MATERIAL SAFETY DATA SHEET

SRM Supplier: **National Institute of Standards and Technology**
Standard Reference Materials Program
Bldg. 202 Rm. 211
Gaithersburg, Maryland 20899

SRM Number: 660a
MSDS Number: 660a
SRM Name: Lanthanum Hexaboride Powder, Line Position and Line Shape Standard for Powder Diffraction
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MSDS Coordinator: Joylene W.L. Thomas
Phone: (301) 975-6776
ChemTrec: 1-800-424-9300

FAX: (301) 926-4751
e-mail: SRMMSDS@nist.gov

SECTION I. MATERIAL IDENTIFICATION

Material Name: Lanthanum Hexaboride Powder, Line Position and Line Shape Standard for Powder Diffraction

Description: SRM 660a is a high purity lanthanum hexaboride fine powder of 99.5 % purity or better. This material was ball milled and size classified to nominally < 15 µm.

Other Designations: Lanthanum Boride

Name	Chemical Formula	CAS Registry Number
Lanthanum Hexaboride	LaB_6	12008-21-8

DOT Classification: Not regulated by DOT regulations

Manufacturer/Supplier: Available from a number of suppliers

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Component	Nominal Concentration (%)	Exposure Limits and Toxicity Data
Lanthanum Hexaboride	~99	ACGIH TLV-TWA: No occupational exposure limits established

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

Lanthanum Hexaboride
Appearance and Odor: a purple, crystalline powder
Molecular Weight: 203.78
Specific Gravity (Water = 1): 2.61
Boiling Point: decomposes
Melting Point: 2210 °C
Solubility in Water (vol/vol at 0 °C): insoluble
Solubility in Other Compounds: insoluble in hydrochloric acid

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: N/A **Method Used:** N/A **Autoignition Temperature:** N/A

Flammability Limits in Air (Volume %): **UPPER:** N/A
LOWER: N/A

Unusual Fire and Explosion Hazards: This material is an explosion hazard as a fine dust, especially over 600 °C. This material may generate toxic fumes if involved in a fire.

Extinguishing Media: Use extinguishing media that is appropriate to the surrounding fire.

Special Fire Procedures: Fire fighters should wear a self-contained breathing apparatus (SCBA) and protective clothing when fighting fires involving materials of this type.

SECTION V. REACTIVITY DATA

Stability: **__X__ Stable** **_____ Unstable**

Conditions to Avoid: Avoid incompatible materials and excessive temperatures.

Incompatibility (Materials to Avoid):. Keep lanthanum hexaboride away from strong acids and fluorine.

See Section IV**:** *Fire and Explosion Hazard Data*

Hazardous Decomposition or Byproducts: Thermal oxidative reduction of this material can produce oxides of lanthanum and boron.

Hazardous Polymerization: **_____ Will Occur** **__X__ Will Not Occur**

SECTION VI. HEALTH HAZARD DATA

Route of Entry: **__X__ Inhalation** **_____ Skin** **__X__ Ingestion**

Health Hazards (Acute and Chronic): This material is a nuisance dust and may act as a pulmonary irritant when inhaled. Contact with the skin or eyes will cause irritation by mechanical means; it is not absorbed through the skin.

Intestinal absorption of lanthanum boride is usually poor. As with other rare earth compounds, chronic exposure could increase blood clotting time. Borides are considered industrial poisons, affecting the central nervous system and liver. Symptoms of boron poisoning include vomiting, diarrhea, and a scarletina-form body rash. Symptoms of acute lanthanide toxicity in rats are immediate defecation, writhing, inability to coordinate voluntary muscular movements, sedation, labored respiration, and reduced activity. Death is mainly due to respiratory and cardiac failure. Chronic lanthanide intoxication causes renal and hepatic derangement and increases coagulation time. Lanthanides target the liver, causing fatty liver degeneration and a decrease in liver glycogen and blood glucose levels.

Medical Conditions Generally Aggravated by Exposure: N/A

Listed as a Carcinogen/Potential Carcinogen:

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens		X
In the International Agency for Research on Cancer (IARC) Monographs		X
By the Occupational Safety and Health Administration (OSHA)		X

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Remove contaminated shoes and clothing. Rinse affected area with large amounts of water followed by washing the area with soap and water. Obtain medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance if necessary.

Inhalation: If inhaled, move the victim to fresh air. If breathing is difficult, give oxygen; if the victim is not breathing, give artificial respiration. Obtain medical assistance if necessary.

Ingestion: If ingestion occurs, wash out mouth with water. Obtain medical assistance if necessary.

TARGET ORGAN(S) OF ATTACK: The liver, kidneys, blood, and central nervous system.

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material Is Released or Spilled: Notify safety personnel of major spills and/or leaks. Sweep up spills, avoid dust promoting conditions, and place material in an appropriate container for disposal.

Waste Disposal: Follow all federal, state, and local regulations.

Handling and Storage: Provide local exhaust ventilation in sufficient volume and pattern to keep concentration of hazardous ingredients below the minimal exposure at which irritation may occur. Wear appropriate protective clothing, such as chemical safety goggles and/or a full face shield to prevent eye contact, when working with this material.

NOTE: Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the laboratory.

Store this material in tightly closed containers in a cool, dry, well ventilated area. Eyewash stations and washing facilities should be readily available in areas of use and handling.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Sources: MDL Information Systems, Inc., MSDS *Lanthanum Boride*, 02 June 1999.
Merck Index, 11th Ed., 1989.
The Sigma Aldrich Library of Chemical Safety Data, Ed. II, 1988.