

Flicker Checker Investigation

An incandescent bulb produces light by passing electricity through a wire inside the bulb. This wire is called a filament. When electricity flows through the wire, it gets very hot and glows, producing light. Incandescent bulbs use 90 percent of the electricity to produce heat and only ten percent to produce light. They are very inefficient in their use of energy.

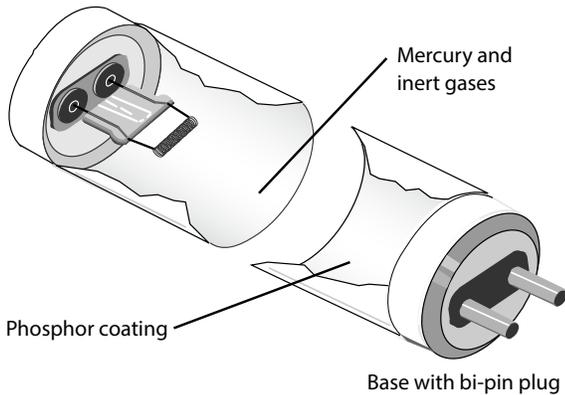
A fluorescent bulb produces light by passing electricity through a gas inside the bulb. The electrons in the gas molecules become more energetic and some escape. They bounce around and crash into the walls of the bulb. The walls of the bulb are painted with a special material that gives off light when hit by electrons.

Fluorescent lights have ballasts that help move the electricity through the gas inside the bulb. A ballast is an electromagnet that produces a large voltage between the two ends of the bulb so the electricity will flow between them.

There are two types of ballasts, magnetic and electronic. Magnetic ballasts produce a frequency of 60 Hertz (Hz), which means the light is flickering on and off 60 times a second. Electronic ballasts produce a frequency of 10,000-20,000 Hz. Fluorescent lights with electronic ballasts are more energy efficient than those with magnetic ballasts.

To determine which type of ballast a fluorescent light contains, spin the Flicker Checker under it. If you see smooth circles, as shown in the bottom picture below, the fluorescent light contains an electronic ballast. If you see a checkered pattern that moves from ring to ring, the light contains a magnetic ballast.

Fluorescent Tube Lamp

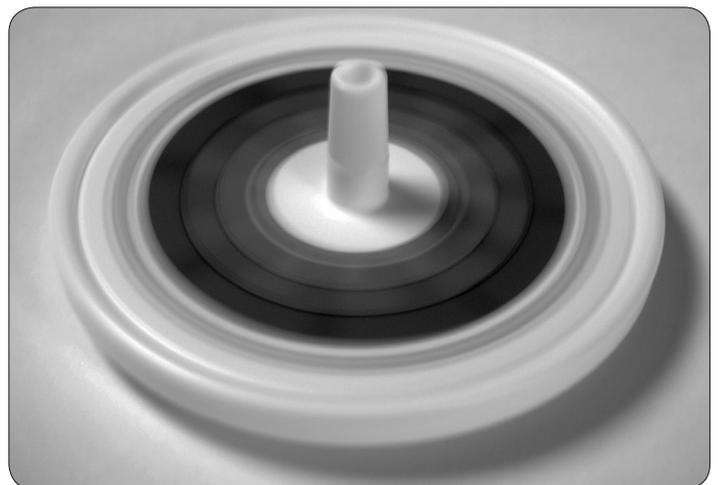


In fluorescent tubes, a very small amount of mercury mixes with inert gases to conduct the electric current. This allows the phosphor coating on the glass tube to emit light.

FLICKER CHECKER SHOWING A MAGNETIC BALLAST



FLICKER CHECKER SHOWING AN ELECTRONIC BALLAST



✓ Procedure

Use the Flicker Checker to determine the type of lighting in different areas of your school.

AREA	TYPE OF BALLAST
Classroom	
Cafeteria	
Gym	
Hallway	
Office	
Restroom	