

WATER

It may seem odd to think of water as an active, functional ingredient, but that's exactly what it is. Water even supersedes flour in terms of its incredible dynamic effect on bread (see High-Hydration Doughs, page 4-144). Water molecules never rest during the baking process; they stay busy from beginning to end because water has unique chemical properties, which we cover in-depth in chapter 5 on The Physics of Food and Water, [page 1-342](#).



Neapolitan pizza with tap water



Neapolitan pizza with water and 1.5 ppm chlorine



Neapolitan pizza with hard water

Water is crucial to the very beginning of the bread-making process, the grain of wheat. That grain can hang out in a dry, inert form for months. Just add water, and the seed begins to grow. Water then plays irreplaceable roles at virtually every step in the creation, consumption, and even spoilage of bread. That is why we return at many places throughout this book to the function of water in **mixing** (page 3-80), **baking** (page 3-284), and **drying, staling, and molding** (page 3-402).

The higher the hydration of the bread, the better optimized the gluten network will be, generally resulting in a more open crumb and a higher loaf volume. This is limited only by the flour's capacity to absorb water and the baker's ability to manipulate the slacker, stickier nature of **high-hydration doughs**; see pages 106–107 for our techniques on adding the maximum amount of water possible while making the doughs easier to handle. Doughs with different water contents will also bake differently; a wet dough like the ciabatta on page 4-155 will have a relatively amorphous shape, whereas a stiffer dough like the one for the Sicilian bread on page 5-109 will almost be like modeling clay.

In addition to determining consistency, water is also important when adjusting the temperature of the dough, a critical factor in making bread. The overall quality of the water is important, but in our experiments, we determined that almost any kind of water works well for making bread. Water with an off-flavor from various contaminants is not the best choice and may not be good for you, but it won't negatively affect the yeast. While the generally accepted wisdom is that hard water is heavy with minerals that will toughen doughs and that heavily chlorinated water could kill most of the yeasts, we found that doughs made with these types of water were virtually the same as those made with filtered water (and the bread made with chlorinated water had increased volume in some cases).

[For more on](#) how water quality affects dough, see [Does Pure Water Make for Better Bread?](#), page 1-371.

There's a lot of hype surrounding the type of water used in some breads, such as bagels and pizzas. We made several versions of pizza dough using tap water, hard water, and chlorinated water. The health department standard for public swimming pools is 1-1.5 ppm. We tested all the way up to 4 ppm, the maximum allowed for human consumption. Our results showed that there are negligible differences among water sources.