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## Charles's Law Apparatus, Deluxe #CHRLW01

### Warning:

- **Not a toy; use only in a laboratory or educational setting.**
- **California Proposition 65 Warning: This product may contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.**



### Introduction

The behaviors of gases in most conditions can be approximated using the **Ideal Gas Law**:

$$PV=nRT$$

This law of gas behavior is the combination of three separate discoveries – Boyle's Law, Avogadro's Law, and **Charles's Law**.

Of the variables covered by the Ideal Gas Law – pressure, volume, molecular quantity, and temperature – Charles's Law describes the relationship between the volume and the temperature of a gas at a given amount and pressure.

Charles's Law is written as follows:

$$\frac{V}{T} = k$$

- **V= Volume**
- **T= Temperature (Kelvins)**
- **k= Constant**

To compare the same quantity of the same gas under two different sets of conditions, the formula can also be written as follows:

$$\frac{V_1}{T_1} = \frac{V_2}{T_2}$$





## Care and Precaution

1. Do not immerse the bulb in boiling water.
2. Use caution when handling hot water and hot glassware.
3. Be careful that water doesn't rush into the bulb when you remove heat from the bulb.

