

## An Endothermic Reaction

### Purpose

To demonstrate an endothermic reaction by combining two solids.

### Materials

250 mL beaker	hydrated barium hydroxide
wooden splint	ammonium thiocyanate
wooden board	

### Procedure

1. Place about 20 grams of  $\text{Ba}(\text{OH})_2 \cdot 8 \text{H}_2\text{O}$  crystals in a 250 mL beaker.
2. Add 10 grams of ammonium thiocyanate to the beaker.
3. Stir the two solids together with a wooden splint.
4. Place a small pool of water on a piece of board. Place the beaker on the pool of water.
5. After 2-3 minutes, the beaker will freeze to the board.

### Additional Information

1. Ammonium chloride (7.0 grams) or ammonium nitrate (10 grams) may replace the ammonium thiocyanate.
2.  $\text{Ba}(\text{OH})_2 \cdot 8 \text{H}_2\text{O} + 2 \text{NH}_4\text{SCN} \rightarrow \text{Ba}(\text{SCN})_2 + 2 \text{NH}_3 + 10 \text{H}_2\text{O}$
3. A variation involves adding about 10-15 grams of ammonium nitrate to 100 mL of water. The temperature will drop significantly.

### Disposal

Excess solutions/solids should be placed in a properly labeled waste container with UI# 205437.

### Reference

Summerlin, L., Ealy, J.; Chemical Demonstrations: A Sourcebook for Teachers, 1985.

