

INTERNATIONAL_GASES_AND_CHEMICALS_LTD

MATERIAL SAFETY DATA SHEETS

DATE: 12/15/00

SUPPLIER ADDRESS: SPEEDWELL RD
PARKHOUSE EAST
NEWCASTLE-U-LYME

EMERGENCY PHONE: (178) 256-5556
NUMBER

1. CHEMICAL PRODUCT

PRODUCT NAME: GERMANE

SYNONYMS: Germanium Hydride, Germanium Tetrahydride

2. COMPOSITION, INFORMATION ON INGREDIENTS

Ingredient Name	Formula	CAS#	Concentration	Exposure Limits (PPM)			
				ACGIH TLV	OSHA PEL	MAC	Other STEL
GERMANE	GeH4	7782-65-2	99+%	0.2	NE	NE	NE

Note: NE = NONE ESTABLISHED

3. HAZARD IDENTIFICATION

*** EMERGENCY OVERVIEW ***

Poisonous, flammable liquid and gas under pressure.

May be fatal if inhaled.

Causes severe, blood, liver, kidney and other organ damage.

Symptoms may be delayed.

May form explosive mixtures with air.

May ignite on contact with air.

POTENTIAL HEALTH EFFECTS

ROUTES OF ENTRY: Inhalation

ACUTE EFFECTS: Destroys red blood cells. Inhalation causes irritation of the respiratory tract. Symptoms include malaise, difficulty breathing, severe headache, giddiness, fainting fits, nausea, vomiting, and gastric disturbances. May damage liver and kidney.

CHRONIC EFFECTS: None known

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: None known

OTHER EFFECTS OF OVEREXPOSURE: None

CARCINOGENICITY (US Only):

NTP - No

IARC MONOGRAPHS - No

OSHA REGULATED - No

Continued ...

_4._FIRST_AID_MEASURES

INHALATION: Immediately remove victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.

EYE CONTACT: Immediately flush with copious amounts of water for at least 15 minutes.

SKIN CONTACT: Immediately flush with copious amounts of water for at least 15 minutes while removing contaminated clothing.

INGESTION: None

IN EVENT OF EXPOSURE, CONSULT A PHYSICIAN

NOTE TO PHYSICIAN: None

_5._FIRE_FIGHTING_MEASURES

FLASH POINT: Flammable

AUTOIGNITION TEMPERATURE: N/Av

FLAMMABLE LIMITS:

LOWER: 2% (estimated)

UPPER: 98% (estimated)

EXTINGUISHING MEDIA: Allow to burn. Do not try to extinguish because burning reduces the possibility of explosion.

SPECIAL FIRE FIGHTING INSTRUCTION AND EQUIPMENT: Wear self-contained breathing apparatus and full protective clothing. Keep fire exposed cylinders cool with water spray.

HAZARDOUS COMBUSTION PRODUCTS: Germanium products.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Vapors may travel a considerable distance to the source of ignition and flash back. Cylinder rupture may occur under fire conditions. Poses an explosion hazard indoors, outdoors, and in sewers. May form explosive mixtures with air and can ignite without warning.

_6._ACCIDENTAL_RELEASE_MEASURES

CLEAN UP PROCEDURES: Evacuate and ventilate area. Remove all sources of ignition. Material can be expected to ignite spontaneously. Shut off source if possible and remove source of heat. Use a self-contained breathing apparatus in case of emergency or non-routine use.

SPECIALIZED EQUIPMENT: None

_7._HANDLING_AND_STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING: Use only in a well-ventilated area. Use suitable hand truck to move cylinders. Secure cylinder when using to protect from falling.

PRECAUTIONS TO BE TAKEN IN STORAGE: Store in well ventilated areas. Keep valve protection cap on cylinders when not in use.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide adequate general and local exhaust ventilation to maintain concentrations below exposure and flammable limits. Use explosion-proof ventilation equipment.

PERSONAL PROTECTION

EYE/FACE PROTECTION: Safety glasses . A safety shower and eyewash station should be readily available.

SKIN PROTECTION: None

RESPIRATORY PROTECTION: Use a self-contained breathing apparatus in case of emergency or non-routine use.

OTHER PROTECTIVE EQUIPMENT: Safety shoes when handling cylinders.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Colorless

ODOR: Pungent

PHYSICAL STATE: Gas

VAPOR PRESSURE: @70 deg.F: 638 psia

VAPOR DENSITY (AIR=1): 2.64

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BOILING POINT (C): -88.4
SOLUBILITY IN WATER: Insoluble
SPECIFIC GRAVITY (H2O=1): @20 deg.C:
1.52
EVAPORATION RATE: N/Av
ODOR THRESHOLD: N/Av

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal storage conditions.

CONDITIONS TO AVOID: Storage in poorly ventilated areas.

MATERIALS TO AVOID: Air, halogens, oxidizing agents.

HAZARDOUS POLYMERIZATION: Will not occur.

HAZARDOUS DECOMPOSITION: Hydrogen gas. Germanium dioxide particles.

11. TOXICOLOGICAL INFORMATION

LETHAL CONCENTRATION (LC50): 622 ppm, Rat 1 hour.

LETHAL DOSE 50 (LD50): N/Ap

TERATOGENICITY: N/Ap

REPRODUCTIVE EFFECTS: N/Ap

MUTAGENICITY: N/Ap

12. ECOLOGICAL INFORMATION

No adverse ecological effects are expected.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Dispose of non-refillable cylinders in accordance with federal, state and local regulations. Allow gas to vent slowly to atmosphere in an unconfined area or exhaust hood. If the cylinders are the refillable type, return cylinders to supplier with any valve outlet plugs or caps secured and valve protection caps in place.

14. TRANSPORT INFORMATION

CONCENTRATION: 99+%

DOT DESCRIPTION (US ONLY):

PROPER SHIPPING NAME: Germane

HAZARD CLASS: 2.3 (poison), Hazard Zone

B

IDENTIFICATION NUMBER: UN2192
REPORTABLE QUANTITIES: None
LABELING: POISON GAS, FLAMMABLE GAS

ADR/RID (EU Only): Class 2, 1TF

SPECIAL PRECAUTIONS: Cylinders should be transported in a secure upright position in a well ventilated truck.

15. REGULATORY INFORMATION

OSHA: Process Safety Management: Material is not listed in appendix A of 29 CFR 1910.119 as highly hazardous chemical.

TSCA: Material is listed in TSCA inventory.

SARA: The threshold planning quantity for material is 10,000 lbs.

EU NUMBER: N/Av

NUMBER IN ANNEX 1 OF DIR 67/548: Not listed in annex 1.

EU CLASSIFICATION: N/Av

R: N/Av

S: N/Av

16. OTHER INFORMATION

OTHER PRECAUTIONS: Protect containers from physical damage. Do not deface cylinders or labels. Cylinders should be refilled by qualified producers of compressed gas. Shipment of a compressed gas cylinder which has not been filled by the owner or with his written consent is a violation of federal law (49 CFR).

ABBREVIATIONS:

N/Ap - Not Applicable

N/Av - Not Available

SA - Simple Asphyxiant

NE - None Established

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