

ORION MATERIAL SAFETY DATA SHEET

SHEET 1 OF 2

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

I. PRODUCT IDENTIFICATION

PRODUCT NAME ORION APPLICATION SOLUTION NITRITE STANDARD
 CATALOG NO. 954606
 EFFECTIVE DATE 11/18/91

HAZARDOUS SHIPMENT LABELLING: DOT IATA TESTING BY ASSOCIATION OF AMERICAN RAILROADS INDICATES THIS PRODUCT IS NOT AN OXIDIZER

PREPARED BY THOMAS FLYNN TITLE QUALITY ASSURANCE CHEMIST
 APPROVED BY LYNN ORLOWIZ TITLE DIRECTOR REGULATORY MATTERS

II. HAZARDOUS INGREDIENTS (IDENTITY INFORMATION)

HAZARDOUS COMPONENTS* SPECIFIC CHEMICAL IDENTITY: COMMON NAME(S)	CAS NO.	%	OSHA PEL	ACGIH TLV	LD/LO 50 MG/KG
SODIUM NITRITE (NANO2)	7632-00-0	0.70	NONE	NONE	186 (ORL-RBT)
SODIUM HYDROXIDE (NAOH)	1310-73-2	0.01	2 MG/M3	2 MG/M3	40 (IPR-MUS)

DEIONIZED WATER (H2O)** 7732-18-5 99.29 NONE NONE 190,000 (IPR-MUS)

III. PHYSICAL DATA

BOILING POINT 760 MM HG SPECIFIC GRAVITY (H2O=1) PH @ 25 'C VOLATILES, % BY WT.	100 'C 1.0 (6.2-8.5)	FREEZING POINT 0 'C VAPOR PRESSURE @ NA* SOLUBILITY IN WATER, % BY WT. @ EVAPORATION RATE (BUTYL ACETATE=1) NA
VAPOR DENSITY (AIR=1) NA	APPEARANCE AND ODOR COLORLESS, ODORLESS SOLUTION	

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD) N A AUTOIGNITION TEMPERATURE NA
 FLAMMABLE LIMITS LOWER UPPER
 IN AIR, % BY VOLUME: NA NA
 EXTINGUISHING MEDIA WATER, CO2
 SPECIAL FIRE-FIGHTING PROCEDURES NONE
 UNUSUAL FIRE AND EXPLOSION HAZARDS NONE

*CHEMICALS WHICH ARE NOT CLASSIFIED AS HAZARDOUS PER U.S. OSHA GUIDELINES (29CFR PARTS 1915.2 OR 1916.2) OR THE MASSACHUSETTS SUBSTANCE LIST WILL NOT NECESSARILY BE LISTED ON THIS FORM EVEN THOUGH ONE OR MORE MAY BE A CONSTITUENT OF THIS PRODUCT.
 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.
 DOCUMENT NO. 205560-001 REV. B
 PRINTED IN U.S.A. FORM MSDS/1191

ORION MATERIAL SAFETY DATA SHEET

SHEET 2 OF 2 ORION APPLICATION SOLUTION
 PRODUCT NAME: NITRATE STANDARD CATALOG NO.: 954606

V. REACTIVITY DATA

STABILITY UNSTABLE STABLE X NONE
 CONDITIONS TO AVOID
 INCOMPATIBILITY (MATERIALS TO AVOID)
 ORGANIC COMPOUNDS AND REDUCING AGENTS
 HAZARDOUS DECOMPOSITION PRODUCTS
 HAZARDOUS FUMES OF NOX UPON THERMAL DECOMPOSITION
 HAZARDOUS POLYMERIZATION: WILL NOT OCCUR X NONE
 CONDITION TO AVOID

VI. HEALTH HAZARD DATA

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

HEALTH HAZARDS (ACUTE AND CHRONIC)
 LOW HAZARD VIA SKIN AND INHALATION BECAUSE OF LOW CONCENTRATION OF SALT.
 INGESTION: MAY PRODUCE NAUSEA, VOMITING, CYANOSIS. REPREATED SMALL DOSES
 CAUSE A FALL IN BLOOD PRESSURE.
 CARCINOGENICITY: NTP? IARC MONOGRAPHS? OSHA REGULATED?
 NOT FOUND ON THESE LISTS.
 SIGNS AND SYMPTOMS OF EXPOSURE IRRITATION OF SKIN IN SENSITIZED PERSONS,
 NAUSEA, VOMITING, AND WEAKNESS.
 MEDICAL CONDITONS GENERALLY AGGRAVATED BY EXPOSURE LOWERED BLOOD PRESSURE,
 HEART TROUBLE.
 EMERGENCY AND FIRST AID PROCEDURES WASH CONTACT AREA WITH WATER. INTERNAL:
 GIVE LARGE AMOUNTS OF WATER AND CONSULT PHYSICIAN.

VII. PRECAUTIONS (SAFE HANDLING AND USE)

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
 CLEAN UP AND SET ASIDE FOR WASTE DISPOSAL.
 WASTE DISPOSAL METHOD
 OBSERVE ALL FEDERAL, STATE, AND LOCAL REGULATIONS BEFORE DISPOSING OF THIS
 PRODUCT.
 PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
 NFPA RATING SCALE (0-4); HEALTH -1, FIRE -0, REACTIVITY -0, SPECIFIC -0.
 OTHER PRECAUTIONS SARA TITLE III: NANO2 AND NAOH ARE BOTH CERCLA HAZARDS AND
 NANO2 IS ALSO REGULATED UNDER SECTION 313. NOT FOUND ON CAL. PROP. 65 LISTING.
 REPORTED IN EPA TSCA INVENTORY.

VIII. CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE)	NONE		
VENTILATION	LOCAL EXHAUST	NONE	SPECIAL NONE
	MECHANICAL (GENERAL)	NONE	OTHER NONE
PROTECTIVE GLOVES		YES	EYE PROTECTION SAFETY GLASSES
OTHER PROTECTIVE CLOTHING OR EQUIPMENT			LAB COAT
WORK/HYGENIC PRACTICES			EMERGENCY EYE WASH SHOULD BE AVAILABLE

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

I. PRODUCT IDENTIFICATION

EFFECTIVE DATE; 6/20/91
 PRODUCT NAME: ORION APPLICATION SOLUTION CISA COMPONENT B
 CATALOG NO. 941709 B
 HAZARDOUS SHIPMENT LABELING: DOT: OXIDIZER 1494 IATA: OXIDZER 1494
 PREPARED BY: THOMAS FLYNN QUALITY ASSURANCE CHEMIST
 APPROVED BY: LYNN ORLOWITZ DIRECTOR REGULATORY MATTERS

II. HAZARDOUS INGREDIENTS (IDENTITY INFORMATION)

HAZARDOUS COMPONENTS	CAS NO.	%	OSHA PEL	ACGIH TLV	LDLO MG/KG
SODIUM BROMIDE	7789-38-0	100.00	NONE	NONE	250 ORL-RBT

III. PHYSICAL DATA

BOLING POINT,760 MM HG N A FREEZING POINT: N A
SPECIFIC GRAVITY (H2O = 1) 3.34 VAPOR PRESSURE @ NA
PH @ 25 DEG C NA SOLUBILITY
IN WATER, % BY WT. @ NA
VOLATILES, % BY WT. NA EVAPORATION RATE
VAPOR DENSITY (AIR = 1) NA (BUTYL ACETATE= 1) NA
APPEARANCE AND ODOR SOLID CRYSTALS, COLORLESS, ODORLESS
IV. FIRE AND EXPLOSION HAZARD DATA
FLASH POINT (TEST METHOD) NA AUTOIGNITION NA
FLAMMABLE LIMITS IN AIR, % BY VOLUME LOWER NA UPPER NA
EXTINGUISHING MEDIA: ANY
SPECIAL FIRE FIGHTING PROCEDURES: NONE

UNUSUAL FIRE AND EXPLOSION HAZARDS: WILL MAKE OTHER MATERIALS MORE COMBUSTIBLE
IF ALLOWED TO COME IN CONTACT WITH THEM.

*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 (105CMR670.000
APPENDIX A), WILL NOT NECESSARILY BE LISTED ON THIS FORM EVEN THOUGH ONE OR
MORE MAY BE A CONSTITUENT OF THIS PRODUCT.
LIABILITY IS EXPRESSLY DISCLAIMED FOR ANY LOSS OR INJURY ARISING OUT OF THE USE
OF THIS INFORMATION OR THE USE OF MANY MATERIALS DESIGNATED, SAFE USE OF THE
MATERIALS IS THE RESPONSIBILITY OF THE USER.

NA=NOT AVAILABLE OR NOT APPLICABLE

DOC NO. 205422-001
REV. B

ORION MATERIAL SAFETY DATA SHEET
SHEET 2 OF 2 ORION APPLICATION SOLUTION
PRODUCT NAME: CISA COMPONENT B CATALOG NO.: 941709B

V. REACTIVITY DATA
STABILITY: STABLE CONDITIONS TO AVOID: STORING NEAR HEAT OR INCOMPATIBLE
CHEMICALS.
INCOMPATIBILITY (MATERIALS TO AVOID): REDUCING AGENTS, CHARCOAL, S, BA,
TRICHLOROETHYLENE.
HAZARDOUS DECOMPOSITION PRODUCTS: BROMINE, OXIDES OF BROMINE

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR CONDITIONS TO AVOID: NONE

VI. HEALTH HAZARD DATA
ROUTE(S) OF ENTRY: INHALATION: NO SKIN: NO INGESTION: YES
HEALTH HAZARDS (ACUTE AND CHRONIC): ACUTE-LARGE AMOUNTS TWKEN INTERNALLY MAY BE
FATAL OR CAUSE DIZZINESS, CRAMPS, CONVULSIONS, VOMITING, WEAKNESS, AND COLLAPSE
CHRONIC: MAY CAUSE ANEMIA, NEPHRITIS, AND METHEMOGLOBINEMIA.
CARCINOGENICITY: NTP: IARC MONOGRAPHS: OSHA REGULATED:
NOT FOUND ON THESE LISTS.
SIGNS AND SYMPTOMS OF EXPOSURE: DIZZINESS, NAUSEA, WEAKNESS - NO SERIOUS ACUTE
OR CHRONIC EFFECT WITH EITHER EXTERNAL OR INHALATION EXPOSURE.

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

EMERGENCY AND FIRST AID PROCEDURES: EYES AND SKIN: WASH OFF WITH WATER.
INTERNAL: INDUCE VOMITING. CONSULT PHYSICIAN.

VII. PRECAUTIONS (SAFE HANDLING AND USE)

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: SWEEP UP AND SET ASIDE FOR WASTE DISPOSAL.

WASTE DISPOSAL METHOD: OBSERVE ALL FEDERAL, STATE, AND LOCAL LAWS WHEN DISPOSING OF THIS PRODUCT.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: NFPA RATING: SCALE(0-4);
HEALTH-1, FIRE-0, REACTIVITY-1, SPECIFIC - OXIDIZER.

OTHER PRECAUTIONS: SARA TITLE III: SUBJECT TO REPORTING REQUIREMENTS UNDER SECTIONS 311 AND 312 OF THIS LAW. THIS PRODUCT IS NOT FOUND ON CAL. PROP. 65. REPORTED IN EPA TSCA INVENTORY.

VIII. CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE): NA

VENTILATION

LOCAL EXHAUST: NO

SPECIAL: NO

MECHANICAL (GENERAL): NO

OTHER: NO

PROTECTIVE GLOVES: NONE

EYE PROTECTION: SAFETY GLASSES

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: NONE

WORK/HYGIENIC PRACTICES: EMERGENCY EYE WASH STATION MUST BE AVAILABLE.

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I. PRODUCT IDENTIFICATION

PRODUCT NAME:

ORION APPLICATION SOLUTION NITRATE STANDARD

CATALOG NO.: 954606

EFFECTIVE DATE: 11/18/91

HAZARDOUS SHIPMENT LABELING: DOT IATA

TESTING BY ASSOCIATION OF AMERICAN RAILROADS INDICATES THIS PRODUCT IS NOT AN OXIDIZER.

PREPARED BY: THOMAS F. FLYNN

TITLE: QUALITY ASSURANCE CHEMIST

APPROVED BY: LYNN ORLOWITZ

TITLE: DIRECTOR REGULATORY MATTERS

II. HAZARDOUS INGREDIENTS (IDENTITY INFORMATION)

HAZARDOUS COMPONENTS*

SPECIFIC CHEMICAL IDENTITY: CAS NO. % OSHA ACGIH LD/LP

COMMON NAME(S)		PEL	TLV	50 MG/KG	
SODIUM NITRATE (NANO2)	7632-00-0	0.70	NONE	NONE	186 (ORL-RBT)
SODIUM HYDROXIDE (NAOH)	1310-73-2	0.01	2MG/M3	2MG/M3	40 (IPR-MUS)
DEIONIZED WATER (H2O)**	7732-18-5	99.29	NONE	NONE	190,000 (IPR-MUS)

* 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 OR NOT APPLICABLE.

** NON-HAZARDOUS COMPONENT

PAGE 1

III. PHYSICAL DATA

BOILING POINT (760 MM HG): 100 C
SPECIFIC GRAVITY (H2O = 1): 1.0
PH @ 25 C: (6.2 - 8.5)
VOLATILES, % BY WT.:
VAPOR DENSITY (AIR = 1): NA
APPEARANCE AND ODOR: COLORLESS, ODORLESS SOLUTION
FREEZING POINT: 0 C
VAPOR PRESSURE @: NA*
SOLUBILITY IN WATER, % BY WT. @: MISCIBLE
EVAPORATION RATE (BUTYL, ACETATE = 1): NA

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): NA
AUTOIGNITION TEMPERATURE: NA
FLAMMABLE LIMITS IN AIR, % BY VOLUME: LOWER-NA UPPER-NA
EXTINGUISHING MEDIA: WATER, CO2
SPECIAL FIRE-FIGHTING PROCEDURES: NONE
UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE

V. REACTIVITY DATA

STABILITY: STABLE
CONDITIONS TO AVOID: NONE
INCOMPATIBILITY (MATERIALS TO AVOID):
ORGANIC COMPOUNDS AND REDUCING AGENTS.
HAZARDOUS DECOMPOSITION PRODUCTS:
HAZARDOUS FUMES OF NOX UPON THERMAL DECOMPOSITION.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR
CONDITION TO AVOID: NONE

VI. HEALTH HAZARD DATA

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

HEALTH HAZARD (ACUTE AND CHRONIC):
LOW HAZARD VIA SKIN AND INHALATION BECAUSE OF LOW CONCENTRATION OF SALT.
INGESTION: MAY PRODUCT NAUSEA, VOMITING, CYANOSIS. REPEATED SMALL DOSES
CAUSE A FALL IN BLOOD PRESSURE.

CARCINOGENICITY: NTP? IARC MONOGRAPHS? OSHA REGULATED?
NOT FOUND ON THESE LISTS.

SIGNS AND SYMPTOMS OF EXPOSURE:
IRRITATION OF SKIN IN SENSITIZED PERSONS, NAUSEA, VOMITING, AND WEAKNESS.!

PAGE 2

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:
LOWERED BLOOD PRESSURE, HEART TROUBLE.

EMERGENCY AND FIRST AID PROCEDURES:
WASH CONTACT AREA WITH WATER. INTERNAL: GIVE LARGE AMOUNTS OF WATER AND
CONSULT PHYSICIAN.

VII. PRECAUTIONS (SAFE HANDLING AND USE)

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
CLEAN UP AND SET ASIDE FOR WASTE DISPOSAL.

WASTE DISPOSAL METHOD:
OBSERVE ALL FEDERAL, STATE, AND LOCAL REGULATIONS BEFORE DISPOSING OF
THIS PRODUCT.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:
NFPA RATING: SCALE (0-4); HEALTH-1, FIRE-0, REACTIVITY-0, SPECIFIC-0.

OTHER PRECAUTIONS:
SARA TITLE III: NANO2 AND NAOH ARE BOTH CERCLA HAZARDS AND NANO2 IS ALSO
REGULATED UNDER SECTION 313. NOT FOUND ON CAL. PROP. 65 LISTING. REPORTED
IN EPA TSCA INVENTORY.

VIII. CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFY TYPE): NONE

VENTILATION:
LOCAL EXHAUST-NONE
MECHANICAL (GENERAL) -NONE
SPECIAL-NONE
OTHER-NONE

PROTECTIVE GLOVES: YES

EYE PROTECTION: SAFETY GLASSES

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: LAB COAT

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

LIABILITY IS EXPRESSLY DISCLAIMED FOR ANY LOSS OF INJURY ARISING OUT OF THE
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PAGE 3 (LAST PAGE)