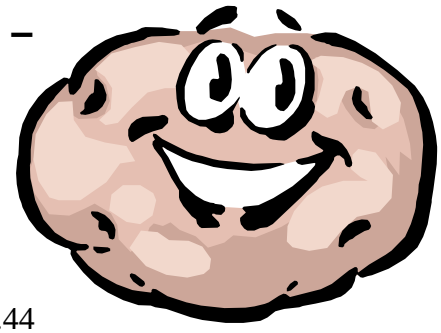
Name: _____ **Date:** _____

Heat Transfer: Hot Potato, Cold Foil Activity – To Heat or Not to Heat? Worksheet



Accuracy

Now that you have finished testing the heat capacities of your three objects, it is time to compare them to the accepted scientific values. For this, you need to use the equation below for each of the three experiments. The specific heat capacity of copper at 25° Celsius is 22.44 J/(mol K) and aluminum is 24.20 J/(mol K).

Be sure to convert your values to consistent units before using the equation below:

$$\%\ Error = \frac{\left|C_{P\ true} - C_{P\ exp}\right|}{C_{P\ true}}$$

Where:

$C_{p\ true}$ = the accepted heat capacity for the substance and

$C_{p\ exp}$ = the heat capacity you calculated for the substance.

Calculation

Improvement

One of the most important aspects of engineering is to redesign and improve your project, whether it be a chemical process, an airplane wing, or an engine.

1. What do you think caused the error in you measurements?

   _____

   _____

2. How much error would you predict finding in testing the Cp of another object in the calorimeter?

   _____

   _____

Name: _____ **Date:** _____

The heat capacities you used as "true values" are tabulated for 25°, whereas you actually tested the samples at a much lower temperature.

3. How do you think this affects the error in your calculation?

_____

_____

If you were the lead engineer…

If you were the lead engineer and you were able to do this experiment again:

4. How would you do it differently?

_____

_____

_____

5. How would you design the procedure?

_____

_____

_____

6. How could you improve the process or do it differently?

_____

_____

_____

Other Details

1. What other factors could change the outcome of your experiment?

_____

_____

2. Could the specific heat also be temperature dependent?

_____

_____