# C:\Documents and Settings\checkout\Local Settings\Temporary Internet Files\Content.IE5\5DEYKYAN\fd00890_[1].wmfHeat 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:

*Cp true*= the accepted heat capacity for the substance and

*Cp 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?

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

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

1. 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:

1. How would you do it differently?

1. How would you design the procedure?

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

**Other Details**

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

1. Could the specific heat also be temperature dependent?