

ATI ORION MATERIAL SAFETY DATA SHEET

ORION RESEARCH INCORPORATED
THE SCHRAFFT CENTER
529 MAIN STREET, BOSTON, MA 02129 USA
TELEPHONE 617-242-3900

I. PRODUCT IDENTIFICATION

PRODUCT NAME: REF ELECTRODE FILL SOLUTION

CATALOG NO: 900001

EFFECTIVE DATE: 02/07/94

HAZARDOUS SHIPMENT LABELING: TESTING BY BUREAU OF EXPLOSIVES HAS INDICATED THIS IS NOT AN OXIDIZER.

PREPARED BY: THOMAS F. FLYNN TITLE: QUALITY ASSURANCE CHEMIST

APPROVED BY: LYNN ORLOWITZ TITLE: DIRECTOR REGULATORY MATTERS

II. HAZARDOUS INGREDIENTS (IDENTIFY INFORMATION)

HAZARDOUS COMPONENTS*	CAS NO.	%	OSHA PEL	ACGIH TLV	LD	L0MG/KG
POTASSIUM NITRATE (KNO3)	7757-79-1	17.1	NONE	NONE		100 (IVN-CAT)
SILVER CHLORIDE (AGCL)	7783-90-6	TRACE	NONE	NONE		330 (MUL-RAT)
TRITON X-100 (C32H58O11)	9002-93-1	TRACE	NONE	NONE		1800-LD50 (ORL-RAT)
POTASSIUM CHLORIDE (KCL)	7747-40-7	5.0	NONE	NONE		20 (ORL-MAN)
SODIUM CHLORIDE (NACL)	7647-14-5	0.4	NONE	NONE		8,000 (ORL-RBT)
** DEIONIZED WATER (H2O)	7732-18-5	77.5	NONE	NONE		629,000 (ORL-DOG)

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III. PHYSICAL DATA

BOILING POINT 750 MM HG: 100 DEGREES C

FREEZING POINT: - 4 DEGREES C

SPECIFIC GRAVITY (H2O=1): 1.06

VAPOR PRESSURE @: NA

PH @ 25 DEGREES C: (5.5-7.5)

SOLUBILITY IN WATER, % BY WT @: MISCIBLE

VOLATILES, % BY WT.: NA

EVAPORATION RATE (BUTYL, ACETATE = 1): NA

VAPOR DENSITY (AIR = 1): NA

APPEARANCE AND ODOR: ODORLESS LIQUID

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): NA

AUTOIGNITION TEMPERATURE: NA

FLAMMABLE LIMITS IN AIR, % VOLUME: LOWER: NA UPPER: NA

EXTINGUISHING MEDIA: ANY

SPECIAL FIRE-FIGHTING PROCEDURES: NA

UNUSUAL FIRE AND EXPLOSION HAZARDS: NITRATE MAY RENDER OTHER MATERIALS MORE COMBUSTIBLE IF ALLOWED TO DRY OUT UPON THEM.

V. REACTIVITY DATA

STABILITY: STABLE

CONDITIONS TO AVOID: STORING NEAR HEAT OR INCOMPATIBLE CHEMICALS.

INCOMPATIBILITY (MATERIALS TO AVOID): REDUCING AGENTS, B, BAS, NA ACETATE, TI, S, TRICHLOROETHYLENE, CHARCOAL.

HAZARDOUS DECOMPOSITION PRODUCTS: OXIDES OF NITROGEN UPON HEATING TO DECOMPOSITION.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITION TO AVOID: NA

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VI. HEALTH HAZARD DATA

ROUTE(S) OF ENTRY: INHALATION? NO SKIN? NO INGESTION? YES

HEALTH HAZARDS (ACUTE AND CHRONIC)

ACUTE - LARGE AMOUNTS TAKEN INTERNALLY MAY BE FATAL OR CAUSE DIZZINESS, CRAMPS, CONVULSIONS, VOMITING, WEAKNESS AND COLLAPSE.

CHRONIC - CAN CAUSE ANEMIA, NEPHRITIS.

CARCINOGENICITY: NOT FOUND ON THESE LISTS.

SIGNS AND SYMPTOMS OF EXPOSURE:

DIZZINESS, NAUSEA, WEAKNESS; NO SERIOUS ACUTE OR CHRONIC AFFECTS WITH EITHER EXTERNAL OR INHALATION EXPOSURE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:
KIDNEY OR HEART PROBLEMS.

EMERGENCY AND FIRST AID PROCEDURES

SKIN AND EYES - WASH OFF WITH LARGE AMOUNTS OF WATER FOR 15 MINUTES. INTERNAL - INDUCE VOMITING. CONSULT PHYSICIAN.

VII. PRECAUTIONS (SAFE HANDLING AND USE)

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
DILUTE WITH WATER AND COVER WITH SODA ASH, MIX AND SCOOP INTO A BEAKER OF WATER, NEUTRALIZE WITH CHL AND WASH DOWN DRAIN WITH EXCESS WATER.

WASTE DISPOSAL METHOD:
ADD TO LARGE CONTAINER OF WATER, STIR IN SLIGHT EXCESS OF SODA ASH. LET STAND
24 HOURS. NEUTRALIZE WITH 6M HCL AND WASH DOWN DRAIN WITH EXCESS WATER.
OBSERVE ALL FEDERAL, STATE AND LOCAL LAWS.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:
STORE AT ROOM TEMPERATURE AND KEEP CAP TIGHTLY SEALED TO PROTECT PRODUCT
INTEGRITY. NFPA RATING: SCALE(0-4): HEALTH-2, FIRE-1, REACTIVITY-0, SPECIFIC
-NONE.

OTHER PRECAUTIONS:
NOTE: POTASSIUM NITRATE IS LISTED IN TABLE 172.101 OF TITLE 49CFR.
THIS PRODUCT IS NOT AFFECTED BY CAL, PROP 65. COMPONENTS ARE LISTED IN TSCA
INVENTORY.

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VIII. CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE): NA

VENTILATION: LOCAL EXHAUST: NA SPECIAL: NA

VENTILATION: MECHANICAL(GENERAL): NA

OTHER: NA

PROTECTIVE GLOVES: NONE

EYE PROTECTION: SAFETY GLASSES

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: NONE

WORK/ HYGIENIC PRACTICES: EMERGENCY EYE WASH SHOULD BE AVAILABLE.

* CHEMICALS WHICH ARE NOT CLASSIFIED AS HAZARDOUS PER U.S. OSHA GUIDELINES
(29CFR PARTS 1915.2 OR 1916.2) OR THE MASSACHUSETTS SUBSTANCE LIST
(105CMR670.000 APPENDIX A) WILL NOT NECESSARILY BE LISTED ON THIS FORM EVEN
THOUGH ONE OR MORE MAY BE A CONSTITUENT OF THIS PRODUCT.

* NA NOT AVAILABLE/NOT APPLICABLE

** NON-HAZARDOUS COMPONENT

LIABILITY IS EXPRESSLY DISCLAIMED FOR ANY LOSS OR INJURY ARISING OUT OF THE USE
OF THIS INFORMATION OR THE USE OF ANY MATERIALS DESIGNATED. SAFE USE OF THE
MATERIALS IS THE RESPONSIBILITY OF THE USER.

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I. PRODUCT IDENTIFICATION

PRODUCT NAME: REF ELECTRODE FILL SOLUTION

EFFECTIVE DATE: 02/07/94

HAZAROUS SHIPMENT LABELING (DOT/IATA):

TESTING BY BUREAU OF EXPLOSIVES HAS INDICATED THIS IS NOT AN OXIDIZER.

II. HAZARDOUS INGREDIENTS (IDENTIFY INFORMATION)

HAZARDOUS COMPONENTS* SPECIFIC CHEMICAL IDENTITY	CAS#	%	OSHA PEL	ACGIH TLV	LD (LOMG/KG)
POTASSIUM NITRATE (KNO3)	7757-79-1	17.1	NONE	NONE	100 (IVN-CAT)
SILVER CHLORIDE (AGCL)	7783-90-6	TRACE	NONE	NONE	330 (MUL-RAT)
TRITON X-100 (C32H58O11)	9002-93-1	TRACE	NONE	NONE	1800-LD50 (ORL-RAT)
POTASSIUM CHLORIDE (KCL)	7747-40-7	5.0	NONE	NONE	20 (ORL-MAN)
SODIUM CHLORIDE (NACL)	7647-14-5	0.4	NONE	NONE	8,000 (ORL-RBT)
**DEIONIZED WATER (H2O)	7732-18-5	77.5	NONE	NONE	629,000 (ORL-DOG)

III. PHYSICAL DATA

BOILING POINT(750MMHG): 100 C FREEZING POINT: -4 C
SPECIFIC GRAVITY(H2O=1): 1.06 VAPOR PRESSURE: NA*
PH @ 25 C: (5.5 - 7.5) SOLUBILITY IN H2O, % BY WT: MISCIBLE
VOLATILES, % BY WT: NA EVAPORATION RATE(BUAC=1): NA
VAPOR DENSITY(AIR=1): NA
APPEARANCE AND ODOR: ODORLESS LIQUID.

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): NA
AUTOIGNITION TEMPERATURE: NA
FLAMMABLE LIMITS IN AIR, % BY VOLUME: LEL: NA UEL: NA
EXTINGUISHING MEDIA: ANY.

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(SECTION IV. CONTINUED...)
SPECIAL FIRE-FIGHTING PROCEDURES: NA

UNUSUAL FIRE & EXPLOSION HAZARDS: NITRATE MAY RENDER OTHER MATERIALS MORE
COMBUSTIBLE IF ALLOWED TO DRY OUT UPON THEM.

V. REACTIVITY DATA

STABILITY: STABLE
CONDITIONS TO AVOID: STORING NEAR HEAT OR INCOMPATIBLE CHEMICALS.
INCOMPATIBILITY (MATERIALS TO AVOID): REDUCING AGENTS, B, BAS, NA ACETATE, TI,
S, TRICHLOROROETHYLENE, CHARCOAL.

HAZARDOUS DECOMPOSITION PRODUCTS: OXIDES OF NITROGEN UPON HEATING TO
DECOMPOSITION.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

CONDITION TO AVOID: NA

VI. HEALTH HAZARD DATA

ROUTE(S) OF ENTRY: INGESTION.

HEALTH HAZARDS (ACUTE & CHRONIC):

ACUTE - LARGE AMOUNTS TAKEN INTERNALLY MAY BE FATAL OR CAUSE DIZZINESS, CRAMPS, CONVULSIONS, VOMITING, WEAKNESS AND COLLAPSE.

CHRONIC - CAN CAUSE ANEMIA, NEPHRITIS.

CARCINOGENICITY: NOT FOUND ON THESE LISTS (NTP, IARC MONOGRAPHS, OSHA REGULATED)

SIGNS AND SYMPTOMS OF EXPOSURE: DIZZINESS, NAUSEA, WEAKNESS; NO SERIOUS ACUTE OR CHRONIC AFFECTS WITH EITHER EXTERNAL OR INHALATION EXPOSURE.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: KIDNEY OR HEART PROBLEMS.

EMERGENCY AND FIRST AID PROCEDURES:

SKIN AND EYES - WASH OFF WITH LARGE AMOUNTS OF WATER FOR 15 MINUTES.

INTERNAL - INDUCE VOMITING. CONSULT A PHYSICIAN.

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WASTE DISPOSAL METHOD: ADD TO LARGE CONTAINER OF WATER, STIR IN SLIGHT EXCESS OF SODA ASH. LET STAND 24 HOURS. NEUTRALIZE WITH 6M HCL AND WASH DOWN DRAIN WITH EXCESS WATER. OBSERVE ALL FEDERAL, STATE, AND LOCAL LAWS.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: STORE AT ROOM TEMPERATURE AND KEEP CAP TIGHTLY SEALED TO PROTECT PRODUCT INTEGRITY. NFPA RATING: SCALE (0-4); HEALTH - 2, FIRE - 1, REACTIVITY - 0, SPECIFIC - NONE.

OTHER PRECAUTIONS:

NOTE: POTASSIUM NITRATE IS LISTED IN TABLE 172.101 OF TITLE 49CFR. THIS PRODUCT IS NOT AFFECTED BY CAL. PROP 65. COMPONENTS ARE REPORTED IN TSCA INVENTORY.

VIII. CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFIC TYPE): NA

VENTILATION: NA

PROTECTIVE GLOVES: NONE

EYE PROTECTION: SAFETY GLASSES.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: NONE.

WORK/HYGIENIC PRACTICES: EMERGENCY EYE WASH SHOULD BE AVAILABLE. NO EATING OR SMOKING WHILE USING.

* CHEMICALS WHICH ARE NOT CLASSIFIED AS HAZARDOUS PER U.S. OSHA GUIDELINES (29 CFR PARTS 1915.2 OR 1916.2) OR THE MASSACHUSETTS SUBSTANCE LIST (105 CMR 670.000 APPENDIX A) WILL NOT NECESSARILY BE LISTED ON THIS FORM EVEN THOUGH

ONE OR MORE MAY BE A CONSTITUENT OF THIS PRODUCT.
*NA = NOT AVAILABLE/NOT APPLICABLE
** NON-HAZARDOUS COMPONENT

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