

List	Material Safety Data Sheet (Documentation Requirements)
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Section 1 – Product and Company Information

Product Name Catalog Number Product Type	Sodium CD-SOD-050 Clinical Chemistry Reagent	Emergency Telephone No. CHEMTREC (800) 424-9300 International CHEMTREC (703) 527-3887
Company Name Street Address City, State, Zip Code, Country	Concept Diagnostics 2527 S. Greenwood Pl., Ontario, CA 91761 USA	Company Telephone No. (909) 947-3462 Fax No. (909) 947-3162

Section 2 – Composition/Information on Ingredients

	Chemical Names	Concentration	CAS#
Filtrate reagent:	Uranyl acetate and Magnesium acetate in Ethyl alcohol	2.1 mM, 20 mM	541-09-03, 16674-78-5, 64-17-5
Acid reagent:	Acetic acid	Diluted	64-19-7
Color reagent:	Potassium ferrocyanide	1.5 mM	14459-95-1
Standard:	Sodium chloride	150 mEq/L	7647-14-5
Other components either non-hazardous or at concentrations below that requiring hazardous listing.			

Section 3 – Hazards Identification

Emergency Overview: Note: The following information applies to the component materials at higher concentrations than present in the reagent. Although lower concentrations are present in the reagent, appropriate safety precautions should still be taken.						
Filtrate reagent: Uranyl acetate: Highly Toxic (USA). Very Toxic (EU). Dangerous for the environment. Very toxic by inhalation and if swallowed. Danger of cumulative effects. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Target organ(s): liver, kidneys. Prop. 65 carcinogen (Calif., USA)						
Magnesium acetate: Caution. Avoid contact and inhalation. Target organ(s): Central nervous system, G.I. system						
Ethyl alcohol: Flammable (USA). Highly flammable (EU). Harmful. Harmful by inhalation, in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin. Harmful: possible risk of irreversible effects through inhalation, in contact with skin and if swallowed. Target organ(s): central nervous system, liver.						
Color reagent: Potassium ferrocyanide: Contact with acids liberates very toxic gas. Target organ(s): blood.						
	HMIS Rating			NFPA Rating		
	Health:	Flammability:	Reactivity:	Health:	Flammability:	Reactivity:
uranyl acetate	3*	0	0	3	0	0
magnesium acetate	1*	0	1	1	0	1
ethyl alcohol	2*	3	1	2	3	1
potassium ferrocyanide	1*	0	0	1	0	0
sodium chloride	0	0	0	0	0	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.
Inhalation Exposure If inhaled, remove to fresh air. If not breathing give artificial respiration but NOT by mouth-to-mouth resuscitation. If breathing is difficult, give oxygen. Call a physician.
Dermal Exposure In case of skin contact, immediately wash skin with soap and copious amounts of water for at least 15 minutes while removing 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 and Explosive Hazard Data

Flash Point Ethyl alcohol: 14°C (57°F)	Explosion Limits Ethyl alcohol: Lower: 3.3% Upper: 19%	Autoignition Temp Ethyl alcohol: 363°C (685°F)
Extinguishing Media Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.		
Firefighting Measures 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. Specific Method(s) of Fire Fighting: Ethyl alcohol: Use water spray to cool fire-exposed containers.		

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Section 6 – Accidental Release Measures

<p>Procedure to be Followed in Case of Leak or Spill Wear proper personal protective equipment (PPE) as indicated in section 8. Uranyl acetate: Handle as a radioactive spill. Ethyl alcohol: Shut off all sources of ignition.</p>	<p>Procedures of Personal Precaution Wear chemical safety goggles, rubber boots and heavy rubber gloves. Exercise appropriate precautions to avoid direct contact with skin or eyes.</p>
<p>Methods for Cleaning Up and Disposal Mop up liquid, place in bag and hold for waste disposal. Ethyl alcohol: Absorb spill with inert material (e.g. vermiculite or sand), then place in a closed container for disposal. Ventilate area and wash spill site after material pickup is complete. Follow federal, state and local disposal regulations.</p>	

Section 7 – Handling and Storage

<p>Handling Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Avoid inhalation or ingestion. Do not pipette by mouth. Wash thoroughly after handling.</p>	<p>Storage Store in a cool dry place. Keep tightly closed. Ethyl alcohol: Keep container tightly closed. Keep away from heat, sparks, and open flame. Keep away from sources of ignition.</p>
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Section 8 – Exposure Controls / PPE

<p>Engineering Controls Safety shower and eyewash. Good general ventilation.</p>	<p>Personal Protective Equipment Respiratory Protection: None required where adequately ventilated Protective Clothing: Lab coat Protective Gloves: Latex or rubber gloves Eye: Chemical safety goggles with side shields recommended. Other protective equipment: Use a safety pipette device.</p>
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Section 9 - Physical Data

<p>Boiling Point uranyl acetate, magnesium acetate, potassium ferrocyanide = N/A; ethyl alcohol = 78-80°C; sodium chloride = 1413°C</p>	<p>Melting Point uranyl acetate = 110°C, magnesium acetate = 80°C, ethyl alcohol = -144°C, potassium ferrocyanide = 70°C, sodium chloride = 801°C</p>	<p>Specific Gravity (g/cm³) uranyl acetate = 2.89, magnesium acetate = 1.454, ethyl alcohol = 0.79, potassium ferrocyanide = 1.85, sodium chloride = 2.165</p>
<p>Vapor Pressure uranyl acetate, magnesium acetate, potassium ferrocyanide = N/A; ethyl alcohol = 44.6 mm 20°C; sodium chloride = 1 mm 865°C</p>	<p>Percent Volatile uranyl acetate, magnesium acetate, ethyl alcohol, potassium ferrocyanide, sodium chloride = N/A</p>	<p>Vapor Density N/A</p>
<p>Evaporation Rate 1 (water = 1.0)</p>	<p>Solubility in Water Soluble</p>	<p>Appearance filtrate reagent= yellow liquid; acid reagent= clear liquid; color reagent= yellow liquid; standard= clear liquid</p>

Section 10 – Stability and Reactivity

Stability Stable	Conditions to Avoid Moisture	Materials to Avoid strong oxidizing agents, alkali metals, ammonia, peroxides, acids, acid anhydrides, halogens, acid chlorides
<p>Hazardous Decomposition Products uranyl acetate→ carbon monoxide, carbon dioxide, uranium oxides; magnesium acetate→ carbon monoxide, carbon dioxide, magnesium oxide; ethyl alcohol→ carbon monoxide, carbon dioxide; potassium ferrocyanide→ nitrogen oxides, hydrogen cyanide, carbon monoxide, carbon dioxide sodium chloride→ sodium, sodium oxides, hydrogen chloride gas</p>		<p>Hazardous Polymerization None have been reported.</p>

Section 11 – Toxicological information

<p>Route of exposure: Uranyl acetate: Skin contact: May cause skin irritation. Skin absorption: May be harmful if absorbed through the skin. Eye contact: May cause eye irritation. Inhalation: May be fatal if inhaled. Material may be irritating to mucous membranes and upper respiratory tract. Ingestion: May be fatal if swallowed. Target organ(s): kidneys, liver, lungs.</p>	<p>Signs and Symptoms of Exposure: Uranyl acetate: Exposure may cause: conjunctivitis, blood effects, symptoms may be delayed. To the best of our knowledge, the chemical, physical and toxicological properties of have not been thoroughly investigated.</p>
<p>Route of exposure: Magnesium acetate: Skin contact: May cause skin irritation. Skin absorption: May be harmful if absorbed through the skin. Eye contact: May cause eye irritation. Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract. Ingestion: May be harmful if swallowed. Target organ(s): Central nervous system, G.I. system</p>	<p>Signs and Symptoms of Exposure: Magnesium acetate: To the best of our knowledge, the chemical, physical and toxicological properties of have not been thoroughly investigated.</p>

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Section 11 – Toxicological information (continued)

<p>Route of exposure Ethyl alcohol: Skin contact: Causes skin irritation. Skin absorption: Harmful if absorbed through the skin. Eye contact: Causes eye irritation. Inhalation: Harmful if inhaled. Material is irritating to mucous membranes and upper respiratory tract. Ingestion: Harmful if swallowed. Target organ(s): central nervous system, liver, heart, kidneys, cardiovascular system, G.I. system, eyes.</p>	<p>Signs and Symptoms of Exposure Ethyl alcohol: Can cause CNS depression. Drowsiness. Narcotic effect. Damage to the heart. To the best of our knowledge, the chemical, physical and toxicological properties of have not been thoroughly investigated.</p>
<p>Route of exposure Potassium ferrocyanide: Skin contact: May cause skin irritation. Skin absorption: May be harmful if absorbed through the skin. Eye contact: May cause eye irritation. Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract. Ingestion: May be harmful if swallowed. Target organ(s): blood</p>	<p>Signs and Symptoms of Exposure Potassium ferrocyanide: May cause cyanosis (blue-gray coloring of skin and lips caused by lack of oxygen). To the best of our knowledge, the chemical, physical and toxicological properties of have not been thoroughly investigated.</p>
<p>Route of exposure Sodium chloride: Skin contact: May cause skin irritation. Skin absorption: May be harmful if absorbed through the skin. Eye contact: Can cause irritation or redness. Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract. Ingestion: May be harmful if swallowed.</p>	<p>Signs and Symptoms of Exposure Sodium chloride: Ingestion of large amounts causes vomiting and diarrhea. Dehydration and congestion may occur in internal organs. Hypertonic salt solutions can produce inflammatory reactions in the G.I. tract. To the best of our knowledge, the chemical, physical and toxicological properties of have not been thoroughly investigated.</p>

Toxicity Data: Uranyl acetate			
Species:	Dose:	Route of Application:	Result:
Rat	204 mg/kg	Oral	LD50
Rat	8300 UG/kg	Subcutaneous	LD50
Mouse	242 mg/kg	Oral	LD50
Mouse	20400 UG/kg	Subcutaneous	LD50

Remarks: Behavioral: Tremor. Skin and appendages: Other: Hair. Nutritional and gross metabolic: Changes in: Body temperature decrease.
Chronic Exposure – Carcinogen Result: contains a radioactive isotope which may produce cancer and genetic mutation.

Chronic Exposure – Teratogen				
Species:	Dose:	Route of Application:	Exposure Time:	Result:
Rat	50 mg/kg	Oral	6-15D pregnant	Effects on Embryo or Fetus: fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: musculoskeletal system.
Rat	100 mg/kg	Oral	6-15D pregnant	Specific Developmental Abnormalities: craniofacial (including nose & tongue)

Chronic Exposure – Reproductive Hazard				
Species:	Dose:	Route of Application:	Exposure Time:	Result:
Mouse	2 gm/kg	Oral	60D male/ 2W pre/ 1-13Dpreg	Effects on fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total # of implants). Effects on Embryo or Fetus: Fetal death.
Mouse	990 mg/kg	Oral	60D male/ 14D pre-4D post	Effects on newborn: Growth statistics (e.g. reduced weight gain) Effects on newborn: Other postnatal measures or effects.
Mouse	640 mg/kg	Oral	64D male	Effects on fertility: Male fertility index (e.g., # of males impregnating females per # males exposed to fertile non-pregnant females).
Mouse	1280 mg/kg	Oral	64D male	Paternal effects: testes, epididymis, sperm duct.
Mouse	1500 mg/kg	Oral	13-21D preg / 21D post	Maternal effects: Other effects. Effects on newborn: weaning or lactation index (e.g. # alive at weaning per # alive at day 4). Effects on newborn: Other postnatal measures or effects.
Mouse	4 mg/kg	Subcutaneous	10D preg	Effects on fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total # of implants). Effects on Embryo or Fetus: Fetal death. Specific Developmental Abnormalities: Musculoskeletal system.

Toxicity Data: Magnesium acetate:			
Species:	Dose:	Route of Application:	Result:
Mouse	111 mg/kg	Intravenous	LD50

Note: Only selected Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.

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Section 11 – Toxicological information (continued)

Toxicity Data: Ethyl alcohol			
Species:	Dose:	Route of Application:	Result:
Rat	20,000 ppm	Inhalation	LC50
Rat	7.060 mg/kg	Oral	LD50
Human	1,400 mg/kg	Oral	LD50

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.
 Note: Only selected Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.

Toxicity Data: Sodium Chloride			
Species:	Dose:	Route of Application:	Result:
Rat	3 g/kg	Oral	LD50
Rat	>42 g/m3	Inhalation	LC50
Mouse	4 g/kg	Oral	LD50
Mouse	2602 mg/kg	Intraperitoneal	LD50
Mouse	3 gm/kg	Subcutaneous	LD50
Mouse	645 mg/kg	Intravenous	LD50
Mouse	131 mg/kg	Intracervical	LD50
Rabbit	>10 g/kg	Skin	LD50

Irritation Data: Sodium Chloride			
Species:	Dose:	Route of Application:	Result:
Rabbit	50 mg/24H	Skin	Result: Mild irritation effect
Rabbit	500 mg/24H	Skin	Result: Mild irritation effect
Rabbit	100 mg	Eyes	Result: Mild irritation effect
Rabbit	100 mg/24H	Eyes	Result: Moderate irritation effect
Rabbit	10 mg	Eyes	Result: Moderate irritation effect

Other/Organ Effects: Sodium Chloride
 Behavioral Effects: Somnolence, convulsions or effect of seizure threshold, muscle contraction or spasticity
 Cardiac: Other changes
 Endocrine: Estrogenic
 Maternal Effects: ovaries, fallopian tubes, or other effects on female
 Effects on Fertility: pre-implantation mortality, post-implantation mortality, abortion
 Effects on Embryo or Fetus: fetotoxicity, fetal death
 Specific Developmental Abnormalities: musculoskeletal system
 Note: Only selected Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information. (RTECS#: VZ4725000)

Section 12 – Ecological Information

Uranyl acetate, magnesium acetate, potassium ferrocyanide, sodium chloride: No data available.			
Acute Ecotoxicity Tests: Ethyl alcohol			
Test type	Species	Time	Value
LC50 Fish	Onchorhynchus mykiss (Rainbow trout)	96 Hrs	13,000 mg/L
EC50 Daphnia	Daphnia magna	48 Hrs	9.3 mg/L
LC50 Fish	Onchorhynchus mykiss (Rainbow trout)	96 Hrs	10,400 mg/L
LC50 Fish	Pimphales promelas (Fathead minnow)	96 Hrs	15,300 mg/L
LC50 Fish	Other fish	24 Hrs	10,000 mg/L

Section 13 – Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation
Filtrate reagent (containing uranyl acetate): Dispose of as radioactive waste. Consult local, state, and federal regulations on the disposal of radioactive waste.
Acid reagent, Color reagent & Standard: Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state and local environmental regulations.

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Section 14 – Transport Information

<p>DOT Uranyl acetate: Proper shipping name: Radioactive material, excepted package-limited quantity of material UN#: 2910 Class: 7 Packing Group: None Hazard Label: None PIH: Not PIH</p>	<p>IATA Uranyl acetate: Proper shipping name: Radioactive material, excepted package-limited quantity of material IATA UN#: 2910 Class: 7</p>
<p>DOT Ethyl alcohol: Proper shipping name: Ethanol [or] Ethyl alcohol [or] Ethanol solutions [or] Ethyl alcohol solutions UN#: 1170 Class: 3 Packing Group: Packing Group II Hazard Label: Flammable Liquid PIH: Not PIH</p>	<p>IATA Ethyl alcohol: Proper shipping name: Ethanol IATA UN#: 1170 Class: 3 Packing Group II</p>
<p>DOT Magnesium acetate, Potassium ferrocyanide & Sodium chloride: Proper shipping name: None Non-hazardous for Transport: These substances are considered to be non-hazardous for transport.</p>	<p>IATA Magnesium acetate, Potassium ferrocyanide & Sodium chloride: Non-hazardous for Air Transport: Non-hazardous for Air Transport.</p>

Section 15 – Regulatory Information

<p>Uranyl acetate: European Regulatory Information Symbol of Danger: R T+ N Indication of Danger: Radioactive. Very toxic. Dangerous for the environment. R: 26/28 33 51/53 Risk statements: Very toxic by inhalation and if swallowed. Danger of cumulative effects. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S: 50-21 45 61 Safety statements: When using, do not eat, drink or smoke. In 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.</p>	<p>Uranyl acetate: US Classification and Label Text Indication of Danger: Highly toxic (USA). Very toxic (EU). Dangerous for the environment. Risk statements: Very toxic by inhalation and if swallowed. Danger of cumulative effects. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Safety statements: When using, do not eat, drink or smoke. In 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 Statements Radioactive material. Target organ(s): liver, kidneys. Calif. (USA) Prop. 65 carcinogen.</p>
<p>Canadian 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</p>	<p>US Regulatory Information SARA Listed: No US – State Regulatory Information California Prop. 65: This product is or contains chemical(s) known to the State of California to cause cancer.</p>
<p>Magnesium acetate: EU Additional Classification. S: 22 24/25 Safety statements: Do not breathe dust. Avoid contact with skin and eyes.</p>	<p>Magnesium acetate: US Classification and Label Text US Statements Caution: Avoid contact and inhalation. Target organ(s): Central nervous system. G.I. system</p>
<p>Canadian 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: No, NDSL: No</p>	<p>US Regulatory Information SARA Listed: No TSCA Inventory Item: Yes</p>

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Section 15 – Regulatory Information (Continued)

<p>Ethyl alcohol: EU Additional Classification. Symbol of Danger: F Xn Indication of Danger: Highly flammable. Harmful. R: 11 20/21/22 68/20/21/22 Risk statements: Highly flammable. Harmful by inhalation, in contact with skin and if swallowed. Harmful: possible risk of irreversible effects through inhalation, in contact with skin, and if swallowed. S: 7 16 26 36/37 45 Safety statements: Keep container tightly closed. Keep away from sources of ignition – no smoking. In case of contact with eyes, rinse immediately with water and seek medical advice. Wear suitable protective clothing and gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).</p>	<p>Ethyl alcohol: US Classification and Label Text Indication of Danger: Flammable (USA). Highly flammable (EU). Harmful. Risk statements: Harmful by inhalation, in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin. Harmful: possible risk of irreversible effects through inhalation, in contact with skin, and if swallowed. Safety statements: Keep container tightly closed. Keep away from sources of ignition – no smoking. In case of contact with eyes, rinse immediately with water and seek medical advice. Wear suitable protective clothing and gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). US Statements: Target organ(s): nerves, liver.</p>
<p>Canadian 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: No, NDSL: No</p>	<p>US Regulatory Information SARA Listed: Yes Notes: This product is or contains a component that is subject to SARA313 reporting requirements.</p>
<p>Potassium ferrocyanide: EU Additional Classification. R: 32 Risk statements: Contact with acids liberates very toxic gas. S: 22 24/25 Safety statements: Do not breathe dust. Avoid contact with skin and eyes.</p>	<p>Potassium ferrocyanide: US Classification and Label Text Risk statements: Contact with acids liberates very toxic gas. US Statements: Caution: Avoid contact and inhalation. Target organ(s): blood.</p>
<p>Canadian 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: No, NDSL: No</p>	<p>US Regulatory Information SARA Listed: Yes Deminimis: 1% Notes: This product is subject to SARA313 reporting requirements – cyanide compounds.</p>
<p>Sodium chloride: 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</p>	<p>Sodium chloride: US Regulatory Information SARA Listed: No TSCA Inventory Item: Yes</p>

Section 16 – Other Information

This Product is labeled in accordance with CFR21 (Food and Drugs), Section 809.10.
The information contained herein has been compiled from data presented in various technical sources believed to be accurate. We make no warranties, express or implied, and assume no liability in connection with the use of this information. It is the user’s responsibility to determine the suitability of this information and to assure the adoption of necessary safety precautions.

N/A - Not Applicable or Not Available