Material Safety Data Sheet
Cadmium chloride hemipentahydrate, p.a.

ACC# 95935

Section 1 - Chemical Product and Company Identification

MSDS Name: Cadmium chloride hemipentahydrate, p.a.
Catalog Numbers: AC197020000, AC197020250, AC197022500
Synonyms: Cadmium dichloride.
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7790-78-5	Cadmium chloride hemipentahydrate	100	unlisted
10108-64-2	Cadmium chloride anhydrous	-	233-296-7

Hazard Symbols: T+ N
Risk Phrases: 25 26 45 46 48/23/25 60 61 50/53

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white crystals. Contains cadmium. May cause lung damage. Cancer hazard. Hygroscopic (absorbs moisture from the air). Severe marine pollutant. **Danger!** Harmful if swallowed. May be fatal if inhaled. May cause eye and skin irritation. May cause harm to the unborn child. May impair fertility. May cause kidney damage.
Target Organs: Blood, kidneys, liver, lungs, respiratory system, skeletal structures, prostate, reproductive system.

Potential Health Effects

Eye: May cause eye irritation. Exposure to the substance as an aqueous solution may cause irritation and corneal abnormalities.
Skin: May cause skin irritation. May be absorbed through the skin in harmful amounts.
Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Exposure may cause severe swelling of face and neck areas with possible death.
Inhalation: May be fatal if inhaled. Irritation may lead to chemical pneumonitis and pulmonary edema. May cause ulceration and perforation of the nasal septum if inhaled in excessive quantities.
Chronic: May cause respiratory tract cancer. Prolonged or repeated exposure may cause permanent bone structure abnormalities. Chronic inhalation may cause nasal septum ulceration and perforation. Chronic inhalation of cadmium compounds has been associated with lung and prostate cancer. The primary target organ for chronic cadmium disease is clearly the kidney. An inhalation study of cadmium chloride in rats exposed 23 hrs/day for 18 mo at 12.5, 25 or 50 ug/m3, as Cd, produced a frequency of primary lung carcinomas of 15.4%, 52.6% and 71.4%, respectively. There were no primary lung carcinomas in the controls.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.
Skin: In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.
Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.
Inhalation: Poison material. If inhaled, get medical aid immediately. Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
Notes to Physician: Treat symptomatically and supportively.
Antidote: The use of Calcium disodium EDTA as a chelating agent should be determined by qualified medical personnel.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire. Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
Extinguishing Media: Use extinguishing media most appropriate for the surrounding fire.
Flash Point: Not applicable.
Autoignition Temperature: Not applicable.
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 4; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Wear a self contained breathing apparatus and appropriate Personal protection. (See Exposure Controls, Personal Protection section). Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Do not breathe dust. Use only with adequate ventilation.
Storage: Do not store in direct sunlight. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use substance with extreme caution and designate regulated areas for use.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Cadmium chloride hemipentahydrate	none listed	none listed	none listed
Cadmium chloride anhydrous	none listed	none listed	none listed

OSHA Vacated PELs: Cadmium chloride hemipentahydrate: No OSHA Vacated PELs are listed for this chemical. Cadmium chloride anhydrous: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear impervious gloves.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Section 9 - Physical and Chemical Properties

Physical State: Crystals
Appearance: white
Odor: odorless
pH: Not available.
Vapor Pressure: 10 mm Hg @ 656 deg C
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 960 deg C @ 760 mm Hg
Freezing/Melting Point:568 deg C
Decomposition Temperature: Not available.
Solubility: 1400 g/L (20°C)
Specific Gravity/Density:3.33 g/cm3 @ 25°C
Molecular Formula: CdCl2.2.5H2O
Molecular Weight:228.34

Section 10 - Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid: Dust generation, excess heat.
Incompatibilities with Other Materials: Strong oxidizing agents, bromine trifluoride, sulfur, potassium, selenium, tellurium, hydrogen azide.
Hazardous Decomposition Products: Irritating and toxic fumes and gases, cadmium fumes, chloride fumes, toxic cadmium oxide fumes.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 7790-78-5: EV0178000
CAS# 10108-64-2: EV0175000
LD50/LC50:
CAS# 7790-78-5:

Oral, mouse: LD50 = 194 mg/kg;
Oral, rat: LD50 = 665 mg/kg;

CAS# 10108-64-2:
Oral, mouse: LD50 = 60 mg/kg;
Oral, mouse: LD50 = 3.3 mg/kg;
Oral, rat: LD50 = 88 mg/kg;

Carcinogenicity:
CAS# 7790-78-5:
ACGIH: A2 - Suspected Human Carcinogen (as Cd) (listed as Cadmium compounds).
California: carcinogen; initial date 10/1/87 (listed as Cadmium compounds).
NIOSH: potential occupational carcinogen (dust and fume, as Cd) (listed as Cadmium comp
NTP: Known carcinogen (listed as Cadmium compounds).
OSHA: Select carcinogen (listed as Cadmium compounds).
IARC: Group 1 carcinogen (listed as Cadmium compounds). CAS# 10108-64-2:
ACGIH: A2 - Suspected Human Carcinogen (as Cd) (listed as Cadmium compounds).
California: carcinogen; initial date 10/1/87 (listed as Cadmium compounds).
NIOSH: potential occupational carcinogen (dust and fume, as Cd) (listed as Cadmium comp
NTP: Known carcinogen (listed as Cadmium compounds).
OSHA: Select carcinogen
IARC: Group 1 carcinogen (listed as Cadmium compounds).
Epidemiology: Studies suggest that occupational inhalation of cadmium is c orrelated with an increased lung cancer risk. Please refer t o Patty's Industrial Hygiene and Toxicology and IA RC volume 11 for a more detailed discussion.
Teratogenicity: Cadmium has been shown to be teratogenic or embryotoxic in several animal species, causing a variety of major malformations, including defects of the brain, face, lungs, limbs, and abdominal viscera. In some models (such as the rat), cadmium shows prominent toxicity for the placenta, and cadmium has been associated with fetal growth retardation in this animal. In vitro studies suggest that cadmium is likely to be toxic to the human placenta.
Reproductive Effects: A number of animal experiments have investigated the toxicity of cadmium on male reproductive function. In high doses and after chronic administration, Cd produces vascular changes and ischemic (affected with deficiency of blood) necrosis in the testes. Single low dose studies have indicated that Cd can have selective effects on sperm formation, impairing the release of sperm from the seminiferous epithelium in the rat. Also, at low doses that don't interfere with testicular function, Cd exposure in rats has been associated with an increased incidence of prostate tumors. Reports on testicular
Neurotoxicity: No information available.
Mutagenicity: DNA Damage: hamster embryo 2 umol/L, mammal lymphocyte 350 umol/L. DNA Inhibition: hamster lung and mammal kidney 2 umol/L. Unscheduled DNA Synthesis: hamster embryo 10 umol/L. Gene Mutation in Mammal Cells: hamster lung 1 umol/L.
Other Studies: Please refer to RTECS EVO175000 for additional data.

Section 12 - Ecological Information

Ecotoxicity: Fish: Bluegill/Sunfish: 1.94ppm; 96H; Japanese quail, oral LC50=2584 ppm/5D Ring-necked pheasant, oral LC50=767 ppm/5D
Environmental: Substance is mobile in water (movement as hydrated cations or as complexes). Absorption (soil) is dependent on pH with increasing values for alkaline conditions. Cadmium chloride is expected to significantly bioaccumulate. $CdCl_2$ bioconcentrates in fish and aquatic organisms.
Physical: No information available.
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	CADMIUM COMPOUNDS				No information available.
Hazard Class:	6.1				
UN Number:	UN2570				
Packing Group:	III				

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 7790-78-5 is not listed on the TSCA inventory. It is for research and development use only.
CAS# 10108-64-2 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b

None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA

CERCLA Hazardous Substances and corresponding RQs
CAS# 10108-64-2: 10 lb final RQ; 4.54 kg final RQ
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 7790-78-5: acute, chronic. CAS # 10108-64-2: acute, chronic.
Section 313
This material contains Cadmium chloride hemipentahydrate (listed as Cadmium compounds), 100%, (CAS# 7790-78-5) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373. This chemical is not at a high enough concentration to be reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 10108-64-2 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 7790-78-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
CAS# 10108-64-2 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Massachusetts.
California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols:
T+ N
Risk Phrases:
R 25 Toxic if swallowed.
R 26 Very toxic by inhalation.
R 45 May cause cancer.
R 46 May cause heritable genetic damage.
R 48/23/25 Toxic : danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
R 60 May impair fertility.
R 61 May cause harm to the unborn child.
R 50/53 Very toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment.

Safety Phrases:
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 53 Avoid exposure - obtain special instructions before use.
S 60 This material and/or its container must be disposed of as hazardous waste.
S 61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

WGK (Water Danger/Protection)
CAS# 7790-78-5: No information available.
CAS# 10108-64-2: No information available.
Canada - DSL/NDSL
CAS# 10108-64-2 is listed on Canada's DSL List.
Canada - WHMIS
This product has a WHMIS classification of D1A, D2A.
Canadian Ingredient Disclosure List
CAS# 7790-78-5 (listed as Cadmium compounds) is listed on the Canadian Ingredient Disclosure List.
CAS# 10108-64-2 is listed on the Canadian Ingredient Disclosure List.
Exposure Limits
CAS# 7790-78-5: OEL-ARAB Republic of Egypt:TWA 0.05 mg(Cd)/m3 OEL-AUSTRALIA:TWA 0.05 mg(Cd)/m3 OEL-BELGIUM:TWA 0.05 mg(Cd)/m3 OEL-CZECH OSLOVAKIA:TWA 0.05 mg(Cd)/m3;STEL 0.1 mg(Cd)/m3 OEL-DENMARK:TWA 0.01 mg(Cd)/m3 OEL-FINLAND:TWA 0.02 mg(Cd)/m3;Carcinogen OEL-GERMANY;Carcinogen OEL-INDIA:TWA 0.05 mg(Cd)/m3 OEL-JAPAN:TWA 0.05 mg(Cd)/m3 OEL-THE NETHERLANDS:TWA 0.02 mg(Cd)/m3;STEL 0.1 mg(Cd)/m3 OEL-THE PHILIPPINES:TWA 0.2 mg(Cd)/m3 OEL-RUSSIA:TWA 0.01 mg(Cd)/m3;STEL 0.05 mg(Cd)/m3 OEL-SWEDEN:TWA 0.02 mg(Cd)/m3;Carcinogen OEL-SWITZERLAND:TWA 0.05 mg(Cd)/m3 OEL-THAILAND:TWA 0.2 mg(Cd)/m3;STEL 0.5 mg(Cd)/m3 OEL-TURKEY:TWA 0.2 mg(Cd)/m3 OEL-UNITED KINGDOM:TWA 0.01 mg(Cd)/m3 OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV
CAS# 10108-64-2: OEL-ARAB Republic of Egypt:TWA 0.05 mg(Cd)/m3 OEL-AUSTRALIA:TWA 0.05 mg(Cd)/m3 OEL-BELGIUM:TWA 0.05 mg(Cd)/m3 OEL-CZECHOSLOVAKIA:TWA 0.05 mg(Cd)/m3;STEL 0.1 mg(Cd)/m3 OEL-DENMARK:TWA 0.01 mg(Cd)/m3 OEL-FINLAND:TWA 0.02 mg(Cd)/m3;Carcinogen OEL-FRANCE;Skin OEL-GERMANY;Carcinogen OEL-INDIA:TWA 0.05 mg(Cd)/m3 OEL-JAPAN:TWA

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Section 16 - Additional Information

MSDS Creation Date: 9/02/1997
Revision #4 Date: 11/25/2002