



Baking Artisan Bread

10 EXPERT FORMULAS FOR
BAKING BETTER BREAD AT HOME

Ciril Hitz

PHOTOGRAPHY BY
RON MANVILLE

BEVERLY MASSACHUSETTS

Q U A R R Y
B O O K S

Dedication

This book is dedicated to my children, Kira and Cailen.
Their unconditional love is more gratifying than the
best bread I have ever baked.





Contents

Foreword by Jeffrey Hamelman.
Introduction

PART ONE: **Basics**

Chapter One: **Ingredients**

Flour
Yeast
Water
Salt

Chapter Two: **Equipment and Techniques**

Scales and Measuring
Mixers and Mixing
Three Mixing Styles

Other Tools

Ovens

Pre-Ferment Basics

Shaping Basics

PART TWO:

Baking

Chapter Three:

The 10 Steps of Baking.

Chapter Four:

The Bread Formulas

Baguette Dough

Épi

Scroll

Breadsticks

Ciabatta Dough

Twist Sticks

Focaccia

Whole Wheat Dough

Round Rolls

Savory Pizzalets

Pita Bread

Pane Francese

Fougasse

Stamped Rolls

Pizza Dough

Dessert Pizzas

Easy Rolls

Bagel Dough

Bagel Bites and Logs

Bialys

Pain de Mie

Cinnamon Spice Swirl Bread

Raisin Rolls

Picnic Rolls

Challah Dough

Orange Aniseed Loaf

Knotted Rolls

Brioche Dough

Sticky Bun Coffee Cake

Sweet Filled Brioche

Croissant Dough

Pain au Chocolat

Hazelnut Snail

Fruit Danish

Monkey Bread Deluxe

Chapter Five:

Extras

Bread Crumbs

Croutons

Bagel Chips

Baguette à la Pizza

Bread Salad

French Toast

Bread Pudding

Washes and Glazes

Sweet Embellishments

Savory Inspirations

Appendix

Troubleshooting

Charts and Conversions

Ingredients, Tools, and Equipment

Education and Organizations

Recommended Reading

Glossary

Index

Acknowledgments

About the Author

About the Photographer





FOREWORD

by **Jeffrey Hamelman**

THE WORLD DOESN'T SEEM TO BE SLOWING DOWN; at least, the human beings who inhabit it don't. More work, more stress, more demands on our time; many perhaps even feel disconnected from fundamental human links, as if something within us is cracked, almost broken. And so it seems ironic to see the great resurgence in bread baking in so many parts of the world. After all, with so much tugging at us, how can we find the time to bake for ourselves, for our family and friends?

We are emotive creatures, and we require fulfillment, both tactile and creative. When we enter the realm of bread, we find that the chatter of life slips away, that our hands regain their tender partnership with the breathing dough. We reunite with an ineffable and elemental connection that has been part of our shared heritage for thousands of years. When bread comes fragrant from our ovens, we are rewarded with a most marvelous experience of creation.

Baking Artisan Bread is a friendly book, written by a friend of good bread. Ciril Hitz is an outstanding teacher, and he has distilled his years as an instructor into a book that is both good and earnest, one that will make it easy for readers to enter the kitchen with confidence. Ciril rolls up his sleeves from the first page and has us pulling out the flour. His approach will be especially helpful to those new to baking. The recipes he offers are sound and solid, and the variations he gives for each of them enable us to really expand our repertoire. It's particularly valuable to be able to make good bread, a tasty savory item, and even a dessert from just one dough—a small increase in time and ingredients results in a large increase in products and flavors.

On their own, Ron Manville's photographs are absolutely delightful; when coupled with Ciril's discussions of themes such as shaping and troubleshooting, there is a synergy that vividly elucidates the topic. Habits, either good ones or bad, feel natural, and the combination of clear text and skilled

photography will prove especially helpful to new bakers who are learning the basics, those whose habits have yet to be fully formed. ~~Ciril has opened a door into a room full of many possibilities—~~ your kitchen. His hope, which I fully share, is that you take the time to explore that room and expand your experience and your love of baking fine breads.

Jeffrey Hamelman is an employee-owner of the King Arthur Flour Company in Norwich, Vermont. He is the director of the King Arthur Bakery, and instructs the professional classes offered at the King Arthur Baking Education Center. He is the author of Bread: A Baker's Book of Techniques and Recipes.

The Quest for Artisan Bread

FLOUR, WATER, SALT, AND YEAST—these four simple ingredients when combined create the magic that is bread. Baking bread is a time-honored tradition honed over more than six thousand years. The craft is a truly sensory experience: the warmth of the dough in your hands, the aromas lingering in the air during baking, the crackling of the crust as it cools, the complex and seductive flavors on your tongue. Yet for some, the process of making bread strikes fear in their hearts. I hope to change that.

In the world of bread bakers and grammarians alike, there has been much debate about the usage of the word *artisan*. *Artisan* is actually a noun that refers to a skilled worker or craftsman, but due to the ebbs and flows of popular usage, it is applied as an adjective for carefully handcrafted food and beverages, such as cheese, wine, chocolate, and, of course, bread. The romance associated with something handmade, especially in our hustle-bustle world, entices people to seek out artisan products. Unfortunately, the word *artisan* is sometimes liberally used and abused in the marketing campaigns of larger bakeries and corporations, diluting its meaning.

As for defining *artisan*, if you asked fifty artisan bakers to describe exactly what being an artisan baker means, fifty different styles would be conjured. My personal definition of artisan bread is handmade bread that is crafted using quality, natural ingredients and does not include any added chemicals or artificial ingredients. Anyone who considers himself an artisan baker has the responsibility of aiming to reclaim the true origins of the word through experience and education.

The good news is that the quest to make good bread by hand is not one of endless toil. Technology is the baker's friend, and mixers and other equipment are welcome time-savers. It is my opinion that a baker can craft "handmade" bread while taking advantage of helpful technology. Time is also a critical ingredient that cannot be shortchanged.

Being organized and rational about the baking process will aid the aspiring artisan baker. When I competed in my first international baking competition, I streamlined my baking style to maximize my performance and products within a limited amount of time. As a result, I've learned to work through geometric expansion, increasing the number of different breads that can be made from one dough.

With these artisan formulas, you can create a multitude of ide of fantastic, flavorful breads for any occasion.



My premise is simple: If you are going to invest the ingredients, time, and energy in making a dough from scratch, then why not maximize this effort to create more bread? After all, isn't time one of our most precious resources? With just small adjustments or additions, each of the ten bread formulas in *Baking Artisan Bread* generates a new bread form. A baguette dough yields a bouquet of breadsticks, a buttery brioche dough elegantly becomes a fruit danish, and so on, through more than thirty mouthwatering variations.

Baking Artisan Bread provides clear definitions, thorough explanations, and logical steps for creating wonderful bread at home with professional-quality results. The main ingredients are introduced and pored over in [chapter 1](#), while [chapter 2](#) introduces the basic necessary equipment, along with some essential techniques and concepts. These two chapters of [part 1](#) pave the way for [part 2](#), beginning with [chapter 3](#), an overview of the ten steps of baking that provides the organizational

thrust of each formula. This chapter introduces what happens at each stage of the dough development and ~~why—what mixing really is, why a dough needs to rest, and when it is ready to bake. It is~~ followed by the formulas and variations, presented in lush, step-by-step photos. And as a bonus, you can refer to the instructional segments in the accompanying DVD to view basics, such as mixing and shaping, explained in action. If by then you haven't become a disciple of bread baking, it is my hope that with time and practice, you will revel in its joys as much as I do.

Happy baking!

A handwritten signature in black ink, appearing to read "Artisan" or a similar name, written in a cursive style.



Basics

BREAD BAKING is a delicate dance between the simple and the complex. On one hand, nothing could be more straightforward: just combining flour, water, salt, and yeast yields a dough that with the baker's touch magically transforms into a crusty baguette or a hearty loaf. On the other hand, the science behind the "magic" is incredibly complicated, and research reveals the markedly complicated process that baking actually is.

Don't let the complexities of the baking process intimidate you, though. Knowledge is power and, in the case of bread baking, an overview of the components and processes is all you need to start your journey. In the following chapters, the roles of the ingredients, equipment, and techniques are explained and expounded upon. The most important information is extracted and reduced to readily accessible and easily understood core concepts. Armed with these essentials, you can move confidently into the kitchen and let the baking begin!



CHAPTER ONE

Ingredients

THE MAIN INGREDIENTS of bread are strikingly simple: flour, water, salt, and yeast. Each one has a precise role to play in creating a dough that has the qualities desired in the type of bread.

Using the highest quality ingredients you can afford is one of the keys to successful baking. Creating the best product possible starts with the best possible ingredients. These are, after all, the foundation of any formula, and sacrifices or compromises made at this level will definitely have an impact on the bread. That being said, you should not take out a second mortgage to get through your shopping list. One of the great things about bread baking is that the basics are very common and usually do not involve extra trips to specialty foods stores.

For some, though, shopping is half the fun. If you are someone who pores over kitchen product catalogs, or you incessantly comb the Internet for new and interesting sources of little-known ingredients, then by all means, experiment! Experimenting with different brands of flour or yeast will be part of your education as a baker. As you gain experience, you will develop your own baking identity and personal preferences and will come to recognize the qualities of ingredients (and their edible results) that are most important. Baking bread is an art form, one that is open to interpretation and individualizing. And so while each formula has certain standards to be met, bakers bring their own set of unique tools and ideas, ready to make their individual mark on their bread.

The next few pages introduce and explore the four basic ingredients used to make bread. While the main points of each ingredient are simplified, some are more complex than others. Flour, for example, has many different characteristics that a baker must take into consideration when choosing one. Water, on the other hand, does not. As you read about each ingredient, you will become more aware of the choices available to you and what kind of issues may affect your purchases and baking decisions.

Flour

Most bread consumed in the United States is made from wheat flour. Wheat is considered a cereal grain, along with rice, corn, oats, and rye. What makes wheat the grain of choice for bread baking? One of the primary factors is the presence of certain proteins with *gluten*-forming properties. When mixed with water and developed into dough, the wheat flour is given life, and the gluten protein creates a structure much like an intricate web. The interlaced gluten strands capture the gases that have been created by the yeast and are flexible enough to allow the dough to “rise,” expanding in size.

HOW FLOUR IS MADE

Flour is made by grinding wheat kernels, also known as wheat berries. A wheat kernel is the seed of the wheat plant and has three main parts: the *bran*, the *endosperm*, and the *germ*. The bran is the outer protective layer of the kernel and is high in insoluble fiber, minerals, and vitamin B. Underneath the bran lies the endosperm, which makes up the bulk of the kernel. It contains mostly starch and is the whitest part of the kernel. It also contains the proteins that form the gluten matrix, a necessary component of a bread’s crumb structure. Most refined flour comes from this part of the kernel. The germ, in the right conditions, will sprout, or germinate, and allow the seed to grow into a new plant. This embryo is composed of essential oils and vitamin E.

A variety of flours and wheat, clockwise: pastry flour, bread flour, high-gluten flour, white whole wheat flour, cracked wheat; middle: whole wheat berries



Wheat is made into flour by milling. The wheat kernel is crushed into progressively smaller particles, and depending on the type of flour, parts of the kernel are removed by sifting. The degree of separation that takes place is called the *extraction rate*. A flour that uses the entire wheat kernel is said to have a 100 percent extraction rate, meaning the entire kernel was ground into flour and nothing was removed, resulting in a 100 percent whole wheat flour. Most conventional artisan bread flours have an extraction rate of 73 to 76 percent. As a rule, flour with a higher extraction rate contains more minerals and is more nutritious than flour with a lower rate.

By law, supplements can be added to the flour to replace any vitamins and minerals removed during the milling process. This, however, does not replace the nutritional benefit of whole-grain flour.

Once flour is milled, it needs time to mature. This aging process is critical to the performance of

the flour in the baking cycle. Although unaged flour has more available nutrients, without proper aging flour tends to have a sluggish fermentation cycle and becomes harder to shape. Ideally, flour will have a minimum of 3 to 4 weeks to mature, which means storing the flour in large silos and taking up precious space. To mitigate the high costs of properly maturing flour, some suppliers artificially age the flour with gases and oxidizing agents such as potassium bromate. These agents have harmful side effects on both humans and the environment. The nutritional label on the flour is a good source of information about the manufacturers' aging processes. (It is advisable to choose unbleached and unbromated flour.)

FLOUR SPECIFICATIONS

When bakers get together, they like to talk about their flour in very technical terms. For the home baker, it is good to be aware that these specifications exist, but it is not necessary to be bogged down with or intimidated by this data, either. There are many different types of wheat: from hard to soft, from summer to winter, and from red to white. Each type of wheat has its own characteristics, and different flours are often blended to meet a certain specification. The bread flour preferred for the recipes in this book should be derived from a hard winter wheat. This type of wheat has a protein content between 11 and 14 percent, with the most ideal protein content for artisan bread baking being 11.5 to 11.7 percent. When held in the hand and squeezed, this flour does not lump up and does not need to be sifted.

More Minerals = BETTER FERMENTATION

Just like the human body, yeast is a living organism that thrives when it is fed a good, healthy diet. The more minerals retained in the flour after milling, the more beneficial it is to the fermentation process. The nutrients present are processed by the yeast and result in a healthier, more robust culture.

STORING FLOUR

Flour should be stored in an airtight container and away from heat. It is best to buy flour in quantities that will last around 2 to 3 months. Flour can also be wrapped tightly in plastic wrap and stored in the freezer for up to 1 year. Special consideration should be taken when storing whole wheat flour. The natural oils in the wheat germ make this flour more sensitive to heat than regular bread flour or all-purpose flour is. It is best to store this flour in an airtight container in the refrigerator, especially during warm spells, to prevent the flour from becoming rancid.

Yeast

Yeast is a single-cell organism that feeds from simple sugars naturally present in flour in a process called *fermentation*. In the presence of warmth (ideally 75°F to 78°F [24°C to 26°C]) and moisture, this process takes place and accelerates with higher temperatures. The artisan bread baker strives to enhance the flavor and aroma of the bread by controlling this process of fermentation.



VARIETIES OF BAKING YEAST

There are innumerable types of yeast, but two are specifically used for fermenting bread: the wild *Candida milleri* and the manufactured *Saccharomyces cerevisiae*. Sourdough breads are made with the wild yeast, and the baker maintains the yeast's life cycle by regularly feeding the sourdough culture, also known as a starter. The care and cultivation of starters and their use in baking is more complicated and challenging than the scope of this book, and therefore none of the formulas presented in this book are for sourdough breads. Instead, these formulas utilize manufactured yeast that is produced in a lab facility under very tight and strict conditions.

Commercial yeast is available in three main forms:

Active Dry Yeast

Until recently, active dry yeast was practically the only yeast one could buy in a supermarket. Usually sold in packaged perforated envelopes, active dry yeast needs to be rehydrated properly before use. The yeast is allowed to dissolve for about 5 minutes in 100°F (38°C) liquid (water in most cases) before being added to the final dough. If the formula calls for water to be at a cooler temperature when it is added to the final dough, the liquid yeast solution should be cooled before the mixing can commence.

From top to bottom: active dry, instant, and fresh yeast

FERMENTATION 101

The complicated process of fermentation, reduced to bare bones, goes something like this: The starches present in flour are broken down into simple sugars, which then act as food for the yeast. The yeast “eats” the sugar and expels carbon dioxide and alcohol in the process. This feeding cycle continues until the yeast runs out of sugar, or until the bread is baked. Once the internal temperature of 138°F (59°C) is reached, known to bakers as the “thermal death point,” all fermentation ceases. One can almost picture the tiny molecules of carbon dioxide gas trying to make their way out of the dough, but the gluten matrix (that weblike structure of gluten forming proteins) traps the gas, creating a balloon around the carbon dioxide. This gives the dough the desired rising characteristic typical for yeasted breads. (The gluten-forming process is explored at

length in [chapter 2, pages 29–30](#).) The alcohol dissipates during the baking process.

Instant Yeast

Sometimes marketed by manufacturers as “bread machine yeast,” instant yeast is usually sold in a small vacuum-packed brick and is available in many larger supermarkets and through catalog and Internet sources. It has a long shelf life and can be stored unopened without refrigeration for up to a year. Once opened, it should be stored in an airtight container in the refrigerator. Although the manufacturers recommend that it be used within a month, it can usually be stored *much* longer. The beauty of instant yeast is that it can be added directly to the dry ingredients of the final dough before mixing. While it may be a bit pricier than fresh yeast, the dependability of its performance far outweighs the additional cost.

Instant yeast is also available in an *osmotolerant* form for use in sweeter, enriched doughs. The abundant sugar present in these doughs draws the water away from the yeast, making it a very inhospitable environment for regular instant yeast to do its job. The osmotolerant form has literally been engineered to perform under these harsh conditions and is therefore ideal to use in sweet and enriched yeasted doughs, such as brioche (see [page 124](#)).

Fresh Baker’s Yeast

Fresh, or compressed, yeast contains 70 percent water. It is tan in color and should break cleanly when touched. It should have a pleasant, yeasty odor to it. Fresh yeast can be purchased at some grocery stores and through catalog and Internet sources and should be stored in an airtight container in the refrigerator, where it has a shelf life of 3 weeks. A drawback of fresh yeast for home bakers is that one can never be quite certain if the yeast is actually fresh enough, especially if it is purchased from a source that does not sell much on a regular basis. Even most experienced, professional bakers tend to prefer the more consistent quality and performance of instant yeast.

The formulas in this book specify instant yeast exclusively, as it is a favorite ingredient both at home and in the bakeshop. If you would like to experiment with either active dry or fresh yeast, please refer to the yeast conversion chart in the appendix ([page 165](#)).

Water

When it first comes in contact with flour, water swells the starches and awakens the dormant gluten-forming proteins. Fermentation could not take place without water and, to ferment properly, the dough needs to achieve a certain temperature. The temperature of the flour and any pre-ferments are dictated by their surroundings and are hard to change. The temperature of the water is the only variable that can easily be adjusted before it is added to the final dough to help ensure that it reaches the necessary temperature range.

HYDRATION RATES of Dough

Water is the main hydrating factor in dough, although other liquids are frequently included, such as milk, eggs, and oils. When bakers talk about the *hydration* of doughs, they are referring to the relationship between the liquids as they compare to the flour. For example, if a dough has 1,000 grams of flour and 750 grams of liquid, it has a hydration rate of 75 percent. A dough with a high

hydration will be wet and sticky, whereas a dough with a low hydration will be stiffer. If a dough has too much liquid (more than 80 percent hydration), it will be too wet to comfortably handle. On the flip side, a dough must have a minimum hydration of 50 percent or the dough will not come together as a unified mass.



Tap water is the preferred water to use, but certain variables should be kept in mind because of their impact on the dough. For example, water containing too much chlorine will tend to slow down the fermentation process. If water smells like chlorine, it is best to pre-scale it and let it sit at room temperature until the odor dissipates. Minerals present in the water will not usually interfere with baking. If the water is too hard, the overabundant minerals can actually accelerate the fermentation process (although this is most evident when working with sourdough cultures and not with commercial yeast). Working with distilled water is not recommended, since it has been stripped of minerals. (And in case you are wondering, you can certainly make bread with bottled spring water—but it simply does not make good financial or environmental sense.)

Salt

Even though it is used in such minute amounts, salt is an essential ingredient with a critical role in bread baking. Most might assume that salt is added for its flavor, which is not entirely false: Salt does add to the flavor of bread. It should never dictate the flavor, however; instead it should complement the flavor of a well-fermented loaf.

Salt's primary function is something completely distinct from flavor: It helps control the fermentation process, preventing the yeast from overfermenting. An uncomplicated way to say it is the enzymatic reaction of salt in the dough actually encourages the slower digestion of the sugars. In return, not all of the sugars are consumed by the yeast, and the ones that are still present at the time of baking become evident as they caramelize into the golden-brown color on the crust. Salt also has an effect on the proteins by tightening them up, which is evident in the final dough.

TYPES OF SALT

Salt comes in many forms, including sea salt, kosher salt, and regular table salt. Any type can be used in bread baking, as long as the granule size is fine enough to disperse and dissolve properly in the dough. When adding ingredients and especially if you are pre-scaling ingredients to hold overnight, always make sure that the salt and the yeast do not come in contact with each other; salt's potency has the potential to damage the yeast activity, particularly with fresh yeast.

A variety of salts from left to right: coarse sea salt, fine sea salt, table salt, and kosher salt





CHAPTER TWO

Equipment and Techniques

BREAD IS MADE with the simplest of tools, including the hands and a source of fire. As bread baking evolved, so did how it was made. Through modern technology, machines and tools eased the arduous work of the baker. There was great resistance to newfangled machinery in Europe, particularly in France, where bakers were steeped in the traditional art of hand kneading.

Over time, bakers relented and by the 1920s electric ovens, fast-rising yeasts, and mechanical mixers became the norm. Unfortunately, this “modern” approach did nothing to improve bread’s quality, and it slipped into a manufactured state: soft, white, and tasteless. Fortunately, the artisan movement is encouraging more judicious choices of tools and equipment.

The most critical piece of equipment for any baker—and it may not seem like equipment—is the hands. Their dense concentrations of nerve endings register the minutest of tactile changes. No machine or tool will ever replicate this. Moreover, this “finger feel” only improves with time and experience! Every time you bake, the brain catalogues these sensations into an innate baking reference.

This chapter reviews the basic equipment you will need to bake artisan bread. If you are well equipped, you already have most of these items in your kitchen. If not, the next most important piece of equipment is a scale, followed by a stand mixer, followed by a baking stone. The qualities to look for in each of these pieces, along with others, are highlighted.

If you are a beginner or have limited experience in baking, the sections outlining pre-ferment basics and basic shaping techniques (see [pages 4, 2–47](#)) will be most helpful in your tutorial. These sections are important reference points as you move through the formulas in the book.

Basic MISE EN PLACE

Equipment for All Formulas

Work surface
Stand mixer with a dough hook attachment
Mixing bowl
Proofing containers
Scale or measuring cups/spoons
Scraper/dough divider
Parchment paper
Thermometer
Oven
Wire cooling racks

Scales and Measuring

While many aspects of bread baking are creative and artistic, baking is first and foremost a science. Accurately measuring the ingredients is a critical part of artisan bread baking. Just as you would not conduct a scientific experiment using pinches of chemicals, nor should you approach measuring your ingredients in the same manner. Home bakers in the United States are understandably conditioned to measure their ingredients in spoons and cups. Unfortunately, this is a proven inferior way to measure consistently. The arguments against this method are many, ranging from the discrepancies in the manufacturing of the tools, to the different densities to which each individual fills the cups, to the dirty utensils to clean afterward. Weighing ingredients is simply much more accurate and uncluttered — case closed.

Measuring by weight is more accurate than measuring by volume.



TYPES OF SCALES

Second to hands, a scale is the most important piece of equipment for a baker to have. Three different types of scales are available to the home baker:

Balance Scales

The balance scale works by comparing the ingredient to be weighed against a known mass. The ingredient to be weighed is placed on one side of the scale, and weights are either placed on the opposite side or moved along a beam until the two sides are in balance. You have probably used a balance scale if you have ever taken a chemistry class, or when you have stepped on a physician's scale at the doctor's office. These scales can be extremely accurate but occupy a lot of space and are bit cumbersome to use in the kitchen.

Mechanical/Compression Scales

These scales use a platform mounted on a spring to measure weight: As the platform is compressed from the weight of the ingredient, the spring compresses proportionally to the force being applied to it. In theory this way of measuring works fine, but in reality there are some problems with mechanical scales, especially cheaply made ones. For example, compression rates may change over time, as the spring may stop fully returning to its original length, or it may even break. Another issue is that smaller quantities are more difficult for the scale to weigh accurately than larger quantities. (Have you ever wondered why that single onion at the supermarket weighs almost as much as two?)

Digital Scales

Digital scales, the preferred equipment for these formulas, are easy to use and very accurate in the kitchen. Inside the scale is a small computer that calculates the weight based on the resistance measured on the strain gauge, a small electrical component. These scales are readily available at department and kitchen stores, as well as catalog and Internet sources, and range in price from affordable to slightly pricey. In general, the precision of the scale directly correlates to its price. For home bread baking, a scale with a 5-kilogram capacity (5,000 grams) that can weigh increments of 1 gram is recommended.

WEIGHT CONVERSION FORMULA

To convert grams into ounces, divide the number of grams by 28.35.

Example: 72 grams = 2.54 ounces

$$72 \div 28.35 = 2.539$$

To convert ounces into grams, multiply the number of ounces by 28.35.

Example: 6 ounces = 170.1 grams

$$6 \times 28.35 = 170.1$$

If an ingredient's measurement includes both pounds and ounces, first convert the pounds to ounces (multiply the number of pounds by 16), add the remaining ounces to that figure, and then multiply the answer by 28.35.

Example: 2 pounds 3 ounces = 992.25 grams

$$[(2 \times 16) + 3] \times 28.35 = 992.25$$

Here are some other scale features to consider:

- **Imperial and metric units:** All formulas and measurement for the ingredients in this book use the metric system; not all cookbooks or recipes do. It is nice to have a scale that can switch from kilograms and grams to pounds and ounces.
- **Tare function:** The tare function weighs the container and then zeros the scale so that only the net weight of the next added ingredient is displayed. Many scales allow repeated tares, which makes

weighing multiple ingredients consecutively in the same bowl a snap. For example, you can scale 500 grams of flour, press the tare button, scale 15 grams of salt, press the tare button again, and add 7 grams of yeast—all into the same bowl, without a single measuring utensil.

Tools used for measuring by volume should be of the highest quality to ensure accuracy.



SPOONS AND CUPS

The only truly accurate way to measure ingredients is by weight, not by volume (measuring with spoons and cups). If a scale is not available, use the following tips as a guide.

- **Flour:** There is no need to sift bread flour before measuring. Scoop the flour from its bin with the measuring cup, then level off the flour with the back of a knife.

- **Water:** Use a measuring cup made for measuring liquids (transparent glass or plastic cups with measured increments on the side, with a handle and a spout). Place the cup on a flat, level surface and read the measurement of the liquid at eye level.

- **Salt and instant yeast:** Use good-quality measuring spoons and level with the back of a knife.

Even when these measuring tips are followed with the utmost consistency, the characteristics of certain ingredients make this method unreliable. The density of flour can change from bag to bag, not to mention the fact that everybody scoops flour a little differently. Finely ground table salt will pack in tighter than coarsely ground sea salt, and so a tablespoon of fine table salt will weigh more (and flavor more!) than a tablespoon of coarse sea salt.



Philosophy of Baking: MEASURING INGREDIENTS

To weigh or not to weigh? That is the question. Or should it be? After being immersed in the industry for so long, it's hard for me to imagine measuring ingredients any other way. Quite simply, doling out ingredients by weight, and not by volume, is the most accurate measuring

- [The French Party System pdf, azw \(kindle\), epub, doc, mobi](#)
- [download Earthly Powers](#)
- [**Handbook for the 1979 Convention on Long Range Transboundary Air Pollution and Its Protocols for free**](#)
- [The Men's Health Home Workout Bible: Over 400 Exercises No Gym Required pdf, azw \(kindle\), epub](#)
- [**The Taming of the Shrew \(Modern Library Classics\) here**](#)

- <http://thermco.pl/library/Quinn.pdf>
- <http://academialanguagebar.com/?ebooks/Earthly-Powers.pdf>
- <http://dadhoc.com/lib/Scream--Chilling-Adventures-in-the-Science-of-Fear.pdf>
- <http://berttrotman.com/library/The-Men-s-Health-Home-Workout-Bible--Over-400-Exercises-No-Gym-Required.pdf>
- <http://junkrobots.com/ebooks/Windows-7-Device-Driver--Addison-Wesley-Microsoft-Technology-Series-.pdf>