

# Sample Testing Procedures for Typical Properties

Property	Testing Procedure
<b>Color, Texture</b>	Observe the solid.
<b>Solubility in Water</b>	Add approximately 2 mL of distilled or deionized water to a clean test tube. Add a small portion of the solid to the test tube. Stir. Record the results.
<b>Conductivity—Solid</b>	Touch the wires of the conductivity tester directly to the solid. Record the conductivity in the data table.
<b>Conductivity—Solid in Water</b>	Add approximately 2 mL of distilled or deionized water to a clean test tube. Add a small portion of the solid to a clean test tube. Stir. Touch the wires of the conductivity tester directly into the solution. Record the conductivity in the data table.
<b>pH of Solution in Water</b>	Add approximately 2 mL of distilled or deionized water to a clean test tube. Add a small portion of the solid to a clean test tube. Stir. Use pH paper or a pH meter to check, then record pH.
<b>Solubility in Hexane</b>	Add approximately 2 mL of hexane to a clean test tube. Add a small portion of the solid to the test tube. Stir. Record the results.
<b>Solubility in Ethyl Alcohol</b>	Add approximately 2 mL of ethyl alcohol to a clean test tube. Add a small portion of the solid to the test tube. Stir. Record the results.
<b>Melting Point <math>\leq 100</math> °C</b>	Obtain a disposable aluminum evaporating dish and place a small, pea-sized amount of each solid in separate locations on the dish. Hold the dish above the boiling water bath with tongs and heat the solids for 1–2 minutes. Observe whether any of the solids melt and record the observations in the data table.
<b>Melting Point 100–500 °C</b>	For solids that did not melt at the boiling water bath temperature: Place a small, pea-sized amount of each solid in a clean and dry borosilicate-glass test tube. Using a test tube holder, heat the test tube in a medium burner flame for 1–2 minutes. Record observations in the data table. A medium burner flame is obtained by starting with a rich yellow flame and adjusting the air inlet until the yellow just disappears. The result is a light blue flame with no inner cone, and the flame temperature is about 500 °C.
<b>Reaction with 0.1 M HCl</b>	Add approximately 2 mL of HCl solution to a clean test tube. Add a small portion of the solid to the test tube. Stir. Record any indications of chemical reaction.
<b>Reaction with 0.1 M NaOH</b>	Add approximately 2 mL of NaOH solution to a clean test tube. Add a small portion of the solid to the test tube. Stir. Record any indications of chemical reaction.

## GLYCINE

aminoacetic acid, laboratory grade,  
 $\text{NH}_2\text{CH}_2\text{COOH}$

★ **HAZARD ALERT:** Although this material is considered to be non-hazardous, unpredictable reactions among chemicals are always possible. Prudent laboratory practices should be observed.

While this material is considered to be non-hazardous, treat all laboratory chemicals with caution.

**FIRST AID:** External: Flush affected area with water. Internal: See a physician at once. Eyes: Flush with water for 15 minutes. See a physician.  
**SOLUBLE:** Water; insoluble in alcohol and ether.

## IRON(III) OXIDE

ferric oxide, reagent,  $\text{Fe}_2\text{O}_3$ , F.W. 159.69

★ **HAZARD ALERT:** Mild skin irritant. Although this material is considered to be non-hazardous, unpredictable reactions among chemicals are always possible. Prudent laboratory practices should be observed.

While this material is considered to be non-hazardous, treat all laboratory chemicals with caution.

**FIRST AID:** External: Flush affected area with water. Internal: See a physician. Eyes: Flush with water for 15 minutes. See a physician.

**SOLUBLE:** In acids; not water.

## CALCIUM CARBONATE

natural chalk,  $\text{CaCO}_3$ , precipitated, F.W. 100.09

★ **HAZARD ALERT:** Irritating to body tissues.

Body tissue irritant. Avoid contact with body tissues.

**FIRST AID:** External: Flush affected area with water. Internal: See a physician at once. Eyes: Flush with water for 15 minutes. See a physician.

**SOLUBLE:** Slightly in water; in acids with evolution of carbon dioxide.

## ADIPIC ACID

$\text{HO}_2\text{C}(\text{CH}_2)_4\text{CO}_2\text{H}$ , F.W. 146.15

★ **HAZARD ALERT:** Severe eye irritant; combustible when exposed to heat or flame.

Combustible material. Body tissue irritant. Avoid contact with all body tissues. Avoid contact with strong oxidizers or rat  $\text{LD}_{50}$ : 11 g/kg.

**FIRST AID:** External: Flush affected area with water. Internal: See a physician at once. Eyes: Flush with water for 15 minutes. See a physician.

**SOLUBLE:** Acetone and alcohol; only slightly in water.

## ALUMINUM

metal, granular, 5 mesh and finer, Al, A.W. 26.982

★ **HAZARD ALERT:** Although this material is considered to be nonhazardous, unpredictable reactions among chemicals are always possible. Prudent laboratory practices should be observed.

Avoid contact with acids. Contact with acids will release highly flammable hydrogen gas. Also avoid contact with halogens, strong oxidizers, metal oxides, sulfur, silver nitrate and alcohols.

**FIRST AID:** External: Flush affected area with water. Internal: See a physician at once. Eyes: Flush with water for 15 minutes. See a physician.

## DODECYL ALCOHOL

sodium dodecyl sulfate, lauryl alcohol; 1-dodecanol, laboratory grade,  $\text{CH}_3(\text{CH}_2)_{11}\text{OH}$ , F.W. 186.34

★ **HAZARD ALERT:** Combustible. Mild skin irritant.

Combustible material. Avoid contact with acids and oxidizing agents. Mild skin irritant; avoid all body tissue contact. or-rat  $\text{LD}_{50}$ : 12800 mg/kg.

**FIRST AID:** External: Flush affected area with water. Internal: See a physician at once. Eyes: Flush with water for 15 minutes. See a physician.

**SHELF LIFE:** Indefinite.

## IRON

metal, powder, laboratory grade, Fe, A.W. 55.85

- ★ **HAZARD ALERT:** Metals, in fine powder form, present a serious fire and explosion risk.

Finely divided metals are a serious fire and explosion risk. Avoid dispersing dust.

**FIRST AID:** External: Flush affected area with water. Internal: See a physician at once. Eyes: Flush with water for 15 minutes. See a physician.

**SOLUBLE:** Sulfuric, hydrochloric and cold, dilute nitric acids.

## SILICON

metal, lumps, laboratory grade, Si, A.W. 28.09

- ★ **HAZARD ALERT:** Slightly toxic by ingestion; irritating to body tissues; combustible in powder form.

Combustible as a powder. Slightly toxic by ingestion. Irritating to body tissues; avoid all body tissue contact. TLV: 10 mg/m<sup>3</sup>, or 1 rat LD<sub>50</sub>: 3160 mg/kg.

**FIRST AID:** External: Flush affected area with water. Internal: See a physician at once. Eyes: Flush with water for 15 minutes. See a physician.

**SOLUBLE:** Mixture of nitric and hydrofluoric acid and alkalis.

## POTASSIUM NITRATE

crystal, reagent, KNO<sub>3</sub>, F.W. 101.11

- ★ **HAZARD ALERT:** Strong oxidant; fire and explosion risk when heated or in contact with organic material; slightly toxic by ingestion; body tissue irritant.

Extremely strong oxidizer. Avoid contact with combustible materials. Avoid grinding or subjecting to friction. Body tissue irritant. Avoid contact with body tissues. or-rat LD<sub>50</sub>: 3750 mg/kg.

**FIRST AID:** External: Flush affected area with water. Internal: See a physician at once. Eyes: Flush with water for 15 minutes. See a physician.

**SOLUBLE:** Water, glycerin, slightly in alcohol.

## SALICYLIC ACID

laboratory grade, 2-HOC<sub>6</sub>H<sub>4</sub>COOH, F.W. 138.13

- ★ **HAZARD ALERT:** Moderately toxic by ingestion; irritating to body tissues.

Moderately toxic by ingestion. Combustible as a dust. Body tissue irritant. Avoid contact with body tissues; strong oxidizers and strong bases. or-rat LD<sub>50</sub>: 891 mg/kg.

**FIRST AID:** External: Flush affected area with water. Internal: See a physician at once. Eyes: Flush with water for 15 minutes. See a physician.

**SOLUBLE:** Slightly in water; many organic solvents.

## SODIUM CARBONATE

monohydrate, crystal, reagent, Na<sub>2</sub>CO<sub>3</sub> • H<sub>2</sub>O, F.W. 124.00

- ★ **HAZARD ALERT:** Slightly toxic by ingestion; body tissue irritant.

Slightly toxic by ingestion. Irritating to body tissues. Avoid contact with body tissues. or-rat LD<sub>50</sub>: 4090 mg/kg.

**FIRST AID:** External: Flush affected area with water. Internal: See a physician at once. Eyes: Flush with water for 15 minutes. See a physician.

## GRAPHITE POWDER

carbon, black lead

- ★ **HAZARD ALERT:** As a fine powder graphite is combustible and is a fire risk. Dust is mildly irritating to lungs.

Flammable solid. Dust is mildly irritating to skin eyes and mucous membranes. Avoid inhalation. TLV: 2.5 mg/m<sup>3</sup>.

**FIRST AID:** External: Flush affected area with water. Internal: See a physician immediately. Eyes: Flush with water for 15 minutes. See a physician.