

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

GENERAL

MANUFACTURER/SUPPLIER: LTS RESEARCH LABORATORIES, INC.

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1. PRODUCT IDENTIFICATION

PRODUCT NAME: BISMUTH-ANTIMONY-TELLURIDE
FORMULA: BiSbTe
CAS #:
BISMUTH: 7440-69-9
ANTIMONY: 7440-36-0
TELLURIUM: 13494-80-9

2. PHYSICAL AND CHEMICAL CHARACTERISTICS

BOILING POINT: N/A
MELTING POINT: N/A
SPECIFIC GRAVITY: N/A
VAPOR DENSITY: N/A
VAPOR PRESSURE: N/A
% VOLATILES: N/A
SOLUBILITY IN H₂O: N/A
DENSITY: N/A
APPEARANCE AND ODOR: GREY SOLID, ODORLESS.



3. HAZARD IDENTIFICATION

HAZARDOUS DESIGNATION:
BISMUTH: N/A
ANTIMONY: Xi IRRITANT
TELLURIUM: T TOXIC

RISK PHRASES:
BISMUTH: N/A
ANTIMONY: R36/37/38 IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN
TELLURIUM: R11 HIGHLY FLAMMABLE
R26 VERY TOXIC BY INHALATION.

SAFETY PHRASES:
BISMUTH: N/A
ANTIMONY: 26 IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE
37 WEAR SUITABLE GLOVES
TELLURIUM: 36 WEAR SUITABLE PROTECTIVE CLOTHING
45 IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY

HMIS RATINGS:
BISMUTH:

HEALTH:	3
FLAMMABILITY:	3
REACTIVITY:	0
ANTIMONY:	
HEALTH:	2
FIRE:	0
REACTIVITY:	0
TELLURIDE:	
HEALTH:	3
FLAMMABILITY:	0
REACTIVITY:	0
RESPIRATORY PROTECTION:	WHERE AIRBORNE EXPOSURES MAY EXCEED OSHA/ACGIH PERMISSIBLE AIR CONCENTRATIONS, THE MINIMUM RESPIRATORY PROTECTION RECOMMENDED IS NEGATIVE PRESSURE AIR PURIFYING RESPIRATOR WITH CARTRIDGES THAT ARE NIOSH/MSHA APPROVED AGAINST DUST, FUMES AND MISTS HAVING A TWA LESS THAN 0.05mg/m ³
VENTILATION:	LOCAL EXHAUST- MELT METAL UNDER HOOD WITH INERT GAS COVER. MECHANICAL USE FILTERS TO TRAP OXIDE SMOKE GENERATED.
PROTECTIVE GLOVES:	RUBBER FOR CHEMICAL TREATMENT; HIGH TEMPERATURE FOR MELTING.
EYE/FACE PROTECTION:	SAFETY GLASSES RECOMMENDED FOR EXPOSURES THAT EXCEED PERMISSIBLE AIR CONCENTRATIONS. ALL CONTAMINATED CLOTHING SHOULD BE REMOVED BEFORE LEAVING PLANT PREMISES

4. FIRE FIGHTING MEASURES

FLASH POINT (METHOD USED):	N/A
AUTOIGNITION TEMPERATURE:	N/A
FLAMMABLE LIMITS:	
UPPER :	N/A
LOWER:	N/A
AUTOIGNITION TEMPERATURE:	N/A
EXTINGUISHING MEDIA:	SPECIAL POWDER FOR METAL FLAMES. DO NOT USE WATER
SPECIAL FIRE FIGHTING PROCEDURES:	FIREFIGHTERS MUST WEAR FULL FACE, SELF-CONTAINED BREATHING APPARATUS WITH FULL PROTECTIVE CLOTHING TO PREVENT CONTACT WITH SKIN AND EYES. FUMES FROM FIRE ARE HAZARDOUS. ISOLATE RUNOFF TO PREVENT ENVIRONMENTAL POLLUTION
SPECIAL HAZARDS:	IN CASE OF FIRE, METAL OXIDE FUMES MAY BE RELEASED. WHEN HEATED TO DECOMPOSITION, TELLURIUM MAY EMIT TOXIC FUMES OF TELLURIUM. BURNS IN AIR WITH A GREENISH-BLUE FLAME, FORMING TELLURIUM DIOXIDE.

5. HEALTH HAZARD INFORMATION

BISMUTH:	
ACUTE EFFECTS:	
EYE:	IRRITANT EFFECT
SKIN:	IRRITANT EFFECT
CHRONIC EFFECTS:	BISMUTH AND BISMUTH COMPOUNDS ARE OFTEN POORLY ABSORBED. SHOULD ABSORPTION OCCUR HOWEVER, EXPOSURE MAY CAUSE LOSS OF APPETITE, HEADACHE, SKIN RASH, EXODERMATITIS, KIDNEY INJURY, AND JAUNDICE. REPEATED OR PROLONGED

EXPOSURE MAY CAUSE A BISMUTH LINE OR BLACK SPOTS ON THE GUMS, FOUL BREATH, AND SALIVATION.

ANTIMONY:

ACUTE EFFECTS:

EYE:

IRRITANT EFFECT

SKIN:

IRRITATING TO SKIN AND MUCOUS MEMBRANES

CHRONIC EFFECTS:

ANTIMONY COMPOUNDS MAY CAUSE METALLIC TASTE, GASTROINTESTINAL DISTURBANCES, VOMITING, DIARRHEA, DIZZINESS, AND SYSTEMATIC POISONING. CHRONIC EXPOSURE MAY CAUSE LIVER AND KIDNEY DAMAGE. DERMATITIS AND ECZEMATOUS SKIN ERUPTIONS MAY ERUPT FROM SKIN CONTACT.

TELLURIUM:

ACUTE EFFECTS:

EYE:

IRRITANT EFFECT

SKIN:

IRRITATING TO SKIN AND MUCOUS MEMBRANES

CHRONIC EFFECTS:

TELLURIUM IS CONVERTED IN THE BODY TO DIMETHYL TELLURIDE WHICH IMPARTS A GARLIC-LIE ODOR TO THE BREATH AND SWEAT. HEAVY EXPOSURE MAY RESULT IN HEADACHE, DROWSINESS, METALLIC TASTE, LOSS OF APPETITE, NAUSEA, TREMORS, CONVULSION, AND RESPIRATORY ARREST.

6. STABILITY

STABILITY:

STABLE

CONDITIONS TO AVOID:

NONE KNOWN

MATERIALS TO AVOID:

ACIDS, OXIDIZING AGENTS, HALOGENS, INTERHALOGENS

DANGEROUS REACTIONS:

NONE KNOWN

HAZARDOUS

DECOMPOSITION PRODUCTS:

METAL OXIDE FUMES

7. EMERGENCY AND FIRST AID PROCEDURES:

INHALATION:

REMOVE VICTIM TO FRESH AIR AND GET MEDICAL ATTENTION

INGESTION:

SEEK IMMEDIATE MEDICAL ATTENTION NEVER INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

SKIN:

WASH WELL WITH SOAP AND WATER AND RINSE THOROUGHLY. SEEK MEDICAL ADVICE

EYE:

FLUSH EYES WITH RUNNING WATER TO CLEAN PARTICLES, LIFTING UPPER AND LOWER EYELIDS, FOR AT LEAST 15 MINUTES. SEEK MEDICAL ATTENTION.

8. HANDLING AND STORAGE

HANDLING:

KEEP CONTAINER TIGHTLY SEALED. STORE IN COOL, DRY PLACE IN TIGHTLY CLOSED CONTAINERS. ENSURE GOOD VENTILATION.

STORAGE:

NO SPECIAL REQUIREMENTS.

9. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN

CASE MATERIAL IS

RELEASED OR SPILLED:

KEEP DUST TO MINIMUM BY ANY MEANS. VACUUMING IS CHOICE FOR DUST USE AN APPROPRIATE NIOSH

APPROVED RESPIRATOR. DO NOT USE COMPRESSED AIR FOR CLEANING.
WASTE DISPOSAL METHOD: DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS

10. TOXICITY

THE REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS) REPORTS THE FOLLOWING EFFECTS IN LABORATORY ANIMALS:

BISMUTH:	BEHAVIORAL – FOOD INTAKE, COMA, MUSCLE CONTRACTION OR SPASTICITY KIDNEY, UTERER, BLADDER – URINE VOLUME DECREASED BRAIN AND COVERINGS – OTHER DEGENERATIVE CHANGES SENSE ORGANS – EAR: CHANGES IN VESTIBULAR FUNCTION
ANTIMONY:	TUMORIGENIC – CARCINOGENIC BY RTECS CRITERIA LUNGS, THORAX, OR RESPIRATION – TUMORS
TELLURIUM:	BEHAVIORAL – SOMNOLENCE, ANOREXIA BIOCHEMICAL – ENZYME INHIBITION, INDUCTION, OR CHANGE IN BLOOD OR TISSUE LEVELS LUNGS, THORAX, OR RESPIRATION – FIBROSIS, STRUCTURAL OR FUNCTIONAL CHANGE IN TRACHEA OR BRONCHI, OTHER CHANGES NUTRITIONAL AND GROSS METABOLIC – WEIGHT LOSS OR DECREASED WEIGHT GAIN LIVER – FATTY LIVER DEGENERATION, OTHER CHANGES KIDNEY, URETER, BLADDER – OTHER CHANGES REPRODUCTIVE – SPECIFIC DEVELOPMENTAL ABNORMALITIES – CENTRAL NERVOUS SYSTEM, CRANIOFACIAL, MUSCULOSKELETAL SYSTEM REPRODUCTIVE – EFFECTS ON EMBRYO OR FETUS – FETOTOXICITY REPRODUCTIVE – EFFECTS ON NEWBORN – OTHER NEONATAL MEASURE OR EFFECTS REPRODUCTIVE – FERTILITY – POST-IMPLANTATION MORTALITY
ADDITIONAL INFORMATION:	TO THE BEST OF OUR KNOWLEDGE THE ACUTE AND CHRONIC TOXICITY OF THIS SUBSTANCE IS NOT FULLY KNOWN.
CARCINOGENICITY:	NO CLASSIFICATION DATA ON CARCINOGENIC PROPERTIES OF THIS MATERIAL IS AVAILABLE.

11. TRANSPORTATION DATA

DOT REGULATIONS:	NOT A HAZARDOUS MATERIAL FOR TRANSPORTATION
UN IDENTIFICATION:	NONE
HAZARD CLASS:	NONE
ADR//RID CLASS:	NONE
IMDG CLASS:	NONE
AIR TRAN. ICAO/IATA CLASS:	NONE
MARITIME TRAN. IMDG CLASS:	NONE

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.