) to long-fermented breads. DMP contains amylase enzymes that break down the flour's starch into sugar, in turn giving the yeasts and LAB more available sugar to eat. DMP will also contribute to a deeper browning of the crust, providing sugars that will assist with the Maillard reactions on the dough's surface.

Aroma: the aroma might remind you of yogurt or buttermilk. To some, sourdough breads also smell of toasted wheat or burnt popcorn.

Flavor: this is what sourdough-bread enthusiasts crow about—that sour flavor. It comes from the lactic acid (and, to a lesser extent, acetic acid) that is produced as the levain matures. A good sourdough loaf will have that sour note, plus you'll also notice a yeasty flavor that comes from the fermentation process. You can reduce the acidity by using less levain or by decreasing the fermentation time. Lactic acid is available in powdered form, and it is sometimes used by bakeries that don't ferment their dough for long fermentation times but still want a sour flavor. It's worth noting, though, that sourdough created this way is not quite as complex as sourdough made with levain.

Texture: in our texture-analysis trials, sourdough breads turned out to be less firm than baguettes made with commercial yeast. This is something that's been widely observed among researchers, who give varying theories as to why this is the case. Most center on the role acids play on gluten.

SOURDOUGH INGREDIENTS

It takes just flour, water, and salt to make a basic sourdough. The distinctive sourdough flavor comes from the fermentation activity of the levain, which develops from naturally occurring yeasts in the air and in the flour-and-water mix. Note that you won't see yeast listed in the ingredients or the net contents of recipes leavened exclusively with levain.

BREAD FLOUR

100%

WATER

min 48% 60% 74% max

SALT

2%

SOURDOUGH INGREDIENT VARIATIONS

Our Sourdough master recipe (see page 63) is made solely with bread flour, but it has several cousins made with other flours. What ties them together is the use of levain rather than commercial yeast.

KEYS FOR SUCCESSFULLY EXECUTING SOURDOUGH

- This dough can also be shaped into a baguette. Divide the dough into three 330 g / 11.5 oz pieces, and follow the instructions for shaping baguettes on page 3·156. Use the baking instructions in the French Lean Bread Baking Times and Temperatures table, page 32.
- Your proofing setup could include a wooden board lined with a lightly floured couche or the back of a sheet pan lined with a floured kitchen towel; a floured banneton or lightly floured linen-lined wicker baskets will also work. If you're proofing at room temperature, place the dough in an enclosed environment, such as a plastic tub with a lid or a clean cardboard box (see page 3·219). Alternatively, try our method for using a clean plastic bag to protect the skin of the dough from drying out (see page 3·213). If you're using a proofer, leave the dough uncovered and set the relative humidity to 65%.
- Make sure to turn your oven on to preheat at least 1 hour before the bread is ready for baking. The preheat temperatures are the same as the baking temperatures in the Sourdough Baking Time and Temperatures table on page 67.
- Sprinkle the salt evenly across the surface of the dough just before autolyse. This will accomplish two things. First, it will start the dissolution of the salt, which will be in contact with the moist surface of the dough; in turn, the moisture makes it easier for the salt to disperse and mix evenly throughout the dough. Second, sprinkling the salt on the dough at this juncture helps ensure you won't forget to add it after autolyse.

THE FLAVORS OF

Instant Sourdough

There's no substitute for the rich and complex flavor of a sourdough bread made from a carefully cultured levain. It takes time for microbes in a starter to produce the full range of aromatic compounds that round out the sourdough taste. But for those in a hurry, there are shortcuts that can produce an acidic bread that has some of the most distinctive sourdough notes in a fraction of the time it takes to make a sourdough from scratch.

The principal trick is to use commercial yeast to leaven the bread, along with a store-bought flavoring agent to make it sour. Two kinds of instant sourdough flavor mixes are currently on the market. One contains lactic acid, acetic acid, and other acids that give the bread an aggressively tart sourness. These, however, lack any of the more complex flavors created by starter microbes.

The second, better variety of mix is made from freeze-dried starter. These mixes contain dormant microbes and can actually be used to leaven the dough if you activate them (by adding water and warmth) a few days in advance. But you can also use this kind of mix solely as a flavoring additive while relying on commercial yeast to do the leavening. The mix captures many of the more sophisticated flavors that were in the starter, but without advance activation these can be rather subtle compared with those in sourdough made the old-fashioned way. Highly specialized mixes can help bakers anywhere re-create the flavors of breads from across the globe. Puratos, for example, develops special blends of flour that capture the flavors of breads from specific regions of the world—O-tentic Origin is based on breads from the Provençal region of southeastern France, while O-tentic durum re-creates the flavors of durum wheat sourdoughs from the Puglia region of Italy.

If you happen to have a freeze dryer, you can preserve your own starter to use in this way (see page 3·63). We recommend using freeze-dried mixes at 4.7% when added to a straight dough.

Deactivated yeast isn't the only yeast-based product that's frequently added to foods. Autolyzed yeast, also called yeast extract, is often added to foods to enhance their delicious umami flavor. Yeast extract is about 5% glutamic acid, which is the base of MSG. It's made by forcing the digestive enzymes in yeast cells to feed upon themselves, a process called autolysis. The enzymes break down the outer wall and release each cell's contents, including amino acids such as glutamate.

Sourfaux (see page 69)

- Some bakers withhold 5% of the water and stir the salt into it. This can help disperse the salt more evenly in the dough after autolyse. If you are using fine salt (as we recommend), such as table salt or fine sea salt, this step won't be necessary—small crystals of fine salts will disperse and dissolve easily into the dough.
- We use Organic Artisan Bakers Craft Plus flour from Central Milling; any bread flour with 11.5%–12% protein (such as Sir Galahad from King Arthur or Better for Bread from Gold Medal) will work well. The diastatic malt powder (DMP) noted among the ingredients is in addition to the DMP added to the flour by Central Milling.
- If your dough gets too bubbly and gassy from fermentation during bulk fermentation and the gluten has not yet fully developed after the final fold, refrigerate the dough in its tub for the remainder of bulk fermentation. As the dough cools, fermentation will slow down.
- We highly recommend cold-proofing the dough before baking; doing so makes fermentation long and slow, contributing to a loaf that's better looking than one that's proofed just after shaping. Doughs that are cold-proofed in an environment that's colder than room temperature (such as a proofer–retarder or wine cooler) will be firmer and therefore easier to handle and score just before baking. Sourdoughs that are proofed in warm environments (in a proofer or at room temperature) tend to be slacker and therefore harder to score cleanly.
- Our favorite time and temperature combination for cold-proofing sourdoughs is 14 hours at 13 °C / 55 °F, but there are other options. One is to cold-proof in the refrigerator for at least 12 hours before baking. (You can cold-proof for up to 72 hours, but keep in mind that the longer you cold-proof the dough, the more sour it will be. For our experiments on cold-proofing, see page 3·227.)

MAKING A BASIC LEVAIN

For the most part, the preferment we use for the sourdoughs in this book is a liquid levain. You begin with a mixture of flour and water—that's your base—and then you feed it at regular intervals every day. (Unless, of course, you are using one of our short- or long-term storage methods described on page 3·416.) Each day, you take out a portion of the culture, and then add water and flour to replace it. The idea is to use some of the levain for baking each day and have some left over to keep the culture going. (For home bakers, using levain every day might be daunting, so we suggest some ways to save it for later use on page 3·36–41.) You should use your levain at the same time every day.

We prefer the liquid levain over the stiff version because we find that it's easier to mix and therefore requires less time to incorporate. Less time translates to reduced oxidation, which helps the crumb keep its creamy color. You'll have to start your levain at least 5 days before you want to bake with it, and you'll need to feed the levain 12–18 hours before mixing it into the dough. The desired dough temperature (DDT) detailed below applies more for large-scale bakers than home bakers (see page 3·92).

Here's how to maintain your levain once it's started. For more on levain, including details on how to begin the process, see page 3·54.

INGREDIENTS	WEIGHT	VOLUME	⅌
Liquid levain page 3·54	125 g	½ cup	25
Bread flour*	500 g	3¾ cups	100
Water	500 g	2¼ cups	100
Yield	1.125 kg	5 cups	

Add 0.2⅌ diastatic malt powder if ripening beyond 18 h.

GENERAL DIRECTIONS

	PROCEDURE	NOTES
DDT	18–20°C / 65–68°F	see page 3·92
STARTING	follow the instructions on page 3·54 for starting the liquid levain called for in the recipe	see page 3·54
FEEDING	divide the levain into two portions, one for maintaining the culture (125 g in recipe above) and the remainder, which will be a larger amount, for the day's baking; combine the first portion with flour and water; return this culture to a cool area (18–20°C / 65–68°F); use the reserved portion as needed	feed every day at the same time
RIPENING	feed the culture 12–18 h before you intend to mix it into a dough; ideally, the pH will be between 4.2 and 3.8 when the levain is mature	if a less sour flavor is desired, use 8–12 h after the last feeding
MIXING	mix the portion of levain indicated into the dough of your chosen recipe; if you're baking every day, you should use this preferment at approximately the same time daily; maintaining a regular feeding schedule will help keep the balance of microorganisms in the levain consistent; continue feeding the levain as indicated above	see page 3·52

STRATEGIES FOR USING LEVAIN

In general terms, there are two types of levain we use for sourdoughs, stiff and liquid. The designations mean just what you think: a stiff levain will be firm, while a liquid levain will be looser because of its higher hydration. For enriched doughs, we recommend our sweet-and-sour osmotolerant levain over a liquid levain (see Enriched Breads, page 184). Our rye levains are discussed in Rye Breads, page 3·328. For more on starting and maintaining your levain, see Basic Levain, page 3·54.

Preferment	Base flour	Hydration (⅌)	Preferment used to feed / build (⅌)	Other flours that can be used	Flours that can be added to the base	Preferment added to a dough recipe (⅌)
liquid levain*	bread flour	100–125	20–100 (we use 25)	einkorn, emmer, Khorasan, durum, whole wheat, spelt	rye (light, medium, dark), chickpea, wheat bran	15–60**
stiff levain	bread flour	60–80	20–30			30–40

If you aren't going to use your liquid levain for 2–3 d, we recommend feeding it as a stiff levain, which will extend its life in the refrigerator (see page 3·61). When you are ready to use it, feed it as a liquid levain 12–18 h before you need it.

***How much liquid levain you add to a dough depends on how long you want to ferment it. In general, you can use less levain the longer you ferment it. The very popular bread in* Tartine Book No. 3, *for example, uses 15⅌ liquid levain, and the dough is cold-proofed for a long time (at least 8 h) at about 10–13°C / 50–55°F. This results in bread that's sour but not too sour.*

Create Your Own Sourdough Recipe

Sourdough can hold additional ingredients without resulting in a lower volume or a soggy crumb because it has a sufficiently strong gluten network. This gives you more possibilities in terms of flavor variations, including adding cooked grains (see page 2·374), purees (see page 2·392), herbs or spices (see page 2·410), or other ingredients. We call these ingredients inclusions. When using inclusions, you still need to think about ratios. We developed the rules of thumb below, written as baker's percentages, to help guide you in developing recipes. You'll notice that there is a wide range for inclusions. That's because different ingredients make sense in different amounts. For example, adding 20⅌ thyme to a dough would be overpowering; 1⅌ would make more sense. On the other hand, 1⅌ walnuts would be lost, but something like 15⅌ would be appropriate.

Ingredient	⅌
flour	100 (or 80% white wheat flour with 20% of another flour or mix of flours)
levain	liquid levain: 40–60 stiff levain: 30–40
water	65–85 (of the total weight of water, including that of the levain; i.e., net content)
salt	2–2.5 (of the total weight of flour, including that of the levain; i.e., net content)
inclusions	1–50 (of the total weight of flour, including that of the levain; i.e., net content)

Inclusion Combinations

The inclusion combinations you can add to a dough are virtually limitless, more or less restricted only by your personal preferences. Many combinations have existed for a long time, and some have become classics that are a part of the bread baker's repertoire. Those classic combinations include:

- cranberries and walnuts
- raisins, orange zest, and fennel seed
- bacon and cheddar cheese
- pesto and lemon peel
- cinnamon and raisins
- multigrain
- roasted garlic and herbs
- apple and cheddar cheese
- caramelized onions and olives
- raisins and candied fruit (popular in many enriched breads)
- chocolate and dried cherries

Charcoal Sourdough (see page 74)

master recipe

SOURDOUGH

This master recipe features what we most love about sourdough bread: a flavor that is sour without being too acidic, a crumb that is chewy and semiopen, and a crispy crust. The distinct sourdough flavor comes from extended fermentation; we use diastatic malt powder to provide extra food to keep the yeasts active (this is optional). You can reduce the fermentation time (to a minimum of 8 hours), but the flavor will be milder.

TOTAL TIME
Active 27 min
Inactive 20 h 26 min

DDT
24–26 °C/
75–78 °F

DIFFICULTY
Easy: mixing
Moderate: levain maintenance

OVENS
★Deck ★Home Combi Convection

YIELD / SHAPES
1 lg boule/bâtard
2 sm boules/bâtards
13 rolls

	INGREDIENTS	WEIGHT	VOLUME	%
①	Bread flour	480 g	3¼ cups	100
	Water	315 g	1⅓ cups	65.63
	Liquid levain, mature see page 3·54	195 g	¾ cup	40.63
	Wheat bran	10 g	3 Tbsp	2.08
	Diastatic malt powder*	1 g	½ tsp	0.21
②	Fine salt	12 g	2 tsp	2.5
	Yield	~1.00 kg		

For salt, flours, substitutions, and other notes, see pages viii–xi.
**Diastatic malt powder (DMP) is recommended if you are cold-proofing your dough for more than 12 h. For more on DMP, see page 3·226.*

NET CONTENTS

Ingredients	Weight	%
Flour	578 g	100
Water	413 g	71.45
Salt	12 g	2.08
Diastatic malt powder	1 g	0.17

Multiply the recipe by two for a miche.

GENERAL DIRECTIONS

		PROCEDURE				NOTES	TIME active / inactive
MIX	by hand*	combine ① in a bowl, and mix to a shaggy mass; autolyse 30 min; add ②, and mix until homogeneous; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap				see Hand Mixing, page 3·116	5 min / 30 min
	by machine*	combine ① in mixer's bowl, and mix on low speed to a shaggy mass; autolyse 20–30 min; add ②, and mix on medium speed to medium gluten development; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap				see Machine Mixing options, page 65	37–41 min
BULK FERMENT	by hand*	4 h total; 6 folds (1 fold every 30 min after the first hour), 30 min rest after final fold; check for full gluten development using the windowpane test				see How to Perform a Four-Edge Fold, page 3·129, and Gluten Development, page 3·89	5 min / 4 h
	by machine*	2½ h total; 2 folds (1 fold every hour after the first hour), 30 min rest after final fold; check for full gluten development using the windowpane test					5 min / 2½ h
DIVIDE/SHAPE	divide	lg boule/bâtard	sm boule/bâtard	roll	miche	see How to Divide Your Dough, page 3·136	0–7 min
		do not divide	500 g	75 g	do not divide		
	preshape	boule/bâtard	boule/bâtard	boule	boule	see shaping boules and bâtards, pages 3·152–155, and rolls, page 3·176	1–7 min
	rest	20 min	20 min	20 min	20 min		20 min
	shape	boule/bâtard	boule/bâtard	roll	boule		1–7 min
FINAL PROOF	13 °C / 55 °F	14 h	14 h	n/a	14 h	see Final Proofing Methods, page 3·212, and Calling Proof, page 3·220; for roll proofing times and temperatures, page 66	12–16 h
	4 °C / 39 °F	12–16 h	12–16 h	n/a	12–16 h		
SCORE		for scoring options, see page 2·230					30 s–1 min
BAKE		see Sourdough Baking Times and Temperatures, page 67					15–55 min
TOTAL TIME	**Choose by hand or machine*					by hand by machine	32 min / 21¾ h 27 min / 20 h 26 min

Alternatives

Second-Chance Sourdough, page 70
Mantuan Bread, page 90
San Francisco Sourdough, page 87

Fun Facts

The History of Sourdough in the United States, page 285
The Evolution of a Sourdough, page 2·290

Related Breads

French lean breads, page 27
Country-style breads, page 99
Ancient grain breads, page 125
High-hydration breads, page 144

Flavors

Pressure-Cooked Potato Sourdough, page 84
Chocolate and Cherry Sourdough, page 80
Sourdough with Porridge, page 76

Techniques

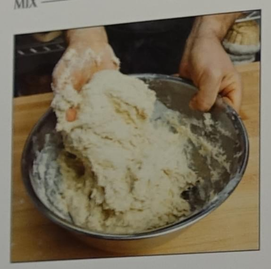
Cold-proofing, page 3·226
Sourfaux, page 69
Basic Levains, page 3·54
Second-Chance Sourdough, page 70

Our Take

Laser-etched sourdough, page 3·276
Charcoal-wrapped sourdough, page 3·274
Freezing a Preferment, page 3·40

HAND MIXING

MIX



1 Combine the levain with the water, and add the flour and bran. Use one hand to mix to a shaggy mass (keep your other hand clean). For larger yields (4 kg and greater), use both hands to mix more quickly.

2 Autolyse 30 min, add the salt, and mix until homogeneous.

BULK FERMENT

3 Cover with plastic wrap, or transfer to a lightly oiled plastic tub and cover with a lid.

4 Bulk ferment for 4 h, performing 6 four-edge folds, one every 30 min after the first hour (see page 3·129). Cover the dough between folds.

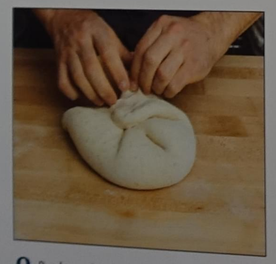
5 Let the dough bulk ferment for 30 min, covered, after the final fold. Perform the windowpane test to assess gluten development (see page 3·89). If the dough has not yet reached full gluten development, perform another fold and let the dough rest for 30 min; repeat the windowpane test.

6 Transfer the dough by gently turning the tub onto a well-floured work surface. Handle the dough carefully to help preserve the CO_2 pockets that have formed inside it.

DIVIDE

7 Divide the dough to the desired weight (see page 3·136). Do not divide for a large boule or bâtard or for a miche.

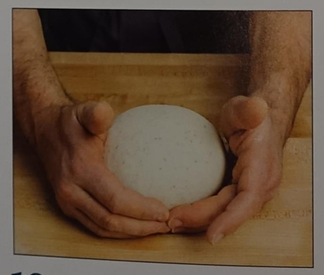
PRESHAPE



8 Preshape the dough as desired (see pages 3·152–155).

9 Rest the dough 20 min.

SHAPE



10 Shape the dough as desired (see pages 3·152–155).

FINAL PROOF

11 Transfer the dough to your preferred proofing setup (see page 58).

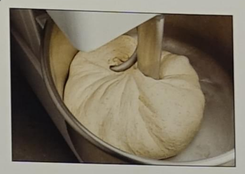
12 Proof the dough following the times and temperatures in the General Directions table for the Sourdough master recipe on page 63. Test for proof using the fingertip test (see page 3·223).

STEP 1 OPTIONS: Machine Mixing

Food Processor

Weight:
1 kg: bowl capacity for most home food processors
1.2 kg: Robot Coupe; industrial-sized food processors: capacity will vary
Initial mix: place all the ingredients in the bowl except the water and bran. Turn the food processor on, and pulse until combined. Add the water, and mix for 45 s, then add the bran and pulse until it is just combined. Turn the machine off. Check for gluten development by performing the windowpane test—the gluten should be fully developed. If it is not, pulse the mixer a few seconds at a time, and check the gluten development each time.

Mixing in a food processor is very different from mixing in other machines in that autolyse is not necessary—because the dough is mixed to full gluten development very quickly, the dough won't benefit from autolyse.



Spiral Mixer

Weight: depends on the capacity of the mixer; at least 8 kg recommended; multiply this recipe by at least 8
Initial mix: in the mixer's bowl, combine all the ingredients except the salt, and use the hook attachment to mix on low speed to a shaggy mass, 2–3 min.
Autolyse: 20–30 min
Final mix: sprinkle the salt across the top of the dough, and use the hook to mix on low speed until it's fully incorporated. Increase the speed to medium, and mix to medium gluten development, 3–4 min (begin to check consistency at 3 min).

Stand Mixer

Weight:
4.5 qt bowl: 1–1.5 kg maximum
8 qt bowl: 1.5 kg–2.5 kg maximum; multiply this recipe by 2; do not exceed 2.5
Initial mix: in the mixer's bowl, combine all the ingredients except the salt, and use the hook attachment to mix on low speed to a shaggy mass, 2–3 min. With the 4.5 qt bowl, start the mix with the paddle attachment if there's not enough dough for the hook to catch and mix the ingredients, then switch to the hook after autolyse.
Autolyse: 20–30 min
Final mix: if you used the paddle for initial mix, switch to the hook. Sprinkle the salt across the top of the dough, and mix on medium-low speed until it's fully incorporated. Increase the speed to medium, and mix to medium gluten development, 4–5 min (begin to check consistency at 4 min).

Planetary Mixer

Weight:
12 qt bowl: 3–6 kg maximum; multiply this recipe by 3, but do not exceed 6
20 qt bowl: 6–8 kg maximum; multiply this recipe by 6, but do not exceed 8
Initial mix: in the mixer's bowl, combine all the ingredients except the salt, and use the hook attachment to mix on low speed to a shaggy mass, 2–3 min.
Autolyse: 20–30 min
Final mix: sprinkle the salt across the top of the dough, and use the hook to mix on low speed until it's fully incorporated. Increase the speed to medium, and mix to medium gluten development, 6–8 min (begin to check consistency at 6 min).

Notes on Machine Mixing

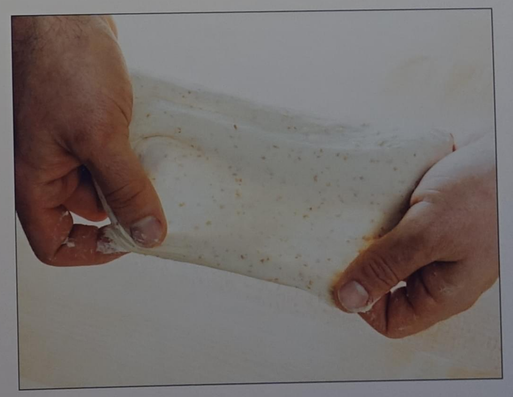
- Initial mix is to a shaggy mass; use the mixer's lowest speed possible.
- Autolyse is for 20–30 min, but more time won't hurt the dough. (There is no autolyse when using a food processor.)
- The salt is added after autolyse to speed up flour hydration and gluten development.
- The final mix time at higher speeds may vary from machine to machine. Larger quantities of dough will take longer to mix. Regardless of the machine, the goal is to achieve medium gluten development by the end of the mix. Consider our suggested times as guidelines. Let your visual assessment and the windowpane test (see page 3·89) determine the dough's stage of gluten development.

TECHNIQUE VARIATION: Machine Mixing

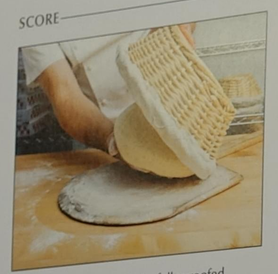
1 Follow the Machine Mixing options above.

2 Transfer the mixed dough to a lightly oiled plastic tub, and begin bulk ferment. After 1 h, perform 1 fold. Bulk ferment for 1 more hour, then perform a second fold. Let the dough bulk ferment for 30 min.

3 Follow steps 7–16 for Hand Mixing on the previous page and page 66.



SCORE



13 Carefully transfer the fully proofed dough, seam side down, onto a peel or loader.

14 Score the surface of the dough (see page 3:230).

If you don't want to cold-proof your dough, you can proof it at 27 °C / 80 °F (65% RH) for 2½–3 h for large boules, 1½–2 h for small boules, 1 h 20 min–1 h 40 min for rolls, or 3½–4½ h for a miche. You can also proof at 21 °C / 70 °F for 5–7 h for large boules, 3–4 h for small boules, 2½–3½ h for rolls, or 8–9 h for a miche.

BAKE

15 Bake the dough according to the Sourdough Baking Times and Temperatures, page 67.

COOL

16 Use a peel to remove the bread from the oven; let it cool completely on a wire rack. Consume the bread within 2–3 d, or freeze for up to 2 mo.

Sourdough Baking Times and Temperatures

Shape	Weight	Type of oven	Steam	Loading temperature	Baking temperature	Initial baking time (min)	Vent time (min)	Total bake time (min)
large boule/ bâtard	1 kg	home using cast-iron combination cooker	n/a	260 °C / 500 °F	245 °C / 470 °F	45 (lid on)	10 (lid off) (last 5 with door cracked)	55
		home using a baking stone with lid*	n/a	260 °C / 500 °F	245 °C / 470 °F	30–35 (lid on)	5 (lid off)	35–40
		combi	before loading and after loading, plus 1 burst every min for the first 2 min of the bake	245 °C / 470 °F, lowest fan speed	245 °C / 470 °F, lowest fan speed	20–25	10	30–35
		convection	after closing the oven door	260 °C / 500 °F, lowest fan speed	245 °C / 470 °F, lowest fan speed	20–25	10	30–35
		deck	after closing the oven door	245 °C / 470 °F	245 °C / 470 °F	15–20	10	25–30
small boule/ bâtard	500 g	home using cast-iron combination cooker	n/a	260 °C / 500 °F	230 °C / 450 °F	30 (lid on)	10 (lid off) (last 5 with door cracked)	40
		home using a baking stone with lid*	n/a	260 °C / 500 °F	230 °C / 450 °F	20–25 (lid on)	5 (lid off)	25–30
		combi	before loading and after loading, plus 1 burst every min for the first 5 min of the bake	245 °C / 470 °F, lowest fan speed	245 °C / 470 °F, lowest fan speed	18–20	10	28–30
		convection	after closing the oven door	260 °C / 500 °F, lowest fan speed	245 °C / 470 °F, lowest fan speed	18–20	10	28–30
		deck	after closing the oven door	245 °C / 470 °F	245 °C / 470 °F	10–15	10	20–25
roll	75 g	home using cast-iron combination cooker	n/a	260 °C / 500 °F	220 °C / 425 °F	15–17 (lid on)	5 (lid off)	20–22
		home using a baking stone with lid*	n/a	260 °C / 500 °F	220 °C / 425 °F	15 (lid on)	5 (lid off)	20
		combi	after loading	245 °C / 470 °F, lowest fan speed	225 °C / 440 °F, lowest fan speed	13–15	2	15–17
		convection	after closing the oven door	260 °C / 500 °F, lowest fan speed	225 °C / 440 °F, lowest fan speed	13–15	5	18–20
		deck	after closing the oven door	225 °C / 440 °F	225 °C / 440 °F	13–15	5	18–20
miche	2 kg	home using cast-iron combination cooker	not recommended (too large)	n/a	n/a	n/a	n/a	n/a
		combi	before loading and after loading, plus 1 burst every min for the first 2 min of the bake	245 °C / 470 °F, lowest fan speed	245 °C / 470 °F, lowest fan speed	25–30	10	35–40
		convection	after closing the oven door	260 °C / 500 °F, lowest fan speed	245 °C / 470 °F, lowest fan speed	20–25	15	35–40
		deck	after closing the oven door	245 °C / 470 °F	245 °C / 470 °F	20–25	15	35–40

*Lid must be large enough that the bread won't expand into it during baking.

modernist variation

MODERNIST SOURDOUGH

Applying Modernist touches to the Sourdough master recipe, we add vital wheat gluten to bring a bit more strength to the dough. To further develop the crispiness of the crust, a small dose of polydextrose is also included. As with the master recipe, we found the ideal proofing temperature to be 13 °C / 55 °F, though proofing in the refrigerator works well, too.

TOTAL TIME
Active 27 min
Inactive 20 h 26 min

DDT
24-26 °C / 75-78 °F

DIFFICULTY
Easy: mixing
Moderate: levain maintenance

OVENS
★Deck ★Home Combi Convection

YIELD / SHAPES
1 lg boule/bâtard
2 sm boules/bâtards
13 rolls

	INGREDIENTS	WEIGHT	VOLUME	%
①	Bread flour	480 g	3¼ cups	96.58
	Water	315 g	1⅓ cups	63.38
	Liquid levain, mature see page 3-54	195 g	¾ cup	39.24
	Vital wheat gluten	17 g	2 Tbsp	3.42
	Wheat bran	10 g	3 Tbsp	2.01
	Polydextrose	5.8 g	2 tsp	1.17
	Diastatic malt powder*	1 g	½ tsp	0.2
②	Fine salt	12 g	2 tsp	2.41
	Yield	~1.00 kg		

For salt, flours, substitutions, and other notes, see pages viii–xi.
**Diastatic malt powder (DMP) is recommended if you are cold-proofing your dough for more than 12 h. For more on DMP, see page 3-226.*

NET CONTENTS

Ingredients	Weight	%
Flour	578 g	97.14
Vital wheat gluten	17 g	2.86
Water	413 g	69.41
Salt	12 g	2.02
Polydextrose	5.8 g	.97
Diastatic malt powder	1 g	0.17

Multiply the recipe by two for a miche.

For places where you can buy polydextrose, see Resources, page 5-XXVIII–XLIII.

Consume within 2–3 d, or freeze for up to 2 mo.

GENERAL DIRECTIONS

		PROCEDURE				NOTES	TIME active / inactive
MIX	by hand*	combine ① in a bowl, and mix to a shaggy mass; autolyse 30 min; add ②, and mix until homogeneous; transfer to a lightly oiled tub or bowl, and cover well				see Hand Mixing, page 3-116	5 min / 30 min
	by machine*	combine ① in mixer's bowl, and mix on low speed to a shaggy mass; autolyse 20–30 min; add ②, and mix on medium speed to medium gluten development; transfer to a lightly oiled tub or bowl, and cover well				see Machine Mixing options, page 65	35–41 min
BULK FERMENT	by hand*	4 h total; 6 folds (1 fold every 30 min after the first hour), 30 min rest after final fold; check for full gluten development using the windowpane test				see How to Perform a Four-Edge Fold, page 3-129, and Gluten Development, page 3-89	5 min / 4 h
	by machine*	2½ h total; 2 folds (1 fold every hour after the first hour), 30 min rest after final fold; check for full gluten development using the windowpane test					5 min / 2½ h
DIVIDE/ SHAPE	divide	lg boule/bâtard	sm boule/bâtard	roll	miche	see How to Divide Your Dough, page 3-136	0–7 min
		do not divide	500 g	75 g	do not divide		
	preshape	boule/bâtard	boule/bâtard	roll	boule	see shaping boules and bâtards, pages 3-152–155, and rolls, page 3-176	1–7 min
	rest	20 min	20 min	20 min	20 min		20 min
	shape	boule/bâtard	boule/bâtard	roll	boule		1–7 min
FINAL PROOF	13 °C / 55 °F	14 h	14 h	n/a	14 h	see Final Proofing Methods, page 3-212; for roll proofing times and temperatures, see below	12–16 h
	4 °C / 39 °F	12–16 h	12–16 h	n/a	12–16 h		
SCORE		for scoring options, see page 3-230					30 s–1 min
BAKE		see Sourdough Baking Times and Temperatures, page 67					15–55 min
TOTAL TIME	**Choose by hand or machine*					by hand / by machine	32 min / 21¾ h / 27 min / 20 h 26 min

If you don't want to cold-proof your dough, you can proof it at 27 °C / 80 °F (65% RH) for 2½–3 h for large boules, 1½–2 h for small boules, 1 h 20 min–1 h 40 min for rolls, or 3½–4½ h for a miche. You can also proof at 21 °C / 70 °F for 5–7 h for large boules, 3–4 h for small boules, 2½–3½ h for rolls, or 8–9 h for a miche.

home variation

SOURFAUX

There's nothing quite like a shortcut for making sourdough to raise the hackles of ardent bakers. We're not suggesting alternative methods to replicate the complexity of flavor that only time can produce, but you can make a direct-leavened bread with sourdough character in a fraction of the time. We tried several sourdough flavorings, including one from King Arthur Flour, which we prefer for the resemblance to true sourdough that comes from the combination of lactic acid, vinegar, rye flour, and inactive yeast.

TOTAL TIME
Active 27 min
Inactive 5 h 26 min

DDT
24-26 °C / 75-78 °F

DIFFICULTY
Easy: mixing
Advanced: shaping baguettes

OVENS
★Deck Combi Convection Home

YIELD / SHAPES
1 lg boule/bâtard
2 sm boules/bâtards
3 baguettes/short baguettes
4 ficelles
20 rolls

	INGREDIENTS	WEIGHT	VOLUME	%
①	Bread flour	585 g	4 cups	100
	Water	400 g	1¾ cups	68.38
	Instant Sourdough Flavor*	40 g	¼ cup	6.84
	Instant dry yeast	4 g	1½ tsp	0.68
②	Fine salt	12 g	2 tsp	2
	Yield	~1.00 kg		

For salt, flours, substitutions, and other notes, see pages viii–xi.
**Other brands of sourdough flavor to consider if you will be producing these breads in larger quantities:*
Puratos: O-tentic: Origin/Durum; Sapore: Traviata/Softgrain
Lallemand: Essential LCR 100, Fermaid RELAX, Fermaid T, LBI 2163, LBI 4060, LBI 4080, Lallemand Rye Flavor

NET CONTENTS

Ingredients	Weight	%
Flour	585 g	100
King Arthur Instant Sourdough Flavor	40 g	6.84
Water	400 g	68.38
Salt	12 g	2
Yeast	4 g	0.68

Consume within 2–3 d, or freeze for up to 2 mo.

GENERAL DIRECTIONS

		PROCEDURE					NOTES	TIME active / inactive
MIX	by hand*	combine ① in a bowl, and mix to a shaggy mass; autolyse 30 min; add ②, and mix until homogeneous; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap					see Hand Mixing, page 3-116	5 min / 30 min
	by machine*	combine ① in mixer's bowl, and mix on low speed to a shaggy mass; autolyse 20–30 min; add ②, and mix on medium speed to medium gluten development; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap					see Machine Mixing options, page 65	37–41 min
BULK FERMENT	by hand*	3½ h total; 3 folds (1 fold every hour after the first hour), 30 min rest after final fold					see How to Perform a Four-Edge Fold, page 3-129, and Gluten Development, page 3-89	5 min / 3½ h
	by machine*	1½ h total; 2 folds (1 fold just after mixing, a second after 45 min), 45 min rest after final fold						5 min / 1½ h
DIVIDE/ SHAPE	divide	lg boule/ bâtard	sm boule/ bâtard	baguette/ sh baguette	ficelle	roll	see How to Divide Your Dough, page 3-136	0–7 min
		do not divide	500 g	330 g	250 g	50 g		
	preshape	boule/bâtard	boule/bâtard	baguette	baguette	roll	see shaping boules, bâtards, baguettes, and ficelles, pages 3-152–158, and rolls, page 3-176	1–7 min
	rest	20 min	20 min	20 min	20 min	20 min		20 min
	shape	boule/bâtard	boule/bâtard	baguette	baguette	roll		1–7 min
FINAL PROOF	27 °C / 80 °F 65% RH	1¼ –1½ h	1–1¼ h	45–60 min	30–45 min	30–45 min	see Final Proofing Methods, page 3-212	30 min–2 h
	21 °C / 70 °F	1½–2 h	1¼–1½ h	1–1½ h	45–60 min	45–60 min		
SCORE		for scoring options, see page 2-230						30 s–1 min
BAKE		see Sourdough Baking Times and Temperatures, page 67						10–55 min
TOTAL TIME	**Choose by hand or machine*						by hand / by machine	32 min / 7¼ h / 27 min / 5 h 26 min

Alternatively, you can cold-proof the dough in the refrigerator (4 °C / 40 °F). For pieces between 50 g and 250 g, cold-proof for 2 h. For pieces between 350 g and 500 g, cold-proof for 2½–3 h. For 1–2 kg doughs, cold-proof for 3½–4 h (or longer if desired).

ingredient variation

SECOND-CHANCE SOURDOUGH

With this recipe, you give leftover or inactive levain a second chance. Levain may be a leavener first, but it also contributes flavor. This recipe uses inactive levain that you have frozen and thawed (see page 3-38). It will have little or no leavening power left—thus the addition of instant yeast. Ultimately, this is an inactive-preferment direct dough flavored with levain, evoking sourdough flavor in much less time.

TOTAL TIME	DDT	DIFFICULTY	OVENS	YIELD / SHAPES
Active 27 min Inactive 6 h 26 min	24–26°C / 75–78°F	Easy: all aspects	★Deck ★Home Combi Convection	1 lg boule/bâtard; 2 sm boules/bâtards; 13 rolls

	INGREDIENTS	WEIGHT	VOLUME	%
①	Water	315 g	1⅓ cups	65.63
	Instant dry yeast	4 g	1½ tsp	0.83
②	Inactive levain, thawed see page 3-38	195 g	¾ cup	40.63
③	Bread flour	480 g	3¼ cups	100
	Wheat bran	10 g	1 Tbsp	2.08
	Diastatic malt powder*	1 g	¼ tsp	0.21
④	Fine salt	12 g	2 tsp	2.5
	Yield	~1.00 kg		

For salt, flours, substitutions, and other notes, see pages viii–xi.
**Diastatic malt powder (DMP) is recommended if you are cold-proofing your dough for more than 12 h. For more on DMP, see page 3-226.*

NET CONTENTS

Ingredients	Weight	%
Flour	578 g	100
Water	413 g	71.45
Salt	12 g	2.08
Wheat bran	10 g	1.73
Yeast	4 g	0.69
Diastatic malt powder	1 g	0.17

Multiply the recipe by two for a miche.

Consume within 2–3 d, or freeze for up to 2 mo.

GENERAL DIRECTIONS

		PROCEDURE				NOTES	TIME active / inactive
MIX	by hand*	combine ① in a bowl, and stir to dissolve yeast; stir in ②; add ③, and mix to a shaggy mass; autolyse 30 min; add ④, and mix until homogeneous; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap				see Hand Mixing, page 3-116	5 min / 30 min
	by machine*	combine ① in mixer's bowl; add ② and ③, and mix on low speed to a shaggy mass; autolyse 20–30 min; add ④, and mix on medium speed to medium gluten development; transfer to a lightly oiled tub or bowl, and cover well with a lid or plastic wrap				see Machine Mixing options, page 65	37–41 min
BULK FERMENT	by hand*	4 h total; 6 folds (1 fold every 30 min after the first hour), 30 min rest after final fold; check for full gluten development using the window-pane test				see How to Perform a Four-Edge Fold, page 3-129, and Gluten Development, page 3-89	5 min / 4 h
	by machine*	2½ h total; 2 folds (1 fold every hour), 30 min rest after final fold; check for full gluten development using the windowpane test					5 min / 2½ h
DIVIDE/SHAPE	divide	lg boule/bâtard	sm boule/bâtard	roll	miche	see How to Divide Your Dough, page 3-136	0–7 min
		do not divide	500 g	75 g	do not divide		
	preshape	boule/bâtard	boule/bâtard	roll	boule	see shaping boules and bâtards, pages 3-152–155, and rolls, page 3-176	1–7 min
	rest	20 min	20 min	20 min	20 min		20 min
	shape	boule/bâtard	boule/bâtard	roll	boule		1–7 min
FINAL PROOF	27°C / 80°F 65% RH	1–1½ h	30–45 min	30–45 min	1–1½ h	see Final Proofing Methods, page 3-212	30 min–2 h
	21°C / 70°F	1–2 h	1–1½ h	1–1½ h	1–2 h		
SCORE		for scoring options, see page 2-230					
BAKE		see Sourdough Baking Times and Temperatures, page 67					30 s–1 min
TOTAL TIME							15–55 min
						by hand	32 min / 7¼ h
						by machine	27 min / 6 h 26 min

**Choose by hand or machine*

LEMON AND HERB PESTO SOURDOUGH

This lemon and herb pesto is not folded or fully blended into the dough as additions often are. Instead, a very thin layer of the paste is spread just under the surface while shaping the loaf, which is scored right before baking to expose the paste a bit. The inspired layering technique creates an almost cracker-like outer crust, while the lemon, garlic, and herb flavors permeate the loaf. An added bonus is the gorgeous aroma created while it bakes.

INGREDIENTS	WEIGHT	VOLUME	SCALING %
For the Lemon and Herb Pesto			
Olive oil	100 g	½ cup	100
Roasted garlic	50 g	¼ cup	50
Thyme leaves	7 g	2 Tbsp	7
Oregano leaves	7 g	2 Tbsp	7
Rosemary leaves	7 g	3 Tbsp	7
Lemon zest	2 g	2 tsp	2
For the Dough			
Sourdough see page 63	950 g		100
Lemon and herb pesto	55 g	¼ cup	5.79
Thin lemon slices	4 ea		

You won't need all this pesto for a 1 kg loaf (or two 500 g loaves), but making just enough for one or two loaves is not feasible in a blender. This paste can also be used for roasting fish and meat if you have any left over.

You can split this dough in half and make two small boules. Follow the baking instructions for small boules in the Sourdough Baking Times and Temperatures table on page 67.

1 Combine all the ingredients for the pesto in a blender. Blend until you obtain a smooth, homogeneous paste. If not using right away, refrigerate for up to 5 d.

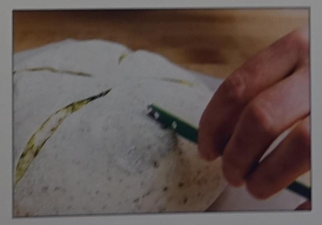
2 Preshape the dough into a boule, and let it rest for 20 min.

3 Turn the boule upside down so the seam side is up. Flatten into a 20 cm / 8 in disc.

4 Using a 60 mL / 2 fl oz ladle, push down into the center of the dough to make a well. Do not push completely through the dough; you just need to make a cradle for the paste.

5 Stir the paste well (solid matter tends to settle), and spoon 55 g (¼ cup) into the center of the well. If the dough can hold more paste, add it. Place the lemon slices on the pesto in a ring.

6 Carefully pull the outer edges of the dough to the center, and gently shape it into a boule. Just as the paste begins to come toward the surface of the crust, stop. Transfer the dough to a floured basket to proof, seam side up.



7 Score the dough as shown in the photo on page 3-234; the intent is to expose the paste.

Consume within 2–3 d, or freeze for up to 2 mo.

8 Follow the instructions for the large boule in the Sourdough Baking Times and Temperatures on page 67. You may choose to bake your loaves on parchment paper; often, the olive oil seeps down the dough and will burn inside the oven. It is easier to remove a sheet of parchment paper than to clean burnt oil.

CHALLAH

Soft, braided, and with a shiny crust, challah is an easily recognized loaf that is often prominently displayed on bakery shelves during Jewish holidays and on Fridays, which is when Jews often buy challah for Shabbat. Underneath that iconic exterior is an enriched bread that's similar to brioche, but with much less liquid and no dairy. (Adding milk or butter to challah would make it not pareve or kosher; those following Jewish dietary stricture could not eat it with meat. You'll occasionally find a challah recipe that includes dairy, but in general, the fat in challah comes from eggs and oil.)

Challah has its roots in the 15th-century Rhine Valley, a locus of Yiddish culture, where braided Sabbath breads were served by Christians. Challah is made in much the same way as brioche, but a few steps require additional attention. One is proofing. Because of challah's braided structure, it can be prone to tearing when baked, but proper proofing helps mitigate that. Braiding, of course, is another tricky part. Beginning on page 3·185, we give you a step-by-step process for shaping many types of challah.

Challah dough typically gets an egg wash to make the crust shine, but take care not to let the wash drip down the sides, or you'll end up with scrambled eggs in your braids. You can up the shine factor by opening the oven vent after the bread begins to brown.

Varieties of challah often involve creating different shapes or adding various flavorings. Traditional Jewish challah generally limits additions to honey, raisins, or saffron. We've come up with our own variations on challah that feature vanilla, Earl Grey tea, and chocolate as well (see page 279). When the bread begins to stale, it makes terrific French toast.

THE ATTRIBUTES OF A WELL-MADE CHALLAH

A typical challah is made by braiding ropes of dough. It looks impressive, but the braiding does take some practice. Here's what you should look for in a fully baked loaf.

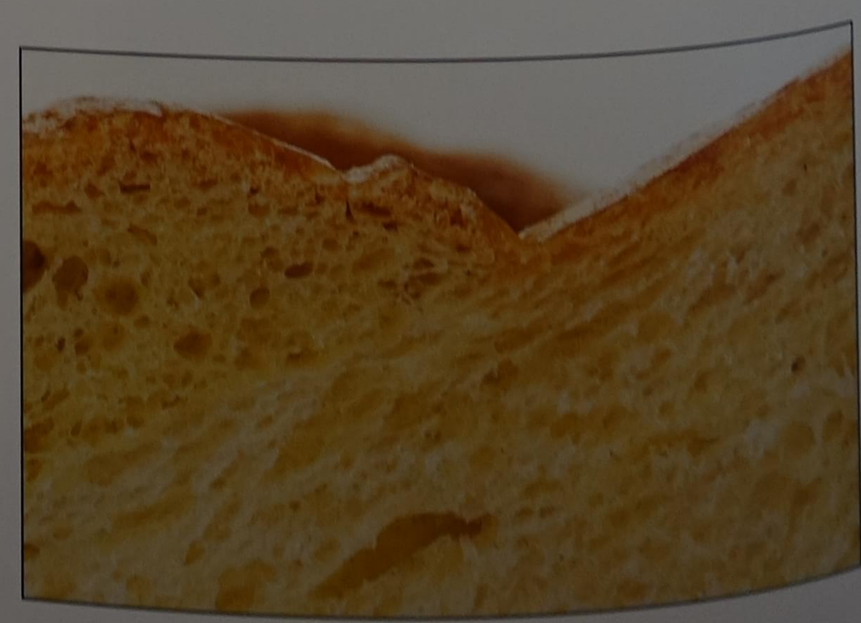
Crust: it should be soft and tender, with a rich golden-brown color. Because challah is traditionally braided, proofing is key—if the dough is not properly proofed, it's going to tear in the oven. Challah isn't as finicky as brioche because challah's lower hydration level makes it less prone to collapsing. The crust should be shiny due to the egg wash, but take care not to go overboard because too much egg wash will result in puddles of baked-on wash lodged in the braids.

Aroma: since eggs are a key ingredient, you'll likely pick up their scent in challah.

Flavor: there's no butter in challah, so you won't taste any. The flavor is similar to that of brioche, except with a hint of egginess.

To use challah for French toast, let it age 24–48 h and then slice it; alternatively, cut the bread into slices that are 2.5 cm/1 in thick, and let the slices dry for a few hours or overnight before soaking in the egg custard base. While you can use fresh bread, we don't recommend it.

Score: if you braid your challah, that takes the place of scoring. But you don't have to braid it if you don't want to. If you opt not to braid it, we recommend a single score down the center of the loaf.



Crumb: challah doesn't contain much liquid, which means it has a denser crumb structure than brioche does. The crumb should be light and tender, with small alveoli.

THE RELIGIOUS SIGNIFICANCE OF

Challah

Many of us think of challah as a braided loaf of eggy, shiny, slightly sweet bread. But the term "challah" (in Hebrew, חַלָּה) doesn't have anything to do with a bread's appearance or even a specific kind of bread. Instead, it's any kind of bread (*lechem*, or לֶחֶם) that has been sanctified in a certain way.

The word comes from a reference in the Torah in which God instructs Moses to set aside a portion of each loaf and use it as an offering to local Jewish priests. The tradition is known as the separation of the challah. It's still practiced, but in a slightly different form. Today, observant home bakers (as well as professional bakeries) take a piece of dough and incinerate it in the oven before baking their bread. Originally, the breads used in this kind of ritual were much simpler than the challah we see in bakeries today—that is, something more like pita bread.

The term "challah" is applied more widely to mean any bread used in Jewish rituals. On the eve of Shabbat, two loaves are placed on the table to reference the Jewish teaching that a double portion of manna fell from heaven on Friday to last through the Saturday Shabbat. In the most common shape of challah, the braided strands form 12 "humps," which are said to represent the 12 ceremonial loaves (shewbread) kept in the Temple in Jerusalem for the 12 tribes of Israel.

For Rosh Hashanah, the Jewish New Year, challah loaves are made in a circular or spiral shape for various symbolic reasons—depending on whom you ask, the round shape represents continuity, the wheel of the seasons, or a spiral of upward progress. Whatever the meaning, this Rosh Hashanah version is typically laden with raisins to symbolize a year of plenty.

master recipe

CHALLAH

A bread that has great meaning and ritualistic value in the Jewish faith (see The Religious Significance of Challah, page 271), challah is a staple at holiday and Shabbat meals. While the bread has a distinctive richness that's reminiscent of brioche, it is traditionally pareve (it contains no meat or dairy), so it is made with oil rather than butter. The whole eggs and egg yolks give the bread its lush flavor and golden color.

TOTAL TIME
Active 21 min
Inactive 5 h 55 min

DDT
27 °C / 80 °F

DIFFICULTY
Easy: mixing
Moderate to advanced: braiding

OVENS
★Combi ★Convection Deck Home

YIELD / SHAPE
4 loaves

INGREDIENTS	WEIGHT	VOLUME	%
① Water	370 g	1½ cups	32.17
Instant dry yeast	12 g	1 Tbsp + 1 tsp	1.04
② Bread flour	1.15 kg	8 cups	100
Whole eggs, cold	160 g	3 ea	13.91
Egg yolks, cold	80 g	4 ea	6.96
Sugar	90 g	½ cup	7.83
Vegetable oil	85 g	⅓ cup + 2 Tbsp	7.39
Fine salt	22 g	3¾ tsp	1.91
Vegetable oil	as needed		
Egg wash see page 3·270	as needed		
Nigella seeds, optional	as needed		
Yield	~2.00 kg		

For salt, flours, substitutions, and other notes, see pages viii–xi.

NET CONTENTS

Ingredients	Weight	%
Flour	1.15 kg	100
Water	534 g	46.43
Fat	122 g	10.61
Sugar	90 g	7.83
Salt	22 g	1.91
Yeast	12 g	1.04

GENERAL DIRECTIONS

		PROCEDURE					NOTES	TIME active/inactive
MIX	by machine	combine ① in mixer's bowl, and stir to dissolve yeast; add ②, and mix on low speed until incorporated; mix on medium speed to full gluten development; transfer to a sheet pan lined with a lightly oiled nonstick silicone mat, and cover well with plastic wrap					see Machine Mixing options, page 275, and Gluten Development, page 3·89	9–10 min
BULK FERMENT		2–3 h total; no folds; keep covered throughout; refrigerate for 1–2 h after the first hour of bulk fermentation					see Bulk Fermentation, page 3·126	2–3 h
DIVIDE/SHAPE	divide (for 4 loaves)	2-strand braid	3-strand braid	4-strand braid	5-strand braid	6-strand braid	see How to Divide Your Dough, page 3·136	2–7 min
		240 g per strand (8 strands total)	160 g per strand (12 strands total)	120 g per strand (16 strands total)	90 g per strand (20 strands total)	80 g per strand (24 strands total)		
	preshape	bâtard	bâtard	bâtard	bâtard	bâtard	refrigerate the dough, well covered, while resting	5–7 min
	rest	20 min	20 min	20 min	20 min	20 min		20 min
	shape	2-strand braid	3-strand braid	4-strand braid	5-strand braid	6-strand braid	roll each piece of dough out to 45 cm / 18 in long before braiding; for shaping instructions, see Braiding, page 3·185	2–7 min
FINAL PROOF	27 °C / 80 °F 65% RH	45 min–1 h					brush with vegetable oil, and proof on a baking sheet lined with parchment paper; see Final Proofing Methods, page 3·212, and Calling Proof, page 3·220	¾–2 h
	21 °C / 70 °F	1–2 h						
BAKE		see Challah Baking Times and Temperatures, page 276					apply egg wash before and halfway through baking; coat with seeds before baking if desired	20–25 min
TOTAL TIME							by machine	21 min / 5 h 55 min

Alternatives

Shaping with enzymes, page 2·342

Flavors

Earl Grey Challah, page 279
Chocolate Challah, page 279
Saffron Challah, page 279

Fun Facts

The Religious Significance of Challah, page 271

Techniques

Braiding, page 3·185
Stacked Braid, page 3·189

Related Breads

White Sandwich Bread, page 289
Oil Brioche, page 236

Our Take

Bread Machine Challah, page 5·306
Modernist Challah, page 278

MACHINE MIXING

MIX

1 Follow the Machine Mixing options on the next page.

BULK FERMENT

2 Transfer the dough to a sheet pan lined with a lightly oiled nonstick silicone mat. Flatten the dough, and form it into a rectangle with even thickness. Cover with plastic wrap.

3 Bulk ferment for 1 h.

4 Refrigerate the dough until it is firm and chilled, 1–2 h.

DIVIDE

5 Divide the dough to the desired weight (see page 3·136).

PRESHAPE

6 Preshape as a simple bâtard with tapered ends (see page 3·154).

7 Refrigerate the dough, well covered, for 20 min.

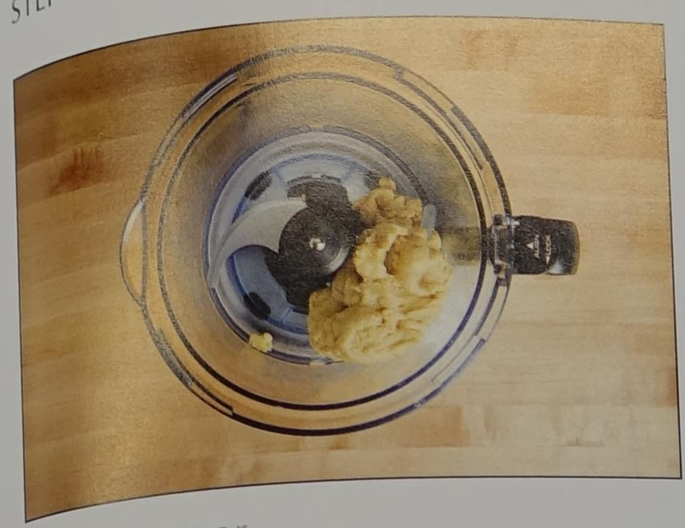
8 Roll out the dough to 45 cm/18 in long strands. Cover the strands immediately after rolling to keep the surface from drying out.

SHAPE

9 Braid the dough according to the braiding section, pages 3·186–191.

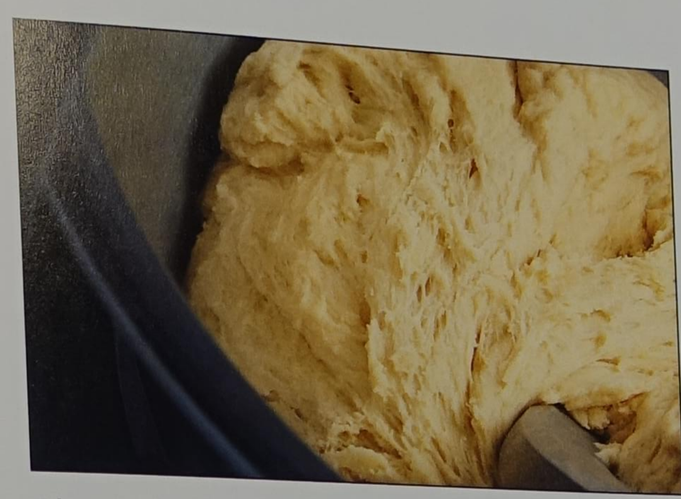
10 Line a sheet pan with a nonstick silicone mat or parchment paper. Place the loaves in the prepared pan.

11 Brush each loaf with a thin coat of vegetable oil. To prevent the crust from ripping, brush the surface with oil 2–3 times during proofing.



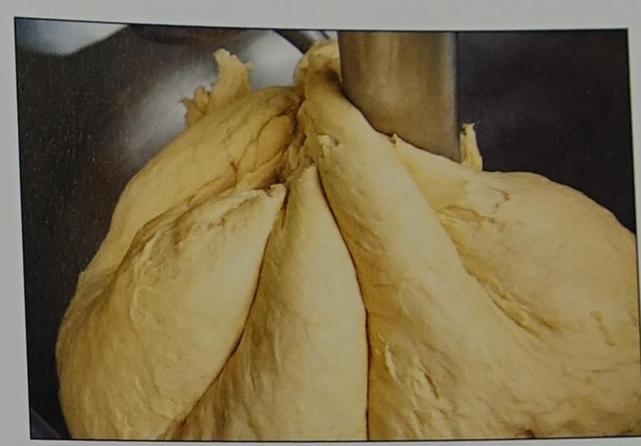
Food Processor

Weight:
1 kg: bowl capacity for most home food processors
1.2 kg: Robot Coupe; industrial-sized food processors: capacity will vary; for home food processors and Robot Coupe, reduce recipe yield accordingly.
Mix: refrigerate all the ingredients for at least 1 h prior to mixing. Place all ingredients in the food processor, and blend on high speed until the dough forms a ball, 1–2 min.



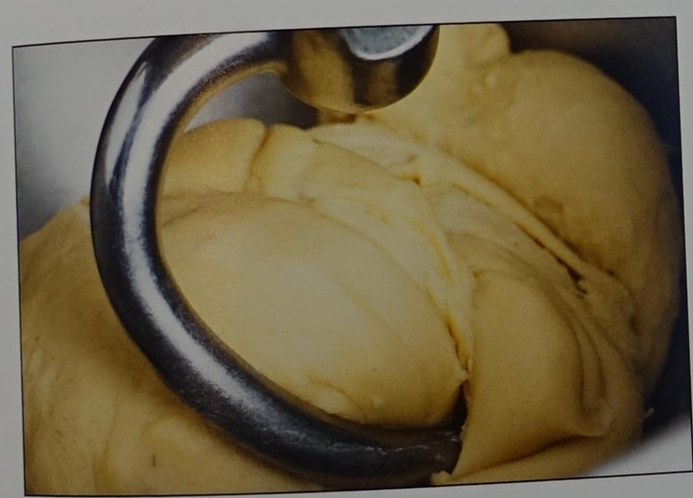
Planetary Mixer

Weight:
12 qt bowl: 4–6 kg maximum; multiply the recipe by 2, but do not exceed 3
20 qt bowl: 6–8 kg maximum; multiply the recipe by 3, but do not exceed 4
Mix: Combine the water and yeast in the mixer's bowl, and stir to dissolve. Add the remaining ingredients. Mix on low speed until you obtain a homogeneous mass, 2 min. Mix on medium speed to full gluten development, 7–8 min.



Spiral Mixer

Weight: depends on the capacity of the mixer; at least 8 kg recommended; multiply the recipe by at least 4.
Mix: combine the water and yeast in the mixer's bowl, and stir to dissolve. Add the remaining ingredients. Mix on low speed for 2 min; stop and scrape the mixer. Mix on low speed until you obtain a homogeneous mass, 2 min. Mix on medium speed to full gluten development, 5–7 min.

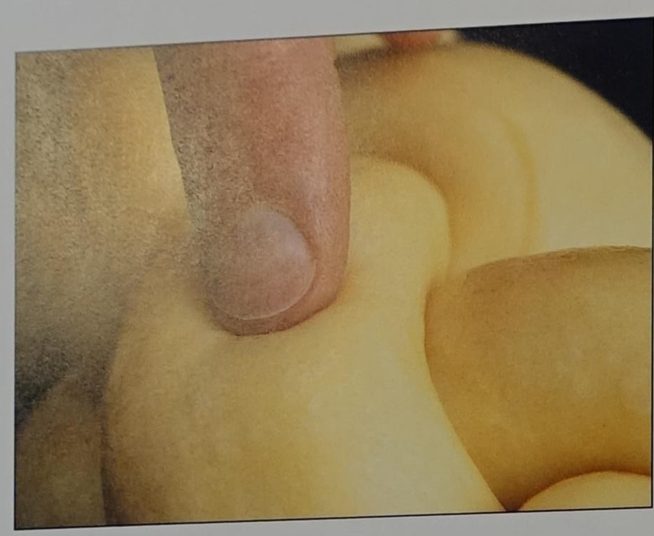


Stand Mixer

Weight:
4.5 qt bowl: 1–1.25 kg maximum; multiply this recipe by 50%; but do not exceed by more than 62% of the yield (approximately 1.25 kg). With very small amounts, start the mix with a paddle attachment to mix the ingredients uniformly; switch to the hook attachment to finish mixing.
8 qt bowl: 1.5–2 kg maximum; divide this recipe by 2
Mix: combine the water and yeast in the mixer's bowl, and stir to dissolve. Add the remaining ingredients. Mix on low speed until you obtain a homogeneous mass, 2 min. Mix on medium speed to full gluten development, 5–7 min.

This striking ring-shaped challah loaf is topped with pumpkin, sunflower, nigella, sesame, and poppy seeds. Simply shape a three-strand braided challah, and then bring the ends together. Apply egg wash to the dough and sprinkle the seeds on top.

FINAL PROOF



12 Proof the dough following the times and temperatures in the General Directions table (see page 273). Test for proof using the fingertip test (see page 3·223).

13 Brush egg wash on the loaves just before baking (see page 3·270). Coat with seeds or other toppings if desired (see page 5·185).

BAKE

14 Bake the dough according to the Challah Baking Times and Temperatures table (below).

15 Once the crust is an amber-brown color, take the loaf out of the oven, and apply a second coat of egg wash. Return the loaf to the oven, open the vent, and finish baking.

COOL

16 Remove the bread from the oven. Cool the bread by placing the sheet pan over a cooling rack or metro shelf so that air circulates below the pan. Consume within 1 d, or freeze for up to 2 mo.

Challah Baking Times and Temperatures Table

Shape	Weight	Type of oven	Baking temperature	Initial baking time (min)	Vent time (min)	Total bake time (min)
loaf	500 g	convection	180 °C / 360 °F, full fan speed	8	12	20
		combi	175 °C / 350 °F, medium fan speed	10	10	20
		home	190 °C / 375 °F	15	10	25
		deck	190 °C / 375 °F	10	10	20

KEYS TO SUCCESSFULLY EXECUTING CHALLAH

- Instant dry osmotolerant yeast is added all at once, and it can be dissolved in the water or sprinkled into the flour. We recommend hydrating the yeast in the water to ensure proper dispersion of yeast cells throughout the dough; this will make the dough ferment faster. If you don't have much experience with this dough, combine the yeast with the flour instead. This will slow down the hydration of the yeast and the speed of fermentation, which will give you more time to work.
- Chilling the dough before shaping makes it easier to roll out than a room-temperature dough.
- The final mixing time at higher speeds may vary from machine to machine. Whatever the model and yield, the goal is to achieve full gluten development. Consider our suggested times as guidelines. Use the windowpane test (see page 3·89) to help determine the dough's stage of gluten development.
- Because challah is a stiff dough, mixing it in a stand mixer can cause the machine to struggle and possibly burn out. If your stand mixer is dancing on the worktable, it either has too much dough or too stiff of a dough (or both) for it to handle. For a 4.5 qt bowl, you can mix on the lowest possible speed, which will double the mixing time. You can also mix the dough to a homogeneous mass, divide the dough in half, and mix it to full gluten development in two batches. In an 8 qt bowl, you can mix 1 kg dough to full gluten development.
- We made a 2 kg yield for this dough because it is easier to mix this amount of firm dough in larger machines. If the ingredient quantities aren't large enough for the dough hook to mix them well, use a paddle attachment initially to mix the ingredients uniformly. Once you have a homogeneous mass, switch to a hook attachment.
- Steam is not necessary for baking many enriched doughs; some bakers apply it, but it is not crucial for a successful bake.
- Use the baking times on the previous page as parameters. Ovens vary from model to model. To ensure a proper bake, use a thermometer to check the challah's core internal temperature, which should read 90–93 °C / 195–200 °F. When checking for doneness, take the temperature of a single loaf outside a home oven. An open door will cause the oven temperature to drop dramatically. This is especially important when you are baking multiple loaves. If one loaf is fully baked, they all should be, so there's no reason to take the temperature of each loaf.
- If baking in a home oven, place your baking rack just below the center of the oven. This way, when the pan is placed on the rack, the loaf will be in the center of the oven, where the temperature is optimal. Use an oven thermometer to ensure the oven is at the right temperature.
- We recommend baking on a baking stone in a home oven. If you shaped and proofed the challah on a sheet of parchment paper, simply slide the parchment paper onto the stone. If you don't feel comfortable sliding the dough onto the baking stone, leave it on the sheet pan and place the sheet pan on the baking stone. The bake time will be about 5 min longer.
- If baking in a home oven, place the four loaves on two half-sheet pans (two loaves per pan). A full-size sheet pan won't fit in a home oven.
- The second egg wash in tandem with the venting step is crucial—it gives challah its characteristic sheen and deep brown color.

This snail-shell-shaped challah is made during Rosh Hashanah, the Jewish New Year.

modernist variation

MODERNIST CHALLAH

Unlike in many of our Modernist modifications, which incorporate a number of adjustments, the change in our Modernist Challah is minimal. A tiny amount of glutathione relaxes the gluten and makes the dough easier to roll into strands for braiding. Otherwise, the ingredients and technique follow the master recipe. If you don't have glutathione on hand, use a few drops of fresh pineapple juice, (not canned, which has been cooked) or another alternative, such as kiwi or papaya juice; see page 2·342.

TOTAL TIME
Active 21 min
Inactive 5 h 55 min

DDT
27 °C / 80 °F

DIFFICULTY
Easy: mixing
Moderate to advanced: braiding

OVENS
★Convection ★Combi ★Deck Home

YIELD / SHAPE
4 loaves

	INGREDIENTS	WEIGHT	VOLUME	%
①	Water	370 g	1⅔ cup	31.62
	Instant dry yeast	12 g	4 tsp	1.03
②	Bread flour	1.17 kg	8⅔ cups	100
	Whole eggs	160 g	3 ea	13.68
	Egg yolks	80 g	4 ea	6.84
	Sugar	90 g	½ cup	7.69
	Vegetable oil	85 g	½ cup	7.26
	Fine salt	22 g	3¾ tsp	1.88
	Glutathione	0.0058 g	n/a	0.0005
	Vegetable oil	as needed	as needed	
	Egg wash see page 3·270	as needed	as needed	
	Nigella seeds, optional	as needed	as needed	
	Yield	~2.00 kg		

NET CONTENTS

Ingredients	Weight	%
Flour	1.17 kg	100
Water	535.3 g	45.75
Fat	122.78 g	10.49
Sugar	90 g	7.69
Salt	22 g	1.87
Yeast	12 g	0.99
Glutathione	0.0058 g	0.0005

For salt, flours, substitutions, and other notes, see pages viii–xi.

Consume within 1 d, or freeze for up to 2 mo.

GENERAL DIRECTIONS

		PROCEDURE					NOTES	TIME active/inactive
MIX	by machine	combine ① in mixer's bowl, and stir to dissolve yeast; add ②, and mix on low speed until incorporated; mix on medium speed to full gluten development; transfer to a lightly oiled tub or bowl, and cover with a lid or plastic wrap					see Machine Mixing options, page 275, and Gluten Development, page 3·89	9–10 min
BULK FERMENT	by machine	2–3 h total; no folds; refrigerate for 1–2 h after bulk fermentation					see Bulk Fermentation, page 3·126	2–3 h
DIVIDE/SHAPE	divide (for 4 loaves)	2-strand braid	3-strand braid	4-strand braid	5-strand braid	6-strand braid	see How to Divide Your Dough, page 3·136	2–7 min
		240 g per strand (8 strands total)	165 g per strand (12 strands total)	120 g per strand (16 strands total)	90 g per strand (20 strands total)	80 g per strand (24 strands total)		
	preshape	bâtard	bâtard	bâtard	bâtard	bâtard	refrigerate, well covered	5–7 min
	rest	20 min	20 min	20 min	20 min	20 min		20 min
	shape	2-strand braid	3-strand braid	4-strand braid	5-strand braid	6-strand braid	roll out each piece of dough to 45 cm / 18 in long before braiding; for shaping instructions, see Braiding, page 3·185	2–7 min
FINAL PROOF	27 °C / 80 °F 65% RH	45 min–1 h					brush with vegetable oil and proof on a baking sheet; see Final Proofing Methods, page 3·212, and Calling Proof, page 3·220	¾–2 h
	21 °C / 70 °F	1–2 h						
BAKE		see Challah Baking Times and Temperatures, page 276; apply egg wash before and halfway through baking					coat with seeds after egg washing before baking if desired	20–25 min
TOTAL TIME							by machine	21 min / 5 h 55 min

Modernist Challah

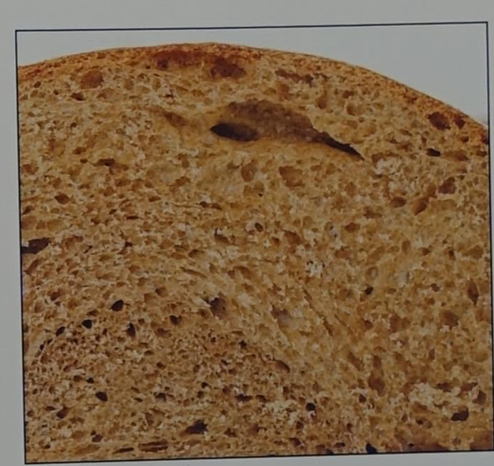
We found that rolling out strands for challah takes a good amount of effort because you often have to go back and roll out the strands again to ensure they are all the same length and have not shrunk too much. Glutathione helps tremendously with this. If you don't have this ingredient, you can substitute 0.05 g of fresh pineapple juice. Crush a pineapple cube to obtain the small amount of juice that you need (see page 2·346). If your scale can't weigh such a small amount of liquid, just add two drops of the raw pineapple juice to the dough as you mix all the ingredients.

FLAVOR VARIATIONS

100% Whole Wheat Challah

Replace the bread flour with whole wheat flour, and follow the instructions in the Challah General Directions table (see page 273). The dough (and the baked loaf) will be denser than the master challah, but this adjustment will also make it easier to shape and work with.

100% Whole Wheat Challah



Flavored Challah

Most purees (see page 2·393) change the consistency of the dough, requiring closer attention to the amount of water added. By using powdered or concentrated liquid ingredients, you can make flavor adjustments to challah without altering the hydration of the dough. One exception is cocoa powder, which does require adding a bit more water because it has a drying effect on the dough.

Schmaltz Challah

Replace the oil with room-temperature chicken fat (schmaltz).

Ironic Challah

Replace the oil with rendered bacon fat.

Ingredients	%	How to add	Similar ingredients (add in the same amount)
saffron	0.2	combine 5% of the flour with the saffron, and grind together in a spice grinder; add to the remaining flour when mixing	cinnamon; instant coffee
vanilla paste or extract	5	combine with the water	coffee extract; caramel paste; almond extract
Earl Grey tea	3	same as with saffron	any tea
cocoa powder	10	combine the cocoa powder with the flour; add 10% of the water to the recipe (for the master recipe, it would an additional 37 g)	malted milk powder
flavored oil (see Focaccia Oil Alternatives, page 5·78)	7.39	replace the oil with an equal amount of flavored oil	

Chocolate Challah

CHALLAH PUREE VARIATIONS

The following recipes are suggestions for adding purees and pastes to our master challah recipe. Because these ingredients contain different amounts of water and will affect the dough differently, the proportions used will vary accordingly. In some cases, the ingredient replaces a portion of the water called for in the master recipe.

If the purees and pastes are added directly into the water portion of the dough, mix them in just after the yeast has been dissolved in the water. Follow the instructions in the Challah General Directions table on page 273.

	INGREDIENT	WEIGHT	VOLUME	%
①	Water* see tables below	X	X	32.17
	Instant dry osmotolerant yeast	12 g	4 tsp	1.04
②	Flour	1.15 kg	8½ cups	100
	Whole eggs	160 g	3 ea	13.91
	Egg yolks	80 g	4 ea	6.96
	Sugar	90 g	½ cup	7.83
	Vegetable oil	85 g	⅓ cup + 2 Tbsp	7.39
	Fine salt	22 g	3¾ tsp	1.91
	Egg wash see page 3·270	as needed	as needed	
	Vegetable oil	as needed	as needed	

For salt, flours, substitutions, and other notes, see pages viii–xi.

**The original amount of the water in the dough that will be replaced either in part or completely by the puree; in some instances, the amount is left as is, and the puree is simply added to the dough.*

1. Coconut Milk Challah

INGREDIENTS	WEIGHT	VOLUME	%
Coconut milk, unsweetened	370 g	1½ cups	32.17
Water	115 g	½ cup	10

Substitute for the water in group ①.

2. Sweet Potato Challah

INGREDIENTS	WEIGHT	VOLUME	%
Sweet potato, pressure-caramelized and pureed see page 2·378	370 g	1½ cups	32.17

There is no water replacement in this recipe; use the 370 g of water in the master recipe in addition to the puree here. Add the sweet potato to the dough once it has reached between low and medium gluten development, and then continue to mix on medium speed to full gluten development.

3. Hazelnut Praline Challah

INGREDIENTS	WEIGHT	VOLUME	%
Hazelnut praline paste	288 g	1 cup	25

There is no water replacement in this recipe; use the 370 g of water in the master recipe in addition to the paste here. Add the hazelnut praline paste to the dough once it has reached between low and medium gluten development, and then mix on medium speed to full gluten development. For information on where to purchase hazelnut praline paste, see Resources, pages 5·XXXVIII–XLIII.

4. Fig Jam Challah

INGREDIENTS	WEIGHT	VOLUME	%
*Fig jam (store-bought or homemade)	288 g	1 cup	25.04

There is no water replacement in this recipe; use the 370 g of water in the master recipe in addition to the paste here. Add the fig jam to the dough once it has reached between low and medium gluten development, and then mix on medium speed to full gluten development. For information on where to purchase fig jam, see Resources, pages 5·XXXVIII–XLIII.

5. Quince Challah

INGREDIENTS	WEIGHT	VOLUME	%
Quince paste	172.5 g	⅔ cup	15

There is no water replacement in this recipe; use the 370 g of water in the master recipe in addition to the paste here. Add the quince paste to the dough once it has reached between low and medium gluten development, and then mix on medium speed to full gluten development. For information on where to purchase quince paste, see Resources, pages 5·XXXVIII–XLIII.

6. Spinach Challah

INGREDIENTS	WEIGHT	VOLUME	%
Spinach, sautéed and pureed smooth see page 2·400	370 g	2 cups	32.17
Water	115 g	½ cup	10

Substitute for the water in group ①.

ingredient variation

VEGAN CHALLAH

21

To make a vegan challah, we have to omit the eggs, of course. Since eggs contribute water and fat, we compensate with a little extra oil. Soy lecithin fills in for the eggs as an emulsifier. The resulting loaf won't have quite the luxurious color and texture of the original, but it is still a solid challah.

TOTAL TIME	DDT	DIFFICULTY	OVENS	YIELD / SHAPE
Active 21 min Inactive 3 h 55 min	27 °C / 80 °F	Easy: mixing Moderate to advanced: braiding	★Convection ★Combi Deck Home	4 braided loaves

INGREDIENTS	WEIGHT	VOLUME	%
① Water	550 g	1⅓ cups	46.61
Instant dry yeast	12 g	4 tsp	1.02
② Bread flour	1.18 kg	9 cups	100
Vegan sugar	100 g	½ cup	8.47
Coconut oil, melted but cool	130 g	¾ cup	11.02
Fine salt	22 g	3¾ tsp	1.86
Soy lecithin powder	14 g	4 tsp	1.19
Vegetable oil	as needed		
Modified starch glaze, optional see page 3·268	as needed		
Yield	~2.00 kg		

For salt, flours, substitutions, and other notes, see pages viii–xi.

NET CONTENTS

Ingredients	Weight	%
Flour	1.18 kg	100
Water	550 g	46.61
Fat	130 g	11.02
Sugar	100 g	8.47
Salt	22 g	1.86
Soy lecithin	14 g	1.19
Yeast	12 g	1.02

GENERAL DIRECTIONS SPECIFIC TO THIS RECIPE

		PROCEDURE	NOTES	TIME active/inactive
MIX	by machine	combine ① in mixer's bowl, and stir to dissolve yeast; add ②, and mix on low speed until incorporated; mix on medium speed to full gluten development; transfer to a lightly oiled tub or bowl, and cover the dough well with a lid or plastic wrap	see Machine Mixing options, page 275	9–10 min
BULK FERMENT	by machine	1 h total; no folds; keep covered throughout	do not chill this dough after bulk fermentation because it will become too hard to shape; see Bulk Fermentation, page 3·126	1 h
		follow the steps for shaping, proofing, and baking from the Challah master recipe on pages 274–276; do not egg-wash the challah		

Regular granulated sucrose is often filtered through animal bones (called bone char, or natural carbon). This is also the case for brown sugar, which frequently is just white sugar with molasses added back into it. There are vegan-specific sugars that are not filtered through bone char. If you use turbinado or another vegan sugar with large sugar crystals, grind it in a spice or coffee grinder for finer crystals so that it doesn't take too long to mix into the dough.

You can substitute vegetable oil, olive oil, cocoa butter (melted but cooled), or any infused oil for the coconut oil so long as it is vegan.

Consume within 1 d, or freeze for up to 2 mo.