

Friction – A Hot Topic!

Friction can make it harder to move things but it also affects objects in other ways. When two objects slide against each other, friction between the objects causes heat to be produced. You can feel this yourself by doing a simple activity.

Materials:

- Your hand
- Table or desk with a clean smooth surface

Procedures:

1. Use your index finger to lightly touch the surface of a desk or table.
2. Move your finger back and forth as fast as you can without pressing down hard. Now press down harder and harder while moving your finger as fast as you can. What do you notice?



3. Try the same thing again with all four fingers at the same time. After rubbing your fingers as fast as you can while pressing down, touch your fingers to your cheek. What do you feel?
4. Touch the palms of your hands together but don't press them together very hard. Rub them back and forth very quickly. Now press them together with more force while rubbing them together quickly. Do you think the amount of force on a surface increases the amount of friction?



Think about this ...

A metal saw blade rubs against wood many times as it goes back and forth to make a cut. A drill bit rubs against wood or metal as it drills a hole. Friction causes the saw blade and the drill bit to become very hot. Sometimes a carpenter will add a little oil to the saw blade or drill bit to reduce the amount of heat that builds up. Why do you think this works?

Where's the Chemistry?

When you rub your hands together, the action of scraping the surface of your skin back and forth against each other causes the molecules in your skin to move a little faster. The faster that molecules move, the higher the temperature. So the friction of rubbing your hands together makes them feel warmer.



The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at www.acs.org/kids.

Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

Never eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

Never experiment on your own!

For more detailed information on safety go to www.acs.org/education and click on "Safety Guidelines".

