

# Dissolving M&Ms

M&Ms are great but have you ever noticed that if your fingers are a little wet, the candy coating begins to dissolve and you see color on your fingers? If the coating dissolves in water, do you think it will dissolve in other liquids? Let's find out!

## What you'll need

- Goggles
- M&Ms
- 3 clear plastic cups
- Tablespoon
- Water
- Isopropyl alcohol (70%)
- Mineral oil



## Be safe

Put on your goggles. Since you are using isopropyl alcohol, be sure that a teacher, parent, or other adult is working with you. Be sure to keep the alcohol away from heat or any flames. Read and follow all the warnings on the label. Wash your hands after the experiment.

## Here's what to do

1. Label your three cups **water**, **alcohol**, and **oil**.
2. Add 1 tablespoon of water, isopropyl alcohol, and oil to its labeled cup.
3. Take three M&Ms of the same color and put one in each cup.



- Swirl each cup for about 20 seconds to see if one liquid is better than another at dissolving the candy coating.



### What to expect

The coating on the M&M in the water will dissolve the most. You may even see the chocolate on the inside. There will be a little dissolving in the alcohol but not nearly as much as in the water. In the oil, you probably will not be able to see any dissolving.



## What's happening in there?

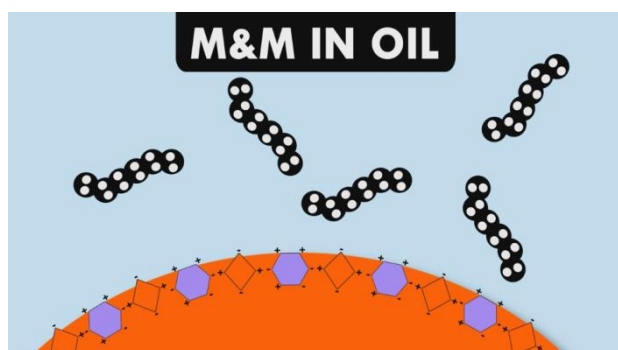
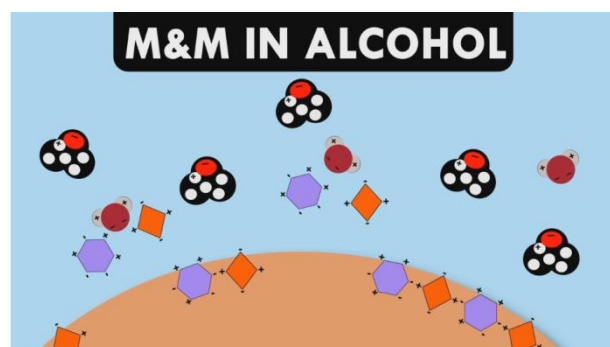
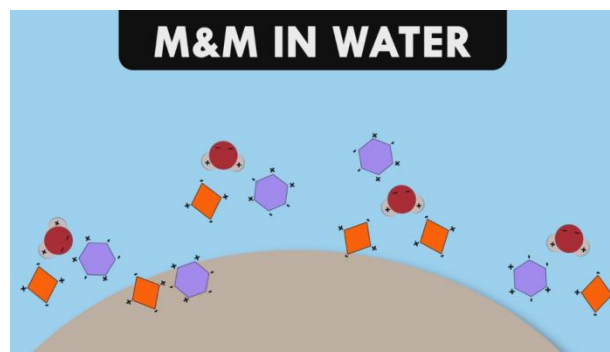
### Why does the color come off differently in each liquid?

The candy coating is made up of coloring and sugar. The coloring and the sugar molecules both have positive and negative charges on them.

The water molecule has positive and negative charges so it can attract and dissolve the color and sugar pretty well.

The alcohol molecules don't have as many positive and negative areas as the water. The alcohol molecules can't attract the coloring and sugar molecules as well as the water so the candy coating doesn't dissolve well in alcohol.

The oil molecules have no positive and negative areas. They don't attract the coloring or sugar molecules so the candy coating doesn't dissolve at all in oil.



## What else could you try?

You've seen that water is the best liquid for dissolving the candy coating from an M&M. But have you ever tried putting two or more M&Ms in water at the same time? You can get some pretty cool-looking patterns.

## What you'll need

- Goggles
- Water
- Shallow white plastic plate
- M&Ms



## Here's what to do



1. Pour water in the plate until it covers the bottom and is about as deep as an M&M.
2. Place two or more M&Ms near each other in the center of the plate.
3. Do not stir the water or bump the plate.
4. Watch for about 1-2 minutes.
5. Try different arrangements of M&Ms.



## What to expect

The coating comes off the M&M in a round shape surrounding the M&M. The dissolved coatings from different M&Ms drift toward each other and touch. The colors seem to form a line and don't seem to mix right away.



## What's happening in there?

### Why don't the colors mix?

It may seem weird that the colors don't mix right away. But if you think about it, we usually stir or shake things if we want them to mix. We usually don't just let two liquids touch and expect them

to mix right away. As the molecules from the dissolved coatings interact with each other, they will mix but it takes some time.