

## EXERCISE 13-B

### Heat of Reaction

The heat of reaction is a change in enthalpy when a reaction occurs.

1. Empty your calorimeter and dry it carefully. Weigh exactly 50.0 g of 2.0 M HCl and place into your calorimeter.
2. Weigh exactly 50.0 g of 2.0 M NaOH and place into a clean, dry beaker.
3. Both of these solutions should be at room temperature.
4. Pour the NaOH quickly with thorough stirring into the HCl. Reaction will occur immediately. Watch the temperature rise and record the maximum temperature.
5. Calculate the heat evolved during the reaction using expression 13-2. The solution you are using is NaCl and its specific heat is 0.931 cal/g °C. Remember you have 100g of solution.
6. You combined 0.10 mole acid and 0.10 mole of base in the calorimeter to get the heat of reaction in calories per mole.
7. The accepted molar heat of reaction of an acid with a base is 13340 cal/mol.
8. Calculate your percent error and show all of your work.

**ANSWER SHEET**

**EXERCISE 13-B**

1. Weight of HCl.....

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2. Weight of NaOH .....

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3. Starting temperature .....

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4. Final temperature .....

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5. Heat evolved .....

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6. Calculated heat of reaction cal/mol.....

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7. Accepted heat of neutralization .....

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8. Percent error.....

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