

## THE AMERICA'S TEST KITCHEN GLUTEN-FREE FLOUR BLEND

MAKES 42 OUNCES (ABOUT 9½ CUPS)

It is important to bring the mix to room temperature before using it in a recipe. Be sure to use potato starch, not potato flour. Tapioca starch is also sold as tapioca flour; they are interchangeable. See notes at right about shopping for rice flours and substitutes for potato starch and nonfat dry milk powder.

- 24 ounces (4½ cups plus ½ cup) white rice flour**
- 7½ ounces (1⅔ cups) brown rice flour**
- 7 ounces (1⅓ cups) potato starch**
- 3 ounces (¾ cup) tapioca starch**
- ¾ ounce (3 tablespoons) nonfat milk powder**

Whisk all ingredients together in large bowl until well combined. Transfer to airtight container and refrigerate for up to 3 months.

## BUYING RICE FLOURS

We used rice flours made by Bob's Red Mill during our testing. We found some (including those made by Arrowhead Mills) to be coarser, which negatively impacts texture. We strongly recommend Bob's Red Mill rice flours. See page 19 for more detail on our rice flour testing.

## POTATO STARCH

You can substitute 7 ounces of sweet rice flour or arrowroot starch (also known as arrowroot flour or powder) for the potato starch. We had better results using sweet rice flour in quick breads, cakes, and cookies and using arrowroot starch in yeast breads.

## USING MILK POWDER

If dairy is part of your diet, we strongly recommend adding the nonfat milk powder. If you prefer, use an equal amount of soy milk powder. You can omit the milk powder altogether, however baked goods won't brown quite as well and they will taste a bit less rich.

structure; and potato starch was in the mix for tenderness and some binding power. But we were still having some structural problems in baked goods. We suspected our flour blend needed a protein boost. (All-purpose flour has a protein content of 10 to 12 percent and rice flours contain about half that.)

## TESTING "SECRET" INGREDIENTS

We considered three ingredients that had potential to boost the protein level: calcium carbonate, powdered egg whites, and nonfat milk powder.

We'd seen calcium carbonate listed as an ingredient in one commercial flour blend, and calcium in various forms is also added to many gluten-free breads. In the everyday world, calcium carbonate is sold at drugstores as a calcium supplement and an antacid (it's the active ingredient in Tums). According to our science editor, calcium carbonate could unlock the proteins in rice flour and thus contribute a more tender crumb to baked goods. We located some calcium carbonate tablets, crushed them, and added

them to our blend. In several applications, tasters did in fact notice a tenderizing effect, but ultimately we decided the hassle factor outweighed the benefit.

Egg whites are mostly water with a decent protein content, but the powdered version is nearly all protein. As we hoped, powdered egg whites added a big boost in terms of structure, but no one in the test kitchen liked the meringuelike flavor they imparted.

The nonfat milk powder was the only "secret" ingredient to make the cut. It helped with structure and tenderness, added richness and buttery flavor, and contributed to browning. (Milk powder contains both sugars and proteins, the two building blocks necessary for the Maillard reaction, which creates browning and additional flavors.) The milk powder also seemed to temper the starchiness in baked goods.

After two months of testing we finally had a blend, which consisted of roughly 57 percent white rice flour, 18 percent brown rice flour, 17 percent potato starch, 7 percent tapioca starch, and 2 percent nonfat milk powder.