

# Activity 4.4

## Dissolving different liquids in water

### Do all liquids dissolve in water?

In *Activity 4.3* and *Demonstration 4a*, students explore different *solids* dissolving in water. In this activity, students add different liquids to water and apply their working definition of “dissolving” to their observations. After observing isopropyl rubbing alcohol, vegetable oil, and corn syrup in water, students can conclude that while some liquids may dissolve in water, different liquids dissolve in water to different extents.

### Materials needed for each group

Water  
Vegetable oil  
Isopropyl rubbing alcohol, 70%  
Corn syrup  
3 Clear plastic cups  
3 Small cups  
3 Popsicle sticks or stirrers

### Notes about the materials

- Be sure you and the students wear properly fitting goggles.
- When using isopropyl alcohol, read and follow all warnings on the label.

### Preparing materials

- Use a permanent marker to label 3 small cups **alcohol**, **oil**, and **corn syrup**.
- Place 1 tablespoon of each liquid in its labeled cup.

### Activity sheet



Copy *Activity sheet 4.4—Dissolving different liquids in water*, p. 204, and distribute one per student when specified in the activity.

### Assessment

An assessment rubric for evaluating student progress during this activity is on pp. 218–219. For this formative assessment, check a box beside each aspect of the activity to indicate the level of student progress. Evaluate overall progress for the activity by circling either “Good”, “Satisfactory”, or “Needs Improvement”.

# Activity 4.4

## Dissolving different liquids in water

### Question to investigate

## Do all liquids dissolve in water?

### 1. Introduce the idea that liquids can dissolve in water.

Remind students that they have seen that solids can dissolve in liquids. Ask students: Do you think that liquids can dissolve in other liquids?

As a class, have students describe what they would do to compare how isopropyl alcohol, vegetable oil, and corn syrup dissolve in water. Students should agree that they will need three cups filled with the same amount of water. They should also realize that it's important that the same temperature water is used in each cup.

### 2. Have students conduct an activity to see how well isopropyl alcohol, vegetable oil, and corn syrup dissolve in water.



Distribute *Activity sheet 4.4—Dissolving different liquids in water*. Students will follow the procedure on the activity sheet, record their observations, and consider whether each of the liquids dissolves in water.

### *Procedure*

1. Half-fill three clear plastic cups with room-temperature water.
2. While looking at the water from the side, slowly pour the alcohol into the first cup of water.
3. Observe first to see if the alcohol dissolves in the water.
4. Stir to see if the alcohol dissolves.
5. Record your observations on *Activity sheet 4.4*.
6. Repeat Steps 2–5 for vegetable oil and corn syrup.



### 3. Discuss student observations.

***Expected results:*** The alcohol is visible as it mixes into the water but quickly dissolves and turns clear. Stirring is not needed. The oil will drop into the water and then rise to the surface forming a layer. When stirred, the oil breaks apart a bit and then forms a layer on the surface of the water again. The oil does not dissolve. The corn syrup will sink to the bottom and stay there. After stirring, it dissolves and the solution turns clear.

### 4. Have students add to the class list about dissolving.

Ask students: What did you find out about dissolving from this activity? Students should realize that not all liquids dissolve in water, and those that do, dissolve in water differently.