

INSTRUCTIONAL GUIDE

Contents

- Two 1-pound, 2-inch diameter steel spheres
- Instructional Guide

Recommended for activities:

- Paper
- Aluminum foil



Background

Most students can tell you that mechanical systems convert some energy to heat. When objects collide, the kinetic energy transforms into sound, heat, and kinetic energy in the opposite direction. But it can be difficult to observe the heat produced.

Activities

Caution: Do not place fingers or important documents between the spheres!

1. Hold the spheres on either side of a sheet of plain paper. Carefully (but firmly) crash the spheres together, with the paper in between. Look at the paper. There should be a hole. To confirm that the hole was actually burned in the paper, sniff the paper and smell the smoke.
2. Try thicker papers, or multiple layers. Avoid paper with wax coatings (such as manila folders), as the wax will prevent a hole from forming.
3. Use a sheet of aluminum foil. The force of the colliding spheres creates a permanent concentric ripple in the foil, showing how energy is dispersed through solid matter.

Related Products

Fire Syringe (P1-2020) A smokin' example of adiabatic heating. Using the Fire Syringe to compress air into a smaller volume is a classic example of how rapidly doing work on a gas results in an increase in temperature.

Dropper Popper (P6-6075) The ultimate "Super Ball" is really only half a ball! Turn this popper inside out and drop it. The stored energy is released upon impact, and the popper bounces higher than your head!

Newton's Cradle (P1-6001) Newton's Cradle dramatizes Newton's Third Law, which states that for every action, there is an equal and opposite reaction. Use to illustrate that momentum and kinetic energy are conserved.