



MATERIAL SAFETY DATA SHEET
COMPLIES WITH 29 CFR 1910.1200.
OSHA HAZARD COMMUNICATION RULE

DATE OF LAST REVISION: 05-13-96

CHEMICAL IDENTITY

LABEL IDENTITY	LITHIUM METAL	
CHEMICAL NAME/SYNONYMS	LITHIUM METAL	
FORMULA	Li	
CAS REGISTRY NUMBER	7439-93-2	
HAZARDOUS INGREDIENTS	LITHIUM	
%: 99.8	TLV: not established	OSHA/PEL: not established

PHYSICAL AND CHEMICAL PROPERTIES

COLOR, FORM AND ODOR	Silver, soft metallic solid, odorless
DENSITY (gm/cc)	0.534gm/cc
VAPOR PRESSURE @ 20°	Effectively zero at 20°C
MELTING POINT	180.5°C

FIRE, EXPLOSION & PHYSICAL HAZARD DATA

FLASH POINT	No flash point
AUTOIGNITION TEMPERATURE (°C)	ND
FLAMMABLE LIMITS	Flammable solid

FIRE & EXPLOSION HAZARDS: Fire will generate a white, caustic smoke (lithium oxide). Avoid skin contact & inhalation. Molten Lithium reacts explosively with water or concrete flooring. Solid lithium in water will liberate hydrogen and under certain conditions will explode. The rate of reaction increases the greater the surface area.

REACTIVITY DATA: Lithium will react with air, oxygen, nitrogen and carbon dioxide. Incompatible with water, acid, halogens, and many other chemicals.

EXTINGUISHING MEDIA: Lithium fires are very hot and difficult to extinguish unless they are caught early. Lith-X is recommended for lithium fires. It acts by smothering the lithium. Lith-X tends to sink in and re-expose burning lithium. Re-ignition can occur if the Lith-X blanket is disturbed. If a lithium fire reaches large proportions, nothing can be done but to let it burn. **DO NOT USE WATER OR CARBON DIOXIDE EXTINGUISHERS.**

SPECIAL FIRE FIGHTING PROCEDURES: Never fight a lithium fire alone. Self-contained breathing apparatus and fire fighting entry suits are required when fighting fires in confined spaces. There is no known fabric which offers complete protection from burning lithium. It is recommended to layer fire-retardant clothing such as Kelvar or Nomex and an aluminized overcoat.

OTHER PHYSICAL HAZARDS: Flammable solid, dangerous when wet.



LITHIUM MATERIAL SAFETY DATA SHEET

HEALTH HAZARD INFORMATION

ROUTES OF ENTRY: SKIN: **Yes** EYE: **Yes**

SIGNS & SYMPTOMS OF OVEREXPOSURE: **Lithium reacts with body moisture to form lithium hydroxide causing a burning sensation. If such symptoms occur, flush area with water. Follow with neutralizing solution and seek medical attention.**

EFFECTS OF OVEREXPOSURE: **There is no known long-term hazard from lithium in its solid state, when not found in respirable dust. The primary health hazard is from burning lithium. See fire fighting and emergency first aid for more information.**

POTENTIAL FOR CARCINOGENICITY: **Lithium is not listed as a carcinogen or potential carcinogen by the National Toxicology Program of the U.S. Public Health Service, nor has it been found to be a carcinogen or potential carcinogen by OSHA or the International Agency for Research on Cancer.**

EMERGENCY FIRST AID PROCEDURES:

SOLID LITHIUM: (a) On contact with skin, remove all solid metal and wash thoroughly with water to avoid a caustic burn from lithium reacting with body moisture to form lithium hydroxide. Follow with a neutralizing solution. (b) On contact with eyes, flush with potable water for 15 minutes with the burned eye nearest the floor so that the chemical is not washed into the other eye. Seek medical attention.

MOLTEN LITHIUM: (a) Burning lithium particles must be removed as rapidly as possible. Flood the area with mineral oil and scrape the lithium from the affected area. Follow with a neutralizing solution and treat the victim for shock. Seek immediate medical attention.

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: **return material to a sealed container and coat with white mineral oil. If lithium begins to react with the moisture in the air, remove to an isolated area and allow it to burn. If the lithium cannot be removed from the area, follow fire fighting procedures.**

WASTE DISPOSAL METHOD: **Material which has not deteriorated or been contaminated may, with prior approval, be returned to Angstrom Sciences in DOT approved containers for re-processing. Heavily nitrated metal may be disposed of by slow ambient air oxidation in an open area protected from rain. Collect the solution. DO NOT ALLOW IT TO CONTAMINATE GROUND WATER. Follow local, state and federal regulations for disposal.**



LITHIUM MATERIAL SAFETY DATA SHEET

SPECIAL PROTECTION AND PRECAUTIONS

VENTILATION AND ENGINEERING CONTROLS: Lithium should only be exposed in an area that minimizes water vapor and totally avoids liquid water. This is usually achieved with dry inert gaseous atmospheres or dehumidified air. Note that nitrogen is not an inert gas to lithium.

PERSONAL PROTECTIVE EQUIPMENT:

SOLID LITHIUM: wear eye protection and rubber or surgical gloves. Fire fighting clothing should be readily available.

MOLTEN LITHIUM: complete head to foot protection is required including a hard hat, face shield, fire retardant clothing, aluminized overcoat, gloves and safety shoes.

SAFE HANDLIN, USE AND STORAGE: lithium should be stored in an isolated area free from sources of water, including sprinkler systems. Avoid elevated temperatures, open flame and spark-generating equipment. The area should be free of other combustible materials. Buckets of Lith-X and Lith-X fire extinguishers should be readily available.

PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE: if vapors from molten lithium condense on equipment, clean before exposing to air to avoid a flash fire. There should be no water in the repair area. Wear appropriate personal protective equipment to avoid contact with skin or eyes.

OTHER: Lithium is conventionally packaged in DOT approved containers including hermetically sealed cans backfilled with argon or drums in which the metal is coated with white mineral oil. Lithium should be used as soon as possible after receipt.

PROPER SHIPPING NAME: Lithium Metal (UN 1415)

HAZARDOUS LABEL (S) REQUIRED: Flammable Solid/Dangerous When Wet

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any other process. The information set forth herein is based on technical data that **Angstrom Sciences** believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warranties, expressed or implied, and assume no liability in connection with any use of this information. Nothing herein is to be taken as a license to operate under a recommendation to infringe any patents. Any use of this data and information must be determined by the user to be in accordance with Federal, State and Local laws and regulations.