

Product development: disclaimer

No part of this
presentation is
intended to give legal
advice.

Sue Gray

King Arthur Flour

product development

Resources available : Search Vermont or state food incubator

[VT Food Venture Center | Center for an Agricultural Economy](#)

<https://hardwickagriculture.org/farmers-food.../shared-use-commercial-kitchen>

[New England Local Food Processors | Farm to Institution New England](#)

<https://www.farmtoinstitution.org/new-england-local-food-processors>

[Mad River Food Hub L3C | The Atlas | Vermont Farm to Plate](#)

www.vtfarmtoplate.com/organization/mad-river-food-hub-l3c

[Food Incubator & Commercial Kitchen Space ... - Food Fight Vermont](#)

<https://foodfightvt.com/food-incubator-commercial-kitchen-space-available>

[SCORE](#)

<https://www.score.org/>

<https://www.score.org/local-workshops-events>

Services provided by food incubators

- Business advising, writing a business plan
- Branding, marketing , logo design
- Formulation, sourcing, ingredient selection
- Packaging, materials and design, (affects shelf life)
- Information about Food regulations, food safety,
- shared kitchen or production space for rent, servesafe certification may be needed to use facility.
- Distribution leads and information

Know your customer: who are they, and where do they shop? How much will they pay?

No product will satisfy everyone. Does it need to be "Free From"?

(top 8 allergens . Eggs. (such as , cashews,) (such as bass , flounder) (such as , ,) . . .

Gluten free? **Paleo**? High protein, **Vegan**, lower sugar, alternative sugar or other **special diet**?

Money spent upfront to identify key attributes that appeal to consumers = saved effort and \$\$.

Design for quality

- While you may not be required to comply with all regulations, at a minimum, consumers will want to know the ingredients and possible allergens.
- Food safety should be a top concern and needs to be considered from the first steps of concept. Protect your company, its name, goodwill and image.
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CFR 101 .9

(j) The following foods are exempt from this section or are subject to special labeling requirements:

[Labeling & Nutrition > Guidance for Industry: Food Labeling Guide - FDA](#)

The Food and Drug Administration (FDA) is responsible for assuring that foods sold in the United States are

Function of ingredients:

It Has to Taste Good

Products may be changed, sometimes in surprisingly drastic ways, by

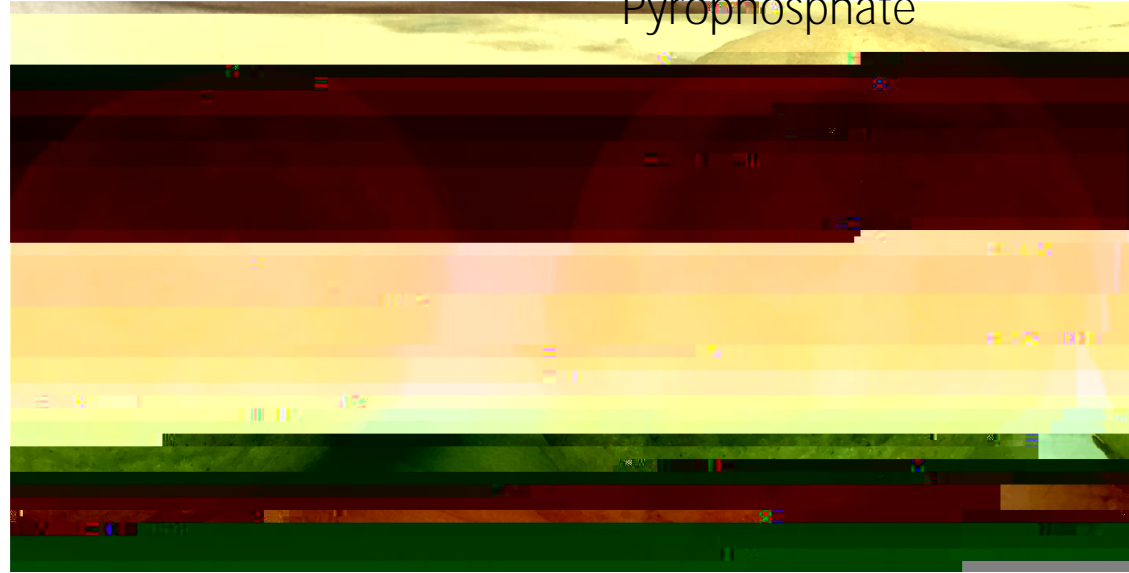
Chemical Leaveners

- Rates of CO₂ generation at different temperatures cause very different shapes and texture in products.
- Changes in pH due to small changes in the amount of baking soda can have large effects on the browning of products.
- Leaveners that appear the same on the ingredient statement or specification sheet may have different reaction rates due to granulation size, or coating
- Always test any new ingredient suppliers product

1 Recipe, Different Leaveners

Sodium Acid
Pyrophosphate

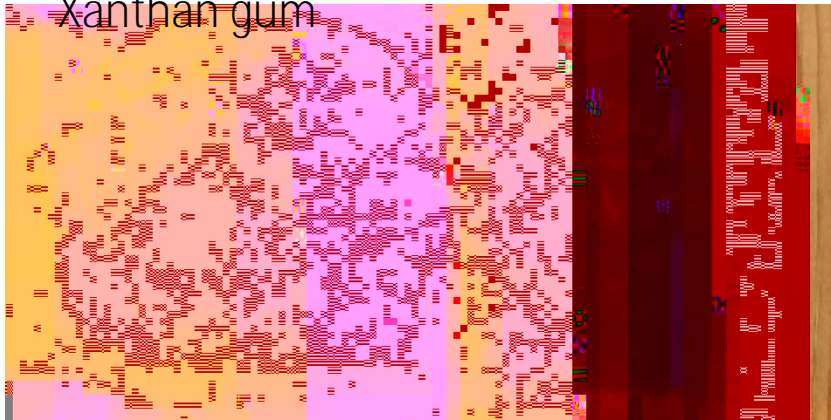
Calcium Monophosphate &
Calcium Acid
Pyrophosphate



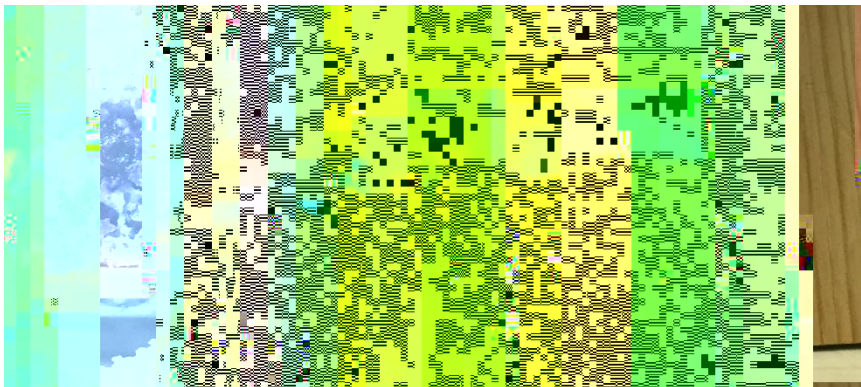
Different leaveners, have different co2 release curves, which cause the

The correct batter viscosity is needed to keep inclusions suspended.
Ingredients that affect viscosity include flour, sugar granulation, fast acting
leavening agents,
gums, pregel starches, HPMC, flax , chia or psyllium

Xanthan gum



Pre gel starch



No specific viscofier added

Cake was overbeaten, and included more viscofier than needed. causing it to raise in the oven, collapse upon cooling.



Viscofier thickens a batter or dough, may be a gum, hydrocolloid cold water swelling starch, or fiber

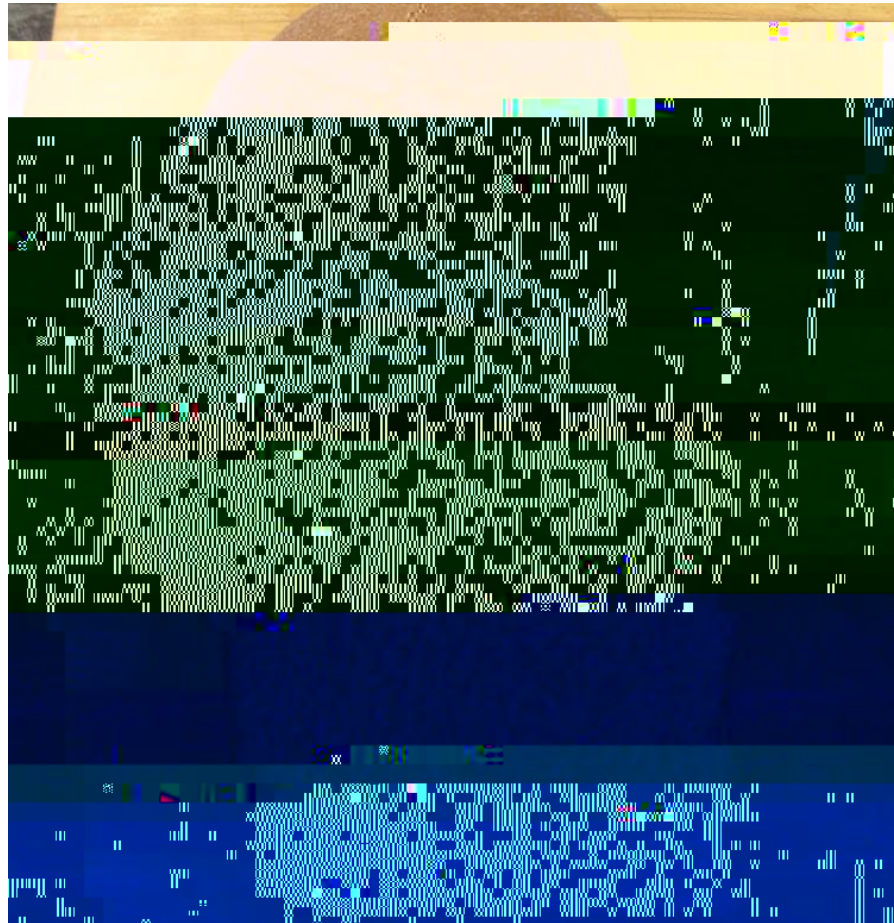
Flour—provides the backbone or structure (toughening) and drying to baked goods.

Flour, as are most of the ingredients you will work with, is a raw agricultural products that should not be eaten raw.

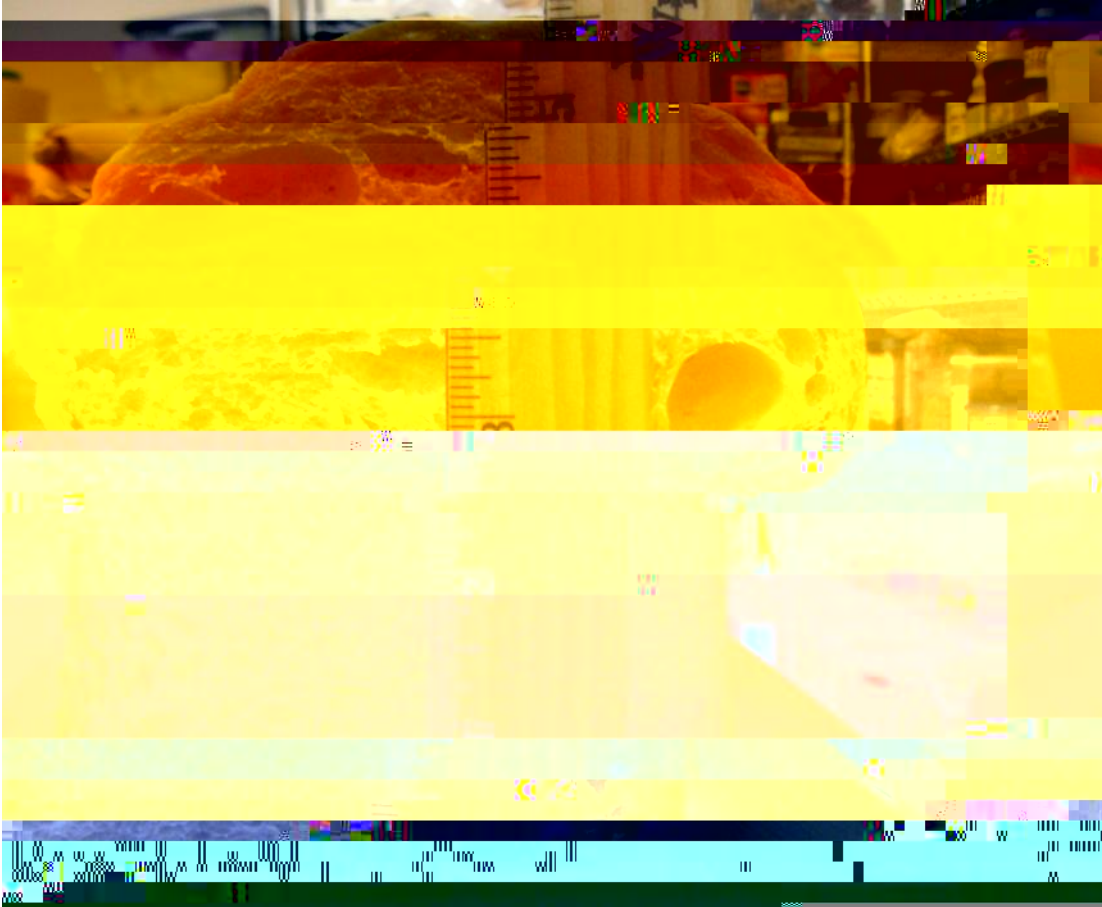
Work with a reliable supplier so minimal adjustments to formulas will be needed.

Protein and starch are the major components that contribute structure and absorb water. (proteins absorbs 1 to 2 times their weight in water, while starch absorbs $\frac{1}{4}$ to $\frac{1}{2}$ its weight—

whole wheat flour - amylase activity
Same formula, with and without sugar



Flour Quality, absorption, protein, ash content, and falling number



Open texture, slight compression on bottom



even texture, loaf shorter, stronger protein

Slick of flour from two mills, with similar ash contents, but big variability in color, due to milling and wheat varietal.



White whole wheat from 3 mills, different areas of the country, different granulation



EGGS

Provide structure in baked goods, especially cakes. Known as tougheners.

- Thickening and gelling in custards, sauces and pastry cream
- Emulsifiers (primarily in the yolk) keep fat and water from separating
- Aeration (stabilize foams) leavening action
- Flavor and Color
- Moisture (eggs are about 76 percent moisture)
- Slows staling-interferes with starch retrogradation
- Adds glossy brown shine to baked goods
- Sugar and starch slow coagulation of eggs

Milk products:

- Provide fine even crumb to baked goods (pan bread and brioche, vs. artisan bread)
- Increase crust softness
- Flavor and browning
- Delays staling
- Cream forms stable foams at 28% milkfat, milk proteins foam (froth on coffee drinks)
- Provide moisture
- Calcium in milk products aids in coagulation of eggs
- Dry milk absorbs water in doughs, increasing shelf life