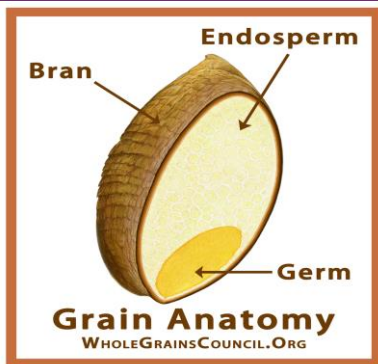


# + Whole Grain Baking 101

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**Whole grain (WG) flours or meal** may be milled from many different kinds of grains and must contain all the grain's parts: bran, endosperm and germ. The grain may also be sprouted first, then milled. After milling, the product may be fine, coarse, rolled, cracked, flaked, stone ground or graham.

**Whole grain-rich:** 50% (1/2) or more of the grain ingredients are whole grain. "Rule of Three" (on food labels): The first ingredient (or second after water) must be whole grain; the next two grain ingredients (if any) may be whole grains, enriched, bran, or germ. In recipes, half (or more) of grain ingredients should be whole.

**EXTRA!** Today's grains may be called ancient (thousands of years old...corn, sorghum or ancient wheats (such as einkorn, emmer, spelt), *heirloom or heritage* (pre-1960/70s), and *modern* (grown since 1970s). Any of these may be whole grain, or not.

The **ingredient label** tells if an ingredient is whole grain or enriched, bran or germ (partial grain) or de-branned or de-germinated.

Whole grain may or may not be organically grown. Some grains are GMO and some are not--wheat flour is always "non-GMO," corn may not be.

**Learn more:** [WheatFoods.org](http://WheatFoods.org); [wholegrainscouncil.org](http://wholegrainscouncil.org)  
Organic and GMO defined: [foodinsight.org](http://foodinsight.org)  
See "How Flour is Milled" and view "Flour Food Safety" videos, [namamillers.org](http://namamillers.org) (Click Education and News Room)



**Flour is NOT just Flour.** Bakers rely on a grain's protein and gluten qualities for volume and structure. **Gluten** is made of two nutritious proteins found in some grains—*glutenin* and *gliadin*. When gluten containing flour mixes with water, a stretchy structure develops that holds leavening gas (CO<sub>2</sub>). The mixture expands and when baked, becomes firm. **Gluten-free structure** comes from Xanthan or guar gums, and sometimes eggs. Additional leavening is often added.

## Grains w/Gluten

Bulgur wheat

Rye, flour, groats, sprouted

Spelt, berries, flour

Triticale, berries, flour

Wheat, white or red\*

## Gluten-Free (GF)

Amaranth flour

Brown rice flour

Corn, whole grain flour, meal, grits

Oat, rolled, quick, flour, instant, steel-cut

Sorghum flour

\*Whole wheat flour is milled from *hard* (all-purpose and bread flours) or *soft* (biscuits, pastries, cookies, cake flours) wheat and may have red or white bran. It may be sold as whole berries, cracked, flaked or rolled, groats or *sprouted* grain flour. (Flour 101, [WheatFoods.org](http://WheatFoods.org))

## Baking Whole Grain Tips

**+Bake with a well-tested (standardized) recipe.** Most good recipes may be baked as a whole-grain product.

**+Start with half whole grain.** Identify the amount of enriched all-purpose or bread flour in the recipe. Divide the amount in half. Substitute a whole wheat flour for half the flour. (EX: For 2 c. all-purpose or bread flour substitute 1 c. whole wheat flour and 1 c. all-purpose or bread flour)

**+Measure or scale flour accurately.** 1 cup flour = 4.25 oz /120g "Fluff, spoon, level" or use a scale. View How to Measure Flour, [http://homebaking.org/glossary/old\\_glossary.html#F](http://homebaking.org/glossary/old_glossary.html#F)

**+For a lighter appearance and flavor use white whole wheat flour** (read package label). Standard whole wheat flour is produced from red wheat and has a darker bran color.

**+For yeast breads,** use *hard* whole wheat flour (red or white)

**+Find the whole grain version.** For de-germinated cornmeal, sub one for one whole grain cornmeal.

**+Want multi-grain?** Create your own blend to sub for ¼ (25% and no more) of the enriched or whole wheat flour.

**+More liquid needed?** Not if veggies, fruits or buttermilk are included. If batter/dough seems dry, add 1-2 T. liquid.

**+Bake together, eat better.** When children help, they're much more likely to try and adopt whole grain foods.

**+Find lessons, recipes and more at [HomeBaking.org](http://HomeBaking.org)**

# Love to Bake Whole Grain Rich

## Whole Wheat Dinner Rolls



RedStarYeast.com

### Ingredients

Makes 15, 1.75 oz. rolls

1 cup (8 fl oz) whole milk, scald and cool\*  
1 pkg (7g) Platinum™ or quick-rise yeast  
½ cup (2 oz/115g/1 stick) unsalted butter  
1/3 cup (2.5 oz/70g) honey or sugar  
2 large (4 oz/113 ml) eggs  
½ teaspoon salt

3 ½ cups (14 oz/400g) whole wheat flour

**Topping Option:** 2 T. melted unsalted butter mixed with 2 tsp. honey  
Pinch coarse Kosher salt

**Directions:** **STEP 1. Make the dough.**

\*Microwave milk until steaming; pour into mixing bowl and **cool to 110°F.**

Whisk together with yeast; cover for 5 minutes. On low speed or by hand, mix in butter (cut in 4 pieces), honey or sugar, eggs and salt. If butter's lumpy—don't worry☺ Continue on low-speed to gradually add flour, ½ cup at a time. Once flour is all in bowl, knead on medium high 6-7 minutes. Dough will pull from sides but gently bounce back. If too sticky, add 1-2 Tbsp. flour and mix; if too dry, 1-2 Tbsp water. Knead into smooth ball, lightly grease top and cover loosely with plastic wrap. Place in 70° (warm) place until doubled, ~1 ½ hours. Deflate dough. (**Two-day plan:** Tightly cover and refrigerate dough 1-2 days-deflate again. Bring to room temperature, then shape.)

**STEP 2: Shape the rolls.** Grease a 9 X 13-in baking dish. Flatten the dough into 8 X 12-in rectangle; use pizza wheel to cut 2 X 4 cuts (see photo). Arrange in pan, loosely cover with plastic wrap. Proof in warm (100°F) place to double, ~1 hour.

**STEP 3: Bake the rolls.** Preheat oven to 375°F. Bake rolls 20-25 minutes until golden and 190°F. at center. Brush with optional butter/honey mix and small sprinkle of coarse salt. Serve warm.

## Carrot Apple Muffins



HodgsonMill.com

Makes 12, (2.25 oz) muffins

### Ingredients

1 cup (4 oz/115g) whole white wheat flour  
½ cup (2 oz/58g) multi-grain hot cereal\*  
½ cup (2.1 oz/60g) all-purpose flour  
½ cup (3.8 oz/105g) sugar  
1 Tablespoon (0.5 oz/13g) baking powder  
½ teaspoon (2g) baking soda  
½ teaspoon (3g) salt  
1 teaspoon ground cinnamon (optional)  
1 cup (3.7 oz/105g) shredded carrots  
1 cup (4.4 oz/125g) apples, peeled, chopped (no need to peel if thin-skinned)  
½ cup (4 fl oz) low fat milk  
¼ cup (1.9 oz/55g) vegetable oil  
2 large eggs (4 oz/113ml)  
1 teaspoon vanilla  
½ cup (2 oz/57g) chopped pecans (opt.)

\*Hodgson Mill Multi-grain cereal OR make ½ c. oat/flax/corn meal (multi-grain) mixture

### Directions:

1. Preheat oven 400°F. Paper line or grease 2 ½ -inch medium muffin cups.
2. Wash and shred carrots and apples.
3. In a medium mixing bowl measure flours, hot cereal, sugar, baking powder, baking soda, salt and cinnamon (if desired). Whisk to blend thoroughly.
4. In small bowl, measure and whisk together the milk, oil, eggs and vanilla.
5. With a spoon mix the liquid mixture, shredded carrots and apples and nuts into the dry mixture just until blended.
6. Use a 1/3 cup scoop to portion batter evenly into the 12 paper-lined or greased muffin cups. Bake 20 to 22 minutes until golden brown and 200°F at center.
7. Cool on wire rack. Serve warm or they're even better the next day!



**Ingredients** One 15 X 10-in crust  
2 cup (8.5 oz) whole wheat flour  
1 pkg (1/4 oz/7g) quick yeast  
¼ teaspoon salt  
1 cup (8 oz) warm water (115-120 °F)  
1 Tablespoon sugar (optional)  
2 Tbsp. vegetable shortening or oil

### Directions:

1. Mix flour, yeast, salt, and sugar.
2. Measure water and oil and stir into flour mixture. Mix/knead about 3-5 minutes until smooth and elastic.
3. Lightly cover dough w/food wrap and let rest 15 minutes. Prepare 4 cups of toppings of choice.
4. Preheat oven to 425° F. oven. Press dough into greased 15 X 10-in sheet pan. Allow dough to rest briefly and press again as needed.
5. Par-bake crust in pre-heated oven, about 5-6 minutes.

**Topping:** Seasoned 8 oz sauce, 4 c. toppings, 8 oz. grated cheeses.  
6. Bake at 425° F. oven until bubbly.  
Serves 8 (1 oz. whole grain-rich crust)

### Whole Grain Gluten-Free Baking

This mix may replace gluten-containing flours in **some** standard recipes. Slightly more leavening may be needed.

For structure, add **xanthan or guar gum** based on package directions.

**Basic guide:** For each cup GF flour mix:  
Quick breads: ¼ to ½ tsp. xanthan gum  
Yeast breads: 1 to 2 tsp xanthan gum/cup

### Whole Grain Gluten-Free Mix

(Makes 9 c/43.25 oz) Blend well with whisk  
6 cups (28.5 oz) brown rice flour  
2 cups (10.75 oz) potato starch  
1 cup (4 oz) tapioca starch or flour

**Source:** *Gluten-free Baking Guide*

*Whole Grain Baking Guide*

KingArthurFlour.com

**Test-kitchen GF Recipes:**

Hodgsonmill.com

KingArthurFlour.com

Panhandlemilling.com

Redstaryeast.com

A Bakers Dozen Labs, HomeBaking.org