SIGMA-ALDRICH

Material Safety Data Sheet

Date Printed: 06/26/2008
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Version 1.70

Section 1 - Product and Company Information

Product Name Mercury(II) chloride, anhydrous, powder, 99.998% metals basis
Product Number 429724
Brand Aldrich Chemical

Company Sigma-Aldrich
Street Address 3050 Spruce Street
City, State, Zip, Country SAINT LOUIS, MO 63103 US
Technical Phone: 800-325-5832 **Emergency Phone:** 314-776-6555
Fax: 800-325-5052

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313	EC no	Annex I Index Number
MERCURIC CHLORIDE	7487-94-7	Yes	231-299-8	080-010-00-X

Formula HgCl2
Synonyms Abavit B, Bichloride of mercury, Bichlorure de mercure (French), Calochlor, Chlorid rtutnaty (Czech), Chlorure mercurique (French), Cloruro di mercurio (Italian), Corrosive mercury chloride, Corrosive sublimate, Dichloromercury, Fungchex, Mercuric bichloride, Mercury bichloride, Mercury(2+) chloride, Mercury dichloride, Mercury perchloride, NCI-C60173, Perchloride of mercury, Quecksilber chlorid (German), Sulem, Sulema (Russian), Sublimat (Czech), Sublimate, TL 898

Section 3 - Hazards Identification

Emergency Overview
Highly Toxic (USA) Very Toxic (EU). Dangerous for the environment.
Causes burns. Very toxic in contact with skin and if swallowed. Very toxic to aquatic organisms, may cause longterm adverse effects in the aquatic environment.
Readily absorbed through skin. Target organ(s): Kidneys. Nerves.

HMIS Rating
Health: 4* Flammability: 0 Reactivity: 0

NFPA Rating
Health: 4 Flammability: 0 Reactivity: 0

*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

Oral Exposure
If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

Inhalation Exposure
If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

Dermal Exposure
In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

Eye Exposure
In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

Autoignition Temp: N/A

Extinguishing Media
Suitable
Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

Firefighting
Protective Equipment
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s)
Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

Procedure to be Followed in Case of Leak or Spill
Evacuate area.

Procedure(s) of Personal Precaution(s)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

Methods for Cleaning Up
Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Handling
User Exposure
Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

Storage
Suitable
Keep tightly closed. Store in a cool dry place.

Special Requirements
Light sensitive. Moisture sensitive.

Section 8 - Exposure Controls / PPE

Engineering Controls
Safety shower and eye bath. Use only in a chemical fume hood.

Personal Protective Equipment
Respiratory
Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.
Hand
Compatible chemical-resistant gloves.

Eye
Chemical safety goggles.

General Hygiene Measures
Wash contaminated clothing before reuse.Wash thoroughly after handling.

Exposure Limits, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	0.025 MG(HG)/M3
Remarks: Skin			
USA	MSHA Standard-air	TWA	0.05 MG(HG)/M3
New Zealand	OEL		
Remarks: check ACGIH TLV			
USA	NIOSH	Ceiling concentration	0.1 MG/M3 (SK)

Section 9 - Physical/Chemical Properties

Appearance
Physical State
Solid

Molecular Weight 271.5 AMU

Property	Value	At Temperature or Pressure
pH	N/A	
BP/BP Range	302 °C	760 mmHg
MP/MP Range	277 °C	
Freezing Point	N/A	
Vapor Pressure	1.3 mmHg	236 °C
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
SG/Density	5.44 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point °F	N/A	
Flash Point °C	N/A	
Explosion Limits	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Solubility	N/A	

N/A = not available

Section 10 - Stability and Reactivity

Stability
Stable
Stable.
Conditions to Avoid
Light.

Materials to Avoid
Strong oxidizing agents, Strong bases

Hazardous Decomposition Products
Hazardous Decomposition Products
Mercury/mercury oxides..

Hazardous Polymerization
Hazardous Polymerization
Will not occur.

Section 11 - Toxicological Information

Route of Exposure
Skin Contact
Causes burns.
Skin Absorption
May be fatal if absorbed through skin.
Eye Contact
Causes burns.
Inhalation
May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Ingestion
May be fatal if swallowed.

Target Organ(s) or System(s)
Kidneys. Nerves. G.I. System.

Signs and Symptoms of Exposure
Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.Inhalation may result in spasm, inflammation and edema of the larynxand bronchi, chemical pneumonitis, and pulmonary edema.Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.Prolonged exposure can cause: Stomach pains, vomiting, diarrhea.

Conditions Aggravated by Exposure
May cause nervous system disturbances.

RTECS Number: OV9100000

Toxicity Data

Oral - Man: 143 mg/kg (LDLO)
Remarks: Behavioral:Excitement.
Kidney, Ureter, Bladder:Changes in tubules (including acute renal failure, acute tubular necrosis).
Blood:Changes in leukocyte (WBC) count.

Oral - Man: 86 mg/kg (LDLO)
Remarks: Vascular:Change in plasma or blood volume.
Gastrointestinal:Ulceration or bleeding from stomach.
Gastrointestinal:Necrotic changes.

Oral - Human: 29 mg/kg (LDLO)
Remarks: Gastrointestinal:Ulceration or bleeding from duodenum.
Gastrointestinal:Ulceration or bleeding from large intestine.
Gastrointestinal:Nausea or vomiting.

Oral - Rat: 1 mg/kg (LD50)

Skin - Rat: 41 mg/kg (LD50)

Intraperitoneal - Rat: 3210 UG/KG (LD50)
Remarks: Kidney, Ureter, Bladder:Changes in tubules (including acute renal failure, acute tubular necrosis).

Subcutaneous - Rat: 14 MG/KG (LD50)

Intravenous - Rat: 1272 UG/KG (LD50)

Oral - Mouse: 6 mg/kg (LD50)

Remarks: Behavioral:Somnolence (general depressed activity).
Behavioral:Muscle weakness.

Intraperitoneal - Mouse: 3900 UG/KG (LD50)

Subcutaneous - Mouse: 4500 UG/KG (LD50)

Intravenous - Mouse: 4992 UG/KG (LD50)

Intramuscular - Rabbit: 7300 UG/KG (LD50)

Oral - Quail: 36 mg/kg (LD50)
Remarks: Behavioral:Tremor.
Behavioral:Ataxia.

Intramuscular - Quail: 34 MG/KG (LD50)
Remarks: Behavioral:Tremor.
Behavioral:Ataxia.

Intramuscular - Frog: 7579 UG/KG (LD50)
Remarks: Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels: Phosphatases.
Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels: Dehydrogenases.
Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels: Other transferases.

Irritation Data

Skin - Rabbit: 500 mg 24H
Remarks: Severe irritation effect

Eyes - Rabbit: 0.05 mg 24H
Remarks: Severe irritation effect

Chronic Exposure - Carcinogen
Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC Carcinogen List
Rating
Group 3

ACGIH Carcinogen List
Rating
A4

Chronic Exposure - Teratogen

Species	*Dose*	*Route of Application*	*Exposure Time*
Rat	120 MG/KG	Oral	(6-15D PREG)
	Result:Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).		
Rat	2470 UG/KG	Oral	(7D PREG)
	Result:Effects on Embryo or Fetus: Cytological changes (including somatic cell genetic material).		
Rat	276 NG/M3/24H	Inhalation	(1-22D PREG)
	Result:Specific Developmental Abnormalities: Blood and lymphatic system (including spleen and marrow).		
Rat	80 MG/KG	Subcutaneous	(13-22D PREG/10D POST)
	Result:Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Newborn: Weaning or lactation index (e.g., # alive at weaning per # alive at day 4). Effects on Newborn: Growth statistics (e.g., reduced weight gain).		
Rat	1069 UG/KG	Intravenous	(10D PREG)
	Result:Specific Developmental Abnormalities: Central nervous system.		
Rat	1069 UG/KG	Intravenous	(14D PREG)
	Result:Specific Developmental Abnormalities: Blood and lymphatic system (including spleen and marrow).		
Mouse	230 UG/M3/4H	Inhalation	(9-12D PREG)
	Result:Specific Developmental Abnormalities: Musculoskeletal system.		
Mouse	2030 UG/KG	Intravenous	(1D PREG)
	Result:Effects on Embryo or Fetus: Cytological changes (including somatic cell genetic material).		
Mouse	3384 UG/KG	Intravenous	(1D PREG)
	Result:Specific Developmental Abnormalities: Other developmental abnormalities.		

Chronic Exposure - Mutagen

Species	*Dose*			*Cell Type*	*Mutation test*
Human	5 UMOL/L			lymphocyte	Micronucleus test
Human	2 UMOL/L			lymphocyte	Other mutation test systems
Human	10 MG/L			HeLa cell	Cytogenetic analysis
Human	2 UMOL/L			lymphocyte	Cytogenetic analysis
Rat	500 UMOL/L			Ascites tumor	DNA damage
Rat	5 UMOL/L			Embryo	DNA damage
Rat	8 MG/KG	Subcutaneous			DNA inhibition
Rat	8 MG/KG	Subcutaneous			Other mutation test systems
Rat	250 NG/KG	Oral			Dominant lethal test
Rat	2500 UG/KG	Unreported			Dominant lethal test
Mouse	1 MG/KG	Intraperitoneal			DNA inhibition
Mouse	50 UMOL/L			Other cell types	DNA inhibition
Mouse	10 UMOL/L			sperm	DNA inhibition
Mouse	6 MG/L (+S9)			lymphocyte	Mutation in microorganisms
Mouse	100 UMOL/L			lymphocyte	DNA damage
Mouse	50 NMOL/L			Embryo	DNA damage
Mouse	1 UMOL/L			Other cell types	Unscheduled DNA synthesis
Mouse	10 UMOL/L			Other cell types	DNA inhibition
Mouse	100 NMOL/L			lymphocyte	DNA inhibition
Mouse	10 UMOL/L			lymphocyte	Other mutation test systems
Mouse	3 MG/KG	Oral			Other mutation test systems
Mouse	3 MG/KG	Oral			Cytogenetic analysis
Mouse	2 MG/KG	Intraperitoneal			Dominant lethal test
Mouse	400 UG/L			lymphocyte	Mutation in mammalian somatic cells.
Mouse	2 MG/KG	Intraperitoneal			Heritable translocation test
Hamster	50 UMOL/L			Embryo	Morphological transformation.
Hamster	10 UMOL/L			lung	DNA damage
Hamster	2500 NMOL/L		1H	ovary	DNA damage
Hamster	25 UMOL/L		1H	ovary	DNA damage
Hamster	40 UMOL/L			ovary	DNA inhibition
Hamster	2700 UG/L			ovary	Other mutation test systems
Hamster	6400 UG/KG	Subcutaneous			Cytogenetic analysis
Hamster	1100 NMOL/L			ovary	Sister chromatid exchange
Hamster	1 MG/KG	Intraperitoneal			Sister chromatid exchange
Chicken	3 UMOL/L			Other cell types	DNA damage
Mammal	33 PPH			lymphocyte	DNA damage
Cattle, Horse	10 UMOL/L			kidney	DNA inhibition

Chronic Exposure - Reproductive Hazard

Species	*Dose*	*Route of Application*	*Exposure Time*
	Result: Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.		
Woman	50 UG/KG	Oral	(10W PREG)
	Result: Effects on Fertility: Abortion.		
Rat	126 MG/KG	Oral	(84D MALE)
	Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology,motility, and count).		
Rat	240 MG/KG	Oral	(6-15D PREG)
	Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Specific Developmental Abnormalities: Musculoskeletal system.		
Rat	919 MG/KG	Oral	(12W MALE/2W PRE)
	Result: Paternal Effects: Testes, epididymis, sperm duct. Paternal Effects: Prostate, seminal vessicle, Cowper's gland, accessory glands. Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females).		
Rat	2720 NG/M3/24H	Inhalation	(1-22D PREG)
	Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus)Effects on Embryo or Fetus: Fetal death.		

Rat	19540 NG/M3/24H	Inhalation	(1-22D PREG)

Result: Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord).

Rat	60 MG/KG	Intraperitoneal	(30D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.

Rat	4500 UG/KG	Intraperitoneal	(90D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.Paternal Effects: Other effects on male.

Rat	4500 UG/KG	Intraperitoneal	(90D MALE)

Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology,motility, and count)Paternal Effects: Testes, epididymis, sperm duct.

Rat	5430 UG/KG	Subcutaneous	(1D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.

Rat	21719 UG/KG	Intratesticular	(1D MALE)

Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology,motility, and count)Paternal Effects: Testes, epididymis, sperm duct.

Mouse	25 MG/KG	Oral	(40D MALE/16D PRE-3W POST)

Result: Effects on Fertility: Other measures of fertilityEffects on Newborn: Live birth index (# fetuses per litter; measured after birth).

Mouse	49 MG/KG	Oral	(40D MALE/16D PRE-3W POST)

Result: Effects on Fertility: Other measures of fertilityEffects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Viability index (e.g., # alive at day 4 per # born alive).

Mouse	230 UG/M3/4H	Inhalation	(9-12D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus)Effects on Embryo or Fetus: Fetal death.

Mouse	30 MG/KG	Intraperitoneal	(30D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.

Mouse	5430 UG/KG	Subcutaneous	(30D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.

Mouse	1353 UG/KG	Intravenous	(5D PREG)

Result: Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth).

Mouse	2706 UG/KG	Intravenous	(12D PREG)

Result: Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Guinea pig	60 MG/KG	Intraperitoneal	(30D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.

Hamster	30 MG/KG	Intraperitoneal	(30D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.

Hamster	8660 UG/KG	Subcutaneous	(1D PRE)

Result: Maternal Effects: Oogenesis.

Hamster	24 MG/KG	Subcutaneous	(3D PRE)

Result: Effects on Fertility: Other measures of fertility

Hamster	34648 UG/KG	Subcutaneous	(1D PRE)

Result: Maternal Effects: Oogenesis.

Hamster	8 MG/KG	Parenteral	(1D PRE)

Result: Maternal Effects: Uterus, cervix, vagina.

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation
Contact a licensed professional waste disposal service to dispose of this material.
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT
Proper Shipping Name: Mercuric chloride
UN#: 1624

Class: 6.1
Packing Group: Packing Group II
Hazard Label: Toxic substances.
PIH: Not PIH

IATA
Proper Shipping Name: Mercuric chloride
IATA UN Number: 1624
Hazard Class: 6.1
Packing Group: II

Section 15 - Regulatory Information

EU Directives Classification
Symbol of Danger: T+ N
Indication of Danger
Very toxic. Dangerous for the environment.
Risk Statements **R:** 28 34 48/24/25 50/53
Very toxic if swallowed. Causes burns. Toxic: danger of serious damage to health by prolonged exposure in contact with skin and if swallowed. Very toxic to aquatic organisms, may cause longterm adverse effects in the aquatic environment.
Safety Statements **S:** 36/37/39 45 61
Wear suitable protective clothing, gloves, and eye/face protectionIn case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).Avoid release to the environment. Refer to special instructions/safety data sheets.

US Classification and Label Text
Indication of Danger
Highly Toxic (USA) Very Toxic (EU). Dangerous for the environment.
Risk Statements
Causes burns. Very toxic in contact with skin and if swallowed.Very toxic to aquatic organisms, may cause longterm adverse effects in the aquatic environment.
Safety Statements
Do not breathe dust.In case of contact with eyes, rinse immediately with plenty of water and seek medical advice/Wear suitable protective clothing, gloves, and eye/face protection.In case of accident or if you feel unwell, seek medicaladvice immediately (show the label where possible).This material and its container must be disposed of as hazardous wasteAvoid release to the environment. Refer to special instructions/safety data sheets.
US Statements
Readily absorbed through skin.Target organ(s): Kidneys. Nerves.

United States Regulatory Information
SARA Listed: Yes
Notes: This product is subject to SARA section 313 reporting requirements.

TSCA Inventory Item: Yes

United States - State Regulatory Information
California Prop - 65
This product is or contains chemical(s) known to the state of California to cause developmental toxicity.

Canada Regulatory Information
WHMIS Classification
This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: Yes
NDSL: No

Section 16 - Other Information

Disclaimer
For R&D use only. Not for drug, household or other uses.

Warranty
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with gard to appropriate