PREPARATION

Ingredient Substitutions no. 9.329

by P. Kendall [1] *(4/08)*

How many times have you been ready to cook and found you were out of a certain ingredient? Sometimes it is inconvenient to run out and purchase the necessary ingredient — it's easier to use a similar product as a replacement.

There are, however, several factors to consider when substituting ingredients. Take into account differences in flavor, moisture, texture and weight.

Substitutions with an acid factor, such as molasses, need to be neutralized to avoid changes in the flavor and texture of the product. Differences in sweetening and thickening power need consideration in sugar and flour substitutions. To help avoid disappointments when substituting ingredients, understand the physical and chemical properties of all ingredients. Measure accurately.

Table 1 gives substitutes that may be used to get a finished product similar to the original. The following abbreviations are used:

tsp = teaspoon
Tbsp = tablespoon
oz = ounce
lb = pound

Quick Facts...

It is sometimes more convenient to substitute an ingredient than it is to go out and purchase the necessary ingredient.

When substituting ingredients, take into account the differences in taste, moisture content, texture and weight.

When substituting for sugar and flour, consider the differences in sweetening and thickening power.

Understand the physical and chemical properties of all ingredients.

Measuring accurately will help avoid disappointment.

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Table 1: Ingredient equivalents.

Ingredient	Amount	Substitutions
Allspice	1 tsp	1/2 tsp cinnamon plus 1/2 tsp ground cloves.
Apple pie spice	1 tsp	1/2 tsp cinnamon, 1/4 tsp nutmeg, and 1/8 tsp cardamom.
Arrowroot, as thickener	1 Tbsp	2 Tbsp all-purpose flour.
		1 Tbsp cornstarch.
Baking powder, double acting	1 tsp	1/4 tsp baking soda, 1/2 tsp cream of tartar and 1/4 tsp cornstarch;
		1/4 tsp baking soda plus 5/8 tsp cream of tartar;
		1/4 tsp baking soda plus 1/2 cup buttermilk, sour milk or yogurt (decrease liquid in recipe by 1/2 cup);
		1/4 tsp baking soda, 1/2 Tbsp vinegar or lemon juice plus sweet milk to make 1/2 cup (decrease liquid in recipe by 1/2 cup);
		1/4 tsp baking soda plus 1/4 cup molasses (decrease liquid in recipe by 1-2 Tbsp);
		1 1/2 tsp phosphate or tartrate baking powder.
Bay leaf, crushed	1 tsp	1 whole bay leaf.
Brandy	1/4 cup	1 tsp brandy extract plus enough water or liquid called for in recipe to make 1/4 cup.
Bread crumbs		
dry	1/4-1/3 cup	1 slice bread;
		1/4 cup cracker crumbs;
		2/3 cup rolled oats.
soft	1/2-3/4 cup	1 slice bread.
Broth, beef or chicken	1 cup	1 bouillon cube, 1 tsp (1 envelope) powdered broth base or 1 tsp instant granules dissolved in 1 cup water.
Butter	1 cup	1 cup margarine;
		7/8 to 1 cup hydrogenated shortening plus 1/2 tsp salt;
		7/8 cup lard plus 1/2 tsp salt;
		7/8 cup oil plus 1/2 tsp salt.
Catsup	1 cup	1 cup tomato sauce plus 1/2 cup sugar and 2 Tbsp vinegar (for use in cooking).
Chili Sauce	1 cup	1 cup tomato sauce, 1/4 cup brown sugar, 2 Tbsp vinegar, 1/4 tsp cinnamon, and dash of ground cloves and allspice.
Chives, finely chopped	1 Tbsp	1 Tbsp green onion tops, finely chopped.
Chocolate, unsweetened	1 oz	3 Tbsp cocoa plus 1 Tbsp butter or fat;
		3 Tbsp carob powder plus 2 Tbsp water.
semisweet	1-2/3 oz	1 oz unsweetened chocolate plus 4 tsp sugar.
Chocolate chips, semisweet, melted	6 oz pkg (2/3 cup)	2 squares (2 oz) unsweetened chocolate, plus 2 Tbsp shortening and 1/2 cup sugar.
Coconut, grated, dry	1 Tbsp	1 1/2 tbsp fresh coconut, grated.
Coconut milk	1 cup	1 cup milk.
Coconut cream	1 cup	1 cup cream.
Cornstarch	1 Tbsp	2 Tbsp all-purpose flour;
		2 Tbsp granular tapioca;
		1 Tbsp arrowroot.
Corn syrup	1 cup	1 cup granulated sugar plus 1/4 cup water or other liquid called for in recipe;
		1 cup honey.
Cracker crumbs	3/4 cup	1 cup dry bread crumbs.
Cream:		
half & half (10-12% fat)	1 cup	1 1/2 Tbsp butter plus 7/8 cup milk;
		1/2 cup coffee cream plus 1/2 cup milk;
		1 cup evaporated milk, undiluted.
coffee (20% fat)	1 cup	3 Tbsp butter plus 7/8 cup milk.
heavy (36-40% fat)	1 cup	1/3 cup butter plus 3/4 cup milk (for baking only, will not whip).
sour	1 cup	7/8 cup buttermilk or sour milk;
		1 cup yogurt;
		1 1/8 cup powdered nonfat dry milk, 1/2 cup warm water and 1 Tbsp vinegar (mixture will thicken in refrigerator in a few hours);
		1 cup evaporated milk plus 1 Tbsp vinegar (allow to stand 5 minutes before using);
		1/3 cup buttermilk, 1 Tbsp lemon juice, and 1 cup smooth cottage cheese blended together;
		7/8 cup milk, 1 Tbsp lemon juice, and 2 Tbsp butter or margarine.
whipped cream	2 cups	1 cup chilled evaporated milk plus 1/2 tsp lemon juice, whipped until stiff.
Cream of tartar	1/2 tsp	1 1/2 tsp lemon juice or vinegar.
Dill, fresh	1 head	1 tsp dill seed.
Eggs whole, large	1 egg (3 1/3 Tbsp)	2 1/2 Tbsp dried, sifted eggs plus 2 1/2 Tbsp water;
		3 1/3 Tbsp frozen egg yolks, thawed;
		1/2 tsp baking powder, 1 Tbsp vinegar and 1 Tbsp liquid (in baking);
		1 egg in every 3 can be replaced with 1 Tbsp cornstarch in baking;
		Soften 1 Tbsp unflavored gelatin in 3 Tbsp cold water, add 3 tsp boiling water, cool and beat until frothy, add to recipe (reduce other liquid by 2 Tbsp);
		1/4 cup commercial egg substitute.
whites	1 egg white (2 Tbsp)	2 tsp dried egg white plus 2 Tbsp water;
		2 Tbsp frozen egg whites, thawed.
yolks	1 egg yolk (1 1/3 Tbsp)	2 Tbsp dried egg yolks plus 2 tsp water;
		4 tsp frozen egg yolks, thawed.

Ingredient	Amount	Substitutions
Flour, pastry	1 cup	7/8 cup all-purpose or bread flour.
cake	1 cup	7/8 cup all-purpose flour (1 cup less 2 Tbsp).
white, all-purpose for thickening	1 Tbsp	1/2 Tbsp cornstarch, potato starch, rice starch or arrowroot;
		1 Tbsp quick-cooking tapioca;
		1 Tbsp waxy rice or corn flour;
		2 Tbsp granular cereal;
		2 Tbsp browned flour;
		1 1/2 Tbsp whole wheat flour.
white, all-purpose for baking	1 cup	1 1/2 cups bread crumbs;
		1 1/8 cups cake flour (1 cup plus 2 Tbsp);
		7/8 to 1 cup corn meal;
Note: Specialty flours added to yeast bread recipes will result in a reduced volume and heavier product.		1/2 cup cornstarch plus 1/2 cup rye, potato or rice flour (sift together 6 times, use with 2 tsp baking powder per cup in quick breads as wheat flour allergy substitute);
		13/16 cup gluten flour (1 cup less 3 Tbsp);
		5/8 cup potato flour;
		7/8 cup rice flour;
		1 1/3 cups rolled oats;
		1 1/4 cups rye flour;
		1/8 cup soy, cottonseed, peanut or carob flour plus 7/8 cup all-purpose flour;
		1/3 cup wheat germ plus 2/3 cup all-purpose flour;
		1 cup minus 1 Tbsp whole wheat flour.
white, all-purpose, self-rising	1 cup	1 cup all-purpose flour plus 1 1/4 tsp baking powder and 1/4 tsp salt.
Garlic	1 clove, small	1/8 tsp garlic powder or instant minced garlic;
		1/2-1 tsp garlic salt (reduce amount salt called for in recipe).
Gelatin, flavored	3-oz package	1 Tbsp plain gelatin plus 2 cups fruit juice.
Ginger, candied or raw	1 Tbsp	1/8 tsp powdered ginger.
Herbs, fresh	1 Tbsp	1 tsp dried herbs.
Honey	1 cup	1 1/4 cup sugar plus 1/4 cup liquid (use liquid called for in recipe).
Horseradish, grated fresh	1 Tbsp	2 Tbsp bottled horseradish.
Italian seasoning	1 tsp	1/4 tsp basil, 2/3 tsp dried parsley, and pinch oregano.
Lemon, whole	1 lemon	1 to 3 Tbsp juice, plus 2 to 2 1/2 tsp grated rind.
juice	1 tsp	1/2 tsp vinegar.
grated rind or peel	1 tsp	1/2 tsp lemon extract.
Lemon grass	1 Tbsp	1 Tbsp lemon peel.
Maple sugar, grated	1 Tbsp	1 Tbsp white sugar.
	1/2 cup	1 cup maple syrup (decrease liquid by 1/2 cup).
Maple syrup	about 2 cups	Combine 2 cups sugar and 1 cup water, bring to clear boil; take off heat; add 1/2 tsp maple flavoring.
Marshmallows, miniature	1 cup	10 large marshmallows.
Mayonnaise (for use in salads and salad dressings)	1 cup	1 cup yogurt, sour cream or cottage cheese pureed in blender (use for all or part of mayonnaise called for in recipe).
Milk, buttermilk or sour	1 cup	1 cup minus 1 Tbsp sweet milk plus 1 Tbsp vinegar or lemon juice; let stand 5 minutes;
		1 cup sweet milk plus 1 1/4-1 3/4 tsp cream of tartar;
		1 cup yogurt (plain).
skim	1 cup	1/3 cup instant nonfat dry milk plus 7/8 cup water.
whole	1 cup	1/2 cup evaporated milk plus 1/2 cup water;
		1 cup skim, 2% or reconstituted dry milk;
		1 cup soy or almond milk;
		1 cup fruit juice or potato water in baking;
		1 cup water plus 1 1/2 tsp butter in baking;
		1 cup buttermilk plus 1/2 tsp baking soda (decrease baking powder by 2 tsp).
sweetened condensed	1 cup	Combine 1 cup plus 2 Tbsp dry milk with 1/2 cup warm water and 3/4 cup sugar, mix well; may set pan in bowl of hot water to dissolve sugar.
Mint leaves, fresh chopped	1/4 cup	1 Tbsp dried mint leaves.
Molasses	1 cup	3/4 cup sugar, increase liquid by 5 Tbsp, decrease baking soda by 1/2 tsp, add 2 tsp baking powder;
		3/4 cup sugar plus 1 1/4 tsp cream of tartar, increase liquid in recipe by 5 Tbsp.
Mushrooms, fresh	1 lb	3 oz dried plus 1 1/2 cups water;
		1 8-oz can, drained weight.
Mustard, dry	1 tsp	1 Tbsp prepared mustard;
		1/2 tsp mustard seeds.
Nuts	1 cup	1 cup rolled oats, browned (in baked products).
Oil (for sauteing)	1/4 cup	1/4 cup melted margarine, butter, bacon drippings, shortening or lard.
Onion	1 small	1/4 cup chopped, fresh onion;
		1 1/3 tsp onion salt;
		1 to 2 Tbsp instant minced onion;
		1 tsp onion powder.
Onion powder	1 tsp	1/4 cup fresh onion, chopped.
Orange	1 medium	6 to 8 Tbsp juice; 3/4 cup diced; 2 to 3 Tbsp grated rind.
Orange peel, dried	1 Tbsp	2 or 3 Tbsp grated fresh orange peel (peel of medium orange).

Ingredient	Amount	Substitutions
Parsley, fresh	1 Tbsp	1 tsp parsley flakes.
Pepper, white	1 tsp	1 tsp black pepper.
Peppers, green or red bell, dried	1 Tbsp	3 Tbsp fresh bell pepper, dried chopped.
Pimento	2 Tbsp, chopped	3 Tbsp fresh red bell pepper; 1 Tbsp dried red pepper, rehydrated.
Pumpkin pie spice	1 tsp	1/2 tsp cinnamon, 1/4 tsp ginger, 1/8 tsp allspice and 1/8 tsp nutmeg.
Rennet	1 tablet	1 Tbsp liquid rennet.
Rice	1 cup cooked	1 cup converted, regular brown or wild rice, cooked; 1 cup bulgur or pearl barley, cooked.
Rum	1/4 cup	1 Tbsp rum extract plus enough liquid to make 1/4 cup.
Shortening, melted	1 cup	1 cup cooking oil.
solid	1 cup	1 cup minus 2 Tbsp lard; 1 cup butter or margarine (decrease salt in recipe by 1/2 tsp).
Sour cream, commercial	1 cup	(see cream, sour)
Sugar, brown	1 cup	1 cup granulated sugar; 1 cup granulated sugar plus 1/4 cup unsulphured molasses; 1/2 cup liquid brown sugar.
confectioners or powdered	1 cup	3/4 cup granulated sugar (for uses other than baking).
granulated	1 cup	1 cup firmly packed brown sugar; 1 1/3 cup confectioners sugar (for uses other than baking); 1 cup corn syrup, reduce other liquid by 1/4 cup (never replace more than 1/2 of sugar called for in recipe with corn syrup); 13/16 cup honey (1 cup less 3 Tbsp); reduce liquid in recipe by 3 Tbsp for every cup of honey added, add a pinch of baking soda to neutralize acidity; 3/4 to 1 cup maple syrup minus 3 Tbsp other liquid; 1 cup molasses or sorghum plus 1/2 tsp baking soda, omit or decrease baking powder by 1 tsp, reduce other liquid by 6 Tbsp; 1 cup raw sugar.
noncaloric solution	1/8 tsp 2 Tbsp	1 tsp granulated sugar. 1 cup granulated sugar.
noncaloric grains	1/4 tsp 1/4 cup	1 tsp granulated sugar. 1 cup granulated sugar.
Tapioca, quick-cooking	1 1/2-2 Tbsp	4 Tbsp pearl tapioca, soaked.
quick-cooking for thickening	1 Tbsp	1 Tbsp flour.
Tomatoes, fresh	2 cups, chopped	1 16-oz can, drained.
packed	1 cup	1/2 cup tomato sauce plus 1/2 cup water.
canned	1 cup	1 1/3 cups diced tomatoes simmered 10 minutes.
Tomato juice	1 cup	1/2 cup tomato sauce plus 1/2 cup water.
Tomato sauce	2 cups	3/4 cup tomato paste plus 1 cup water.
Tomato soup	1 10 3/4 oz. can	1 cup tomato sauce plus 1/4 cup water.
Vanilla bean	1/2 bean	1 Tbsp vanilla extract.
Worcestershire sauce	1 tsp	1 tsp bottled steak sauce.
Yeast, active dry (1/4 oz)	1 package	2 1/2 tsp dry yeast or 1 compressed yeast cake.
Yogurt	1 cup	1 cup buttermilk; 1 cup cottage cheese, blended until smooth; 1 cup sour cream.

* For conversion to metrics, use the following equivalents:

1 tsp = 5 milliliters	1 lb = .45 kilograms
1 Tbsp = 15 milliliters	1 cup = .24 liters
1 oz = 28 grams	

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