**Halide Tests for Nucleophilic Substitution**

**Silver Nitrate**

The conditions of the test cause the reaction to proceed via an SN1 mechanism.

AgNO3 + RX 🡺 AgX(*s*) + RONO2

1. Add 2 mL of 0.2 M AgNO3 in ethanol to a test tube.
2. Add one drop of the alkyl halide to the test tube and mix by gently shaking.
3. Record the time it takes for a precipitate forms.
4. If no precipitate forms after 5 minutes, place test tube into a beaker of warm water (78 °C).
5. If no change occurs after 5 minutes, remove the test tube and clean up.

**Note:** the color of the precipitate indicates the halide

White AgCl

Pale yellow AgBr

Dark yellow AgI

**Sodium Iodide**

The conditions of the test cause the reaction to proceed via an SN2 mechanism.

NaI + RX 🡺 NaX(*s*) + RI

1. Add 1 mL of the sodium iodide solution (in acetone) to a test tube.
2. Add two drops of the alkyl halide to the test tube and mix by gently shaking the test tube.
3. Record the time it takes for a precipitate forms.
4. If no precipitate forms after 3 minutes, place test tube into a beaker of warm water (50 °C).
5. If no change occurs after 5 minutes, remove the test tube and clean up.