Material Safety Data Sheet
Cadmium nitrate tetrahydrate, reagent, crystals, 99%

ACC# 00341

Section 1 - Chemical Product and Company Identification

MSDS Name: Cadmium nitrate tetrahydrate, reagent, crystals, 99%
Catalog Numbers: AC403750000, AC403755000
Synonyms: Nitric acid, cadmium salt, tetrahydrate.
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
10022-68-1	Cadmium nitrate, tetrahydrate	99	unlisted
10325-94-7	Cadmium nitrate	-	233-710-6

Hazard Symbols: XN O
Risk Phrases: 20/21/22 8

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white solid. **Danger!** Strong oxidizer. Contact with other material may cause a fire. Harmful if swallowed. May cause eye and skin irritation. Causes severe respiratory tract irritation. May cause lung damage. May cause liver and kidney damage. May cause adverse reproductive effects based upon animal studies. Contains cadmium. Avoid creating dust. Cancer hazard. May cause methemoglobinemia.
Target Organs: Kidneys, liver, lungs, skeletal structures.

Potential Health Effects

Eye: Causes eye irritation.
Skin: Causes severe skin irritation. Chronic inhalation may cause pulmonary emphysema.
Ingestion: Harmful if swallowed. Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause unconsciousness.
Inhalation: Effects may be delayed. Causes respiratory tract irritation. May cause methemoglobinemia, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), convulsions, tachycardia, dyspnea (labored breathing), and death. Irritation may lead to chemical pneumonitis and pulmonary edema. May cause dyspnea (difficult or labored breathing). May cause anemia. May cause cough, chest pain, fever, muscular cramps, and headache.
Chronic: May cause respiratory tract cancer. Prolonged or repeated exposure may cause permanent bone structure abnormalities. May cause liver and kidney damage. May cause anemia and other blood cell abnormalities. Chronic inhalation may cause pulmonary emphysema.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
Skin: Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.
Ingestion: Call a poison control center. 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: Get medical aid immediately. Remove from exposure and move to fresh air immediately. 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. Strong oxidizer. Contact with combustible materials may cause a fire. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Containers may explode when heated.
Extinguishing Media: Do NOT get water inside containers. For small fires, use dry chemical, carbon dioxide, or water spray. For large fires, use dry chemical, carbon dioxide, alcohol-resistant foam, or water spray. Cool containers with flooding quantities of water until well after fire is out.
Flash Point: Not applicable.
Autoignition Temperature: Not applicable.
Explosion Limits, Lower: Not available.
Upper: Not available.

NFPA Rating: (estimated) Health: 2; Flammability: 1; Instability: 1; Special Hazard: OX

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. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Remove all sources of ignition. Provide ventilation. Do not use combustible materials such as paper towels to clean up spill.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and wash before reuse. Minimize dust generation and accumulation. Avoid contact with skin and eyes. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid contact with clothing and other combustible materials. Do not ingest or inhale. Use with adequate ventilation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.
Storage: Do not store near combustible materials. 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: Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Cadmium nitrate, tetrahydrate	none listed	none listed	none listed
Cadmium nitrate	none listed	none listed	none listed

OSHA Vacated PELs: Cadmium nitrate, tetrahydrate: No OSHA Vacated PELs are listed for this chemical. Cadmium nitrate: 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 appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to minimize contact with skin.
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: Solid
Appearance: white
Odor: odorless
pH: Not available.
Vapor Pressure: Negligible.
Vapor Density: Not available.
Evaporation Rate: Negligible.
Viscosity: Not available.
Boiling Point: 132 deg C
Freezing/Melting Point:59.5 deg C
Decomposition Temperature: Not available.
Solubility: 215% (20 C)
Specific Gravity/Density:2.455 @ 17C
Molecular Formula: Cd(NO3)2.4H2O
Molecular Weight:308.47

Section 10 - Stability and Reactivity

Chemical Stability: Stable.
Conditions to Avoid: Incompatible materials, combustible materials, organic materials, reducing agents.
Incompatibilities with Other Materials: Reducing agents, phosphorus, copper, copper alloys, and organic materials.
Hazardous Decomposition Products: Nitrogen oxides, toxic cadmium oxide fumes.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 10022-68-1: EV1850000
CAS# 10325-94-7: EV1750000

LD50/LC50:
CAS# 10022-68-1:
Draize test, rabbit, eye: 20 mg/24H Moderate;
Draize test, rabbit, skin: 500 mg/24H Severe;
Oral, rat: LD50 = 300 mg/kg;

CAS# 10325-94-7:
Oral, mouse: LD50 = 47 mg/kg;
Oral, rat: LD50 = 300 mg/kg;

Carcinogenicity:
CAS# 10022-68-1:
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# 10325-94-7:
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).
Epidemiology: NIOSH cited recent epidemiological evidence of a significant excess of respiratory cancer deaths among a cohort of cad mium production workers, and concluded that cadmium and its compounds are potential carcinogens.
Teratogenicity: No data available.
Reproductive Effects: No data available.
Neurotoxicity: No data available.
Mutagenicity: No data available.
Other Studies: No data available.

Section 12 - Ecological Information

Ecotoxicity: Fish: Rainbow trout: 55ug/L; 48H; Fathead Minnow: 820ug/L; 48H; No data available.
Environmental: Terrestrial: May migrate in the environment in the form of nitrate, chloride, carbonate complexes, hydroxide complexes, ammonia complexes, and as chelated and other organo-metallic complexes resulting from decay of plant and animal matter. Aquatic: Relatively mobile and may be transported in solution as either hydrated cations or as organic or inorganic complexes. Not expected to biodegrade but will bioconcentrate.
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:	NITRATES, INORGANIC, N.O.S.				No information available.
Hazard Class:	5.1				
UN Number:	UN1477				
Packing Group:	II				

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 10022-68-1 is not on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS number for the anhydrous form is on the inventory (40CFR720.3(u)(2)).
CAS# 10325-94-7 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
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 10022-68-1: acute, chronic, flammable. CAS # 10325-94-7: acute, chronic, flammable.
Section 313
This material contains Cadmium nitrate, tetrahydrate (listed as Cadmium compounds), 99%, (CAS# 10022-68-1) 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:
None of the chemicals in this product are listed as Hazardous Substances 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# 10022-68-1 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
CAS# 10325-94-7 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
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:
XN O
Risk Phrases:
R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
R 8 Contact with combustible material may cause fire.

Safety Phrases:
S 22 Do not breathe dust.

WGK (Water Danger/Protection)
CAS# 10022-68-1: No information available.
CAS# 10325-94-7: 3
Canada - DSL/NDSL
CAS# 10325-94-7 is listed on Canada's DSL List.
Canada - WHMIS
This product does not have a WHMIS classification.
Canadian Ingredient Disclosure List
CAS# 10022-68-1 (listed as Cadmium compounds) is listed on the Canadian Ingredient Disclosure List.
CAS# 10325-94-7 is listed on the Canadian Ingredient Disclosure List.
Exposure Limits
CAS# 10022-68-1: 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-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# 10325-94-7: 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-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

Section 16 - Additional Information

MSDS Creation Date: 3/24/1999
Revision #4 Date: 12/03/2002