

MATERIAL SAFETY DATA SHEET

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

I. PRODUCT IDENTIFICATION

PRODUCT NAME:

ALKALINE REAGENT 10N NAOH

CATALOG NO.

951009/951011

EFFECTIVE DATE

9/5/86

HAZARDOUS SHIPMENT LABELLING: DOT IATA

SODIUM HYDROXIDE SOLUTION - U.N. NO.1824-CORROSIVE

PREPARED BY: MICHAEL N. SEVRGINY TITLE: DIRECTOR REGULATORY MATTERS

APPROVED BY: MICHAEL N. SEVRGINY TITLE: DIRECTOR REGULATORY MATTERS

II. HAZARDOUS INGREDIENTS (IDENTITY INFORMATION)

HAZARDOUS COMPONENTS* ! CAS NO. ! % ! OSHA PEL ! ACGIH TLV ! LD LO

SODIUM HYDROXIDE ! 1310-73-2 ! 40 ! 2MG/M3 ! C 2MG/M3 ! ORL-RBT 500 MG/KG

III. PHYSICAL DATA

BOILING PT 760 MM HG : >110 C ! FREEZING POINT : <-20 C

SPEC. GRAVITY (HEO=1): 1.4 ! VAPOR PRESSURE : N.A.

PH @ 25 C; STRONGLY ALKALINE (14) ! VAPOR DENSITY (AIR=1) : N.A.

VOLATILES, % BY WT. : N.A. ! SOLUBILITY IN WATER, % BY WT: MISCIBLE

EVAPORATION RATE (BUTYL ACETATE =1) : N.A.

APPEARANCE AND ODOR : COLORLESS ODORLESS SOLUTION

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT/TEST METHOD: NOT COMBUSTIBLE ! AUTOIGNITION TEMPERATURE: N.A.

FLAMMABLE LIMITS IN AIR, % BY VOLUME, LOWER: N.A.; UPPER: N.A.

EXTINGUISHING MEDIA : ANY

SPECIAL FIRE FIGHTING PROCEDURES:

MOVE CONTAINERS AWAY IF POSSIBLE, COOL FROM SIDE, USE FLOODING QUANTITIES OF WATER AS A FOG. APPLY FROM DISTANCE, STAY UPWIND AVOID BREATHING.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

NEGLECTIBLE FIRE AND EXPLOSION HAZARD WHEN EXPOSED TO HEAT OR FLAME.

V. REACTIVITY DATA

STABILITY: STABLE ; CONDITIONS TO AVOID: SEE BELOW

INCOMPATIBILITY (MATERIALS TO AVOID): CONTACT WITH WATER MAY CAUSE HEAT TO BE RELEASED, CONTACT WITH ACIDS, FLAMMABLE LIQUID, & ORGANIC HALOGEN COMPOUNDS MAY CAUSE FIRE.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY RELEASE TOXIC FUMES OF SODIUM OXIDE

WHICH CAN REACT WITH WATER OR STEAM TO PRODUCE HEAT OR FLAMMABLE, H2 GAS.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

VI. HEALTH HAZARD DATA

ROUTE(S) OF ENTRY; INHALATION?: YES-VAPORS CORROSIVE; SKIN?: YES-BURNS;

INGESTION?: YES-CORROSIVE

HEALTH HAZARDS (ACUTE AND CHRONIC.): INHALATION-MILD, TO SEVERE IRRITATION.

LARGE DOSES-DELAYED POLMONARY EDEMA, SMALL SKIN BURNS WITH DEEP ULCERATION,

SEVERE BURNS AND DISINTEGRATION OF CONJUNCTIVAL AND CORNEAL EPITHELIUM.

CORROSION OF LIPS, MOUTH, TONGUE AND PHARYNX, VOMITING OF MUCOSE-ASPHYXIA

CAN OCCUR FROM SWELLING OF THROAT. CHRONIC-BRONCHIAL IRRITANT, COUGHING,

PNEUMONIA, GASTROINTESTINAL DISTURBANCES-DERMATITIS-CONJUNCTIVITIS.

CARCINOGENICITY: NOT FOUND ON THESE LISTS. NTP/IARC MONOGRAPHS/OSHA REGULATIONS

SIGNS/SYMPTOMS OF EXPOSURE: SORE THROAT, COUGHING, LABORED BREATHING-BURNS OF

SKIN, EYES, MUCOUS MEMBRANES.

DOC 1009

PAGE 2

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

LUNG CONDITIONS, IRRITATED OR SENSITIVE SKIN

EMERGENCY AND FIRST AID PROCEDURES: ALL-GET MEDICAL ATTENTION

INHALATION- FRESH AIR, ARTIFICIAL RESPIRATION IF NECESSARY-KEEP WARM-AT REST.

SKIN-WASH WITH SOAP & LARGE AMOUNTS OF WATER WHILE REMOVING CONTAMINATED

CLOTHING- EYES-FLUSH WITH LARGE AMOUNTS OF WATER WHILE LIFTING LIDS (15-20MIN)

INGESTION-GIVE LARGE AMOUNTS OF MILK OR WATER & ALLOW VOMITING TO OCCUR-DO

NOT INDUCE VOMITING.

VII. PRECAUTIONS (SAFE HANDLING AND USE)

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

VENTILATE AREA, WEAR IMPERVIOUS GLOVES, CLOTHING AND FACE SHIELD, PREVENT

SKIN CONTACT - PICK UP, NEUTRALIZE WITH HCL, FLUSH RESULTING SODIUM CHLORIDE

SOLUTION DOWN DRAIN. - WASTE DISPOSAL METHOD: SEE ABOVE.
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: KEEP COOL AND WELL SEALED.
STORE AWAY FROM ACIDS, FLAMMABLES. - OTHER PRECAUTIONS: WILL ATTACK SOME
FORMS OF PLASTICS, RUBBER AND COATINGS.

VIII. CONTROL MEASURES
RESPIRATORY PROTECTION (SPECIFY TYPE): >100 MG/M3 SCBA FULL FACEPLATE.
VENTILATION; LOCAL EXHAUST: TO MEET EXPOSURE LIMITS; SPECIAL : N.A.
MECHANICAL/GENERAL: N.A. OTHER : N.A.
PROTECTIVE GLOVES : IMPERVIOUS GLOVES
EYE PROTECTION : SPLASH PROOF SAFETY GOGGLES
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: IMPERVIOUS CLOTHING
WORK.HYGIENIC PRACTICES : EMERGENCY EYEWASH SHOULD BE AVAILABLE -
NO EATING OR SMOKING WHILE USING.

DOCUMENT NO. 205432-001 - REV C - N.A.= NOT AVAILABLE OR NOT APPLICABLE.

*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.
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.

DOC 52 MATERIAL SAFETY DATA SHEET PAGE 1 LAST PAGE

I. PRODUCT IDENTIFICATION
10 M SODIUM 951009 OR TELEPHONE NO: 1-617-864-5400
PRODUCT NAME: HYDROXIDE CATALOG NO:951011
SODIUM HYDROXIDE CAUSTIC ALKALI
CHEMICAL NAME: CHEMICAL FAMILY:
SYNONYMS: SODIUM HYDRATE, CAUSTIC SODA, LYE, NAOH

II. HAZARDOUS INGREDIENTS
MATERIAL % TLV(UNITS) LD
SODIUM HYDROXIDE (CERTIFIED ACS), CAS #1310-73-2 40% 2MG/M 3 CEILING LD LO
LIMIT 500 MG/KG
WATER BALANCE

III. PHYSICAL DATA
BOILING POINT, 760 MM HG > 100DEGC FREEZING POINT: < 0DEGC
SPECIFIC GRAVITY (H2O=1) -2 VAPOR PRESSURE@ N.A.
SOLUBILITY MISCIBLE
PH @ 25 DEGC -13-14 IN WATER, % BY WT. @
VOLATILES, % BY WT. EVAPORATION RATE
VAPOR DENSITY(AIR=1) (BUTYL ACETATE=1) N.A.

IV. FIRE AND EXPLOSION HAZARD DATA
FLASH POINT AUTOIGNITION
(TEST METHOD) N.A. TEMPERATURE N.A.
FLAMMABLE LIMITS IN AIR, % BY VOLUME LOWER N.A. UPPER N.A.
EXTINGUISHING ANY
SPECIAL FIRE-FIGHTING N.A.
PROCEDURES
UNUSUAL FIRE
AND EXPLOSION
HAZARDS N.A.

ORION RESEARCH INCORPORATED
840 MEMORIAL DRIVE
CAMBRIDGE, MA 02139
N.A. = NOT AVAILABLE OR NOT APPLICABLE

DOC 52

PAGE 2

ORION
RESEARCH
INCORPORATED
PRODUCT NAME:

CATALOG NO:

V. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

MARKEDLY CORROSIVE ACTION UPON ALL BODY TISSUES

EFFECTS OF OVEREXPOSURE BURNS, DEEP ULCERATIONS, SCARRING
EMERGENCY AND FIRST WASH AREA WITH COPIOUS AMOUNTS OF WATER. GETT
AID PROCEDURES MEDICAL ASSISTANCE IMMEDIATELY

VI. REACTIVITY DATA

STABILITY

UNSTABLE STABLE CONDITIONS
TO AVOID

INCOMPATIBILITY METALS ORGANIC HALOGENS, NITRO COMPOUNDS, AL,
(MATERIALS TO AVOID) SN, ZN

HAZARDOUS

DECOMPOSITIONS PRODUCTS

HAZARDOUS POLYMERIZATION

MAY OCCUR WILL NOT OCCUR CONDITIONS

X TO AVOID

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL

IS RELEASED OR SPILLED DILUTE AND NEUTRALIZE WITH 6M - HCL, WASH DOWN

AND DRAIN WITH LARGE EXCESS OF WATER

WASTE DISPOSAL METHOD

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION

(SPECIFY TYPE)

VENTILATION LOCAL EXHAUST X SPECIAL
MECHANICAL OTHER
(GENERAL)

PROTECTIVE GLOVES X EYE
PROTECTION FACE SHIELD

OTHER PROTECTIVE EQUIPMENT LAB COAT

IV. SPECIAL PRECAUTIONS

PRECAUTIONARY/DOT

LABELING CORROSIVE LIQUID

OTHER HANDLING AND STORE IN COOL AREA AWAY FROM ACIDS AND OTHER

STORAGE CONDITIONS INCOMPATIBLE MATERIAL

PREPARED BY BRI DATE 12/22/83

TITLE:QUALITY ASSURANCE CHEMIST

LAST PAGE

CATALOG NUMBER: 951009

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: ALKALINE REAGENT 10N NAOH

EFFECTIVE DATE: 03/07/94

HAZAROUS SHIPMENT LABELING (DOT/IATA):

SODIUM HYDROXIDE SOLUTION / UN1824 - CORROSIVE.

II. HAZARDOUS INGREDIENTS (IDENTIFY INFORMATION)

HAZARDOUS COMPONENTS*	CAS#	%	OSHA PEL	ACGIH TLV	LD (LOMG/KG)
SODIUM HYDROXIDE (NAOH) ACID) (C2H4O2)	1310-73-2	40	2 MG/M3	2 MG/M3	500 (ORL-RBT)
**DEIONIZED WATER (H2O)	7732-18-5	60	NONE	NONE	629 (ORL-DOG)

III. PHYSICAL DATA

BOILING POINT(750MMHG): >110C
 SPECIFIC GRAVITY(H2O=1): 1.4
 PH @ 25 C: STRONGLY ALKALINE(14)
 VOLATILES, % BY WT: NA
 VAPOR DENSITY(AIR=1): NA
 APPEARANCE AND ODOR: COLORLESS, ODORLESS LIQUID.

FREEZING POINT: <20C
 VAPOR PRESSURE: NA*
 SOLUBILITY IN H2O, % BY WT: MISCIBLE
 EVAPORATION RATE(BUAC=1): NA

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): NOT COMBUSTIBLE.
 AUTOIGNITION TEMPERATURE: NA
 FLAMMABLE LIMITS IN AIR, % BY VOLUME: LEL: NA UEL: NA
 EXTINGUISHING MEDIA: ANY.

CATALOG # 951009

PAGE 2

=====

(SECTION IV. CONTINUED...)

SPECIAL FIRE-FIGHTING PROCEDURES: MOVE CONTAINERS AWAY IF POSSIBLE, COOL FROM SIDE, USE FLOODING QUANTITIES OF WATER AS A FOG. APPLY FROM A DISTANCE, STAY UPWIND, AVOID BREATHING.

UNUSUAL FIRE & EXPLOSION HAZARDS: NEGLIGIBLE FIRE AND EXPLOSION HAZARD WHEN EXPOSED TO HEAT OR FLAME.

V. REACTIVITY DATA

STABILITY: STABLE
 CONDITIONS TO AVOID: SEE BELOW.

INCOMPATIBILITY (MATERIALS TO AVOID): CONTACT WITH WATER MAY CAUSE HEAT TO BE RELEASED. CONTACT WITH ACIDS, FLAMMABLE LIQUID, OR ORGANIC HALOGEN COMPOUNDS MAY CAUSE FIRE.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY RELEASE TOXIC FUMES OF SODIUM OXIDE WHICH CAN REACT WITH WATER OR STEAM TO PRODUCE HEAT OR FLAMMABLE H2 GAS.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.
 CONDITION TO AVOID: NONE LISTED.

VI. HEALTH HAZARD DATA

ROUTE(S) OF ENTRY: INHALATION-VAPORS CORROSIVE, SKIN-BURNS, INGESTION-CORROSIVE

HEALTH HAZARDS (ACUTE & CHRONIC):
 INHALATION: MILD TO SEVERE IRRITATION. IN LARGE DOSES, DELAYED PULMONARY EDEMA, SMALL SKIN BURNS WITH DEEP ULCERATION, SEVERE BURNS AND DISINTIGRATION OF

CONJUNCTIVAL AND CORNEAL EPITHELIUM. CORROSION OF LIPS, MOUTH, TONGUE, AND PHARYNX, VOMITING OF MUCOSA-ASPHYXIA CAN OCCUR FROM SWELLING OF THROAT. CHRONIC: BRONCHIAL IRRITANT, COUGHING, PNEUMONIA, GASTROINTESTINAL DISTURBANCES DERMATITIS, CONJUNCTIVITIS.

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

SIGNS AND SYMPTOMS OF EXPOSURE: SORE THROAT, COUGHING, LABORED BREATHING, BURNS OF SKIN, EYES, MUCOUS MEMBRANES.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: LUNG CONDITIONS, IRRITATED OR SENSITIVE SKIN.

EMERGENCY AND FIRST AID PROCEDURES:

ALL: GET MEDICAL ATTENTION. INHALATION: FRESH AIR, ARTIFICIAL RESPIRATION IF NECESSARY, KEEP WARM AND AT REST. SKIN: WASH WITH SOAP & LARGE AMOUNTS OF WATER WHILE REMOVING CONTAMINATED CLOTHING. EYES: FLUSH WITH LARGE AMOUNTS OF WATER WHILE LIFTING LIDS (15-20 MINUTES). INGESTION: GIVE LARGE AMOUNTS OF MILK OR WATER & ALLOW VOMITING TO OCCUR, DO NOT INDUCE VOMITING.

CATALOG # 951009

PAGE 3

=====

VII. PRECAUTIONS (SAFE HANDLING & USE)

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: VENTILATE AREA, WEAR IMPERVIOUS GLOVES, CLOTHING & A FACE SHIELD. PREVENT SKIN CONTACT. PICK UP, NEUTRALIZE WITH HCL, FLUSH RESULTING SODIUM CHLORIDE SOLUTION DOWN DRAIN OBSERVE ALL FEDERAL, STATE, AND LOCAL LAWS.

WASTE DISPOSAL METHOD: SEE ABOVE.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: KEEP COOL AND WELL-SEALED. STORE AWAY FROM ACIDS, FLAMMABLES. NFPA RATING: SCALE (0-4); HEALTH - 3, FIRE - 0, REACTIVITY - 1, SPECIFIC - CORROSIVE.

OTHER PRECAUTIONS:

WILL ATTACK SOME FORMS OF PLASTICS, RUBBER, AND COATINGS. SARA TITLE III: NAOH IS A CERCLA HAZARD AND IS REGULATED BY SECTION 313 OF THE SARA AMENDMENT. THIS PRODUCT IS NOT AFFECTED BY CAL. PROP 65. COMPONENTS ARE REPORTED IN TSCA INVENTORY.

VIII. CONTROL MEASURES

RESPIRATORY PROTECTION(SPECIFIC TYPE): >100 MG/M3 SCBA FULL FACEPLATE.

VENTILATION: LOCAL EXHAUST TO MEET EXPOSURE LIMITS.

PROTECTIVE GLOVES: NA

EYE PROTECTION: SPLASH PROOF SAFETY GOGGLES.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: IMPERVIOUS CLOTHING.

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

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 RESPONSIBILITY OF THE USER.