

LTS RESEARCH LABORATORIES, INC.
MATERIAL SAFETY DATA SHEET
GERMANIUM ANTIMONY TELLURIDE

GENERAL

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DATE MSDS PREPARED: 06/28/12

1. PRODUCT IDENTIFICATION

PRODUCT NAME: GERMANIUM ANTIMONY TELLURIDE
FORMULA: $\text{Ge}_2\text{Sb}_2\text{Te}_5$
CAS #: 7440-56-4/7440-36-0/13494-80-9
MOLECULAR WEIGHT: 1026.80

2. PHYSICAL AND CHEMICAL CHARACTERISTICS

BOILING POINT: N/A
MELTING POINT: N/A
SPECIFIC GRAVITY ($\text{H}_2\text{O}=1$): 6.35 g/cc
VAPOR DENSITY: N/A
VAPOR PRESSURE: N/A
EVAPORATION RATE: N/A
% VOLATILES: N/A
SOLUBILITY IN H_2O : INSOLUBLE
APPEARANCE AND ODOR: GRAY BLACK POWDER, PIECES, SPUTTERING TARGET.
ODORLESS

3. HAZARD IDENTIFICATION

HAZARDOUS COMPONENTS %
GERMANIUM 0-100%
OSHA/PEL: N/A
ACGIH/TLV N/A
PARTICULATES NOT OTHERWISE REGULATED: 0-100%
OSHA/PEL: 15 MG/M^3 (DUST), 5 MG/M^3 (RESP)
ACGIH/TLV 10 MG/M^3 TOTAL DUST
HAZARD DESCRIPTION: T TOXIC
Xn HARMFUL
N DANGEROUS FOR THE ENVIRONMENT
RISK PHRASES: 20/22 HARMFUL BY INHALATION AND IF SWALLOWED
51/53 TOXIC TO AQUATIC ORGANISMS, MAY CAUSE LONG-TERM ADVERSE EFFECTS IN THE AQUATIC ENVIRONMENT
HMIS RATINGS:
HEALTH: 2
FLAMMABILITY: 1
REACTIVITY: 1

4. FIRE FIGHTING MEASURES

FLASH POINT: N/A
AUTOIGNITION TEMPERATURE: N/A

FLAMMABLE LIMITS:
UPPER: N/A
LOWER: N/A
EXTINGUISHING MEDIA: PRODUCT IS NOT FLAMMABLE. USE SUITABLE
EXTINGUISHING MEDIA FOR SURROUNDING FIRE
SPECIAL HAZARDS: IN CASE OF FIRE TOXIC METAL OXIDE FUMES MAY BE
RELEASED

5. HEALTH HAZARD INFORMATION

ACUTE EFFECTS:
SKIN: IRRITANT TO SKIN AND MUCOUS MEMBRANES
EYE: IRRITATING EFFECT
CHRONIC EFFECTS: ANTIMONY COMPOUNDS MAY CAUSE METALLIC TASTE,
GASTROINTESTINAL DISTURBANCES, VOMITING,
DIARRHEA, DIZZINESS, AND SYSTEMIC POISONING.
CHRONIC EXPOSURE MAY CAUSE LIVER AND KIDNEY
DAMAGE. DERMATITIS AND ECZEMATOUS SKIN
ERUPTIONS MAY RESULT FROM SKIN CONTACT.
TELLURIUM IS CONVERTED IN THE BODY TO DIMETHYL
TELLURIDE WHICH IMPARTS A GARLIC-LIKE ODOR TO
THE BREATH AND SWEAT. HEAVY EXPOSURE MAY
RESULT IN HEADACHE, SLEEPSINESS, METALLIC TASTE,
LOSS OF APPETITE, NAUSEA, TREMORS, CONVULSION,
AND RESPIRATORY ARREST.
LOW TEMPERATURE, LANGUOR, DIARRHEA, CYANOSIS
AND EXTREME DEPRESSION OF HEART AND BREATH.
EDEMA, LUNG HEMORRHAGE, SPOT HEMORRHAGE FROM
SMALL INTESTINAL WALL, PERITONEAL
EXTRAVASATION
GERMANIUM COMPOUNDS RELATIVELY LOW TOXIC. HIGH
DOSES CAUSE DAMAGE TO KIDNEY AND BLADDER INJURY.
ACUTE AND CHRONIC TOXICITY IS NOT FULLY KNOWN.
EXPOSURE TO DUST OR FUMES OF INORGANIC TIN SALTS IS
KNOWN TO CAUSE BENIGN INFLAMMATION OF THE LUNG
TISSUE, A CONDITION IN WHICH THERE IS NO DISTINCTIVE
FIBROSIS, NO SIGN OF DISABILITY, NO COMPLICATING
FACTORS.

6. STABILITY

STABILITY: STABLE
CONDITIONS TO AVOID: HEATING IN THE PRESENCE OF BROMINE, CHLORINE,
FLUORINE, OXYGEN, POTASSIUM CHLORIDE AND
POTASSIUM NITRITE.
MATERIAL TO AVOID: ACIDS, HEATING IN THE PRESENCE OF BROMINE,
CHLORINE, FLUORINE, OXYGEN, POTASSIUM CHLORIDE
AND POTASSIUM NITRITE
DANGEROUS REACTIONS: REACTS WITH STRONG OXIDIZING AGENTS
HAZARDOUS
DECOMPOSITION PRODUCTS: TOXIC METAL OXIDE FUMES

7. EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: REMOVE TO FRESH AIR AND PROVIDE ARTIFICIAL
RESPIRATION IF NECESSARY. SEEK IMMEDIATE MEDICAL
ADVICE.
INGESTION: SEEK IMMEDIATE MEDICAL ATTENTION.
SKIN: WASH SKIN THOROUGHLY WITH MILD SOAP AND WATER.
RINSE THOROUGHLY. SEEK IMMEDIATE MEDICAL
ADVICE.

EYE: FLUSH EYES WITH PLENTY OF WATER. SEEK IMMEDIATE MEDICAL ADVICE.

8. HANDLING AND STORAGE

HANDLING & STORAGE: STORE IN A COOL, DRY PLACE IN TIGHTLY SEALED CONTAINERS. ENSURE GOOD VENTILATION. NO SPECIAL REQUIREMENTS ARE NECESSARY IF USED CORRECTLY.

9. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

RESPIRATION: WEAR NIOSH APPROVED DUST-MIST VAPOR RESPIRATOR.
VENTILATION: LOCAL EXHAUST TO MAINTAIN CONCENTRATION AT OR BELOW THE PEL, TLV.
PROTECTIVE GLOVES: RUBBER GLOVES.
EYE PROTECTION: SAFETY GLASSES
PROTECTIVE CLOTHING: PROTECTIVE GEAR SUITABLE TO PREVENT CONTAMINATION.

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

10. TOXICITY DATA

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

UN NUMBER: 3284
HAZARD CLASS: 6.1
PACKING GROUP: II
PROPER SHIPPING NAME: TELLURIUM COMPOUND, N.O.S.
ADR//RID CLASS: 6.1 (T5) TOXIC SUBSTANCES
IMDG CLASS: 6.1
ICAO/IATA CLASS: 6.1

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.