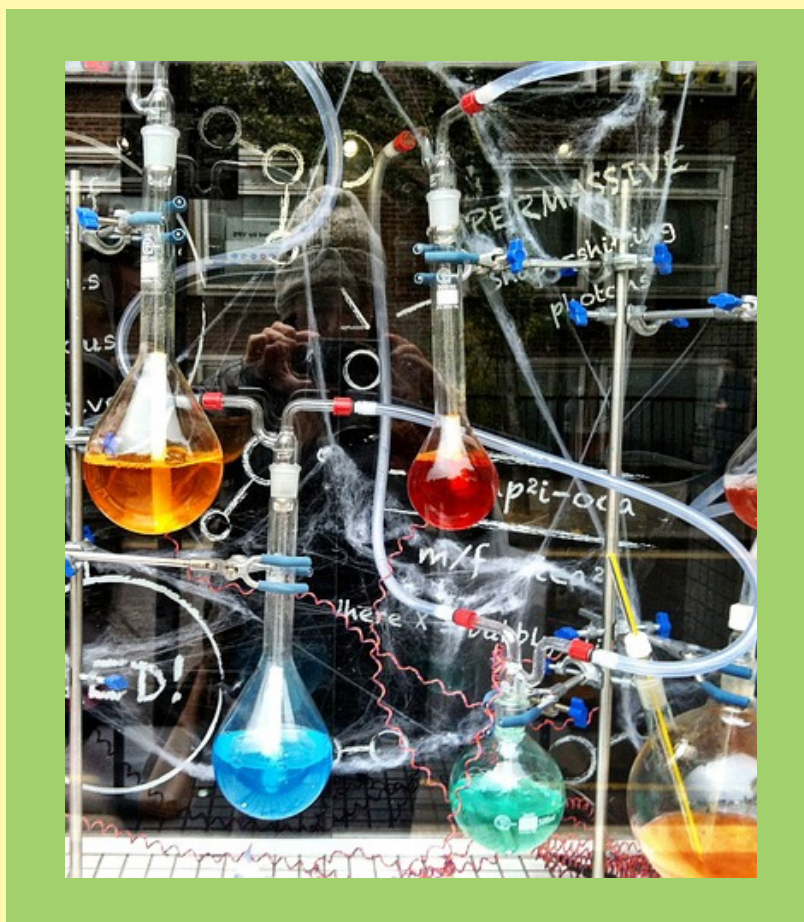


Chemical Mixer



Chemical Mixer

**Do you need an idea for a scientific study?
Try out one of our ideas or make one of your own.**

Start learning right now about how to combine different elements in the correct amounts to make chemical compounds. Take the following brief quiz to see how much you already know about chemical formulas and reactions. See the bottom of page 4 to check your answers.

- How many elements are there on the current Periodic Table?
 - 82
 - 92
 - 108
 - 118
- Marie Curie named the element "Polonium" as a tribute to:
 - her dog.
 - her husband.
 - her cat.
 - native country.
- All of the following are correct regarding the element sodium *except* that sodium:
 - is a metal.
 - is very hard and difficult to cut.
 - is highly reactive.
 - has only one stable isotope.
- Which letter in the alphabet does *not* appear as a symbol representing an element on the Periodic Table?
 - x
 - g
 - j
 - y
- All of the following are correct regarding the element helium *except* that helium:
 - is the most abundant element in the universe.
 - has the lowest melting point of any element.
 - is colorless, odorless, tasteless, and inert.
 - has the lowest boiling point of any element.

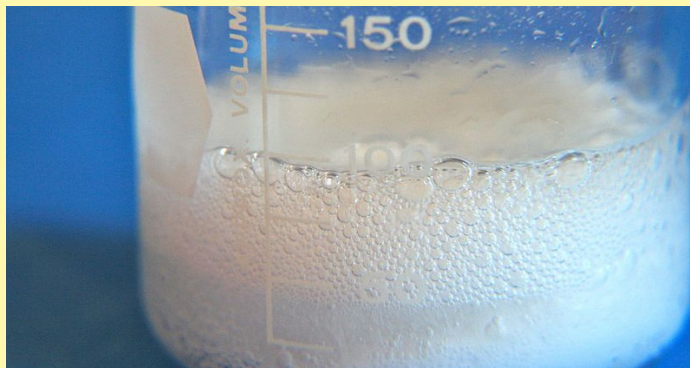


Making Gas

A chemical reaction occurs when two or more substances are converted into a new substance or substances. The new substance usually has different chemical and physical properties from the original materials. The chemical reaction occurs as a result of the making and breaking of chemical bonds. In this investigation, you'll use common household products to make a chemical reaction.

Materials

- Large pan
- Plastic spoon
- Paper cup
- Paper towels
- $\frac{1}{2}$ cup Baking soda (not baking powder)
- $\frac{1}{2}$ cup Vinegar



(Photo courtesy of Kate Ter Haar, flickr user katerha)

Procedure

1. Conduct this experiment outside.
2. Place the large pan on a flat level surface.
3. Place the paper cup inside the large pan.
4. Use the spoon to place 3 -4 large scoops of the baking soda into the paper cup.
5. Note and record in Table 1 the appearance of the baking soda.
6. Pour the $\frac{1}{2}$ cup of vinegar into the paper cup with the baking soda.
7. Note and record in Table 1 what happens after the vinegar is added to the baking soda.

Table 1.

Baking soda appearance	
What happened after vinegar was added to the baking soda	

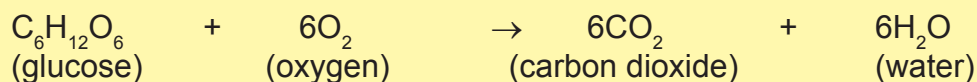
Questions

1. What is the chemical name of baking soda?
2. What is the chemical name of vinegar?
3. What new substance or substances were produced after the vinegar was added to the baking soda?

Chemical Mixer

The Most Important Chemical Reaction?

From the simplest bacteria to the most complex human, all living organisms in some way depend on a chemical reaction involving glucose to provide energy to supply the organism's many needs and actions. Each gram of glucose can provide a human body with about 3,750 calories of chemical energy. Glucose is a main product of photosynthesis, which is the process in which plants convert sunlight into various products. For this reason, plants are rich in glucose. People eat plants and take in the glucose, which they can use for their body's energy needs. The glucose is moved to individual cells where an important chemical reaction occurs. Inside the cell, the glucose undergoes a combustion reaction where it is combined with oxygen to release some of the energy stored within the chemical bonds of the glucose molecule for the cell's metabolic activities. Although a number of chemical reactions and various reaction intermediaries occur during this overall process, the end product of this reaction is energy, carbon dioxide, and water. So the next time you're feeling a little tired and rundown, grab a bite of a carbohydrate that is rich in glucose to give your body a quick boost of energy.



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Answers: 1) d, 2) d; she named the element after her native country... Poland, 3) b, 4) c, 5) a; helium is the second most abundant element in the universe though, while hydrogen is the most abundant. **Page 3 Answers:** 1) sodium bicarbonate, 2) acetic or ethanoic acid, 3) they formed carbonic acid that immediately broke down into water and carbon dioxide (bubbles).

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