LABORATORY CHEMICAL SAFETY SUMMARY: SODIUM AZIDE

Substance Sodium azide
(Hydrazoic acid, sodium salt)
CAS 26628-22-8

Formula NaN_3

Physical Properties Colorless crystalline solid
mp >275 °C (decomposes)
Readily soluble in water (41.7 g/100 mL at 17 °C)

Odor Odorless solid
Toxicity Data
LD_{50} oral (rat) 27 mg/kg
LD_{50} skin (rabbit) 20 mg/kg
TLV-TWA (ACGIH) 0.29 mg/m^3 (ceiling)

Major Hazards Highly toxic by inhalation, ingestion, or skin absorption.
Toxicity
The acute toxicity of sodium azide is high. Symptoms of exposure include lowered blood pressure, headache, hypothermia, and in the case of serious overexposure, convulsions and death. Ingestion of 100 to 200 mg in humans may result in headache, respiratory distress, and diarrhea. Target organs are primarily the central nervous system and brain. Sodium azide rapidly hydrolyzes in water to form hydrazoic acid, a highly toxic gas that can escape from solution, presenting a serious inhalation hazard. Symptoms of acute exposure to hydrazoic acid include eye irritation, headache, dramatic decrease in blood pressure, weakness, pulmonary edema, and collapse. Solutions of sodium azide can be absorbed through the skin.

Sodium azide has not been found to be carcinogenic in humans. Chronic, low-level exposure may cause nose irritation, episodes of falling blood pressure, dizziness, and bronchitis.

Flammability and Explosibility
Flammability hazard is low, but violent decomposition can occur when heated to 275 °C. Decomposition products include oxides of nitrogen and sodium oxide.

Reactivity and Incompatibility
Sodium azide should not be allowed to come into contact with heavy metals or their salts, because it may react to form heavy metal azides, which are notorious shock-sensitive explosives. Do not pour sodium azide solutions into a copper or lead drain. Sodium azide reacts violently with carbon disulfide, bromine, nitric acid, dimethyl sulfate, and a number of heavy metals, including copper and lead. Reaction with water and acids liberates highly toxic hydrazoic acid, which is a dangerous explosive. Sodium azide is reported to react with CH_2Cl_2 in the presence of DMSO to form explosive products.

Storage and Handling
Because of its high toxicity, sodium azide should be handled in the laboratory using practices identified by the academic department for such highly toxic chemicals. In particular, work with sodium azide should be conducted in a fume hood to prevent exposure by inhalation, and appropriate impermeable gloves and splash goggles should be worn at all times to prevent skin and eye contact. Containers of sodium azide should be stored in secondary containers in a cool, dry secured storage separated from acids.

Accidents
In the event of skin contact, immediately wash with soap and water and remove contaminated clothing. In case of eye contact, promptly wash with copious amounts of water for 15 min (lifting upper and lower lids occasionally) and obtain medical attention. If sodium azide is ingested, obtain medical attention immediately. If large amounts of this compound are inhaled, move the person to fresh air and seek medical attention at once.

In the event of a small spill, absorb sodium azide with absorbent, collect, and place in a container within secondary containment for hazardous waste disposal.

Disposal

Excess sodium azide and waste material containing this substance should be placed in an appropriate container and clearly labeled. Spill clean up residues and unused product are considered Acute Listed Hazardous Waste with a waste code of P105. Waste resulting from chemical reactions involving sodium azide may be a Characteristic Hazardous Waste if the waste is flammable, corrosive, reactive or toxic.

The information in this LCSS has been compiled by a committee of the National Research Council from literature sources and Material Safety Data Sheets and is believed to be accurate as of July 1994. This summary is intended for use by trained laboratory personnel in conjunction with the NRC report Prudent Practices in the Laboratory: Handling and Disposal of Chemicals. This LCSS presents a concise summary of safety information that should be adequate for most laboratory uses of the title substance, but in some cases it may be advisable to consult more comprehensive references. This information should not be used as a guide to the nonlaboratory use of this chemical.