

DEMONSTRATION 4.10

AN ENDOTHERMIC REACTION: AMMONIUM THIOCYANATE AND BARIUM HYDROXIDE

Solid ammonium thiocyanate and solid barium hydroxide-8-water react endothermically and absorb heat from their surroundings.

EQUIPMENT

- a flat piece of wood about 20 x 20 x 1 cm thick
- 500 mL conical flask
- 2 x 100 mL beakers

REAGENTS



- ammonium thiocyanate, NH_4SCN (38 g)
- barium hydroxide-8-water, $\text{Ba}(\text{OH})_2 \cdot 8\text{H}_2\text{O}$ (79 g)

PREPARATION

- Using the beakers weigh out ammonium thiocyanate (38 g) and barium hydroxide-8-water (79 g).
- Set up the empty, dry conical flask, the reagents and the piece of wood.

PROCEDURE

- Hold the piece of wood under a tap and allow a puddle of water to form in the middle of the slab.
- Combine the dry reagents in the flask and shake the mixture for about 15 seconds.
- Set the flask down over the puddle.

RESULTS

After about one minute, the endothermic reaction taking place in the flask will have drawn so much heat from its environment that the water freezes. Raise the flask to show that the piece of wood is now frozen to the bottom of the flask.

Note: It is important to show that tap water is used for wetting the wood in order to allay suspicions of trickery.

