

MATERIAL SAFETY DATA SHEET

IDENTIFICATION & USE	TYPE OF PRODUCT Etch Solution for Sodium Electrode		CHEMICAL FAMILY inorganic solution					
	PRODUCT NUMBER Orion 181113		FORMULA					
	MANUFACTURER'S NAME AND ADDRESS Thermo Fisher		PRODUCT USE Etch solution					
	166 Cummings Center		EMERGENCY TELEPHONE NO. 1-800-424-9300					
	Beverly, MA 01915							
	CONTAINER SIZE AND TYPE 1 oz plastic bottle		USE AS RECEIVED	YES				
HAZARDOUS INGREDIENTS	SHIPPING NAME not regulated (DOT/IATA/TDGR)		CLASS					
	PIN	WHMIS Classification not regulated		PACKING GROUP				
	CONCENTRATION*	HAZARDOUS	INGREDIENTS	CHEMICAL NAMES	LD ₅₀ mg/kg	LC ₅₀ **	CAS REGISTRY NO.	
	1	0.5	Sodium Fluoride		ORL-Rat	NA	7681-49-4	
					64 mg/kg			
	1	6	Acetic Acid		ORL-Rat		64-19-7	
				3310 mg/kg				
PHYSICAL DATA	FREEZING POINT		-1 °C	MELTING POINT	N. Appl. °C	BOILING POINT		100 °C
	VAPOUR PRESSURE		N.A.	VAPOUR DENSITY (AIR = 1)	N.A.	SPECIFIC GRAVITY (H ₂ O = 1)		1.02
	COEFFICIENT OF WATER/OIL DISTRIBUTION		No Data	EVAPORATION RATE	No Data	pH AT 25 °C		3.0 - 3.5
	ODOUR THRESHOLD		No Data	PHYSICAL STATE	GAS LIQUID PASTE SOLID POWDER			
	ODOUR AND APPEARANCE		Colourless, clear, odourless liquid					
	FLASH POINT AND METHOD OF DETERMINATION				FLAMMABLE LIMITS	L.E.L.	U.E.L.	
FIRE & EXPLOSION DATA	CONDITIONS OF FLAMMABILITY		none					
	MEANS OF EXTINCTION		Carbon dioxide, dry chemical, alcohol, foam, as appropriate to surrounding fire conditions.					
	HAZARDOUS COMBUSTION PRODUCTS		Small amount of HF gas if in contact with oxidizers.					
					AUTO IGNITION TEMP.	°C		
	EXPLOSION DATA	SENSITIVITY TO MECHANICAL IMPACT		None				
		SENSITIVITY TO STATIC DISCHARGE		None				
SPECIAL FIRE FIGHTING PROCEDURES								

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REACTIVITY	STABLE	YES	CONDITIONS TO AVOID heat or flame		PRODUCT NUMBER Orion 181113	
	UNSTABLE					
	INCOMPATIBILITY — MATERIALS TO AVOID Strong oxidizers (HNO₃, chromic acid, sodium peroxide), strong caustics .					
	HAZARDOUS DECOMPOSITION PRODUCTS HF gas					
CONDITIONS OF REACTIVITY						
HEALTH HAZARD DATA	HAZARDOUS ROUTES OF ENTRY	INHALATION	INGESTION	EYE CONTACT	SKIN CONTACT	SKIN ABSORPTION
			YES	YES	YES	
	EFFECTS OF EXPOSURE (ACUTE) Irritation of skin or respiratory tract. Swallowing large amount may cause injury.					
	EFFECTS OF EXPOSURE (CHRONIC)					
	EXPOSURE LIMITS					
	SENSITIZATION TO PRODUCT					
	CARCINOGENICITY					
	OTHER TOXICOLOGICAL EFFECTS Carcinogenicity: Not found on IARC monographs or ACGIH lists					
	Symptoms of Exposure: Irritation of the eyes, conjunctivitis, coughing, dyspnea.					
	EMERGENCY AND FIRST AID PROCEDURES Eyes and Skin: immediately flush with a stream of running water for a minimum of 15 minutes, occasionally lifting eye lid.					
	Ingestion: Do not induce vomiting, give large amounts of water if conscious.					
	PREVENTIVE MEASURES	RESPIRATORY PROTECTION				
VENTILATION		LOCAL EXHAUST to control exposure limits		SPECIAL		
		MECHANICAL (GENERAL)		OTHER		
HAND PROTECTION impervious gloves		EYE PROTECTION chemical goggles				
PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL Neutralize with soda ash. Clean up and set aside for waste disposal.						
Note: sodium, fluoride and acetic acid are on EPA list 302.4 of 40 CFR						
WASTE DISPOSAL METHOD Dispose of in accordance with local, provincial, and federal laws.						
HANDLING PROCEDURES AND EQUIPMENT Keep away from caustic materials. Keep container well sealed and at room temperature to protect product integrity.						
STORAGE REQUIREMENTS NFPA Rating (scale 0-4): Health - 1, Fire - 0, Reactivity - 1, Specific - Acid						
SPECIAL SHIPPING INFORMATION						
PREPARATION	PREPARED BY Peter Bakker		APPROVED BY Peter Bakker			
	TITLE Chemistry Manager		TITLE Chemistry Manager		TELEPHONE (519) 941-8161	
			<i>Peter Bakker</i>		DATE November 5, 2009	
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