西亚试剂® Xiya Reagent 说明书

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化 学 品 安 全 技 术 说 明 书

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MSDS标题

LITHIUM BOROHYDRIDE MSDS报告

产品标题

锂硼氢, 四氢硼酸锂;锂硼氢;氢硼化锂

CAS号

16949-15-8

化学品及企业标识

PRODUCT NAME

LITHIUM BOROHYDRIDE

NFPA

Flammability	4
Toxicity	2
Body Contact	2
Reactivity	2
Chronic	2

SCALE: Min/Nil=0 Low=1 Moderate=2 High=3 Extreme=4

PRODUCT USE

Strong reducing agent used in the reduction of compounds containing ketonic, aldehydic or ester carbonyls and a nitrile group, where reduction of the carbonyl but not the nitrate is required. Used also in the determination of free carboxyl groups in proteins and peptides.

SYNONYMS

B-H4-Li, LiBH4, "lithium tetrahydroborate"

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW

RISK

Reacts violently with water liberating extremely flammable gases.
Extremely flammable.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Accidental ingestion of the material may be damaging to the health of the individual. Borate poisoning causes nausea, vomiting, diarrhea and pain in the upper abdomen. Often persistent vomiting occurs, and there may be blood in the feces. There may also be weakness, lethargy, headache, restlessness, tremors and convulsions. All borates cause similar effects; the lethal dose is over 30 grams. Poisoning initially stimulates the central nervous system before causing depression, as well as disturbing the digestive system, causing skin eruptions, and damage to the liver and kidneys. Borate is mostly eliminated from the body via the kidneys. Lithium, in large doses, can cause dizziness and weakness. If a low salt diet is in place, kidney damage can result. There may be dehydration, weight loss, skin effects and thyroid disturbances. Central nervous system effects include slurred speech, blurred vision, numbness, inco-ordination and convulsions. Repeated exposure can cause diarrhea, vomiting, tremor, muscle jerks and very brisk reflexes.

EYE

Although the material is not thought to be an irritant, direct contact with the eye may cause transient discomfort characterized by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result. The material may produce foreign body irritation in certain individuals.

SKIN

The material is not thought to be a skin irritant (as classified using animal models). Abrasive damage however, may result from prolonged exposures. Good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting. Skin contact with the

material may damage the health of the individual; systemic effects may result following absorption. Open cuts, abraded or irritated skin should not be exposed to this material. Solution of material in moisture on the skin, or perspiration, mayincrease irritant effects. Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED

The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified using animal models). Nevertheless, adverse effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

CHRONIC HEALTH EFFECTS

Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems. Lithium compounds can affect the nervous system and muscle. This can cause tremor, inco- ordination, spastic jerks and very brisk reflexes. They may cause birth defects and should not be used when pregnancy is suspected. They are effective in treating manic episodes of bipolar disorder. Restricting sodium in the diet increases the risks of taking lithium. Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung. Prime symptom is breathlessness; lung shadows show on X-ray. Borate can accumulate in the testes and deplete germ cells and cause withering of the testicles, according to animal testing. Hair loss, skin inflammation, stomach ulcer and anemia can all occur. Repeated swallowing or inhalation irritates the stomach, causes a loss of appetite, disturbed digestion, nausea and vomiting, red rash, dry skin and mucous membranes, reddening of the tongue, cracking of the lips, inflamed conjunctiva, swelling of the eyelids and kidney injury. Prolonged ingestion causes effects to the reproductive system in both males and females. Rats exposed to pentaborane(9) for 5 hours/day, 5 days/week for up to 4 weeks at 3 ppm (calculated) exhibited hyperexcitability, tremors, and decreased body weight. Repeated exposures at 1 ppm for 4 weeks produced loss of body weight, diminished activity and amongst rabbits, ataxia. At 0.2 ppm monkeys were apathetic, anorexic and appeared anaesthetised. There was progressive incoordination, hindlimb immobility and muscle tremor in both nonhuman primates and dogs. Repeated exposure to decaborane by various routes produces toxic effects intermediate between the more toxic pentaborane and less toxic diborane. All routes of entry produce significant disability with skin absorption in rats and rabbits producing central nervous system effects more prominent than those produced by single exposures. Recovery from these effects may take several days (against a few hours for diborane). Daily inhalation exposures of 5-6 hours, for up to 6 months at 4.5 ppm, were fatal to rabbits after only a few exposures, dog and monkey (4-15 exposures), mice

(10-100 exposures) and rats (135+ exposures). Performance decrements, in various types of operant behaviors, is apparent in monkeys following injection of 3-6 mg/kg. Workers exposed to decaborane may be expected to exhibit decline in tasks requiring continuous motor behaviour or a series of discriminations. Chronic effects of diborane exposure include respiratory distress. Prolonged exposure to low concentrations cause headache, vertigo, chills and sometimes, fever. Daily 6-hour exposures at 7 ppm proved fatal in dogs (10-25 exposures) and rats (7-113 exposures). Although pulmonary changes could not be substantiated, the repeated respiratory insult was thought to be the underlying cause of death. Dogs developed signs of respiratory infection, probably secondary to respiratory irritation resulting from hydrolysis of the molecule. Chronic effects of diborane exposure include respiratory distress. Prolonged exposure to low concentrations causes headache, vertigo, chills and, sometimes, fever. Daily 6 hour exposures at 7 ppm proved fatal in dogs (10-25 exposures) and rats (7-113 exposures). Although pulmonary changes could not be substantiated, the repeated respiratory insult was thought to be the underlying cause of death. Dogs developed signs of respiratory infection probably secondary to respiratory irritation.