

Static Charge Indicator

P6-3570



BACKGROUND:

All atoms are naturally charged. This is because protons and electrons naturally carry a *positive* or *negative* charge. A stable atom usually has an *equal number of protons and electrons*, giving it a *neutral charge*. However, it is possible to *transfer electrons from one atom to another*. This occurs every day in nature, and is called static electricity. The effects of the atmosphere sliding over itself is sufficient to produce vast amounts of static electricity; lightning bolts are simply discharges of this energy.

Electroscopes are devices that *respond to changes in static electricity*. Electroscopes are a staple of scientific classrooms. Though static electricity is invisible most of the time, an electroscope can visually demonstrate a charge. Consider a standard leaf electroscope: as a charged object is brought near, the leaves move apart. This is a much better way of demonstrating static electricity than a simple spark discharge would be.

Our new Static Charge Indicator takes the concept one step further. Instead of using silver foil or pith balls, this variant uses Light Emitting Diodes, or LED's. A transistor present inside the device responds to changes in voltage that a charged object induces in the dome-shaped brass antenna. Most electroscopes require hundreds or thousands of volts to activate the moving foil leaves. Our transistorized Static Charge Indicator is much more sensitive, responding to only a few tens of volts. Simply rubbing a plastic pen on your shirt several times is enough to trigger an unambiguous response from the LED charge polarity indicators.

USING THE STATIC CHARGE INDICATOR:

Enclosed in a sturdy blue case, our Static Charge Indicator is extremely accurate and exceptionally durable.

1. Leave the unit in the off position to start.
2. Charge a rod or other object, and hold it within a few centimeters of the dome-shaped brass antenna without actually touching the object to the antenna.
3. Now turn the unit on.

If the charge is negative, the green (or yellow) LED will illuminate. When you remove the rod, the red one will light up.

If the charge is positive, the red LED will light when you switch the unit on. When the charge is removed, the green (or yellow) LED will light up.

The center push button will reset the electroscope. The default mode for the LED's is the red LED is illuminated and the green (or yellow) LED is dark.

If the object tested has no charge, the red LED will glow as it does upon start-up by default, even when no object is held near the antenna. When the uncharged test object is moved away from the antenna nothing will change and the red LED will stay on, the green (or yellow) LED will remain off.

RELATED PRODUCTS:

Electroscope (P6-1156)

Pith Balls (P6-1650)

Friction Rod Kit (P6-1600)

Fun Fly Stick (11-0058)

