

# Enthalpy change of reaction assignment



**ASSIGN  
BUSTER**

## Determining an Enthalpy Change of Reaction Purpose of Experiment

The purpose of this experiment is to determine the enthalpy change for the displacement reaction:  $\text{Zn(s)} + \text{CuSO}_4\text{(aq)} \rightarrow \text{Cu(s)} + \text{ZnSO}_4\text{(aq)}$

**Hypothesis**  
With this experiment I can also not make a hypothesis, because we did actually not do the experiment, but we were told that the temperature would make a sudden drop, but we can measure the  $\Delta T$  of the surrounding. The reaction is endothermic because the system will take in energy. During the reaction bonds need to be broken down, so that new bonds can be formed.

In the first step, the step of breaking down bonds, energy is released. Then, in the second step, new bonds form, so energy is taken in. So you will know that the first step will be bigger than the second step, the reaction will be endothermic. But if, the second step will be bigger than the first step, the reaction will be exothermic. **Calculations** Variables Fair test- The temperature was measured every 20 seconds. The Reactant was measured properly, so there is no mistake. But, I think that the results got affected by the reason that the cup is not a closed system.

There was no covering on the cup when reaction was taking place.

**Independent-** The time when Zinc powder is added to the water, and the amount of Zinc, and the water in the cup. **Dependent-** Change of Water temperature. **Materials** -Measuring Cylinder-Copper Sulphate Solution ( 1M  $\text{CuSO}_4$ ) -Polystyrene Cup- Zinc Powder -Balance-Thermometer -Watch or a Clock with second hand- Safety Spectacles **Procedure** First, we measured 25 ml of Copper Sulphate Solution into a Polystyrene Cup. Then, we weighed 6g of Zinc Powder on a piece of paper.

We put the thermometer into the polystyrene cup, we stirred and recorded the temperature to the nearest 0, 1 C?? for every half of a minute for 2, 5 minutes altogether. When about 3 minutes passed, we added the zinc powder into the cup. We kept stirring and recording the temperature for another 6 minutes. We organised the results into a table. Data Collection T

(s)	T(C??)	T (K)
0	22	295
20	21.8	294.8
40	21.8	294.8
60	21.8	294.8
80	21.	294.8
100	21.8	294.8
120	21.8	294.8
140	21.5	294.5
160	21.4	294.4
180	20	293
200	19.8	292.8
220	19.8	292.8
240	19.8	292.8
260	19.9	292.9
280	19.9	292.9
300	19.9	292.9
320	20	293
340	20	293
360	20	293

Processing Data Conclusion and Evaluation