



NORTH AMERICAN
MILLERS
ASSOCIATION

Flour Food Safety

Presented by
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- Over 40 million acres of wheat are grown in the United States.



- Flour is made from raw grain that is grown and harvested in nature and exposed to the elements.



Flour Facts

- Ground grain was one of civilization's first foods.
- In 2020, U.S. millers ground over 918 million bushels of wheat to make 42.5 billion pounds of flour.
- The average American consumes 130.7 pounds of flour / year.
- A bushel of wheat can produce 90 one-pound loaves of whole wheat bread or 210 servings of spaghetti.

- Wheat flour has a very strong food safety track record, however...
- E. coli and other naturally occurring pathogens present in nature and in fields, crops.



Flour is not ready-to-eat

- Traditional milling does not include a process to eliminate the presence of pathogens such as e coli and salmonella.
- Peer reviewed studies have reported pathogen prevalence in wheat as 0.1 to 3% at low MPN levels. (*Myoda et al., 2019*).



Consumer Perceptions

- Many Americans admit to sampling raw dough or batter.
- But most don't understand the risks.
- More Millennials and Gen Z than Boomers or Gen X engage in risky baking behaviors.
- Online interest in baking has skyrocketed, but not food safety.



44% believe flour is safe to eat before baking.



Common Misconceptions

- Growing misconception that microwaving makes flour safe to eat uncooked.
- But: microwave heating can be uneven, especially for low-moisture foods like flour.
- Not hot enough to kill all bacteria.

Fact: flour is a raw ingredient.

Note: Commercially sold products that contain “raw dough” should use flours that have been commercially treated to reduce pathogens.

INSIDER

REVIEWS



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How to make edible cookie dough that's safe to eat raw

By Taylor Mead Sep 8, 2021, 1:04 PM



Labeling

All You Need:

Whole Egg Recipe:
1 Cup Water 1/2 Cup Oil 3 Whole Eggs*

OR

Egg White Recipe:
1 1/4 Cups Water 1/2 Cup Oil 4 Egg Whites

SUBSTITUTION
Eggs: Use 1/4 cup of Greek yogurt
OR
Oil: Use 1/2 cup unsweetened applesauce

Baking Instructions

- 1 Set** oven to 350°F. Coat bottom of pan with no-stick cooking spray or shortening and a flour dusting. For Bundt® cake, coat entire pan. For cupcakes, use paper baking cups.
- 2 Beat** cake mix, water, oil and eggs in bowl with mixer on medium speed for 2 minutes. Pour batter into pan(s).
- 3 Bake** at 350°F. Follow the bake times below. When toothpick inserted in the center comes out clean, cake is done. Cool 10 to 15 minutes before removing from pan. Cool cake completely before frosting. Store loosely covered.

| Pan Size | 15 x 9-inch | Two 8-inch rounds | Two 9-inch rounds | Bundt® pan | 24 Cupcakes (1/2 half) |
|-----------|---------------|-------------------|-------------------|---------------|------------------------|
| Bake Time | 34 to 38 min. | 34 to 38 min. | 29 to 33 min. | 39 to 43 min. | 19 to 23 min. |

*If desired, substitute 1/2 cup egg substitute for the eggs.
Bundt® is a registered trademark of Norham Aluminum Products, Inc., Minneapolis, MN.
WARNING: Do not eat raw batter. Please cook fully before enjoying.

Funfetti® Cupcake Cones

TURN THE BOX FOR THE RECIPE!

Inspiration and Tips at PillsburyBaking.com

© 2015 PILLSBURY BAKING CO.

“Do not eat raw batter”



“Flour is raw”

“Please cook fully before enjoying”

| | |
|---------------|----|
| Vitamin | 0% |
| Calcium 0mg | 0% |
| Iron 0mg | 0% |
| Potassium 0mg | 0% |

*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

INGREDIENTS: Unbleached Hard Red Wheat Flour, Malted Barley Flour.

DISTRIBUTED BY

KING ARTHUR BAKING COMPANY, INC.
NORWICH, VERMONT 05055
KingArthurBaking.com | 800-827-6836

SAFE HANDLING INSTRUCTIONS: Raw flour is not ready-to-eat and must be thoroughly cooked or baked before eating to prevent illness from bacteria in the flour. Do not eat or play with raw dough; wash hands, utensils, and surfaces after handling. After opening, keep cool and dry in a sealed container. Freeze for prolonged storage.

kitchen (or long-term storage) will do just fine. Just bring to room temperature before using.

Measure it

Spoon flour into a dry measuring cup and level off with a knife. No sifting necessary.

Substitute it

All-purpose means just that, use it in a pinch for recipes calling for self-rising flour with just a dash of other ingredients. For one cup flour, add 1½ teaspoons of baking powder and ½ teaspoon of salt.

Cups Per Pound

There are 3⅓ cups of flour per pound and about 16⅔ cups per 5 pound bag.

Warning

Flour is not ready-to-eat and must be thoroughly cooked before eating.

Safe Handling Instructions

To prevent illness from naturally occurring bacteria in wheat flour, do not eat or play with raw dough. Wash hands and surfaces after handling.

Key Messages

Say No to Raw Dough

[Español](#) | [Print](#)

What You Need to Know

- Don't taste or eat raw (unbaked) dough or batter.
- Don't let children handle or play with raw dough, including play clay and dough for crafts.
- Uncooked flour and raw eggs can contain germs that can make you sick if you taste raw dough.
- Wash your hands, bowls, utensils, and countertops after handling raw flour, eggs, or dough.



[Read Harlee's story](#) to find out what happened when she got an *E. coli* infection from eating raw batter.



Raw Dough's a Raw Deal and Could Make You Sick

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FDA



5 Important Things to Know About Flour

1. Flours most commonly used in home baking and cooking are made directly from raw grains.
2. Processing raw grains into flour does not kill harmful bacteria.
3. Many foods made with flour also contain raw eggs, which may contain harmful bacteria.
4. Cooking is the only way to be sure that foods made with flour and raw eggs are safe.
5. **Never eat or taste raw flour, dough, or batter.**



Key Messages

**DID YOU KNOW FLOUR IS A RAW INGREDIENT?
IT'S TRUE.**

**WHEAT COMES FROM THE FARM, IS MINIMALLY PROCESSED,
THEN PACKAGED FOR USE**



SO YOU SHOULD NEVER EAT RAW FLOUR!

HEALTH & SAFETY TIPS:

DON'T EAT RAW DOUGH OR BATTER



**WASH HANDS, BAKING TOOLS AND
SURFACES WITH SOAP
AND HOT WATER**



AND

**ONLY EAT FOOD THAT CONTAINS FLOUR
WHEN IT IS FULLY COOKED**



Endorsed By:

Watch the video at www.nama.com/floursafety



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Quality products from nature



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Wheat Flour Food Safety



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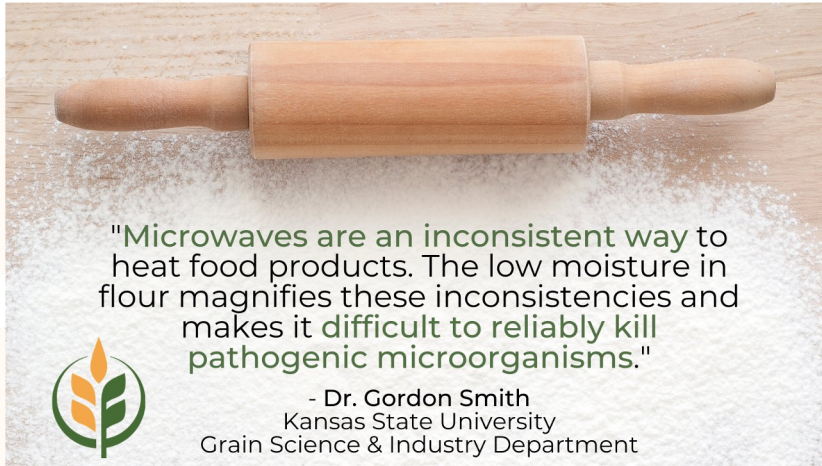


Save



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Key Messages



Dos and Dont's of Handling Flour

✓ Follow cooking directions for correct temperatures and times.

✓ Keep raw ingredients like flour **separate** from ready-to-eat foods.

✓ Refrigerate doughs according to package directions.

✓ Clean up carefully after handling raw ingredients like flour.

✗ Do not **eat or allow children to play with** raw dough.

✗ Do not use raw cookie dough in **ice cream**.

✗ Do not use products that contain raw flour to make **milkshakes**.

✗ Do not keep **recalled flour**.

Source: U.S. Food and Drug Administration

Key Messages

SAY NO TO RAW DOUGH



www.fightbac.org/kids



Partnership for
Food Safety
Education

Together: A Food Safe America



**DON'T EAT BATTER THAT
CONTAINS RAW EGGS OR
RAW FLOUR!** Raw eggs
and raw flour may contain
harmful bacteria that could
make you or your family sick.



Baker's Bottom Line for Food Safety: Raw flour, baking mixes, batter and dough are not ready-to-eat. Flour, as well as eggs, must be thoroughly cooked or baked before eating to prevent illness from bacteria in the flour. Wash hands, utensils, and surfaces after mixing and handling batter or dough.

HomeBaking.org





Partnership for
Food Safety
Education

Together: A Food Safe America

Hot Chocolate Cookies



SAFE
RECIPE
STYLEGUIDE

saferecipeguide.org



INGREDIENTS

- 1/2 cup unsalted butter
- 12 oz semi-sweet chocolate chips
- 1/4 cup Gerken's® Aristocrat Dutch Processed Cocoa Powder
- 1-1/2 cups all-purpose flour
- 1-1/2 tsp baking powder
- 1/4 tsp salt
- 1-1/4 cup light brown sugar, packed
- 3 large eggs, room temperature
- 2 tsp pure vanilla extract
- 8 oz dark chocolate, cut into 1/2" squares, plus more grated for garnish
- 12 large marshmallows, cut in half

INSTRUCTIONS

1. Wash hands with soap and water.
2. Combine butter and semi-sweet chocolate chips in a small sauce pan over medium-low heat. Stir constantly until chocolate is melted and smooth. Remove from heat and let cool for 10 minutes.
3. In a medium mixing bowl, whisk together cocoa powder, flour, baking powder and salt until combined.
4. In a large mixing bowl, beat brown sugar, eggs and vanilla on medium speed until smooth. Add cooled melted chocolate and beat until just combined. Add flour mixture in batches, beating on low speed until just combined, stopping to scrape down sides of bowl as needed. Wash hands with soap and water.
5. Don't eat raw dough or batter.
6. Cover and chill dough in refrigerator for 1-2 hours.
7. Wash hands with soap and water.
8. Preheat oven to 325°F. Line two baking sheets with parchment paper. Remove dough from refrigerator and scoop dough into 2-tablespoon sized mounds onto prepared baking sheet, spacing cookies 2-3 inches apart. Flatten cookies slightly. Wash hands after handling raw dough.
9. Bake cookies 10 minutes, until tops start to crack. Remove from oven and place a square of dark chocolate onto the center of each cookie. Top the dark chocolate with the marshmallow halves, cut side down, pressing down slightly into cookie. Return to oven for 4-5 minutes, until marshmallows soften.
10. Remove cookies from oven and let cool on baking sheet for 5 minutes before transferring to wire rack to cool completely. Top cookies with shaved dark chocolate and serve immediately
11. Store in an airtight container for up to 1 week.

NOTES

This recipe was developed using the Safe Recipe Style Guide at SafeRecipeGuide.org.



Heat Is An Ingredient



And carefully measuring how much you add is the key to baking success for students and their families.

Use a digital thermometer to measure your **ingredient and process temperatures...**



Cutting in Butter
35 to 40°F



Creaming Butter
68 to 70°F



Dry Blend Yeast
(Water Temp)
120 to 130°F



Blooming Yeast
(Water Temp)
105 to 115°F

Use a digital thermometer to verify your **doneness temperatures...**



Cheesecake
145 to 150°F



**Quiche/Custard/
Cream Pie**
160 to 165°F



Brioche
180 to 190°F



Bagels
185 to 195°F



Sourdough
190 to 210°F



Yeast Breads
190 to 210°F



Rich Cake
200 to 205°F



Muffins
205 to 210°F



Light Cake
205 to 210°F

Challenges Remain



Edible Cookie Dough

★★★★☆ 4.4 (227) | [171 REVIEWS](#) | [57 PHOTOS](#)

This edible cookie dough recipe is egg-free and will satisfy any cravings for chocolate chip cookies without the wait. I have made this with friends before and they said that they loved the taste. So do I. The leftovers will keep in the freezer for up to 3 months.

Step 1

To heat-treat your flour so it is safe to use: Place flour in a microwave-safe dish and cook for 1 minute and 15 seconds, stirring it every 15 seconds. Set aside.

Birthday Cake Shake



[Be the first to rate & review!](#)

This 5-ingredient cake batter milkshake shows there's more than one use for bought cake mix.



Ingredients

- ☐ 3 scoops birthday cake ice cream
- ☐ ½ cup milk
- ☐ 1 teaspoon vanilla extract
- ☐ ¼ cup birthday cake mix
- ☐ Garnished with whipped cream and sprinkles, if desired



Discussion

- What questions do you have about flour food safety?
- What strategies do you think are most effective when sharing food safety messaging?
- What resources would be helpful for you to have on hand in your work?

Feedback on Messages

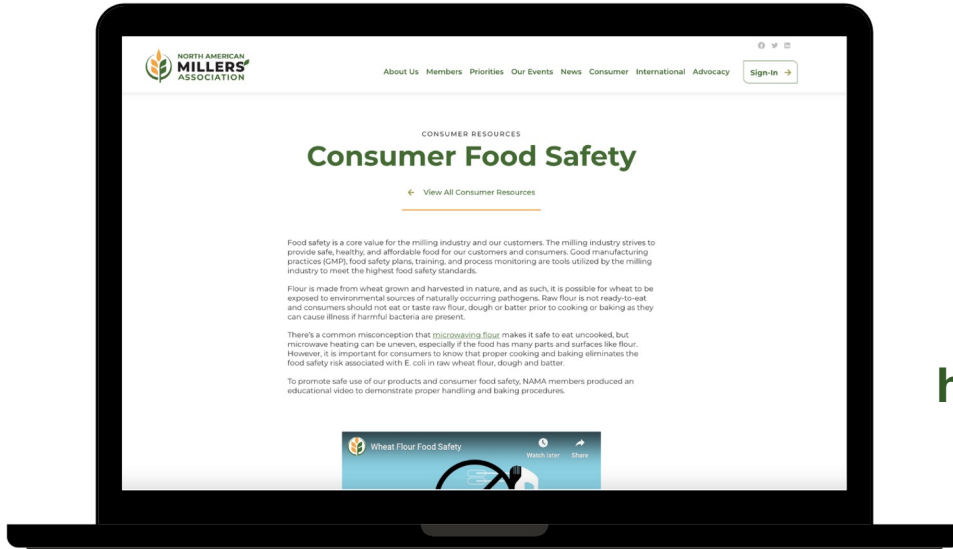
- Say no to raw dough or batter.
- Raw dough is a raw deal.
- Never eat or taste raw flour, dough, or batter.
- Bake before eating.
- Wash hands and surfaces after handling, mixing portioning flour, batter or dough and before serving or packaging baked products
- ...others?

Stay in Touch

For consumer food safety resources visit:

namamillers.org

homebaking.org/baking-food-safety





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The Link Between
Grain and Goodness