A collection of small, elongated sprinkles in various colors including white, brown, grey, and red, scattered across a light beige background.

The Chemistry of Baking



Table of Contents



01

Recipe

02

**Chemical
Reactions**

03

Works Cited



A collection of small, short, cylindrical confetti pieces in various shades of brown, tan, and white, scattered in the top-left corner of the page.

01 Recipe



Main Ingredients

Plain Flour	1 $\frac{3}{4}$ cups	Baking Soda	1 $\frac{1}{2}$ tsp.	Large Eggs	2
Unsweetened Cocoa Powder	$\frac{3}{4}$ cup	Salt	1 tsp.	Milk	1 cup
Baking Powder	1 $\frac{1}{2}$ tsp.	Granulated White Sugar	2 cups	Vanilla Extract	2 tsp.





02

Chemical Reactions

The image features a light beige background with a central, irregular, cream-colored shape. Inside this shape, the words "Baking Soda" are written in a bold, orange-brown sans-serif font. Scattered around the central shape and across the entire background are numerous small, short, thick lines representing confetti or sprinkles. These lines are in three colors: dark brown, light beige, and white. The overall aesthetic is clean and modern, with a focus on the product name.

Baking Soda



Baking Soda Chemical Reaction

Heat Catalyst

Undergoes a reaction
when it is heated.

Why is it used?

CO₂ is a product.

Chemical Formula

NaHCO₃.

Chemical Equation

$2\text{NaHCO}_3 \xrightarrow{\text{heat}} \text{H}_2\text{O} + \text{CO}_2 + \text{Na}_2\text{CO}_3$

This is a decomposition reaction!

Baking Soda is Basic

- ❖ Batter is acidic
 - Neutralizes with baking soda
- ❖ Ingredients affect pH levels
- ❖ Affects the flavor





Flour

Two Main Purposes

Gluten

**Maillard
Reaction**



Gluten

01

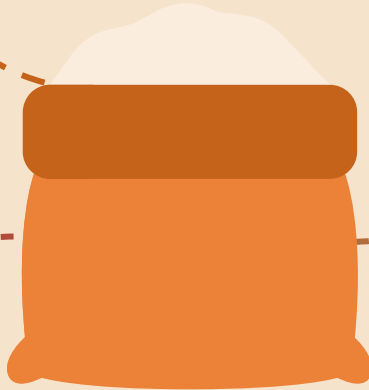
Glutenin and Gliadin

03

Disulfide bonds and
hydrogen bonds

02

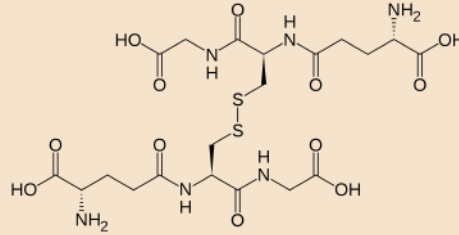
When they come in
contact with water, they
form gluten.





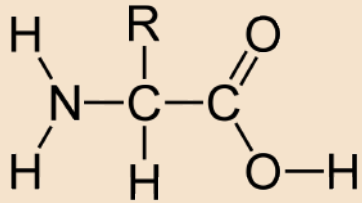
Disulfide Bonds

Two Sulfurs Bond



Importance of
Stirring

Amino Acids



Gluten Holds CO₂

Disulfide bonds make a
stretchy web.

Maillard Reaction

01

The amino acids
break apart.

02

Hundreds of new
compounds



03

It also darkens the color
of the surface.



Salt



● The Purpose of Salt

Strengthens gluten and helps trap CO₂.



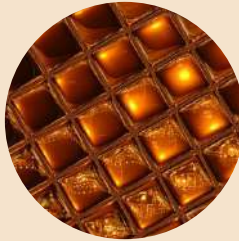
Sugar

It Has Three Functions



Moisture
Reaction

Carameliza
tion



Flavor



Caramelization

01

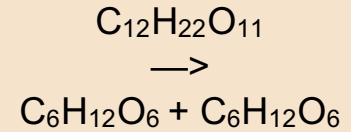
Takes place at 356 degrees Fahrenheit.

04

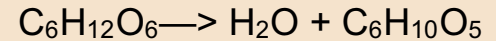
The sugars react with each other.



02




03



Works 03 Cited






Anne Marie Helmenstine, Ph.D. "Equation for the Decomposition of Sodium Bicarbonate (Baking Soda)." *ThoughtCo*, ThoughtCo, 12 Dec. 2019, <https://www.thoughtco.com/decomposition-equation-for-baking-soda-604045>.

"What Does Baking Soda Do & How Does It Work?" *Bob's Red Mill Blog*, 1 Aug. 2019, <https://www.bobsredmill.com/blog/baking-101/what-does-baking-soda-do/#:~:text=Through%20the%20chemical%20reaction%20created,pH%20levels%20while%20reducing%20gluten>.

Smith, Brett. "Chemical Reactions That Occur during Baking." *Sciencing*, 29 Apr. 2019, <https://sciencing.com/chemical-reactions-that-occur-during-baking-12731635.html>.

Roth, Klaus. "Our Daily Bread - Part 3." *ChemistryViews*, 22 Apr. 2022, https://www.chemistryviews.org/details/ezone/4556221/Our_Daily_Bread_Part_3/.

Claire, Jillian. *The Chemistry of Baking*. 10 May 2014, https://scholarcommons.sc.edu/cgi/viewcontent.cgi?article=1014&context=senior_theses.






“Salt.” *King Arthur Baking*, <https://www.kingarthurbaking.com/pro/reference/salt>.

Smith, Brett. “Chemical Reactions That Occur during Baking.” *Sciencing*, 29 Apr. 2019, <https://sciencing.com/chemical-reactions-that-occur-during-baking-12731635.html>.

“What Is the Caramelization?” *Science of Cooking*, <https://www.scienceofcooking.com/caramelization.htm>.

“What Is the Maillard Reaction?” *Science of Cooking*, https://www.scienceofcooking.com/maillard_reaction.htm.

“Functions of Salt in Baking.” *Understanding Ingredients for the Canadian Baker*, BCcampus, 24 Oct. 2015, <https://opentextbc.ca/ingredients/chapter/functions-of-salt-in-baking/#:~:text=Salt%20has%20a%20binding%20or,dough%20to%20expand%20without%20tearing>.





Thanks!

Do you have any questions?

youremail@freepik.com
+91 620 421 838
yourcompany.com



CREDITS: This presentation template was created
by [Slidesgo](#), including icons by [Flaticon](#), and
infographics & images by [Freepik](#)

Please keep this slide for attribution.