

Alternatives to Wheat Flour

Flour can be made from starchy vegetables (carrots, parsnips, turnips, squash), legumes, nuts and roots.

WHAT HAPPENS TO WHEAT FLOUR WHEN ITS' REFINED?

- 93% of the fiber is removed
- 50% of the essential fatty acids are lost
- 22 minerals and vitamins are reduced by 20%
- most of the vitamin E is removed
- it is bleached which strips the remaining nutrients



HELPFUL HINTS...

- the best flour comes from stone-ground mills that do not overheat the flours, thereby retaining the nutrients
- flours should be bought from a store that has a high turnover and refrigerates their flour
- to store, remove flour from its original package and refrigerate in a glass, airtight container
- purchase small amounts at a time and use it quickly, since flour does have limited shelf life 1 - 2 months

Non-Wheat Grains: amaranth, buckwheat, quinoa, bean flours (soy, chickpeas), *corn, rye, oats, barley, millet, rice, teff, kamut, spelt*
Italics = related to wheat

<i>Flour</i>	<i>Comments</i>	<i>Nutritional Qualities</i>	<i>Flour equivalent to 1 cup white/whole wheat flour</i>
*Amaranth flour	-strong, distinctive flavour -best combined with other flours that contain gluten or have cohesion (arrowroot, tapioca, bean) -add to baked goods, pancakes/waffle recipes	- gluten-free	1 cup
*Arrowroot starch	-superior replacement for corn starch; add 1 tbsp. to equal parts of cold water before adding to dishes as a thickener -combines well with non-gluten flours to give them cohesion	- gluten-free	½ cup
Barley flour	-makes a sticky bread has a sweet, malty flavour	- low in gluten	1 cup
*Bean flour		- gluten-free	¾ cup
*Brown rice flour	-yields a sweeter, smoother bread -use with other flours, use 20% of brown rice flour in recipe	- gluten-free	

Buckwheat flour	-makes a dark, heavy bread -use with rice flour	- kernels contain an outer hull which is high in the essential amino acid, lysine; ground into the flour, the darker the more nutritious	7/8 cup buckwheat (1 cup minus 2 tbsp.)
Chestnut flour	-used to sweeten baked goods -adds lightness and creaminess -use alone or with other flours		
*Chickpea flour	-used in Eastern Indian culture to make flatbread called papdam, Italy for paelle (chickpea wafers) and in Southern France for socca (chickpea wafers) -too dense and rich to use on its own	- gluten-free	7/8 cup (1 cup minus 2 tbsp.)
*Cornmeal	-makes a light bread -mix with equal parts cold water before adding as a thickener -best combined with small amounts of other flours	- stone ground is more nutritious	1 cup
*Cornstarch	- thickener	- gluten-free	¾ cup 1 cup corn flour
*Garbanzo flour	-good in sauces, pancakes -use alone or mix with other flours	- gluten-free	
Kamut flour	-light texture -rich, buttery flavour -use in baking	- excellent substitute for wheat sensitive people	1 cup
Kudzu starch	-noxious weed in Southern US - excellent substitute for arrowroot or tapioca starch ; it will thicken a sauce as it cools, whereas arrowroot becomes thinner		
*Millet flour	-always combine with other flours	- gluten-free	1 cup
Nuts/seeds	-use ground		½ cup
Oat Bran		- binds cholesterol	
Oat flour	-light texture -adds moisture to baked goods -best combined with corn or rice flours, use only 20% oat flour in recipe -contains a natural antioxidant, therefore retains its freshness longer than wheat		1 1/8 cup flour 1 1/3 cup rolled oats
*Potato flour/starch	-best combined with other flours - thickener	- gluten-free	5/8 cup flour ¾ cup starch
*Quinoa flour	-best combined with other flours	- gluten-free	
*Rice flour		- gluten-free	7/8 cup (1 cup minus 2 tbsp.)
Rye flour	-makes a sticky, dense bread -knead dough well	- low in gluten	1 ¼ cup
*Soy flour	-makes bread or baked goods more moist and smooth -best if small amounts are added to other flours; use only 20% soy flour in recipe, decrease temperature by 25 degrees	- gluten-free	¾ cup
Spelt flour		- excellent substitute for wheat sensitive people	1 cup

*Tapioca starch	-made from cassava root - excellent substitute for arrowroot or corn starch -thins if reheated -combines well with non-gluten flours to give them cohesion, thickener	- gluten-free	1 cup
*Teff	-used by Ethiopians to make a large flatbread -do not add yeast to breads because it has its own symbiotic yeast	- gluten-free	
Wheat Bran	-the whole wheat berry has 6 fibrous layers known as bran -indigestible, therefore adds bulk and fiber -add small amounts to baked goods		
Wheat flour	-variety of forms: durum, semolina, unbleached, bleached, whole wheat, pastry -stone ground is best -store in refrigerator because it has a short shelf life	- high in gluten	

*= gluten-free

Flour Combinations: equivalent to 1 cup of white or whole wheat flour

- ½ cup rye flour + 1/3 cup potato flour
- 1/3 cup rye flour + 5/8 cup rice flour
- 1/3 cup rye flour + 1/3 cup oat flour = 1/3 cup barley flour
- ½ cup potato flour + ½ cup rye/spelt flour
- 1/3 cup potato flour + 2/3 cup rye/spelt flour
- 1 cup soy flour + ¼ cup potato starch
- ½ cup soy flour + ½ cup potato starch
- 5/8 cup rice flour + 1/3 cup potato/rye/spelt flour
- ½ cup corn starch + ½ cup rye/rice/potato flour
- ½ cup arrowroot + ½ cup rye flour
- ½ cup arrowroot + ½ cup potato flour

Tips for substituting for wheat flour:

- Do not be concerned if batter appears thinner than wheat batters, this is common
- Add ½ tsp. baking powder per cup of substitute flour; add just before cooking because it loses its potency when mixed with liquid and allowed to sit
- Refrigerate dough ½ hour helps improve texture
- Don't bake anything thicker than 4 inches
- When baking, lower the temperature a little
- Baking time is usually longer, especially if egg or milk is eliminated from the recipe

For thickening, the following quantities equal 1 tbsp. of wheat flour:

- 1 tbsp. barley flour
- 1 tbsp. oatmeal flour
- *1 tbsp. arrowroot = 2 tbsp. wheat flour
- *1 tbsp. corn starch = 2 tbsp. wheat flour
- *½ tbsp. potato flour/starch = 2 tbsp. wheat flour
- *½ tbsp. rice flour = 2 tbsp. wheat flour
- *½ tbsp. tapioca flour = 2 tbsp. wheat flour