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:	Tin Plating Materials: Tin Coatalyte #311 Tin Anode Anode #531, 541, or 551
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
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2. HAZARDS IDENTIFICATION

Note	**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.** **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.**

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	1B (ph<2, in vitro test)	**Target Organ Toxicity**	--
Serious Eye Damage/Irritation	1 (pH<2, in vitro test)	**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):
1 (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.
H302	Harmful if swallowed
H315	Causes skin irritation
H320	Causes eye irritation
H332	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

ID	Precautionary Statement
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
P301+311	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Call a POISON CENTER or doctor/physician
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 (Tin Anode Anode #531, 541, or 551):

Chemical Name	Common Name	CAS-No	Concentration (Wt%)
Tin (Metal)	Anode	7440-31-5	>99.9
Stainless Steel, 316	Backing	Not Applicable (SS316)	Not Applicable
Dynel (acrylo), Woven	Sleeve_y1	Not Applicable (Dynel)	Not Applicable

Note	**The anode backing/stem is intended to provide mechanical stiffness as well as electrical continuity and is not intended to be processed in any way that could create a dust/or fume hazard to the worker. 316 Stainless Steel has a very high corrosion resistance in a variety of chemical environments. Consequently, the backing/stem is not expected to evolve hazardous chemicals during the selective plating process.** **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 the selective plating process.**

Coatalyte/Activator (Tin Coatalyte #311):

Chemical Name	Common Name	CAS-No	Concentration (Wt%)
Sulfamic Acid	-	5329-14-6	< 10
Components not designated as hazardous or <1 wt% or carcinogen <0.1 wt%	Various	Various	> 90

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:	Irritant to skin, eyes and other mucous membranes.
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:	As appropriate for surrounding fire.
Hazardous combustion products:	On extreme heating beyond dryness: sulfur oxides, and ammonia fumes.
Special exposure hazards arising from the substance or mixture:	If material is free to mix with water, mixing may result in acidic water runoff.

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 suface 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 acidic waste solution that may contain trace amounts of tin. Can be neutralized with calcium oxide (lime) or sodium carbonate (soda ash).
Methods for containment:	Use inert, absorbent material.
Methods for clean-up	Confine material in appropriately marked container. After pickup, clean affected area with mild alkaline (baking soda, etc.)
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. Tin Coatalyte #311 may give off some sulfur oxides during use.
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, cyanide compounds, alkalis, reactive metals and other incompatible materials. Do not store near combustible/flammable materials (in the event of fire and container rupture, there is the potential for acidic solution runoff from fire-fighting water).
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
Sulfamic Acid	Not Listed.	Not Listed.	Not Listed.
Tin (Metal)	2 mg/m3 - as Sn	Not Listed.	2 mg/m3 -as Sn
Tin, Inorganic Compounds	2 mg/m3 - as Sn in Oxide and inorganic compounds	Not Listed.	2 mg/m3 -as Sn

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 (Tin Anode Anode #531, 541, or 551):

Physical state:	Solid	**Vapour pressure:**	Not Applicable
Appearance	Metallic	**Vapor density:**	Not Applicable
Color:	Silvery	**Relative Density:**	7.31
Odor:	No identifiable odor.	**Solubility (in water):**	Not Applicable
pH:	Not Applicable	**Partition coefficient: n-octanol/water:**	Not Applicable
Melting point / melting range:	232º C (449.4º 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 (Tin Coatalyte #311):

Physical state:	Liquid	**Vapour pressure:**	As Water
Appearance	Liquid	**Vapor density:**	As Water
Color:	Blue	**Relative Density:**	1.05
Odor:	No identifiable odor.	**Solubility (in water):**	Aqueous solution--soluble in water.
pH:	1.2	**Partition coefficient: n-octanol/water:**	As Water
Melting point / melting range:	< 0º C (< 32º F)	**Auto-ignition temperature:**	Not Applicable (aqueous solution)
Boiling point / boiling range:	> 100º C (> 212º 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 known.
Chemical Stability:	Stable
Possibility of Hazardous Reactions:	On extreme heating beyond dryness: sulfur oxides, and ammonia fumes.
Conditions to avoid:	High heat. Mixing with incompatible materials.
Incompatible Materials:	Chlorine, chlorate, nitrate, nitrite, and sulfide compounds; cyanides, alkalis, and highly reactive metals (potential for hydrogen gas generation).
Hazardous decomposition products:	On extreme heating beyond dryness: sulfur oxides, and ammonia fumes.
Anode Reactivity:	RAPID Tin Anodes are generally inert until used in the plating process with RAPID Tin Coatalyte #311. During the plating process, the anode slowly dissolves and provides tin 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	Tin (Metal)	Not Available	Not Available	No	No	No	No
Anode	Tin, Inorganic Compounds	2207 OR as Tin Sulfate	Not Available	No	No	No	No
Coat311	Sulfamic Acid	3160 OR	Not Available	No	No	No	No

Estimated Product LD50 (mg/kg)	25000
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:	Mist can cause respiratory irritation.
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:	Eyes, skin, respiratory system
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:	Category 1 (pH<2)
Respiratory Sensitization:	Unknown
Toxicologically Synergistic Materials	Unknown

12. ECOLOGICAL INFORMATION

Specific Toxicity:

Chemical Name	Effect dose/concentration	Test duration	Species	Result/Evaluation	Method	Remark
Sulfamic Acid	LC50 70.3 mg/L	96 Hrs	Pimephales promelas (fathead minnow)	LC50	Unknown	Unknown

Persistence and degradability:	Unknown
Bioaccumulative potential:	Unknown
Mobility in soil:	Components are water soluble.
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 acidic waste solution that may contain trace amounts of tin. Can be neutralized with calcium oxide (lime) or sodium carbonate (soda ash).

14. TRANSPORT INFORMATION

Anode (Tin Anode Anode #531, 541, or 551):

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 (Tin Coatalyte #311):

Information List	US DOT	IATA
UN Number	UN 3264	UN 3264
Hazard Class	8	8
Packing Group	II	II
Proper Shipping Name	Corrosive Liquid, Acidic, Inorganic, n.o.s.	Corrosive Liquid, Acidic, Inorganic, n.o.s.
Technical Name (if needed)	(Sulphamic Acid Solution)	(Sulphamic Acid 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
Sulfamic Acid	5329-14-6	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed
Tin (Metal)	7440-31-5	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed
Tin, Inorganic Compounds	EL050	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed

FEDERAL: 'Superfund Amendments and Reauthorization Act (SARA) of 1986':	This notice is not known to apply.

Canada:

Chemical Name	CAS	WHMIS Note	WHMIS Class
Sulfamic Acid	5329-14-6	Corrosive; E;1%	E Corrosive Material 1 Transportation of Dangerous Goods: Class 8
Tin (Metal)	7440-31-5	Disclosure; 1%	Not Listed
Tin, Inorganic Compounds	EL050	Not Listed	Not Listed

California:

Chemical Name	CAS	CA Prop 65 Toxicity	CA Acutely Hazardous TQ	CA Hazardous Substance	CA Hazardous Note
Sulfamic Acid	5329-14-6	Not Listed	Not Listed	Not Listed	--
Tin (Metal)	7440-31-5	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.
Tin, Inorganic Compounds	EL050	Not Listed	Not Listed	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:

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)

Key literature references and sources for data:
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 Sulfamic Acid Crystals

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. Versions of this MSDS in languages other than English may have been translated by automated means (e.g., GOOGLE Translate ™). Content of the non-English version should be confirmed by the user against the English version to ensure correct translation.

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