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Prepared to OSHA, ACC, ANSI, NOHSC, WHMIS, 2001/58 & 1272/2008/EC Standards

SDS Revision: 1.2

SDS Revision Date: 12/12/2013

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1.1	Product Name:		. PRODUC		PANI	IDEI	NIII	ICA	110	N				
			LL <sup>®</sup> DIP & E											
1.2	Chemical Name:		Bifluoride Solution											
1.3	Synonyms:		Ammonium Hydrogendifluoride Solution; 3227-DIP											
1.4	Trade Names:	Etchall® Dip	& Etch											
1.5	Product Use:	NA DECISION												
1.6	Distributor's Name:		ng Products, Inc.											
1.7	Distributor's Address:		5, Sun City, AZ 85											
1.8	Emergency Phone:		AC +1 (800) 53		(352) 3	23-35	500							
1.9	Business Phone / Fax:	+1 (623) 93	3-4567 / +1 (623) 8	315-9095										
			2. HA	ZARDSI	DENT	FIC	ATIC	ON						
2.1	Hazard Identification:	classificatio  DANGER!  Hazard Stat  Precautiona warm watet protective of POISON Cl Sheet. P30 lenses, if pi	ict is classified an criteria of [NOHS TOXIC IF SWALL tements (H): H301 ary Statements (P): r after handling. Figloves/clothing and ENTER or doctor/j 05+P351+P338 IF resent and easy to sician. P330 – Rin:	GC: 1088 (2004) OWED. CAUS  - Toxic if swa : P264 - Was P270 - Do not d eye/face pro physician. P3 IN EYES: Rins o do. Continue	4)] and AE SES SEVE Illowed. He h hands a eat, drin otection. F 21 – Spe se cautious e rinsing.	OG Coo STR BUI 318 – Cool and exposed or single 301+Food of the cool STR STR STR STR STR STR STR STR STR STR	de (Auses Causes cosed : moke v 2310 - eatmei h wates – Imm	stralia)  ND EN  s serior  skin su  while u  IF SW  nt – Se  er for se  nediate	.  YE DA  us eye  urfaces  sing th  VALLC  ee sec  everal  ly call	MAGE dama thoron nis pro WED: ction 4 minute a POI	ge. ughly v duct. Imme of this es. Re	with so P280 ediately s Safet move	ap and Wea call a y Data contac	
			ived waste disposa		05 – 3101	e locke	a up.	F301	- Disp	ose oi	Conte	IIIS/ CO	папе	
2.2	Effects of Exposure:	Ingestion:  Eyes: Skin: Inhalation:	severe burns o Eye irritant. Ma Harmful or fata or ulcers of skii	If mouth, throat ay case severed If if swallowed In.	t and ston e or perma . May be	nach. anent e narmfu	eye da ıl by bı	mage. reathin	g dust	s or m	ists. C	ontact	may ı	sible. May cause result in blistering membranes and
		illiaiation.	upper respirato		ialeriai is	CXIICII	iely de	Structi	ve io i	iiie iist	sue oi	uic iii	ucous	membranes and
2.3	Symptoms of Overexposure:	Eyes:       Redness, burning, irritation, and swelling around eyes.         Skin:       Redness, burning, itching, rash, blistering of skin.         Ingestion:       Possible symptoms include nausea, vomiting, and abdominal pain.         Inhalation:       Coughing, wheezing, swelling of throat, irritation in mucous membranes, difficulty breathing.												
2.4	Acute Health Effects:	Harmful or	fatal if swallowed.											•
2.5	Chronic Health Effects:	Exposure m	nay result in dama	ge to bones a	nd ligame	nts. C	hronic	expos	ure m					
2.6	Target Organs:		lungs (corrosive), l											
			,											
		3. (	COMPOSITI	ON & INC	REDI	ENT	INF	ORN	//AT	ION				
											IMITS IN	I AIR (m	g/m³)	
						AC	GIH		NOHSC	<u> </u>		OSHA		_
					1	pr	om	F6	ppm	FC	1	ppm		-
CHEM	CAL NAME(S)	CAS No.	RTECS No.	EINECS No.	%	TLV	STEL	ES- TWA	ES- STEL	ES- PEAK	TLV	STEL	IDLH	OTHER
WAT		7332-18-		231-791-2	40-70	NE	NE	NF	NF	NF	NE	NE	NE	
VVAI	LN			_										
AMM	ONIUM BIFLUORIDE	1341-49- Acute To	7 BQ9200000 ox. Oral 3; Skin Cor	215-676-4 r. 1B: Serious	20-40 Eve Dam	(2.5) 1: H3		(2.5) 314	NF	NF	NA	NA	NA	NIOSH (2.5)
				FIRST AI										
4.1	First Aid:	<u>Eyes</u> <u>Skin</u> :	attention. No occurs spont of product get holding eyel following use Remove cor and/or the s	cal emergency ever give anyt taneously, keets in the eyes, lid(s) open to e, consult a photaminated clo	telephon thing by mep victim's flush eye ensure or ysician or othing and orsens, co	e numicouth to head I h	ber for an ur lowere oughly te flus gency r affect	r assist nconsc d (forw with c hing. room ir ted are	cance a cious p vard) to opious If the mmedicas wit	and inserson.  oreduces amou eyes ately.  th soap	struction Rinse ce the unts of or fact	ons. S mouth risk of water water water.	eek im with aspira for at ome s	nmediate medical water. If vomiting



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**BBE-001** Prepared to OSHA, ACC, ANSI, NOHSC, WHMIS, 2001/58 & 1272/2008/EC Standards SDS Revision: 1.2 SDS Revision Date: 12/12/2013 4. FIRST AID MEASURES - cont'd Medical Conditions Aggravated by Pre-existing dermatitis, other skin conditions, and disorders of HEALTH 3 Exposure: the target organs (eyes, skin, respiratory system, bones) or **FLAMMABILITY** 0 impaired kidney function may be more susceptible to the effects **PHYSICAL HAZARDS** 2 of this substance. В PROTECTIVE EQUIPMENT **EYES** SKIN 5. FIREFIGHTING MEASURES 5.1 Fire & Explosion Hazards: Non-flammable. May react with metals to release hydrogen gas, which can form explosive mixtures with air. Excessive heat may release toxic corrosive gases. 5.2 Extinguishing Methods: Water spray, dry chemical, alcohol foam, or carbon dioxide. Firefighting Procedures: 5.3 As with any fire, firefighters should wear appropriate protective equipment including a MSHA/NIOSH approved or equivalent self-contained breathing apparatus (SCBA) and protective clothing. Fight fires as for surrounding materials. Hazardous decomposition products may be released. Thermal degradation may produce oxides of carbon, phosphorous, and/or nitrogen, hydrogen fluoride, hydrocarbons and/or derivatives. Fire should be fought from a safe distance. Keep containers cool until well after the fire is out. Use water spray to cool fireexposed surfaces and to protect personal. Fight fire upwind. Prevent runoff from fire control or dilution from entering sewers, drains, drinking water supply, or any natural waterway. 6. ACCIDENTAL RELEASE MEASURES Spills Before cleaning any spill or leak, individuals involved in spill cleanup must wear appropriate Personal Protective Equipment (PPE). Use safety glasses or safety goggles and face shield; use gloves and other protective clothing (e.g., apron, boots, etc.) to prevent skin contact. Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. Small Spills: Wear appropriate protective equipment including gloves and protective eyewear. Use a noncombustible, inert material such as vermiculite or sand to soak up the product and place into a container for later disposal. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices Large Spills: Keep incompatible materials (e.g., powdered metals) away from spill. Stay upwind and away from spill or release. Isolate immediate hazard area and keep unauthorized personnel out of area. Stop spill or release if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant. Recover as much free liquid as possible and collect in acid-resistant container. Use absorbent to pick up residue. Avoid discharging liquid directly into a sewer or surface waters. 7. HANDLING & STORAGE INFORMATION Work & Hygiene Practices: Avoid breathing mists or spray. Avoid eye and skin contact. Wear protective equipment when handling product. 7.1 Keep out of the reach of children. Do not eat, drink or smoke when handling this product. Wash thoroughly after handling. Do not expose to heat and flame. Use only in ventilated areas. Keep out of the reach of children. Immediately clean-up and decontaminate any spills or residues. 7.2 Storage & Handling: Use and store in a cool, dry, well-ventilated location (e.g., local exhaust ventilation, fans) away from heat and direct sunlight. Store in acid-resistant containers. Keep containers covered when not in use. Keep away from incompatible substances (see Section 10). Protect containers from physical damage. 7.3 Special Precautions: Empty containers may retain hazardous product residues. Store only in plastic containers such as polyethylene, polypropylene or polyvinyl chloride at temperatures between 65-85 °F (18-30°C). Crystals will form in product at temperatures below 65 °F (18 °C), but will dissolve when product temperature is raised above 65 °F (18 °C) **EXPOSURE CONTROLS & PERSONAL PROTECTION** 8.1 Ventilation & Engineering Controls: Use local or general exhaust ventilation to effectively remove and prevent buildup of vapors or mist generated from the handling of this product. Ensure appropriate decontamination equipment is available (e.g., sink, safety shower, eye-wash station). Where risk assessment shows air-purifying respirators are appropriate use a full-face particle 8.2 Respiratory Protection: respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such NIOSH (US) or CEN (EU). Safety glasses with side shields must be used when handling or using this product. A 8.3 Eye Protection: protective face shield is also recommended. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU) 8.4 Hand Protection: Wear protective, chemical-resistant gloves (e.g., neoprene) when using or handling this product. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Wash and dry hands. 8.5 Body Protection: A chemical resistant apron and/or protective clothing are recommended when handling or

using this product. For splash or full contact, a nitrile rubber apron/protective clothing (0.11

mm thickness min.) is recommended



13.2

Special Considerations:

### SAFETY DATA SHEET

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Prepared to OSHA, ACC, ANSI, NOHSC, WHMIS, 2001/58 & 1272/2008/EC Standards SDS Revision Date: 12/12/2013 9. PHYSICAL & CHEMICAL PROPERTIES Appearance: Clear liquid Mild, ammonia-like odor 9.3 Odor Threshold NA 9.4 2.0-3.0 9.5 Melting Point/Freezing Point: NA Initial Boiling Point/Boiling Range: 9.6 > 99 °C (> 210 °F) 9.7 Flashpoint NA 9.8 Upper/Lower Flammability Limits: NA 9.9 Vapor Pressure Same as water Vapor Density: 9.10 NA Relative Density: 9.11 1.00 - 1.18 Solubility 9 12 Complete (water) Partition Coefficient (log Pow): 9.13 NA 9.14 Autoignition Temperature: NA 9.15 Decomposition Temperature: NA 9.16 Viscosity: NA 9.17 Other Information: Evaporation Rate: NA 10. STABILITY & REACTIVITY 10.1 Stability Stable. 10.2 Hazardous Decomposition Products: Contact with metals such as aluminum and zinc may produce hydrogen gas. Thermal decomposition may produce phosphoric, nitrogen, carbon or sulfur oxides. 10.3 Hazardous Polymerization: Will not occur. 10.4 Conditions to Avoid: Incompatible substances. 10.5 Incompatible Substances: Cyanides, water-reactive substances, chlorinated cleaners or sanitizers, metals such as aluminum, zinc and magnesium. May generate heat or form flammable gases when mixed with a wide variety of substances 11. TOXICOLOGICAL INFORMATION Ingestion: YES 11.1 Routes of Entry: Inhalation: YES Absorption: YES 11.2 Toxicity Data: 11.3 Acute Toxicity: See Section 2.4 114 Chronic Toxicity See Section 2.5 11.5 Suspected Carcinogen: NA Reproductive Toxicity: This product is not reported to cause reproductive toxicity in humans. 11.6 Mutagenicity: This product is not reported to produce mutagenic effects in humans. Embryotoxicity This product is not reported to produce embryotoxic effects in humans Teratogenicity: This product is not reported to cause teratogenic effects in humans. Reproductive Toxicity: This product is not reported to cause reproductive effects in humans. See Section 2.3 Irritancy of Product: 11.7 11.8 Biological Exposure Indices: NE 11.9 Physician Recommendations Treat symptomatically 12. ECOLOGICAL INFORMATION Environmental Stability: 12.1 No data available. Effects on Plants & Animals: 12.2 No data available. 12.3 Effects on Aquatic Life No data available. 13. DISPOSAL CONSIDERATIONS 13.1 Waste Disposal: Review current local, state and federal laws, codes, statutes and regulations to determine current status and appropriate disposal method for the ingredients listed in Section 2. Any disposal practice must be in compliance with local, state, and federal laws and regulations. Contact the appropriate agency for specific information. Treatment, transport, storage and disposal of hazardous waste must be provided by a licensed facility or waste hauler.

U.S. EPA Hazardous Waste - Characteristic - Corrosive (D002)



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Prepared to OSHA, ACC, ANSI, NOHSC, WHMIS, 2001/58 & 1272/2008/EC Standards SDS Revision: 1.2 SDS Revision Date: 12/12/2013 14. TRANSPORTATION INFORMATION 14.1 49 CFR (GND): UN2817, AMMONIUM HYDROGENDIFLUORIDE SOLUTION, 8, II LTD QTY: IP VOL < 1.0 L, PKG ≤ 30.0 kg UN2817. AMMONIUM HYDROGENDIFLUORIDE SOLUTION. 8. II 14.2 IATA (AIR): IMDG (OCN): 14.3 UN2817, AMMONIUM HYDROGENDIFLUORIDE SOLUTION, 8, II LTD QTY: IP VOL < 1.0 L. PKG  $\leq$  30.0 kg TDGR (Canadian GND): UN2817, AMMONIUM HYDROGENDIFLUORIDE SOLUTION, 8, II 14.4 LTD QTY: IP VOL < 1.0 L, PKG ≤ 30.0 kg 14.5 ADR/RID (EU): UN2817, AMMONIUM HYDROGENDIFLUORIDE SOLUTION, 8, II LTD QTY: IP VOL < 1.0 L, PKG ≤ 30.0 kg SCT (MEXICO): 14 6 UN2817, DIHIDROFLORURO AMONICO EN SOLUCION, 8, II CANTIDAD LIMITADA: IP VOL < 1.0 L, PKG ≤ 30.0 kg ADGR (AUS): UN2817, AMMONIUM HYDROGENDIFLUORIDE SOLUTION, 8, II 14.7 LTD QTY: IP VOL < 1.0 L, PKG  $\leq$  30.0 kg 15. REGULATORY INFORMATION 15.1 SARA Reporting Requirements: This material does not contain any chemical components with known CAS numbers that exceed the threshold (de minimis) reporting levels established by SARA Title III, Section 313. SARA Threshold Planning Quantity: 15.2 15.3 TSCA Inventory Status: The components of this product are listed on the TSCA Inventory. CERCLA Reportable Quantity (RQ): 15.4 Ammonium Bifluoride: 100 lbs (45.4 kg). 15.5 Other Federal Requirements 15.6 Other Canadian Regulations: This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR. The components of this product are listed on the DSL/NDSL. None of the components of this product are listed on the Priorities Substances List. WHMIS Class D1, E (Toxic, corrosive material). 15.7 State Regulatory Information: Ammonium Bifluoride is found on the following state criteria lists: Massachusetts Hazardous Substances List (MA), and Pennsylvania Right-to-Know List (PA). No other ingredients in this product, present in a concentration of 1.0% or greater, are listed on any of the following state criteria lists: California Proposition 65 (CA65), Delaware Air Quality Management List (DE), Florida Toxic Substances List (FL), Massachusetts Hazardous Substances List (MA), Michigan Critical Substances List (MI), Minnesota Hazardous Substances List (MN), New Jersey Right-to-Know List (NJ), New York Hazardous Substances List (NY), Pennsylvania Right-to-Know List (PA), Washington Permissible Exposures List (WA), Wisconsin Hazardous Substances List (WI). The primary components of this product are listed in Annex I of EU Directive 67/548/EEC. Other Requirements: Ammonium Bifluoride: Toxic, Corrosive (T, C). Risk Phrases (R): R25-34 – Toxic if swallowed. Causes burns.

<u>Safety Phrases</u> (S): S(1/2)-22-26-37-45 - Keep locked up and out of the reach of children. Do not breathe dust. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable gloves. If case of accident, or if you feel unwell, seek

medical advice immediately (show the label where possible).



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		16. OTHER II	NFORMATION		
16.1	Other Information:	DANGER! TOXIC IF SWALLOWED. CAUSES SEVER BURNS AND EYE DAMAGE. Wash hands and exposed skin surfaces thoroughly with soap and warm water after handling. Do not eat, drink or smoke while using this product. Wear protective gloves/clothing and eye/face protection. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Rinse mouth. Store locked up. KEEP OUT OF REACH OF CHILDREN.			
16.2	Terms & Definitions:	See last page of this Safety Data Sheet			
16.3	Disclaimer:	Other government regulations must be Etchall's knowledge, the information of suitability or completeness is not gua provided. The information contained h	resuant to OSHA's Hazard Communication Standard, 29 CFR §1910.1200. reviewed for applicability to this product. To the best of ShipMate's & b & b ontained herein is reliable and accurate as of this date; however, accuracy, ranteed and no warranties of any type, either expressed or implied, are herein relates only to the specific product(s). If this product(s) is combined operties must be considered. Data may be changed from time to time. Be		
16.4	Prepared for:	B & B Etching Products, Inc. PO Box 1415 Sun City, AZ 85372 Tel: +1 (623) 933-4567 Fax: +1 (623) 815-9095 http://www.etchall.com	etchall etchall		
16.5	Prepared by:	ShipMate, Inc. P.O. Box 787 Sisters, Oregon 97759-0787 USA Tel: +1 (310) 370-3600 Fax: +1 (310) 370-5700 http://www.shipmate.com	ShipMate <sup>®</sup> Dangerous Goods Training & Consulting		



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#### **DEFINITION OF TERMS**

A large number of abbreviations and acronyms appear on a SDS. Some of these that are commonly used include the following:

#### **GENERAL INFORMATION:**

CAS No.	Chemical Abstract Service Number

#### **EXPOSURE LIMITS IN AIR:**

ACGIH	American Conference on Governmental Industrial Hygienists	
TLV	Threshold Limit Value	
OSHA	U.S. Occupational Safety and Health Administration	
PEL	Permissible Exposure Limit	
IDLH	Immediately Dangerous to Life and Health	

#### FIRST AID MEASURES:

CPR	Cardiopulmonary resuscitation - method in which a person whose heart has
	stopped receives manual chest compressions and breathing to circulate blood
	and provide oxygen to the body.

#### HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: HMIS

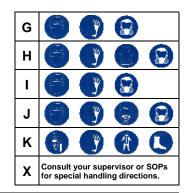
#### **HEALTH, FLAMMABILITY & REACTIVITY RATINGS:**

0	Minimal Hazard
1	Slight Hazard
2	Moderate Hazard
3	Severe Hazard
4	Extreme Hazard



#### PERSONAL PROTECTION RATINGS:

Α			
В			
С	T		
D			
E		<u>ē</u>	
F			9











**Full Face Respirator** 







**Dust & Vapor Half-**Mask Respirator

Full Face Respirator

Û Airline Hood/Mask or SCBA

#### OTHER STANDARD ABBREVIATIONS:

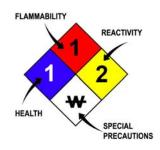
NA	Not Available
NR	No Results
NE	Not Established
ND	Not Determined
ML	Maximum Limit
SCBA	Self-Contained Breathing Apparatus

#### NATIONAL FIRE PROTECTION ASSOCIATION: NFPA

FLAMMABILITY LIMITS IN AIR:					
Autoignition Temperature	Minimum temperature required to initiate combustion in air with no other source of ignition				
LEL	Lower Explosive Limit - lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source				
UEL	Upper Explosive Limit - highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source				

#### **HAZARD RATINGS:**

0	Minimal Hazard
1	Slight Hazard
2	Moderate Hazard
3	Severe Hazard
4	Extreme Hazard
ACD	Acidic
ALK	Alkaline
COR	Corrosive
W	Use No Water
ох	Oxidizer
TREFOIL	Radioactive



#### TOXICOLOGICAL INFORMATION:

LD <sub>50</sub>	Lethal Dose (solids & liquids) which kills 50% of the exposed animals
	S
LC <sub>50</sub>	Lethal concentration (gases) which kills 50% of the exposed animal
ppm	Concentration expressed in parts of material per million parts
TD <sub>Io</sub>	Lowest dose to cause a symptom
TCLo	Lowest concentration to cause a symptom
TD <sub>Io</sub> , LD <sub>Io</sub> , & LD <sub>o</sub> or	Lowest dose (or concentration) to cause lethal or toxic effects
TC, TC <sub>o</sub> , LC <sub>io</sub> , & LC <sub>o</sub>	
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program
RTECS	Registry of Toxic Effects of Chemical Substances
BCF	Bioconcentration Factor
TL <sub>m</sub>	Median threshold limit
log Kow or log Koc	Coefficient of Oil/Water Distribution

#### REGULATORY INFORMATION:

WHMIS	Canadian Workplace Hazardous Material Information System	
DOT	U.S. Department of Transportation	
TC	Transport Canada	
EPA	U.S. Environmental Protection Agency	
DSL	Canadian Domestic Substance List	
NDSL	Canadian Non-Domestic Substance List	
PSL	Canadian Priority Substances List	
TSCA	U.S. Toxic Substance Control Act	
EU	European Union (European Union Directive 67/548/EEC)	
WGK	Wassergefährdungsklassen (German Water Hazard Class)	

#### WORKPLACE HAZARDOUS MATERIALS IDENTIFICATION (WHMIS) SYSTEM:

0	<b>(*)</b>	<b>(2)</b>		$\odot$	(18)		
Class A	Class B	Class C	Class D1	Class D2	Class D3	Class E	Class F
Compressed	Flammable	Oxidizing	Toxic	Irritation	Infectious	Corrosive	Reactive

#### EC (67/548/EEC) INFORMATION:

F.I.		*	*		<b>%</b>	X	×
С	E	F	N	0	Т	Xi	Xn
Corrosive	Explosive	Flammable	Harmful	Oxidizing	Toxic	Irritant	Harmful

#### CLP/GHS (1272/2008/EC) PICTOGRAMS:

			$\Diamond$			<b>\cdots</b>		*
GHS01	GHS02	GHS03	GHS04	GHS05	GHS06	GHS07	GHS08	GHS09
Explosive	Flammable	Oxidizer	Pressurized	Corrosive	Toxic	Harmful Irritating	Health Hazard	Environment