

Rapid Electroplating Process, Inc

SAFETY DATA SHEET



Conforms to: 29CFR 1900.1200 App D
Complies with Canadian WHMIS MSDS Requirements
Based on CCOHS:A Brief Summary of Canadian Requirements (Apr 2014)



1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

Product Identification:	Silver Coatalyte #316
Product Use:	Selective Electroplating
Manufacturer:	Rapid Electroplating Process, Inc. 2901 W. Soffel Ave. Melrose Park, IL 60160 USA
Telephone	00-1-708-344-2504
Emergency telephone:	In U.S.--CHEMTREC 1-800-424-9300 Outside U.S.-- 001-703-527-3887 (call collect)
Date of Issue (Version):	May 2014

CANADIAN SUPPLIER
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2. HAZARDS IDENTIFICATION

Note	Unless noted, hazard information presented here is based on the properties of the full strength constituent chemicals with concentrations > 1 wt% (>0.1 wt% if identified as carcinogenic). This product contains diluted forms of the chemicals which should be taken into account when evaluating the hazards of the product as a whole.
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Hazard	Category	Hazard	Category
Acute Toxicity		Reproductive Hazard	
Oral	3 (ATE Product LD50)	Germ Cell Mutagenicity	Unknown
Dermal	Unknown	Reproductive Toxicity	DUPONT reports that limited reproductive studies do not suggest effects from sodium cyanide. Some tests have shown the potential for developmental toxicity but only at exposure levels producing toxic effects in the adult animal.
Inhalation Dusts/Mists	Unknown	Lactation	Unknown
Skin Corrosion	1B	Target Organ Toxicity	
Serious Eye Damage/Irritation	1	Single Exposure	Eyes, skin, cardiovascular system, respiratory system
Carcinogenicity	No Component Categorized by IARC, NTP	Chronic Exposure	Central nervous system, thyroid, blood
Respiratory/Skin Sensitizations	Unknown	Aspiration Hazard	Unknown

Hazard Category	Signal Word	Precautionary Statements:	Hazard Symbol(s) (GHS):
1B (Skin Corrosion/Irritation)	Danger	Causes severe skin burns and eye damage	
3 (Acute Toxicity-Oral)	Danger	Toxic if swallowed	

Hazard Statements (US-GHS):

ID	Hazard Statement
EUH031	Contact with acids liberates toxic gas
EUH066	Repeated exposure may cause skin dryness or cracking
EUH210	Safety data sheet available on request.
EUH401	To avoid risks to human health and the environment, comply with the instructions for use.
H300	Fatal if swallowed
H302	Harmful if swallowed
H311	Toxic in contact with skin
H312	Harmful in contact with skin
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H320	Causes eye irritation

ID	Hazard Statement
H331	Toxic if inhaled
H332	Harmful if inhaled
H401	Toxic to aquatic life
H402	Harmful to aquatic life

Precautionary Statements (US-GHS):

ID	Precautionary Statement
P102	Keep out of reach of children
P103	Read label before use
P220	Keep/Store away from clothing/acids/foodstuffs/combustible materials
P233	Keep container tightly closed
P234	Keep only in original container
P235	Keep cool
P261	Avoid breathing dust/fume/gas/mist/vapours/spray
P262	Do not get in eyes, on skin, or on clothing
P264	Wash exposed skin thoroughly after handling
P270	Do not eat, drink or smoke when using this product
P271	Use only outdoors or in a well-ventilated area
P273	Avoid release to the environment
P280	Wear protective gloves/protective clothing/eye protection/face protection
P281	Use personal protective equipment as required
P301+310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
P302+352	IF ON SKIN: Wash with soap and water
P303+361+353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+351+338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing
P309+311	IF exposed or you feel unwell: Call a POISON CENTER or doctor/physician
P312	Call a POISON CENTER or doctor/physician if you feel unwell
P321	Specific treatment (see items on label and SDS)
P330	If swallowed, rinse mouth
P332+313	If skin irritation occurs: Get medical advice/attention
P337+313	If eye irritation persists get medical advice/attention
P361	Remove/Take off immediately all contaminated clothing
P363	Wash contaminated clothing before reuse
P370	In case of fire use extinguishers suitable for surrounding fire (avoid CO ₂).
P403+233	Store in a well ventilated place. Keep container tightly closed
P405	Store locked up

Hazards Not Otherwise Classified	None known.
Ingredients with Unknown Toxicity	None >1%

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Common Name	CAS-No	Concentration (Wt%)
Potassium Carbonate, Anhydrous	Potash	584-08-7	< 5
Silver Cyanide	-	506-64-9	< 5
Sodium Cyanide	Prussiate	143-33-9	< 5
Components not designated as hazardous	Various	Various	> 85

Note	<p>Under normal conditions of evaporation, only the water phase is expected to evaporate leaving the soluble salts behind. Any TWA is thus believed to be meaningful only for the abnormal case in which the solution as a whole is introduced into the air as an aerosol.</p> <p>Because of manufacturing variances and possible product improvements, the compositions and physical properties listed here should be considered representative. The values listed should not be construed as specifications.</p>
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4. FIRST AID MEASURES

General:	Move to fresh air; flush affected area with water (especially under eyelids if eyes affected); remove contaminated clothing; treat for shock as necessary. Never give anything by mouth to an unconscious person.
Inhalation:	Move to fresh air. If breathing stops, give artificial respiration/oxygen as appropriate. Call physician.
Eye contact:	Rinse with clear water, especially under eyelid. Consult Physician.

Skin contact:	Wash affected area with soap and water. Consult physician if irritation occurs.
Ingestion:	If taken internally and victim is conscious, give water and induce vomiting. Keep head below hips to prevent aspiration of vomitus. Call physician. If unconscious from effects of cyanide, use amyl nitrite and oxygen as directed by cyanide first aid kit instructions. Call physician. (Amyl nitrite is a vasodilator. As a part of safety planning, consult physician regarding use if heart conditions exist.) If any symptoms develop, administer oxygen. Call physician/poison control center.
Most Important Symptoms/Effects—Acute:	Irritant to skin, eyes and other mucous membranes. TLV 'skin' notation indicates that cyanide may penetrate the skin, especially if broken.
Most Important Symptoms/Effects—Delayed:	DUPONT suggests that small exposures to cyanide continuing over a long period have caused decreased thyroid activity and kidney changes. Long-term administration to dogs have produced unspecified acute intoxication symptoms, increased numbers of red blood cells, decreased proteins and central nervous system changes. Literature indicates that body can metabolize small amounts of cyanide without chronic/long term residual effects. Silver compounds absorbed by the body may be reduced by the body depositing silver—results in darkening of effected tissue over prolonged time/exposure (argyria).
Indication of Immediate Medical Attention/Special Treatment Needed:	Cyanide Exposure: Weakness, dizziness, confusion, headache, vomiting, skin/mucous membrane irritation. In the extreme case, cyanosis, unconsciousness and death. Cyanide disrupts the oxidative mechanism; skin may have deceptively healthy pink to red color but with injury or lack of oxygen may be bluish. Prompt action is needed to prevent further injury or death.
Note to physicians:	DUPONT suggests that intravenous injections by a physician of sodium nitrite and sodium thiosulfate may be useful for severe cyanide exposure. Without symptoms, no treatment is suggested—decontaminate and observe for at least 30 minutes (the half-life of cyanide in the body is about 20-90 minutes). An expansive discussion of cyanide first aid from the DUPONT MSDS is available on request. The Center for Disease Control also offers guidance for cyanide emergencies at http://www.bt.cdc.gov/agent/cyanide/ .

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media:	As appropriate for surrounding fire.
Extinguishing Media Which must not be used for safety reasons:	Avoid CO2 or acid-based extinguishers in confined area because they may react with spilled material to produce HCN.
Hazardous combustion products:	On extreme heating or mixing with acids: metal oxides, nitrous oxides, cyanates, and/or flammable HCN gas.
Special exposure hazards:	If material is free to mix with water, mixing may result in toxic water runoff
Conditions of Flammability:	Not flammable (aqueous solution). See Section 9: Physical and Chemical Properties.
Special protective equipment for fire-fighters:	Wear self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:	Control access to spill area. Ensure adequate ventilation and avoid direct contact with material.
Environmental precautions:	Comply with all national, regional and local regulations for ultimate disposal of cyanide/silver waste solution. Do not flush cyanide compounds into sewers that may contain an acid. Use toxic material disposal service or hypochlorite detoxification.
Methods for containment:	Use inert, absorbent material.
Methods for clean-up	Confine material in appropriately marked container. After pickup, clean effected area with mild hypochlorite (bleach, etc.)
Other information:	Dispose in accordance with local, regional and national regulations.

7. HANDLING AND STORAGE

Handling:	DO NOT TAKE INTERNALLY. USE IN WELL-VENTILATED AREA. DO NOT MIX WITH OTHER CHEMICALS. Keep container closed when not in use. Keep away from children. Silver Coatalyte #316 may give off some ammonia gas during use, and under unusual conditions, HCN.
Usage:	To reduce the possibility of injury by splatter or obstruction of ventilation/air movement, do not crowd workpiece with body or face. Avoid conditions that could allow workpiece to: bend/spring-back and "flick" solution; or drop into puddled solution and splash
Storage:	Store/use in ventilated areas and avoid temperature extremes. Keep away from foodstuff, acids and other incompatible materials. Do not store near combustible/flammable materials (in the event of fire and container rupture, there is the potential for cyanide/silver solution runoff from fire-fighting water). As a strong poison, cyanides should be controlled and handled by responsible individuals. Keep away from children and foodstuff.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values:

Chemical Name	ACGIH TWA	ACGIH STEL	OSHA PEL
Potassium Carbonate, Anhydrous	Not Avail.	Not Avail.	Not Avail.
Silver Cyanide	0.01 mg/m3 - as Ag; STEL of 5(Skin)C as CN also applies.	0.01 mg/m3 - as Ag; STEL of 5(Skin)C as CN also applies.	0.01 mg/m3 - as Ag; PEL of 5(Skin) as CN also applies.

Chemical Name	ACGIH TWA	ACGIH STEL	OSHA PEL
Sodium Cyanide	Not Avail. - STEL of 5(Skin)C as CN also applies.	Not Avail. - STEL of 5(Skin)C as CN also applies.	5(Skin) mg/m ³ - as CN
Silver Compounds, Soluble	0.01 mg/m ³ - as Ag	0.01 mg/m ³ - as Ag	0.01 mg/m ³ - as Ag
Cyanide Compounds	Not Avail.	Not Avail.	5(Skin) mg/m ³ - as CN

Exposure controls:	--
Engineering Controls:	Local exhaust.

Personal protective equipment:	As appropriate for conditions of use: Rubber aprons/suits, eye wash fountain, safety shower.
Respiratory protection:	NIOSH approved dust/mist respirator.
Eye protection:	Chemical splash goggles/face shield. Avoid use of contact lenses.
Hand protection:	Gloves, rubber, e.g., butyl or neoprene.
Skin protection:	As appropriate for conditions of use: Rubber aprons/suits

Environmental exposure controls:	Maintain levels below Community environmental protection thresholds.
General hygiene considerations:	DO NOT TAKE INTERNALLY. Keep away from eyes and out of open wounds. Practice good industrial/personal hygiene and safety practice; do not smoke/eat/drink in area of use; wash hands after use; wash clothing/materials that may have come in contact with chemicals.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid	Vapour pressure:	As Water
Appearance:	Yellow liquid, slight ammonia odor.	Vapor density:	As Water
Colour:	Yellow liquid, slight ammonia odor.	Relative Density:	1.07
Odour:	Yellow liquid, slight ammonia odor.	Solubility (in water):	Aqueous solution—soluble in water.
pH:	11.3	Partition coefficient: n-octanol/water:	As Water
Melting point / melting range:	< 0° C (< 32° F)	Auto-ignition temperature:	Not Applicable (aqueous solution)
Boiling point / boiling range:	> 100° C (> 212° F)	Decomposition Temperature:	Not Applicable (aqueous solution)
Flash point:	Not Applicable (aqueous solution)	Viscosity:	As Water
Evaporation rate:	As Water	Oxidizing properties:	Not Applicable
Flammability (solid, gas):	Not Flammable	Explosion Data-Mechanical Impact:	Insensitive
Upper / Lower Flammability Limit-Explosive Limits:	Not Applicable (aqueous solution)	Explosion Data-Static Discharge:	Insensitive

10. STABILITY AND REACTIVITY

Reactivity:	Reacts with acids to release HCN gas
Chemical Stability:	Stable
Possibility of Hazardous Reactions:	On extreme heating or mixing with acids: metal oxides, nitrous oxides, cyanates, and/or flammable HCN gas.
Conditions to avoid:	High heat. Mixing with incompatible materials.
Incompatible Materials:	Acids, acid salts, and weak alkalis. Strong oxidizers (e.g. nitrates and chlorites) may react exothermally.
Hazardous decomposition products:	On extreme heating or mixing with acids: metal oxides, nitrous oxides, cyanates, and/or flammable HCN gas.

11. TOXICOLOGICAL INFORMATION

Toxic Levels:

Chemical Name	LD50 (mg/kg)	LC50 (mg/M3)	IARC Listed	NTP Listed	OSHA Listed	ACGIH Carcinogenicity Listed
Potassium Carbonate, Anhydrous	1870 OR -	Not Avail.	No	No	No	No
Silver Cyanide	123 OR -	Not Avail.	No	No	No	No
Sodium Cyanide	6.44 OR -	Not Avail.	No	No	No	No
Silver Compounds, Soluble	Not Available	Not Available	No	No	No	No
Cyanide Compounds	5 OR - as Potassium Cyanide	Not Avail. Not Avail.	No	No	No	No

Estimated Product LD50 (mg/kg)	142.78
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EFFECTS OF ACUTE EXPOSURE	--
Eye contact:	Potential for eye irritation or chemical burns.
Inhalation:	Mist can cause respiratory irritation.
Skin contact:	Can cause skin irritation or chemical burns. Note that Cyanide TWA has a "skin" notation.
Ingestion:	Potentially toxic by ingestion.

EFFECTS OF CHRONIC EXPOSURE	–
Target organs:	Eyes, skin, cardiovascular system, central nervous system, thyroid, blood, nasal septum, respiratory system
Chronic Effects:	DUPONT suggests that small exposures to cyanide continuing over a long period have caused decreased thyroid activity and kidney changes. Long-term administration to dogs have produced unspecified acute intoxication symptoms, increased numbers of red blood cells, decreased proteins and central nervous system changes. Literature indicates that body can metabolize small amounts of cyanide without chronic/long term residual effects. Silver compounds absorbed by the body may be reduced by the body depositing silver--results in darkening of effected tissue over prolonged time/exposure (argyria).
Carcinogenicity:	No component has been identified as a carcinogen.
Mutagenicity:	Unknown
Reproductive Effects:	DUPONT reports that limited reproductive studies do not suggest effects from sodium cyanide. Some tests have shown the potential for developmental toxicity but only at exposure levels producing toxic effects in the adult animal.
Developmental Effects:	
Teratogenicity:	None known.
Embryotoxicity:	DUPONT reports that limited reproductive studies do not suggest effects from sodium cyanide. Some tests have shown the potential for developmental toxicity but only at exposure levels producing toxic effects in the adult animal.
Skin Sensitization:	None known.
Respiratory Sensitization:	None known.
Toxicologically Synergistic Materials	None known.

12. ECOLOGICAL INFORMATION

Ecotoxicity:	Cyanide can be toxic to fish until biodegraded.
Mobility:	Cyanide is water soluble.
Persistence and degradability:	Cyanide biodegrades.
Bioaccumulative potential:	Cyanide biodegrades.
Other adverse effects:	None known.

13. DISPOSAL CONSIDERATIONS

Disposal Instructions:	Comply with all national, regional and local regulations for ultimate disposal of cyanide/silver waste solution. Do not flush cyanide compounds into sewers that may contain an acid. Use toxic material disposal service or hypochlorite detoxification.
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14. TRANSPORT INFORMATION

Information List	US DOT	IATA
UN Number	UN 2922	UN 2922
Hazard Class	8	8 (6.1)
Packing Group	II	II
Proper Shipping Name	Corrosive Liquids, Toxic, n.o.s.	Corrosive Liquid, Toxic, n.o.s.
Technical Name (if needed)	(Sodium & Silver Cyanide Solution)	(Sodium & Silver Cyanide Solution)
Labels	Corrosive, Poison	Corrosive, Toxic

Marine Pollutant	No
Transport in Bulk	Not Applicable
Special Precautions	None beyond those above.

15. REGULATORY INFORMATION

Spill Notifications:	Notify local Safety Coordinators. If spill quantity warrants, notify appropriate governmental officials.
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US Federal:

Chemical Name	CAS	CERCLA RQ (lbs)	Section 302 EHS TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Code
Sodium Hydroxide	1310-73-2	1,000	Not Listed	Not Listed	Not Listed	Not Listed
Sodium Cyanide	143-33-9	10	100	10	313 (By Category)	P106
Silver Cyanide	506-64-9	1	Not Listed	Not Listed	313 (By Category)	P104
Cyanide Compounds	N106	CERCLA Class (No RQ)	Not Listed	Not Listed	313	Not Listed
Silver Compounds, Soluble	N740	CERCLA Class (No RQ)	Not Listed	Not Listed	313	Not Listed

FEDERAL: 'Superfund Amendments and Reauthorization Act (SARA) of 1986':	This product contains a toxic chemical subject to Title III SARA, Section 313 and 40 CFR Part 372 toxic chemical release reporting requirements.
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Canada:

Chemical Name	CAS	WMIS Class	WHMIS Note
Sodium Hydroxide	1310-73-2	Corrosive,E,1%	E Corrosive Material 2 strong base (pH calculated = 11.7) (16%)
Sodium Cyanide	143-33-9	Very Toxic,Corrosive; D1A,E;1%	D1A Very Toxic Material Causing Immediate and Serious Toxic Effects 1 Transportation of Dangerous Goods: class 6.1 group I E Corrosive Material 2 strong base (pH calculated = 11.7)
Silver Cyanide	506-64-9	Toxic; D1A; 1%	D1A Very Toxic Material Causing Immediate and Serious Toxic Effects 1 Transportation of Dangerous Goods: class 6.1 group II
Potassium Carbonate	584-08-7	Toxic,Corrosive; D2B,E; 1%	D2B Toxic Material Causing Other Toxic Effects 1 eye irritation in animals E Corrosive Material 2 3 corrodes aluminum surfaces
Cyanide Compounds	N106	Discl; 1%	Not Listed
Silver Compounds, Soluble	N740	Discl; 1%	Not Listed

California:

Chemical Name	CAS	CA Prop 65	CA Acutely Hazardous TQ	CA Hazardous Substance	CA Hazardous Note
Sodium Hydroxide	1310-73-2	Not Listed	Not Listed	Listed	
Sodium Cyanide	143-33-9	Toxic	Not Listed	Listed	
Cyanide Compounds	N106	Toxic	Not Listed	Listed	
Silver Compounds, Soluble	N740	Not Listed	Not Listed	Listed	26. Silver compounds existing in stable emulsions or suspensions as in photographic film are exempt.

CALIFORNIA: 'Safe Drinking Water and Toxic Enforcement Act of 1986' (Proposition 65):

WARNING: This product contains a chemical known to the State of California to be Toxic. Other listed chemicals may be present in the new/used product from trace amounts in the raw materials or by virtue of product use and contact with other materials.

16. OTHER INFORMATION

Information Sources:

Dudavari, Susan, Editor, The Merk Index (01/01/1989)
Sax, N. Irving, Dangerous Properties of Industrial Materials (01/01/1979)
ACGIH, 2012 TLVs and BEIs- (Threshold Limit Values for Chemical Substances in Work Air Adopted by ACGIH) (03/01/2012)
National Toxicology Program (USHHS/PHS), 12th Report on Carcinogens (06/10/2011)
IARC, Overall Evaluations of Carcinogenicity to Humans As evaluated in IARC Monographs Volumes 1-109 (03/31/2014)
EPA, Title III List of Lists: Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to-Know Act (EPCRA) and Section 112(r) of the Clean Air Act, As Amended (10/1/12) (10/01/2012)
Code of Federal Regulations 29, Labor, Parts 1910.1000, SubPart Z, 1 Jul 10 (07/01/2010)
Code of Federal Regulations 40, Protection of the Environment (07/01/2007)
Code of Federal Regulations 49, Transportation (10/01/2010)
California Code of Regulations 22 Division 2, Safe Drinking Water and Toxic Enforcement Act of 1986", "Chemicals known to the State to Cause Cancer and Reproductive Toxicity (03/22/2011)
Toxicological Index Service, CSST, WHMIS, Classification of Chemical Substances (04/10/2011)
Toxicological Index Service, CSST, WHMIS Disclosure list (04/15/2014)
Canadian Centre for Occupational Health and Safety, The MSDS (International Format): A Brief Summary Of Canadian Requirements (04/29/2014)
IATA, Dangerous Goods Regulations, 55rd Edition (01/01/2014)
Various Chemical Suppliers, MSDS's which did not identify chemicals as hazardous (01/01/1900)
Toxicological Index Service, CSST, WHMIS, Classification of Chemical Substances (12/13/2013)
MSDS for Basacid Yellow NB 132P
MSDS for Potassium Carbonate Anhydrous
MSDS for Silver Cyanide
MSDS for Sodium Cyanide
MSDS for Sodium Hydroxide Solution
MSDS for Water, Demineralized

Disclaimer:

This Material Data Sheet was prepared in accordance with US/Canadian guidelines. All information, recommendations and suggestions appearing herein concerning our product are based upon information and data believed to be reliable. However, it is the user's responsibility to determine the safety, toxicity and suitability of the product described herein for his/her own use. Since the actual use by others is beyond our control, no guarantees expressed or implied are made by Rapid Electroplating Process, Inc. as to the effects of such use, the results to be obtained, or the safety and toxicity of the product, nor does Rapid Electroplating Process, Inc. assume any liability arising out of use by others of the product referred to herein. Nor is the information herein to be construed absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations.

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Date:	May 2014	Prepared by:	R. F. Rapids
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