

POWDER VS. SODA

It's tempting to just follow the recipe without giving a thought to the differences between baking soda and baking powder.

BY JOAN LANG

**BAKING POWDER:
ACIDIC ENOUGH
TO CAUSE NOT ONE,
BUT TWO RISING
ACTIONS.**



**BAKING SODA:
AN INCOMPLETE
LEAVENING AGENT
THAT NEEDS
ACIDITY TO WORK.**

LIFE IN THE KITCHEN IS FILLED with little chemical reactions, and one of the most common is leavening. Baking soda and baking powder are both important ingredients that give a rise to many baked and griddled items, but their similarities and differences can be confusing.

Both baking soda and baking powder work in the batter to form tiny carbon dioxide gas bubbles, which expand and cause the product to rise. The batter is then set by the heat of the oven, making a light-textured crumb.

Basically, the difference between the two comes down to acid. Baking soda (also known as bicarbonate of soda) has no leavening properties when used alone; it must be mixed with an acid (such as buttermilk, citrus juice, or molasses) in order to produce carbon dioxide gas bubbles necessary to promote rising. Baking powder, on the other hand, is more complete—it's a combination of baking soda, cream of tartar (an acid), and a secondary substance such as cornstarch to absorb moisture. Baking powder begins to give off carbon dioxide, or is "activated" when mixed with any liquid.


Baking soda makes for a particularly tender, delicate crumb. It is generally combined in a ratio of 1 teaspoon baking soda to 1 cup of liquid. Because it begins bubbling immediately on contact with moisture, it should always be mixed with the other dry ingredients in the recipe first. Once mixed, the batter should be placed into the oven quickly because the action will not be sustained. Soda can also be used to moderate the unpleasant after-

effects of digesting beans, especially the dried variety, by adding ½-1 teaspoon to the water.

Today there are three major kinds of baking powder available commercially, all containing an acid and an alkaline substance (the baking soda) reacting in the presence of moisture to form carbon dioxide gas. Old-fashioned single-acting baking powders (tartrate and phosphate baking powders) go to work as soon as they are mixed with liquid, although tartrate baking powder reacts a little more quickly than the phosphate.

Double-acting baking powder works twice: when it is first mixed, and again when the heat of the oven releases its full leavening force. This eliminates the need to get the batter into the oven immediately. And, while single-acting baking powder is ultimately as effective as a leavener, twice as much of it must be used. Double-acting has become the standard for most common recipes and in terms of availability.

Because products such as chocolate, honey, and corn syrup are not strong enough to be the only source of acid, some recipes with these ingredients call for both baking soda and baking powder, in a ratio of about ½ teaspoon of each per two cups of flour. The soda neutralizes the acid ingredients, while the baking powder does most of the leavening.

Although baking powder has some shelf life when stored in a cool, dark place, it is still perishable. Check the date, and test the product too: Combine 1 teaspoon of baking powder with ½ cup of hot water. It should bubble vigorously; if it doesn't, replace it. 

SUBSTITUTIONS

1 TSP. BAKING POWDER USE 1/2 TSP. BAKING SODA PLUS 1/2 TSP. CREAM OF TARTAR
 BAKING SODA USE 1/2 TSP. BAKING POWDER PLUS 1/2 TSP. BUTTERMILK
 OR 1/4 TSP. CITRUS JUICE OR 1/4 TSP. MOLASSES
 TO REPLACE 1 TSP. BAKING POWDER
 1/2 TSP. BAKING SODA PLUS 1/2 TSP. PHOSPHATE BAKING POWDER
 CAN BE USED TO REPLACE 1 TSP. BAKING POWDER

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bakers' substitutions

For the best results, always use the exact ingredients listed in a recipe. But if you have to substitute, try the following suggestions.

If you don't have:	Use:
1 cup cake flour	1 cup minus 2 tablespoons all-purpose flour
1 cup firmly packed brown sugar	1 cup granulated sugar mixed with 2 tablespoons molasses
1 teaspoon baking powder	$\frac{1}{4}$ teaspoon baking soda plus $\frac{1}{2}$ teaspoon cream of tartar
1 cup whole milk	1 cup skim milk plus 2 tablespoons melted butter
1 cup buttermilk	1 tablespoon lemon juice or vinegar plus milk to equal 1 cup (Stir; let mixture stand 5 minutes.)
1 cup sour cream	1 cup plain yogurt
1 cup honey	$1\frac{1}{4}$ cups granulated sugar plus $\frac{1}{4}$ cup water
1 cup molasses	1 cup dark corn syrup or honey
$\frac{1}{2}$ cup corn syrup	$\frac{1}{2}$ cup granulated sugar plus 2 tablespoons liquid
$\frac{1}{2}$ cup raisins	$\frac{1}{2}$ cup currants, dried cranberries, chopped dates or chopped prunes
1 ounce (1 square) unsweetened chocolate	3 tablespoons unsweetened cocoa plus 1 tablespoon shortening
1 ounce (1 square) semisweet chocolate	1 ounce unsweetened chocolate plus 1 tablespoon sugar
1 cup semisweet chocolate chips	6 ounces semisweet baking chocolate, chopped
1 teaspoon fresh grated lemon peel	$\frac{1}{2}$ teaspoon dried lemon peel
1 teaspoon pumpkin pie spice	Combine $\frac{1}{2}$ teaspoon ground cinnamon, $\frac{1}{4}$ teaspoon ground ginger, $\frac{1}{8}$ teaspoon ground allspice and $\frac{1}{8}$ teaspoon ground nutmeg