

LTS RESEARCH LABORATORIES, INC.
MATERIAL SAFETY DATA SHEET
SAMARIUM ALUMINIDE

GENERAL

MANUFACTURER/SUPPLIER: LTS RESEARCH LABORATORIES, INC.

COMPANY'S STREET: 37 RAMLAND ROAD
COMPANY'S CITY: ORANGEBURG
COMPANY'S STATE: NEW YORK
COMPANY'S ZIP CODE: 10962
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DATE MSDS PREPARED: 09/01/11

1. PRODUCT IDENTIFICATION

PRODUCT NAME: SAMARIUM ALUMINIDE
CHEMICAL NATURE: LANTHANIDES
FORMULA: SmAl₂
CAS #: 12043-27-5
MOLECULAR WEIGHT: 204.32

2. PHYSICAL AND CHEMICAL CHARACTERISTICS

BOILING POINT 760 MM HG: N/A
MELTING POINT: N/A
SPECIFIC GRAVITY: N/A
VAPOR DENSITY: N/A
VAPOR PRESSURE (MM HG): N/A
SOLUBILITY IN H₂O: REACTS
APPEARANCE AND ODOR: POWDER, GRANULES, SPUTTERING TARGET, ODORLESS

3. HAZARD IDENTIFICATION

HAZARD DESCRIPTION: F HIGHLY FLAMMABLE
RISK PHRASES: R 15 CONTACT WITH WATER LIBERATES EXTREMELY
FLAMMABLE GASES
R 17 SPONTANEOUSLY FLAMMABLE IN AIR.

HMIS RATINGS:
HEALTH: 1
FLAMMABILITY: 4
REACTIVITY: 2

(ALUMINUM)
ACGIH/TLV 10 MG/M³ (METAL DUST)

4. FIRE FIGHTING MEASURES

FLASH POINT: N/A
AUTOIGNITION TEMPERATURE: 150⁰C
FLAMMABLE LIMITS:
UPPER: N/A
LOWER: N/A
EXTINGUISHING MEDIA: CO₂, SAND, EXTINGUISHING POWDER. DO NOT USE
WATER, DO NOT USE HALOGENATED EXTINGUISHER
SPECIAL FIRE FIGHTING
PROCEDURES: N/A

UNUSUAL FIRE AND
EXPLOSION HAZARDS:

IN CASE OF FIRE, METAL OXIDE FUMES ARE REALEASED.
CONTACT WITH WATER RELEASES HYDROGEN

ALUMINUM

FRESH, VERY FINELY GROUND ALUMINUM, MAY BE PYROPHORIC WHEN its PARTICLE SIZE IS 0.03 UM OR LESS. DUST IS MODERATELY FLAMMABLE/EXPLOSIVE BY HEAT, FLAME OR CHEMICAL REACTION WITH POWERFUL OXIDIZERS. MAY IGNITE ON CONTACT WITH VAPORS OF $ASCL_3$, SCL_2 , SE_2CL_2 , PCL_5 ; ON CONTACT WITH BARIUM PEROXIDE; CONTACT WITH O_2 ; MIXTURES WITH PICRIC ACID + WATER AFTER A DELAYED PERIOD; EXOTHERMIC REACTION WITH WATER + IRON POWDER WHICH EMITS HYDROGEN GAS; AND SPONTANEOUSLY IGNITES IN CS_2 VAPORS.

MAY IGNITE AND REACT VIOLENTLY WITH MIXTURES OF SODIUM PEROXIDE AND O_2+H_2O ; ON CONTACT WITH HALOGENS AND INTERHALOGENS. MAY REACT VIOLENTLY WITH HYDROCHLORIC ACID, HYDROFLUORIC ACID, HYDROGEN CHLORIDE GAS AND DISULFUR DIBROMIDE; NON-METALS PHOSPHORUS, SULFUR AND SELENIUM; WITH SULFUR, SB OR AS WHEN HEATED; AND POTENTIAL VIOLENT REACTION WITH SODIUM PEROXIDE. MAY HAVE A VIOLENT OR EXPLOSIVE REACTION WHEN HEATED WITH METAL OXIDES, OXOSALTS (NITRATES, SULFATES), SOME HALOCARBONS, SULFIDES OR HOT COPPER OXIDE WORKED WITH AN IRON OR STEEL TOOL. MAY HAVE AN EXPLOSIVE REACTION WITH SODIUM SULFATE ABOVE $800^{\circ}C$; IN POWDERED FORM WITH $KClO_4+BA(NO_3)_2+KNO_3+H_2O$ AND $BA(NO_3)_2+KNO_3+SULFUR+VEGETABLE ADHESIVES+H_2O$ AFTER A DELAYED PERIOD; POWDER FORMS SENSITIVE EXPLOSIVE MIXTURE WITH OXIDANTS; MIXTURES WITH POWDERED $AgCl$, NH_4NO_3 , OR $NH_4NO_3+CA(NO_3)_2+FORMAMIDE+H_2O$ ARE POWERFUL EXPLOSIVES; MIXTURES WITH AMMONIUM PEROXODISULFATE+WATER IS EXPLOSIVE; AND POTENTIAL EXPLOSIVE REACTION WITH CCL_4 DURING BALL MILLING OPERATIONS. MANY VIOLENT OR EXPLOSIVE REACTIONS WITH THE FOLLOWING HALOCARBONS HAVE OCCURRED IN INDUSTRY: BROMOTHANE, BROMOTRIFLUOROMETHANE, CCL_4 , CHLORODIFLUOROMETHANE, CHLOROFORM, CHLOROMETHANE, CHLOROMETHANE+2-METHYLPROPANE, DICHLORODIFLUOROMETHANE, 1, 2-DICHLOROETHANE, DICHLOROMETHANE, 1, 2-DICHLOROPROPANE, 1,2, -DIFLUOROTETRAFLUROETHANE, FLUOROTRICHOROETHANE, HEXACHLOROETHANE ALCOHOL, POLYTRIFLUORETHYLENE OILS AND GREASES, TETRACHLORETHYLENE, TETRACHLORETHYLENE, TETRAFLUOROMETHANE, 1,1,1-TRICHLOROETHANE, TRICHLOROETHYLENE, 1,1,2-TRICHLOROTRIFLUOROETHANE, AND TRICHLOROTRIFLUOROETHANE-DICHLOROBENZENE

5. HEALTH HAZARD INFORMATION

EFFECTS OF OVER EXPOSURE:

SKIN:

CAN CAUSE SLIGHT SKIN IRRITATION.

EYES:

CAN CAUSE PARTICLE IRRITATION. INGESTION IS UNKNOWN.

SUBACUTE TO CHRONIC:

LANTHANONS CAN CAUSE DELAYED BLOOD CLOTTING LEADING TO HEMORRHAGES. EXPOSURE MAY ALSO LEAD TO SENSITIVITY TO HEAT, ITCHING, INCREASED AWARENESS OR ODOR AND TASTE, AND LIVER DAMAGE.

ALUMINUM

EFFECTS OF EXPOSURE:

ACUTE EFFECTS:

INHALATION: DUST OR POWDER MAY CAUSE IRRITATION TO THE UPPER RESPIRATORY TRACT

INGESTION: NO ACUTE HEALTH EFFECTS RECORDED.

SKIN: DUST OR POWDER MAY CAUSE IRRITATION.

EYE: DUST OR POWDER MAY CAUSE ABRASIVE IRRITATION. EYE CONTACT WITH ALUMINUM PARTICLES MAY CAUSE CORNEAL NECROSIS.

CHRONIC AFFECTS:

INHALATION: INHALATION OF FINELY DIVIDED POWDER HAS BEEN REPORTED AS A CAUSE OF PULMONARY FIBROSIS. ALUMINUM IN AEROSOLS HAS BEEN IMPLICATED IN ALZHEIMER'S DISEASE.

INGESTION: NO CHRONIC HEALTH EFFECTS RECORDED.

SKIN: NO CHRONIC HEALTH EFFECTS RECORDED.

EYES: NO CHRONIC HEALTH EFFECTS RECORDED.

MEDICAL CONDITIONS

AGGRAVATED BY EXPOSURE: PRE-EXISTING UPPER RESPIRATORY AND LUNG DISORDERS.

6. STABILITY

STABILITY: STABLE

CONDITION TO AVOID: NONE.

INCOMPATIBILITY (MATERIAL TO AVOID): ACIDS, AIR, OXIDIZING AGENTS, HALOGENS, WATER, AIR/HYDROCARBON MIXTURES, ALUMINUM HALIDES + CARBON MONOXIDE OR CARBON DIOXIDE, ANTIMONY, ARSENIC, BISMUTH, BUTANOL, METHANOL AND OTHER ALCOHOLS, INTERHALOGENS, HALOCARBONS, CARBON DISULFIDE, COPPER (I) OXIDE, COPPER (II) OXIDE, COPPER + SULFUR, DIBORANE, DIETHYL ETHER, DISULFUR DIBROMIDE, FORMIC ACID, HYDROCHLORIC ACID, HYDROFLUORIC ACID, HYDROGEN CHLORIDE, IRON + WATER, MERCURY (II) SALTS, METAL OXOSALTS SUCH AS NITRATES, OXIDES, AND SULFATES, NIOBIUM OXIDE + SULFUR, NON-METAL HALIDES, PHOSPHORUS, SULFUR, SELENIUM, STEEL AND SILICON STEEL, SILVER CHLORIDE, SODIUM ACETYLIDE, SODIUM DIURANATE, SODIUM HYDROXIDE, ZINC.

DECOMPOSITION PRODUCTS: NONE

HAZARDOUS REACTIONS: CONTACT WITH WATER RELEASES FLAMMABLE GASES. SPONTANEOUSLY FLAMMABLE IN AIR. ALUMINUM OXIDE; HYDROGEN WHEN REACTED WITH SOME ACIDS AND CAUSTIC SOLUTIONS

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

7. EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: IF RESPIRATORY IRRITATION OR DISTRESS OCCURS REMOVE VICTIM TO FRESH AIR. SEEK MEDICAL ATTENTION IF RESPIRATORY IRRITATION OR DISTRESS CONTINUES.

INGESTION: IF VICTIM IS CONSCIOUS AND ALERT, GIVE 1-2 GLASSES OF WATER TO DRINK. DO NOT GIVE ANYTHING BY

SKIN: MOUTH TO AN UNCONSCIOUS PERSON. SEEK MEDICAL ATTENTION. DO NOT LEAVE VICTIM UNATTENDED. IN CASE OF CONTACT, WASH WITH PLENTY OF SOAP AND WATER. SEEK MEDICAL ATTENTION IF IRRITATION DEVELOPS OR PERSISTS.

EYE: RINSE PARTICULATE MATTER FROM EYE. SEEK MEDICAL ATTENTION IF IRRITATION DEVELOPS OR PERSISTS OR IF VISUAL CHANGES OCCUR.

8. HANDLING AND STORAGE

HANDLING AND STORAGE: STORE IN CLOSED CONTAINER. IT WILL ABSORB MOISTURE AND CO₂. HANDLE UNDER DRY ARGON. KEEP IGNITION SOURCES AWAY. DO NOT STORE TOGETHER WITH OXIDIZING AGENTS AND ACIDIC MATERIALS.

OTHER PRECAUTIONS: NORMAL LAB COAT.

9. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: SWEEP OR WIPE UP AND DISPOSE.

WASTE DISPOSAL METHOD: DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

RESPIRATORY PROTECTION (SPECIFY TYPE): NIOSH APPROVED DUST, MIST, AND FUME RESPIRATOR

VENTILATION: NONE- LOCAL IF DUSTING OCCURS.

PROTECTIVE GLOVES: RUBBER

EYE PROTECTION: ANSI APPROVED SAFETY GLASSES

10. TOXICITY DATA

LD50/LC50: LD50 RAT, ORALLY >1000 mg/kg

CARCINOGENICITY: NO CLASSIFICATION DATA ON CARCINOGENIC PROPERTIES OF THIS MATERIAL IS AVAILABLE FROM THE EPA, IARC, NTP, OSHA, OR ACGIH.

ADDITIONAL INFORMATION: TO THE BEST OF OUR KNOWLEDGE THE ACUTE AND CHRONIC TOXICITY OF THIS SUBSTANCE IS NOT FULLY KNOWN.

11. TRANSPORTATION DATA

SAMARIUM

D.O.T. REGULATER FOR POWDER AND PIECES

UN NUMBER: 1383
PROPER SHIPPING NAME: PYROPHORIC METAL, N.O.S.
PACKING GROUP: I
ADR//RID CLASS: 4.2 (S4) SUBSTANCE LIABLE TO SPONTANEOUS
COMBUSTION
IMDG CLASS: 4.2
AIR TRAN. ICAO/IATA CLASS: 4.2
MARITIME TRAN. IMDG CLASS: 4.2

ALUMINUM

FOR POWDER ONLY

DANGEROUS WHEN WET

HAZARD CLASS: 4.3
UN NUMBER: 1396
ADR//RID CLASS: 4.3 (W2) SUBSTANCES WHICH, IN CONTACT WITH WATER
EMIT FLAMMABLE GASES
IMDG CLASS: 4.3
AIR TRAN. ICAO/IATA CLASS: 4.3
MARITIME TRAN. IMDG CLASS: 4.3
PG II
PROPER SHIPPING NAME: ALUMINUM POWDER, UNCOATED

12. OTHER INFORMATION

THIS SAFETY DATA SHEET SHOULD BE USED IN CONJUNCTION WITH TECHNICAL SHEETS. IT DOES NOT REPLACE THEM. THE INFORMATION GIVEN IS BASED ON OUR KNOWLEDGE OF THIS PRODUCT, AT THE TIME OF PUBLICATION, IT IS GIVEN IN GOOD FAITH. THE ATTENTION OF THE USER IS DRAWN TO THE POSSIBLE RISKS INCURRED BY USING THE PRODUCT FOR ANY OTHER PURPOSE OTHER THAN THAT FOR WHICH IT WAS INTENDED. THIS DOES NOT IN ANY WAY EXCUSE THE USER FROM KNOWING AND APPLYING ALL THE REGULATIONS GOVERNING HIS ACTIVITY. IT IS THE SOLE RESPONSIBILITY OF THE USER TO TAKE ALL PRECAUTIONS REQUIRED IN HANDLING THE PRODUCT. THE AIM OF THE MANDATORY REGULATIONS MENTIONED IS TO HELP THE USER TO FULFILL HIS OBLIGATIONS REGARDING THE USE OF HAZARDOUS PRODUCTS.