

MATERIAL SAFETY DATA SHEET
COPPER GALLIUM OXIDE

1. PRODUCT IDENTIFICATION

PRODUCT NAME: COPPER GALLIUM OXIDE
CHEMICAL NATURE: METAL OXIDE
FORMULA: CuGaO_2

2. PHYSICAL AND CHEMICAL CHARACTERISTICS

BOILING POINT 760 mm Hg: N/D
MELTING POINT: N/D
SPECIFIC GRAVITY: N/D
MOLECULAR WEIGHT: N/D
VAPOR DENSITY: N/A
VAPOR PRESSURE (mm hg): N/A
% VOLATILES: N/A
SOLUBILITY IN H_2O : INSOLUBLE
APPEARANCE: BROWN
ODOR: ODORLESS

3. HAZARD IDENTIFICATION

HAZARD DESCRIPTION: N/A
HMIS RATINGS (SCALE 0-4):
HEALTH: 1
FLAMMABILITY: 0
REACTIVITY: 0

4. FIRE FIGHTING MEASURES

FLASH POINT: N/A
AUTOIGNITION TEMPERATURE: N/A
FLAMMABLE LIMITS:
UPPER: N/A
LOWER: N/A
SUITABLE EXTINGUISHING AGENTS: PRODUCT IS NOT FLAMMABLE. USE FIRE FIGHTING MEASURES THAT SUIT THE SURROUNDING FIRE.
PROTECTIVE EQUIPMENT: WEAR SELF-CONTAINED RESPIRATOR.
WEAR FULLY PROTECTIVE IMPERVIOUS SUIT.

5. STABILITY

THERMAL DECOMPOSITION CONDITIONS TO BE AVOIDED: DECOMPOSITION WILL NOT OCCUR IF USED AND STORED ACCORDING TO SPECIFICATIONS.
MATERIALS TO BE AVOIDED: NO INFORMATION KNOWN
DANGEROUS REACTIONS: NO
DANGEROUS PRODUCTS OF DECOMPOSITION: METAL OXIDE FUME.

6. HEALTH HAZARD INFORMATION

ACUTE TOXICITY:

PRIMARY IRRITANT EFFECT:

ON THE SKIN:

MAY CAUSE IRRITATION

ON THE EYE:

MAY CAUSE IRRITATION

SENSITIZATION:

NO SENSITIZING EFFECTS KNOWN.

SUBACUTE TO CHRONIC TOXICITY:

COPPER COMPOUNDS MAY BE IRRITATING TO THE SKIN, EYES AND RESPIRATORY TRACT. THEY MAY CAUSE METAL FUME FEVER, HEMOLYSIS OF THE RED BLOOD CELLS AND INJURY TO THE LIVER, LUNGS, KIDNEYS AND PANCREAS. INGESTION MAY ALSO CAUSE VOMITING, GASTRIC PAIN, DIZZINESS, ANEMIA, CRAMPS, CONVULSIONS, SHOCK, COMA AND DEATH. COPPER SOLUTIONS MAY CAUSE SENSITIZATION REACTIONS.

SUBACUTE TO CHRONIC TOXICITY:

GALLIUM MAY BE IMPLICATED IN ALZHEIMERS DISEASE.

ADDITIONAL TOXICOLOGICAL INFORMATION:

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

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

7. EMERGENCY AND FIRST AID PROCEDURES:

INHALATION:

REMOVE TO FRESH AIR, KEEP WARM AND QUIET, GIVE OXYGEN IF BREATHING IS DIFFICULT AND SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST.

SKIN:

REMOVE ANY CONTAMINATED CLOTHING, BRUSH MATERIAL OFF SKIN, FLUSH WITH RUNNING WATER, WASH CAREFULLY WITH SOAP AND WATER. SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST.

EYES:

FLUSH EYES WITH LUKEWARM WATER, LIFTING UPPER AND LOWER EYELIDS, FOR AT LEAST 15 MINUTES. SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST

8. HANDLING AND STORAGE

HANDLING:

KEEP CONTAINER TIGHTLY SEALED, STORE IN COOL, AND DRY PLACE IN TIGHTLY CLOSED CONTAINERS. NO SPECIAL PRECAUTIONS ARE NECESSARY IF USED CORRECTLY.

INFORMATION ABOUT PROTECTION AGAINST EXPLOSIONS AND FIRES: STORAGE:

THE PRODUCT IS NOT FLAMMABLE.

KEEP CONTAINER TIGHTLY SEALED. STORE IN COOL, DRY CONDITIONS IN WELL SEALED CONTAINERS.

9. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS

RELEASED OR SPILLED:

WEAR APPROPRIATE RESPIRATORY AND PROTECTIVE EQUIPMENT. ISOLATE SPILL AREA AND PROVIDE VENTILATION.

RESPIRATORY PROTECTION
VENTILATION:

LOCAL EXHAUST VENTILATION MAY BE NECESSARY TO CONTROL
ANY AIR CONTAMINANTS DURING THE USE OF THIS PRODUCT.
GOOD GENERAL VENTILATION IS RECOMMENDED.

PROTECTIVE GLOVES:
EYE PROTECTION:
OTHER PROTECTIVE CLOTHING
OR EQUIPMENT:
WASTE DISPOSAL METHOD:

RUBBER GLOVES
SAFETY GLASSES.
APRON
IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL
REGULATIONS.

PROCESS: Pulsed Layer Deposition
AREA: Nano Lab
USERS: Sanskriti Semwal, Yashavi Gawali
GUIDE: Professor S. Dattagupta
CO GUIDE: Professor R. PINTO