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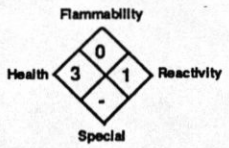
♦SECTION 1 INTRODUCTION

Material Mercuric Chloride, ca 100%
Synonyms Calochlor, corrosive mercury chloride, corrosive sublimate, mercury bichloride, mercury perchloride, sublimate, Sulem
Chemical Formula $HgCl_2$
CAS Number 7487-94-7
DOT Classification Poison, UN1624, and listed as a Hazardous Material for Transportation (49 CFR 172.101)
EPA Classification Listed (as Hg) as a RCRA Hazardous Waste (40 CFR 261.33), (as Hg) a CERCLA Hazardous Substance (40 CFR 302.4), a SARA Extremely Hazardous Substance (40 CFR 355), and (as Hg) a SARA Toxic Chemical (40 CFR 372.65)
OSHA Classification Listed (as Hg, aryl, and inorganic compounds) as an Air Contaminant (29 CFR 1910.1000, Table Z-1-A)
NFPA Hazard Rating Not found

Genium Hazard Rating
4 = Extreme
3 = High
2 = Moderate
1 = Slight
0 = Minimum



HMIS
H 3
F 0
R 1

Description Colorless crystals or white powder with no odor. Obtained by combining chlorine with mercury and heating until volatilization. Most likely found in the school environment in the chemistry lab as an analytical reagent. Also used as a catalyst for polymerization of polyvinyl chloride, a depolarizer for dry batteries, an agent in freeing gold from lead, an ingredient in topical antiseptics and turf fungicides, in embalming solutions, etching iron and steel, and tanning leather.
Overview Mercuric chloride is one of the most toxic forms of mercury salts. It is corrosive and highly toxic by inhalation, ingestion, and skin absorption. It is fatal to humans by ingestion of as little as 0.5 g. This material is not recommended for school use if educational objectives can be met in other ways, and is considered more hazardous than potentially useful in many secondary schools. If mercuric chloride use is deemed absolutely necessary, be cautious and take all appropriate safety measures.
Manufacturer Always request an up-to-date MSDS from your chemical supplier. That sheet should include the manufacturer and their emergency phone numbers. This *Manual*'s Resources/Manufacturers Index lists some larger manufacturers and available emergency phone numbers.

♦SECTION 2 USE AND STORAGE DATA

Preliminary Planning Considerations *Plan and provide for safe disposal of all school-generated chemical waste.* Check applicable regulations prior to use. Provide adequate ventilation or restrict use to fume hood (especially if heated, i.e., Hg vapor) to avoid exceeding the TLV (Sec. 4). Contact lens use when handling chemical materials is controversial. In some cases, soft lenses can actually protect eyes from chemicals. In other cases, chemical entrapment is presumed a possible hazard. Particles adhering to contact lens surfaces can cause corneal damage. For safety, always wear safety glasses or goggles. Wear rubber gloves to minimize skin contact. Employees and students should know the location of eyewash and shower facilities near chemical use areas. Check that eyewash stations and safety showers are working properly.
Usage Precautions and Procedure Before using, *read this material's container label* and follow all precautions. Do not use or store mercuric chloride in a school environment unless its use is deemed absolutely essential. Do not smoke in usage or storage areas. Practice good housekeeping to avoid unintentionally mixing incompatibles. Do not allow chemical residue or dust buildup in lab or work areas. Wear safety glasses or goggles and appropriate protective clothing to work with this substance. Keep mercuric chloride away from notebooks, textbooks, and personal belongings to avoid transporting chemical residues from the lab/work area. After working with chemical materials, and before eating, drinking, or smoking, always wash hands and face. Remove and launder contaminated clothing before reusing.
Additional Data Mercuric chloride is stable at room temperature under normal handling and storage conditions. It does not polymerize but decomposes to metallic mercury in the presence of organic matter and sunlight. Its incompatibilities include albumin, ammonia, alkalies, alkaloid salts, antimony and arsenic, bromides, borax, copper, carbonates, gelatin, formates, hypophosphites, lime water, lead, iron, reduced iron, sulfites, phosphates, tannic acid, and vegetable astringents.
Preferred Storage Location and Methods Store in tightly closed containers in cool, well-ventilated area out of direct sunlight, away from incompatibles and where friction is unlikely. To separate incompatible chemicals, store by chemical family, not by alphabetical name. Protect all chemical containers from physical damage. Prohibit smoking in chemical storage areas. If it must be used, purchase amounts sufficient for one year's use or less.

♦SECTION 3 SPILL/DISPOSAL PROCEDURES

If Spilled Ventilate spill area. Promptly and thoroughly clean spilled material. Cleanup personnel should protect against inhalation and skin or eye contact. For liquid (solution) spills, cover with an inert solid absorbent (vermiculite, dry sand, etc.) and scoop into appropriate containers (with secure lid) for disposal in accordance with existing regulations. As needed, dike spill area with inert absorbent material to contain spill. For dry spills, carefully collect spilled material and scoop into secure disposal or reclamation containers. Avoid creating airborne dust conditions. Wet mop to minimize dust dispersion. Wash area with dilute calcium sulfide solution.
Disposal of Small Quantities *Handle emptied containers carefully since residues may remain.* Always check regulations before disposal. Investigate recycling or reclamation rather than disposal. If these methods are not practical, feasible, or in accord with existing regulations, contact your supplier or a licensed disposal contractor for specific treatment/disposal procedures.
Disposal of Larger Amounts Contact your supplier or a licensed disposal company.

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Follow all applicable local, state, and Federal regulations for all waste disposal.

♦SECTION 4 HEALTH HAZARDS

Mercuric chloride is a highly toxic material and can be inhaled, ingested, or absorbed through skin. It can cause damage to the gastrointestinal (GI) tract, kidney, liver, and central nervous system (CNS). There is evidence that absorbed ionic Hg poses a hazard to pregnant women, causing miscarriages or damage to the fetus.

1991-92 ACGIH TLV (skin) 8-hr TWA: 0.05 mg/m^3, as Hg vapor
1990 NIOSH REL (skin) 10-hr TWA: 0.05 mg/m^3, as Hg vapor
1990 OSHA PEL (skin) 8-hr TWA: 0.05 mg/m^3, as mercury vapor; Ceiling: 0.1 mg/m^3, as Hg, aryl, and inorganic compounds
IDLH Level* 28 mg/m^3, as Hg
1985-6 Toxicity Data Human, oral, LD_{Lo}: 29 mg/kg; Rat, oral, LD_{50}: 1 mg/kg; Rabbit, skin: 500 mg applied for 24 hr produced severe irritation; Rabbit, eye: 0.05 mg applied for 24 hr produced severe irritation.
Carcinogenicity Not listed by the IARC, NTP, or OSHA
Acute Effects Vapor inhalation can cause headache, dyspnea (shortness of breath), cough, chills, and fever. Among systemic effects from ingestion include metallic taste, salivation, abdominal pain, bloody diarrhea, gastrointestinal irritation, vomiting, and cardiac arrhythmias (alteration in heartbeat rhythm), seizures, and possible kidney damage.
Chronic Effects Chronic exposure affects the CNS leading to vertigo (dizzy, confused state of mind), anxiety, depression, and incoordination. Gastrointestinal effects include gingivitis (gum inflammation), stomatitis (mouth inflammation), liver damage, and loosening of teeth. Necrosis (tissue death) of the jaw, reduced urine excretion, visual disturbances, and dermatitis may also occur.

* See definition on page 9 of Glossary for Terms and Abbreviations.

♦SECTION 5 FIRST AID PROCEDURES

Eye Contact Promptly flush eyes with plenty of running water for at least 15 min, including under eyelids. Get prompt medical attention.
Skin Contact After flushing with large amounts of water, wash exposed areas with soap and water.
Inhalation Remove victim from exposure to fresh air and support breathing as necessary.
Ingestion Have that conscious and alert person drink one or two glasses of water, induce vomiting and get *prompt* medical attention. Never give anything by mouth to an unconscious or convulsing person.

Get proper in-school, paramedic, or community medical attention and support.

♦SECTION 6 FIRE PROCEDURES AND DATA

Fire Hazards For major fires, or for fires involving large quantities, firefighters should wear appropriate protective clothing and respirators. Because fire may produce toxic thermal decomposition products, a self-contained breathing apparatus (SCBA) is recommended.
Flash Point and Method None reported
Autoignition Temperature None reported
Flammability Limits in Air (vol. %) None reported
Hazardous Decomposition Products Thermal oxidative decomposition of mercuric chloride can produce highly toxic mercury fumes.
Extinguishing Media Use water fog, carbon dioxide (CO_2), dry chemical, foam, or other media appropriate to surrounding fire conditions. Be aware that a water *spray* may spread material. Dike runoff to prevent further contamination.

♦SECTION 7 PHYSICAL DATA

Boiling Point 576 °F (302 °C)
Melting Point 529 °F (276 °C)
Vapor Pressure (air = 1) 1 mm Hg at 277.2 °F (136.2 °C)
Solubility in Water 48 g/100 cc water at 212 °F (100 °C); 6.9 g/100 cc water at 68 °F (20 °C)
pH of Aqueous Solution ~4.7
Molecular Weight 271.52
Specific Gravity (H_2O = 1) 5.44 at 77 °F (25 °C)

References 73, 90, 100, 101, 103, 124, 126, 127, 132, 133, 136, 140, 162, 163, 164; Genium's *Material Safety Data Sheets Collection*, No. 146 (7/91)
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