MATERIAL SAFETY DATA SHEET
OSHA HAZARD COMMUNICATION RULE

DATE OF LAST REVISION: 04-29-96

<table>
<thead>
<tr>
<th>CHEMICAL IDENTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABEL IDENTITY</td>
</tr>
<tr>
<td>CHEMICAL NAME/SYNONYMS</td>
</tr>
<tr>
<td>FORMULA</td>
</tr>
<tr>
<td>CHEMICAL FAMILY</td>
</tr>
<tr>
<td>CAS REGISTRY NUMBER</td>
</tr>
<tr>
<td>HAZARDOUS INGREDIENTS</td>
</tr>
<tr>
<td>%: 99</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PHYSICAL AND CHEMICAL PROPERTIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLOR, FORM AND ODOR</td>
</tr>
<tr>
<td>BOILING POINT</td>
</tr>
<tr>
<td>DENSITY (gm/cc)</td>
</tr>
<tr>
<td>VAPOUR PRESSURE @ 20°C</td>
</tr>
<tr>
<td>% VOLATILE BY VOLUME (%)</td>
</tr>
<tr>
<td>REACTION WITH WATER</td>
</tr>
<tr>
<td>EVAPORATION RATE (H₂O=1)</td>
</tr>
<tr>
<td>SOLUBILITY IN WATER</td>
</tr>
<tr>
<td>MELTING POINT</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>FIRE AND EXPLOSION HAZARD DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLASH POINT</td>
</tr>
<tr>
<td>AUTOIGNITION TEMPERATURE (°C)</td>
</tr>
<tr>
<td>FLAMMABILITY</td>
</tr>
<tr>
<td>EXTINGUISHING MEDIA</td>
</tr>
<tr>
<td>SPECIAL FIRE FIGHTING PROCEDURES</td>
</tr>
<tr>
<td>UNUSUAL FIRE &amp; EXPLOSION HAZARDS foil,</td>
</tr>
</tbody>
</table>
LANTHANUM METAL
MATERIAL SAFETY DATA SHEET

HEALTH HAZARD INFORMATION

TOXICITY DATA

ND

HMIS RATING:

HEALTH: NA  FLAMMABILITY: NA  REACTIVITY: NA  PERSONAL PROTECTION: NA

ROUTES OF ENTRY

INHALATION: Yes
SKIN: Yes
INGESTION: No

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

No data found

EFFECTS OF OVEREXPOSURE (acute and chronic):

INHALATION: may be harmful if inhaled, good industrial hygiene practice suggests limiting exposure to all respirable particles.
SKIN: low toxicity potential due to poor skin absorption.
DERMAL/EYE: may cause irritation to skin and eyes.
OTHER: has anticoagulant effect when given intravenously

CARCINOGENICITY: none  NTP: no  IARC MONOGRAPHS: no  OSHA REGULATE: no

EMERGENCY FIRST AID PROCEDURES:

INGESTION: if swallowed & victim is fully conscious, induce vomiting immediately by giving 2 glasses of water & sticking finger down throat.
INHALATION: remove to fresh air, if not breathing give artificial respiration or oxygen.
SKIN CONTACT: remove contaminated clothes, wash affected area with soap & water too
EYE CONTACT: flush eyes with plenty of water for 15 minutes, under upper & lower

*SEEK MEDICAL ATTENTION FOR ALL SITUATIONS MENTIONED ABOVE*

REACTIVITY DATA

STABILITY

Stable
avoid dusts, air and moisture sensitive water, strong acids & oxidizing material and halogens
powders or thin foils will react with

CONDITIONS CONTRIBUTING TO UNSTABILITY

Stable

INCOMPATIBILITY (MATERIALS TO AVOID)

avoid at room temp to produce flammable/ explosive Hydrogen gas.

HAZARDOUS DECOMPOSITION PRODUCTS

Will Not Occur
H2O

HAZARDOUS POLYMERIZATION

Conditions to AVOID

NA
SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: eliminate all sources of ignition. Evacuate the area, wear appropriate protective gear, sweep into appropriate container. Avoid creating dust. DO NOT use “shop” vacuum as this may cause a fire. Ventilate the area, wash spill after material is picked up.

WASTE DISPOSAL METHOD:
Consult federal, state and local regulations for proper disposal.

SPECIAL PROTECTIVE INFORMATION

RESPIRATORY PROTECTION
NIOSH approved dust mask, in dust conditions

LOCAL EXHAUST
Maintain airborne below limits

MECHANICAL (general)
NA

SPECIAL
NA

PROTECTIVE GLOVES
Recommended

EYE PROTECTION
Safety goggles with side shields, dust proof, under dusting conditions

OTHER PROTECTIVE EQUIPMENT
Maintain a sink, safety shower and eyewash fountain in the work area. Have oxygen readily available.

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING/STORAGE: store in cool dry place in tightly closed containers. (air & moisture sensitive), store away from oxidizers & other materials listed under incompatibility. STORE UNDER ARGON OR OTHER INERT ENVIRONMENT. Don’t breath dust.

TRANSPORTATION REQUIREMENTS

DOT CLASS: Not Classified
UN NUMBER: Powder: 2813
Chunk: 1325
IMCO CLASS: NA
OTHER: NA

PRECAUTIONARY LABELING
NONE

THE ABOVE INFORMATION IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, SINCE DATA, SAFETY STANDARDS AND GOVERNMENT REGULATIONS ARE SUBJECT TO CHANGE THE CONDITIONS OF HANDLING AND USE, OR MISUSE ARE BEYOND OUR CONTROL, ANGSTROM SCIENCES MAKE NO WARRANTY, EITHER EXPRESSED OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR THE RELIANCE THEREON. USER SHOULD SATISFY HIMSELF THAT HE HAS ALL CURRENT DATA RELEVANT TO HIS PARTICULAR USE. NA= NOT APPLICABLE ND= NO DATA FOUND
ADDITIONAL INFORMATION FOR LANTHANUM METAL

SECTION II:

SARA TITLE III HAZARD CLASSIFICATION:
(X) FIRE HAZARD (X) REACTIVE HAZARD

warning statements:
FLAMMABLE SOLID IN ALL FORMS
AS POWDER OR THIN FOIL WILL REACT WITH WATER EMITTING FLAMMABLE/
EXPLOSIVE HYDROGEN GAS
ALL FORMS WILL REACT WITH DILUTE ACIDS EMITTING FLAMMABLE/
EXPLOSIVE HYDROGEN GAS

SECTION VI:

NOTE TO PHYSICIAN:
All treatments should be based on observed signs and symptoms of distress in
the patient. Consideration should be given to the possibility that over-exposure
to materials other than this product may have occurred. Treat symptomatically.
No specific information found.

SECTION VII:

HANDLING/STORAGE (CONTINUED)
Avoid direct or prolonged contact with skin and eyes. Wash hands thoroughly
after handling. Do not rub eyes with soiled hands. Do not eat, drink or smoke in
the work area.

OTHER PRECAUTIONS:
Avoid creating dusts as this product, like most materials in powder form, is
capable of creating a dust explosion.