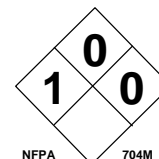


Rapid Electroplating Process, Inc SAFETY DATA SHEET



Conforms to: 29CFR 1900.1200 App D
Complies with Canadian WHMIS MSDS Requirements
Based on CCOHS: A Brief Summary of Canadian Requirements (Apr 2014)
Conforms to Regulation (EC) No.453/2010/EU (REACH)



1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

Product Identification:	Copper Plating Materials: Copper Coatalyte #314-N Copper Anode, Special #534-N, 544-N, 554-N
Product Use:	Selective Electroplating
Manufacturer:	Rapid Electroplating Process, Inc. 2901 W. Soffel Ave. Melrose Park, IL 60160 USA
Telephone	00-1-708-344-2504 (9:00 A.M. -4:30 PM, CST/CDT, M-F)
Emergency telephone:	In U.S.--CHEMTREC 1-800-424-9300 (24 Hrs) Outside U.S.-- 001-703-527-3887 (call collect)
Date of Issue (Version):	Jan 2018

CANADIAN SUPPLIER
GEORGE M. FRASER, LTD.
1815 Ironstone Manor, Unit #11
PICKERING, ONTARIO L1W 3W9
TEL: (905) 420-6555 FAX: (905) 420-4333
24HR. EMERGENCY TEL: (613) 996-6666

2. HAZARDS IDENTIFICATION

Note	<p>Solid metallic anodes are generally classified as "articles" and do not constitute a hazardous material in benign, solid form under the definitions of the OSHA Hazard Communication Standard (29 CFR 1910.1200) or DOT/IATA transportation rules. However, some hazardous elements can be formed as a part of their normal use in selective electroplating. Although not considered a normal end use of our anodes, hazardous conditions can also be created by machining/welding/etc. the anode creating dust/fume or other conditions. The following classification information and warnings are for the hazardous elements which may be released in conjunction with the associated RAPID coatalyte (electrolyte) during normal use in selective electroplating.</p> <p>Unless noted, hazard information presented here is based on the properties of the full strength constituent chemicals with RAPID product 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.</p>
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Hazard	Category	Hazard	Category
Acute Toxicity	--	Reproductive Hazard	--
Oral	Not Classified (ATE Product LD50)	Germ Cell Mutagenicity	Unknown
Dermal	Unknown	Reproductive Toxicity	Unknown
Inhalation Dusts/Mists	Unknown	Lactation	Unknown
Skin Corrosion	2 (ph<11.5, in vitro test)	Target Organ Toxicity	--
Serious Eye Damage/Irritation	1	Single Exposure	Eyes, skin, respiratory system, mucous membranes
Carcinogenicity	No Component Categorized by IARC, NTP	Chronic Exposure	Unknown
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	

Hazard Statements (US-GHS):

ID	Hazard Statement
EUH210	Safety data sheet available on request.
EUH401	To avoid risks to human health and the environment, comply with the instructions for use.
H303	May be harmful if swallowed
H333	May be harmful if inhaled

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/cyanides/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

ID	Precautionary Statement
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
P301+312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P302+352	IF ON SKIN: Wash with soap and water
P305+351+338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing
P332+313	If skin irritation occurs: Get medical advice/attention
P337+313	If eye irritation persists get medical advice/attention
P370	In case of fire use extinguishers suitable for surrounding fire.
P405	Store locked up
P501	Dispose of contents/waste/container according to national/state/local regulations

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

Anode (Copper Anode, Special #534-N, 544-N, 554-N):

Chemical Name	Common Name	CAS-No	Concentration (Wt%)
Copper (Metal)	Anode	7440-50-8	>99
Dynel (acrylo), Woven	Sleeve_y1	Not Applicable (Dynel)	Not Applicable

Note The sleeve serves to carry and maintain the plating chemicals between the metallic anode and the workpiece as well as provide electrical contact insulation between the metallic anode and the workpiece. As such, it is not expected to participate in chemical reactions which will evolve hazardous chemicals during theselective plating process.

Coatalyte/Activator (Copper Coatalyte #314-N):

Chemical Name	Common Name	CAS-No	Concentration (Wt%)
Sodium Carbonate Monohydrate	Soda Ash Light	497-19-8 (Anhydrous)	< 5
Components not designated as hazardous or <1 wt% or carcinogen <0.1 wt%	Various	Various	> 95

Note 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.

4. FIRST AID MEASURES

Description of First Aid Measures:	
General Information:	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.
Following Inhalation:	Move to fresh air. If breathing stops, give artificial respiration/oxygen as appropriate. Call physician.
Following Eye contact:	Rinse with clear water, especially under eyelid. Consult Physician.
Following Skin contact:	Wash affected area with soap and water. Consult physician if irritation occurs.
Following Ingestion:	Call a poison control center (PCC)/physician/emergency responders immediately and follow instructions. If victim is conscious: Rinse mouth. If directed, administer water or milk and/or oxygen if symptoms develop. Do not administer emetic or induce vomiting. Never give anything by mouth to an unconscious person. If victim has stopped breathing: Call a poison control center (PCC)/physician/emergency responders immediately and follow instructions.
Most Important Symptoms and Effects	--
Acute:	Irritation
Delayed:	None identified beyond acute hazards.
Indication of Immediate Medical Attention and Special Treatment Needed:	Persistent irritation/chemical burns. Consult physician.
Note to physicians:	Nothing specific known.

5. FIRE-FIGHTING MEASURES

Extinguishing Media:	As appropriate for surrounding fire.
Extinguishing Media Which must not be used for safety reasons:	None known
Hazardous combustion products:	With extreme heating beyond dryness, decomposition of residue can yield carbon dioxide.
Special exposure hazards arising from the substance or mixture:	None known.
Conditions of Flammability:	Not flammable (aqueous solution). See Section 9: Physical and Chemical Properties.
Advice for fire-fighters:	Wear self-contained breathing apparatus.
Additional information:	Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	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 mild alkaline waste solution that may contain trace amounts of copper. No special requirements are known
Methods for containment:	Use inert, absorbent material.
Methods for clean-up	Confine material in appropriately marked container. After pickup, clean affected area with soap
Additional information:	Dispose of in accordance with local, regional and national regulations.

7. HANDLING AND STORAGE

Precautions for safe handling:	--
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.
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 mild alkaline solution runoff from fire-fighting water). None identified
Specific end use(s):	Recommendations: Observe instructions for use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values:

Chemical Name	ACGIH TWA	ACGIH STEL	OSHA PEL
Copper (Metal)	1 mg/m3 - As Cu; Respirable fraction	Not Listed.	1 mg/m3 - as Cu Dust/Mist
Copper Compounds	1 mg/m3 - Soluble compounds, as Cu; Respirable fraction	Not Listed.	1 mg/m3 - as Cu Dust/Mist
Sodium Carbonate Monohydrate	Not Listed.	Not Listed.	15 mg/m3 - Particulates Not Otherwise Regulated (PNOR); 5 - Respirable fraction

Note 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.

Exposure controls:	--
Engineering Controls:	Local exhaust.
Personal protective equipment:	As appropriate for conditions of use: Chemical 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

Anode (Copper Anode, Special #534-N, 544-N, 554-N):

Physical state:	Solid	Vapour pressure:	Not Applicable
Appearance	Metallic	Vapor density:	Not Applicable
Color:	Reddish	Relative Density:	8.9
Odor:	No identifiable odor.	Solubility (in water):	Not Applicable
pH:	Not Applicable	Partition coefficient: n-octanol/water:	Not Applicable
Melting point / melting range:	1084° C (1983° F)	Auto-ignition temperature:	Not Applicable
Boiling point / boiling range:	Not Applicable	Decomposition Temperature:	Not Applicable
Flash point:	Not Applicable	Viscosity:	Not Applicable
Evaporation rate:	Not Applicable	Oxidizing properties:	Not Applicable
Flammability (solid, gas):	Not Flammable	Explosion Data-Mechanical Impact:	Insensitive
Upper / Lower Flammability Limit--Explosive Limits:	Not Applicable	Explosion Data-Static Discharge:	Insensitive

Coatalyte/Activator (Copper Coatalyte #314-N):

Physical state:	Liquid	Vapour pressure:	As Water
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Appearance	Liquid	Vapor density:	As Water
Color:	Golden yellow	Relative Density:	1.2
Odor:	No identifiable odor	Solubility (in water):	Aqueous solution--soluble in water.
pH:	10.5	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:	None expected
Chemical Stability:	Stable
Possibility of Hazardous Reactions:	With extreme heating beyond dryness, decomposition of residue can yield carbon dioxide.
Conditions to avoid:	High heat. Mixing with incompatible materials.
Incompatible Materials:	As an alkaline solution, avoid acids.
Hazardous decomposition products:	With extreme heating beyond dryness, decomposition of residue can yield carbon dioxide.
Anode Reactivity:	RAPID Copper Anodes are generally inert until used in the plating process with RAPID Copper Coatalyte #314-N. During the plating process, the anode slowly dissolves and provides copper ions to the coatalyte for plating onto the workpiece.

11. TOXICOLOGICAL INFORMATION

Toxic Levels:

Source	Chemical Name	LD50 (mg/kg)	LC50 (mg/M3)	IARC Listed	NTP Listed	OSHA Listed	ACGIH Carcinogenicity Listed
Anode	Copper (Metal)	Not Available		No	No	No	No
Anode	Copper Compounds	Various	Not Available	No	No	No	No
Coat314N	Sodium Carbonate Monohydrate	4090 OR	2300 IR	No	No	No	No

Estimated Product LD50 (mg/kg) 4545.455

Note When the anode is used for normal selective plating, the backing/stem and sleeve are expected to be inert and not generate hazardous chemical products themselves.

EFFECTS OF ACUTE EXPOSURE	--
Eye contact:	Potential for irritation or (in extreme cases) chemical burns.
Inhalation:	Potential for irritation or (in extreme cases) chemical burns.
Skin contact:	Potential for irritation or (in extreme cases) chemical burns.
Ingestion:	Potential for irritation or (in extreme cases) chemical burns.

EFFECTS OF CHRONIC EXPOSURE	--
Target organs:	Unknown
Chronic Effects:	None identified beyond acute hazards.
Carcinogenicity:	No component has been identified as a carcinogen.
Mutagenicity:	Unknown
Reproductive Effects:	Unknown
Developmental Effects:	--
Teratogenicity:	Unknown
Embryotoxicity:	Unknown
Skin Sensitization:	Unknown
Respiratory Sensitization:	Unknown
Toxicologically Synergistic Materials	Unknown

12. ECOLOGICAL INFORMATION

Specific Toxicity:

Chemical Name	Effect dose/concentration	Test duration	Species	Result/Evaluation	Method	Remark
Sodium Carbonate Monohydrate	EC50 200-227 mg/L	48 Hrs	ceriodaphnia (Water flea)	EC50	Unknown	-
Sodium Carbonate Monohydrate	LC50 300 mg/L	96 Hrs	Bluegill sunfish	LC50	Unknown	-

Persistence and degradability:	Unknown
Bioaccumulative potential:	Unknown
Mobility in soil:	Unknown
Results of PBT and vPvB Assessment:	None known.
Other adverse effects:	None known.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods: Comply with all national, regional and local regulations for ultimate disposal of mild alkaline waste solution that may contain trace amounts of copper.
No special requirements are known

14. TRANSPORT INFORMATION

Anode (Copper Anode, Special #534-N, 544-N, 554-N):

Information List	US DOT	IATA
UN Number	N/A	N/A
Hazard Class	N/A	N/A
Packing Group	N/A	N/A
Proper Shipping Name	Not regulated by DOT	Not regulated by IATA.
Technical Name (if needed)		
Labels	N/A	N/A

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

Coatalyte/Activator (Copper Coatalyte #314-N):

Information List	US DOT	IATA
UN Number	UN 3266	UN 3266
Hazard Class	8	8
Packing Group	III	III
Proper Shipping Name	Corrosive Liquid, Basic, Inorganic, n.o.s.	Corrosive Liquid, Basic, Inorganic, n.o.s.
Technical Name (if needed)	(Sodium Carbonate Solution)	(Sodium Carbonate Solution)
Labels	Corrosive	Corrosive

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

15. REGULATORY INFORMATION

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

Safety, health and environmental regulations/legislation specific for the substance or mixture

US Federal:

Chemical Name	CAS	CERCLA RQ (lbs)	Section 302 EHS TPQ (lbs)	Section 304 EHS RQ (lbs)	Section 313	RCRA Code
Copper	7440-50-8	5,000	Not Listed	Not Listed	313	Not Listed
Copper Compounds	N100	CERCLA Class (No RQ)	Not Listed	Not Listed	313	Not Listed
Sodium Carbonate	497-19-8 (Anhydrous)	Not Listed	Not Listed	Not Listed	Not Listed	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.

Canada:

Chemical Name	CAS	WHMIS Note	WHMIS Class
Copper (Metal)	7440-50-8	Discl; 1%	Uncontrolled product according to WHMIS classification criteria
Copper Compounds	N100	Discl; 1%	-
Sodium Carbonate	497-19-8 (Anhydrous)	Toxic, Corrosive; D2B, E	D2B Toxic Material Causing Other Toxic Effects 1 eye irritation in animals E Corrosive Material 2 corrodes aluminum surfaces

California:

Chemical Name	CAS	CA Prop 65 Toxicity	CA Acutely Hazardous TQ	CA Hazardous Substance	CA Hazardous Note
Copper (Metal)	7440-50-8	Not Listed	Not Listed	Listed	3. An MSDS must be provided under the following circumstances: a) The metal is supplied as a fine powder. b) The metal is in welding or brazing rods. c) The metal may be melted with the generation of toxic fume. d) Under normal use toxic dust or fume is likely to be generated by any manufacturing process.
Copper Compounds	N100	Not Listed	Not Listed	Listed	39. Except Copper phthalocyanine crudes and pigments. -
Sodium Carbonate	497-19-8 (Anhydrous)	Not Listed	Not Listed	Not Listed	--

CALIFORNIA: 'Safe Drinking Water and Toxic Enforcement Act of 1986' (Proposition 65): Although no chemical listed by California has been added to the new product, 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

Key literature references and sources for data:

Key literature references and sources for data:
Centers for Disease Control and Prevention, NIOSH Pocket Guide to Chemical Hazards (05/18/2016)
Dudavari, Susan, Editor, The Merk Index (01/01/1989)
Sax, N. Irving, Dangerous Properties of Industrial Materials (01/01/1979)
ACGIH, 2013 TLVs and BEIs- (Threshold Limit Values for Chemical Substances in Work Air Adopted by ACGIH) (03/01/2013)
National Toxicology Program (USHHS/PHS), 14th Report on Carcinogens (11/03/2016)
IARC, Overall Evaluations of Carcinogenicity to Humans As evaluated in IARC Monographs Volumes 1-120 (05/17/2017)
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 (03/01/2015)
Code of Federal Regulations 29, Labor, Parts 1910.1000, SubPart Z
Code of Federal Regulations 40, Protection of the Environment
Code of Federal Regulations 49, Transportation
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 (12/29/2017)
Toxicological Index Service, CSST, Classification according to WHMIS 1988 (12/13/2013)
Toxicological Index Service, CSST, WHMIS Disclosure list (Repealed 2/11/2015) (04/15/2014)
Canadian Centre for Occupational Health and Safety, Information Elements Required on a WHMIS 2015 Safety Data Sheet (SDS) (02/11/2015)
IATA, Dangerous Goods Regulations, 59th Edition (01/01/2018)
Various Chemical Suppliers, MSDS's which did not identify chemicals as hazardous
Canadian centre for Occupational Health and Safety, First Aid for Chemical Exposures (01/09/2017)
National Library of Medicine, TOXNET
National Capital Poison Center, First Aid for Poisons (12/31/2017)
Canadian Centre for Occupational Health and Safety, The Safety Data Sheet -- A Guide to First Aid Recommendations (01/02/2018)
SDS for Potassium Sodium Tartrate Tetrahydrate
SDS for Sodium Carbonate

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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Edition Date:	Jan 2018	Prepared by:	R. F. Rapids
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