

ELF ATOCHEM NORTH AMERICA MSDS PRODUCT CODE: 00209-000
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MATERIAL SAFETY DATA SHEET

ELF ATOCHEM NORTH AMERICA
 BASIC CHEMICALS
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-----PRODUCT IDENTIFICATION -----

PRODUCT NAME: CAUSTIC SODA 50% STANDARD GRADE CAS NO.: NA-MIXTURE

SYNONYMS:
 SODIUM HYDROXIDE SOLUTION

CHEMICAL NAME:
 SODIUM HYDROXIDE

MOLECULAR FORMULA:
 NAOH

CHEMICAL FAMILY: ALKALI

-----INGREDIENTS - HAZARD CLASSIFICATIONS -----

COMPONENTS-HAZARDOUS:	CAS NO.:	%	COMMENTS:
SODIUM HYDROXIDE	01310-73-2	50	TWA 2 MG/M3 (C)

NFPA RATING: 3-0-1

COMPONENTS-OTHER:	CAS NO.:	%	COMMENTS:
WATER	7732-18-5	50	

-----SHIPPING INFORMATION -----

TANK TRUCKS:
 RQ SODIUM HYDROXIDE SOLUTION; 8 CORROSIVE MATERIAL; UN 1824 PGII; CORROSIVE PLACARDS.

TANK CARS:
 RQ SODIUM HYDROXIDE SOLUTION; 8 CORROSIVE MATERIAL; UN 1824, PGII; PLACARDED CORROSIVE.

DOT REPORTABLE QUANTITY, (RQ) IS 1000 LBS ON DRY BASIS.

-----PHYSICAL PROPERTIES -----

BOILING POINT/RANGE: 142 C (288 F)

MOLECULAR WEIGHT: 40.01 (DRY BASIS)

VAPOR DENSITY(AIR=1): NA

MELTING POINT: NA

SPECIFIC GRAVITY(H2O=1): 1.525 @ 20 C

SOLUBILITY IN H2O: COMPLETE

FREEZING POINT: 12 C (54 F)

VAPOR PRESSURE(MM HG): 1.6 @ 20 C

% VOLATILES BY VOLUME: 50

APPEARANCE AND ODOR:

WATER WHITE, CLEAR TO SLIGHTLY TURBID LIQUID. ESSENTIALLY ODORLESS.

-----FIRE AND EXPLOSION DATA -----

FLASH POINT: NONE

FLAMMABLE LIMITS:

LOWER: NA

UPPER: NA

AUTOIGNITION TEMP.: NA

EXTINGUISHING MEDIA:

DO NOT USE WATER TO COOL CONTAINERS EXPOSED TO FIRE. MATERIAL WILL REACT VIOLENTLY WITH WATER. MAY FORM EXPLOSIVE MIXTURES.

SPECIAL FIRE FIGHTING PROCEDURES:

FIRE FIGHTERS AND OTHERS WHO MAY BE EXPOSED TO PRODUCTS OF COMBUSTION SHOULD WEAR FULL FIRE FIGHTING TURN OUT GEAR (FULL BUNKER GEAR) AND SELF-CONTAINED BREATHING APPARATUS (PRESSURE DEMAND OSHA/NIOSH APPROVED OR EQUIVALENT). FIRE FIGHTING EQUIPMENT SHOULD BE THOROUGHLY DECONTAMINATED AFTER USE.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

CONTACT WITH METAL CAN FORM HYDROGEN GAS. HYDROGEN IS EXTREMELY FLAMMABLE AND CAN FORM EXPLOSIVE MIXTURES WITH AIR. CLOSED CONTAINERS MAY EXPLODE WHEN HEATED OR IF CONTENTS CONTAMINATED WITH WATER.

-----REACTIVITY DATA -----

STABILITY: CONDITIONS CONTRIBUTING TO INSTABILITY:

THIS MATERIAL IS CHEMICALLY STABLE UNDER NORMAL AND ANTICIPATED STORAGE AND HANDLING CONDITIONS.

INCOMPATIBILITY-AVOID CONTACT WITH:

CONTACT WITH WATER RELEASES HEAT WHICH CAN RESULT IN VIOLENT BOILING AND SPATTERING. AVOID STRONG ACIDS, METALS AND ORGANIC MATERIALS SUCH AS CHLORINATED HYDROCARBONS. TOXIC CARBON MONOXIDE GAS CAN FORM UPON CONTACT WITH FOOD AND BEVERAGE PRODUCTS IN ENCLOSED SPACES AND CAUSE DEATH. FOLLOW APPROPRIATE TANK ENTRY PROCEDURES (SEE ANSI Z117.1-1977).

HAZARDOUS DECOMPOSITION THERMAL AND OTHER:

EXPLOSIVE HYDROGEN GAS CAN BE LIBERATED ON CONTACT WITH METALS, SUCH AS ZINC, TIN, OR ALUMINUM.

CONDITIONS TO AVOID: AVOID MOISTURE.

-----TOXICITY -----

ROUTE:	ANIMAL:	DATA:
ORAL	NA	NE
DERMAL	RABBIT	LD50 1,350 MG/KG (DRY NAOH)
INHALATION	NA	NE

TOXIC EFFECTS/ROUTES OF ENTRY

EYE EFFECTS: CORROSIVE. CAUSES EYE BURNS. MAY CAUSE BLINDNESS.

SKIN EFFECTS: CORROSIVE. CAUSES SKIN BURNS.

OTHER TOXIC EFFECTS:

SKIN CONTACT AND INHALATION ARE EXPECTED TO BE THE PRIMARY ROUTES OF OCCUPATIONAL EXPOSURE TO SODIUM HYDROXIDE. SODIUM HYDROXIDE IS A STRONG ALKALI THAT CAN BE DESTRUCTIVE TO TISSUE PRODUCING SEVERE BURNS, POSSIBLY WITH DEEP. ULCERATION AND SCARRING, ON CONTACT WITH BODY TISSUES. CONCENTRATIONS AS LOW AS 2-3% CAN CAUSE INJURY. CONTACT WITH THE EYES CAN RAPIDLY CAUSE SEVERE IRRITATION OR PERMANENT INJURY, POSSIBLY WITH LOSS OF SIGHT. SODIUM HYDROXIDE SOLUTIONS MAY NOT PRODUCE AN IMMEDIATE SENSATION UPON SKIN CONTACT, DELAYING AWARENESS OF THE FACT THAT CONTACT HAS OCCURRED. DERMATITIS (INFLAMMATION OF THE SKIN) AND SUPERFICIAL SKIN DAMAGE CAN RESULT FROM REPEATED OR PROLONGED CONTACT WITH VERY DILUTE SOLUTIONS. HIGH LEVELS OF DUSTS OR MISTS MAY BE CORROSIVE TO MUCOUS MEMBRANES PRODUCING EYE OR LUNG INJURY AND CHEMICAL PNEUMONIA. LOWER CONCENTRATIONS MAY PRODUCE IRRITATION OF EYES, NOSE OR UPPER RESPIRATORY TRACT WITH COUGHING, SORE THROAT AND SHORTNESS OF BREATH. PROLONGED EXPOSURE MAY RESULT IN ULCERATION OF THE NASAL PASSAGES.

WHILE SWALLOWING OF SODIUM HYDROXIDE IS UNLIKELY IN THE INDUSTRIAL SETTING, IF SWALLOWED, THIS MATERIAL MAY CAUSE SEVERE INTERNAL INJURY, CHARACTERIZED BY PAIN IN THE MOUTH AND STOMACH, VOMITING, AND BREATHING DIFFICULTIES. DUE TO THE POTENTIAL FOR SODIUM HYDROXIDE TO PRODUCE SEVERE RESPIRATORY TRACT IRRITATION, WORKERS WITH LUNG DISEASE OR DIMINISHED RESPIRATORY CAPACITY SHOULD HAVE LIMITED EXPOSURE TO THIS MATERIAL.

TARGET ORGAN TOXIN: NA

TOXICITY COMMENTS:

TOXICOLOGICAL INFORMATION

DATA FROM LABORATORY STUDIES CONDUCTED BY ELF ATOCHEM NORTH AMERICA, INC. AND FROM THE SCIENTIFIC LITERATURE ON SODIUM HYDROXIDE ARE SUMMARIZED BELOW.

SINGLE EXPOSURE (ACUTE) STUDIES INDICATE:

DERMAL - SLIGHTLY TOXIC TO RABBITS (LD50 1,350 MG/KG FOR DRY SODIUM HYDROXIDE)

EYE IRRITATION - CORROSIVE TO RABBITS

SKIN IRRITATION - CORROSIVE TO RABBITS

MANY PUBLICATIONS IN THE SCIENTIFIC LITERATURE CONFIRM THE SEVERELY IRRITATING PROPERTIES OF ACUTE AND SHORT-TERM EXPOSURE TO SODIUM HYDROXIDE IN HUMANS AND ANIMALS AND DISCUSS TOXIC EFFECTS (SUCH AS DEATH, EYE DAMAGE OR CHANGES IN LUNG MORPHOLOGY), WHICH ARE PROBABLY RELATED TO THE CORROSIVE PROPERTIES OF THIS COMPOUND. INHALATION OF UNMEASURED CONCENTRATIONS 30 MINUTES PER DAY FOR 2.5 MONTHS RESULTED IN LUNG DAMAGE IN RATS. A RODENT DRINKING WATER STUDY AT 1% (DURATION UNKNOWN) WAS REPORTED TO RESULT IN "NERVOUS SYMPTOMS" AND GROWTH RETARDATION. GROWTH WAS UNAFFECTED IN THIS SAME STUDY AT 0.5%, BUT NO CONCEPTIONS OCCURRED. NO TUMORS WERE SEEN IN ANY LONGER TERM ANIMAL STUDIES. SODIUM HYDROXIDE PRODUCED NO GENETIC CHANGES IN STANDARD TESTS USING BACTERIAL CELLS. NO SIGNIFICANT INCREASES IN MORTALITY IN RELATION TO DURATION OR

INTENSITY OF EXPOSURES WERE REPORTED IN AN EPIDEMIOLOGIC STUDY OF A SMALL GROUP OF WORKERS EXPOSED TO CAUSTIC DUSTS FOR 30 YEARS OR MORE. MASSIVE INGESTION OF SODIUM HYDROXIDE HAS BEEN IMPLICATED AS CAUSING ESOPHAGEAL CANCER. SQUAMOUS CELL CARCINOMAS OF THE ESOPHAGUS OCCURRED APPROXIMATELY 12-42 YEARS LATER IN INDIVIDUALS WHO SURVIVED ACCIDENTAL CHILDHOOD INGESTION AND ARE LIKELY DUE TO THE TISSUE DESTRUCTION AND POSSIBLE SCARRING OF THE ESOPHAGUS RATHER THAN A DIRECT EFFECT OF SODIUM HYDROXIDE.

-----HEALTH HAZARD INFORMATION -----

PERMISSIBLE EXPOSURE LIMITS:

PERMISSIBLE EXPOSURE LIMITS ARE LISTED IN THE 'INGREDIENTS' SECTION.

-----EMERGENCY FIRST AID -----

INGESTION:

IF SWALLOWED, DO NOT INDUCE VOMITING. GIVE WATER TO DRINK. GET MEDICAL ATTENTION. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

DERMAL:

IF ON SKIN, IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING AND SHOES. GET MEDICAL ATTENTION. WASH CLOTHING BEFORE REUSE. DESTROY CONTAMINATED SHOES.

EYE CONTACT:

IF IN EYES, IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. GET MEDICAL ATTENTION.

INHALATION:

IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. GET MEDICAL ATTENTION.

-----SPECIAL PROTECTION INFORMATION -----

VENTILATION REQUIREMENTS:

INVESTIGATE ENGINEERING TECHNIQUES TO REDUCE EXPOSURES BELOW AIRBORNE EXPOSURES LIMITS. PROVIDE VENTILATION IF NECESSARY TO CONTROL EXPOSURE LEVELS BELOW AIRBORNE EXPOSURE LIMITS. IF PRACTICAL, USE LOCAL MECHANICAL EXHAUST VENTILATION AT SOURCES OF AIR CONTAMINATION SUCH AS OPEN PROCESS EQUIPMENT. CONSULT ACGIH VENTILATION MANUAL OR NFPA STANDARD 91 FOR DESIGN OF EXHAUST SYSTEMS.

FOR PROPER TANK ENTRY PROCEDURES, SEE ANSI Z117.1-1977. MONITOR CARBON MONOXIDE AND OXYGEN LEVELS IN TANKS AND ENCLOSED SPACES.

EYE:

WHERE THERE IS POTENTIAL FOR EYE CONTACT, WEAR CHEMICAL SPLASH GOGGLES (IN ADDITION, A FULL LENGTH FACE SHIELD IS RECOMMENDED). HAVE EYE FLUSHING EQUIPMENT IMMEDIATELY AVAILABLE.

HAND (GLOVE TYPE):

WEAR APPROPRIATE CHEMICAL RESISTANT PROTECTIVE CLOTHING AND CHEMICAL RESISTANT GLOVES TO PREVENT SKIN CONTACT. SYNTHETIC GLOVES SHOULD BE WORN WHEN HANDLING THIS MATERIAL. WEAR CHEMICAL GOGGLES, FACE SHIELD, AND CHEMICAL RESISTANT CLOTHING SUCH AS RUBBER APRON WHEN SPLASHING MAY OCCUR. RINSE IMMEDIATELY IF SKIN IS CONTAMINATED. REMOVE CONTAMINATED CLOTHING PROMPTLY AND WASH BEFORE REUSE. CLEAN PROTECTIVE EQUIPMENT BEFORE REUSE. PROVIDE A SAFETY SHOWER AT ANY LOCATION WHERE SKIN CONTACT CAN OCCUR. WASH SKIN THOROUGHLY AFTER HANDLING.

RESPIRATOR TYPE:

AVOID BREATHING VAPOR OR MIST. USE NIOSH APPROVED RESPIRATORY PROTECTION

EQUIPMENT APPROPRIATE TO THE MATERIAL AND/OR ITS COMPONENTS WHERE AIRBORNE EXPOSURE IS LIKELY. FULL FACEPIECE EQUIPMENT IS RECOMMENDED AND, IF USED, REPLACES NEED FOR CHEMICAL GOGGLES. IF EXPOSURES CANNOT BE KEPT AT A MINIMUM WITH ENGINEERING CONTROLS, CONSULT RESPIRATOR MANUFACTURER TO DETERMINE APPROPRIATE TYPE EQUIPMENT FOR GIVEN APPLICATION. OBSERVE RESPIRATOR USE LIMITATIONS SPECIFIED BY NIOSH/MSHA OR THE MANUFACTURER. FOR EMERGENCY AND OTHER CONDITIONS WHERE THERE MAY BE A POTENTIAL FOR SIGNIFICANT EXPOSURE, USE AN APPROVED FULL FACE POSITIVE-PRESSURE, SELF-CONTAINED BREATHING APPARATUS OR POSITIVE-PRESSURE AIRLINE WITH AUXILIARY SELF-CONTAINED AIR SUPPLY. RESPIRATORY PROTECTION PROGRAMS MUST COMPLY WITH 29 CFR SECTION SECTION 1910.134.

OTHER PROTECTIVE EQUIPMENT:

RUBBER BOOTS, RUBBER SUIT OR APRON, CHEMICAL RESISTANT PROTECTIVE CLOTHING.

-----SPECIAL HANDLING AND STORAGE CONDITIONS -----

DO NOT STORE NEAR STRONG ACIDS. DO NOT GET IN EYES, ON SKIN OR CLOTHING. AVOID BREATHING MISTS OR SPRAYS. USE WITH ADEQUATE VENTILATION. DO NOT TASTE OR SWALLOW. WASH THOROUGHLY AFTER HANDLING. KEEP CONTAINER CLOSED. TO AVOID RAPID TEMPERATURE RISE, VIOLENT SPATTERING OR EXPLOSIVE ERUPTIONS: ALWAYS ADD CAUSTIC SODA TO WATER WHEN MIXING. NEVER ADD WATER TO CAUSTIC SODA. HEAT WATER TO 80 DEG TO 100 F BEFORE ADDING PRODUCT. ADD SMALL AMOUNTS OF PRODUCT SLOWLY AND EVENLY OVER SURFACE OF WATER WITH CONSTANT STIRRING. NEVER INCREASE CONCENTRATION OF PRODUCT BY MORE THAN 5% WITH ANY SINGLE ADDITION. WATER SHOULD NOT EXCEED 160 DEG F DURING ADDITION.

-----SPILL MANAGEMENT -----

DIKE AND CONTAIN LIQUID SPILL WITH INERT MATERIAL (E.G. SAND OR EARTH). REMOVE SOLUTIONS WITH VACUUM TRUCK. FOR SMALL SPILLS FLUSH SPILL OR LEAK AREA WITH LARGE AMOUNTS OF WATER AND NEUTRALIZE WITH DILUTE ACID.

-----DISPOSAL PROCEDURES -----

DILUTE WITH WATER AND NEUTRALIZE WITH DILUTE ACID.

CONSULT FEDERAL, STATE, OR LOCAL AUTHORITIES FOR PROPER DISPOSAL PROCEDURES.

-----ADDITIONAL INFORMATION -----

ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:

DATA FROM SEVERAL SPECIES OF FISH SHOWED A RANGE OF TOLERANCE (BROOK TROUT > SPOTFIN AND LAKE EMERALD SHINERS > MINNOWS > MOSQUITOFISH > GOLDFISH) THAT WAS MOST LIKELY RELATED TO CHANGES IN THE PH PRODUCED BY ADDITION OF SODIUM HYDROXIDE TO THE WATER. THE MINIMUM LETHAL CONCENTRATION FOR MINNOWS, MAYFLY LARVAE AND DAPHNIA WAS 100 PPM AND FOR CHIRONOMUS LARVAE, 700 PPM.

CHEMICAL FATE INFORMATION:

NO DATA WERE AVAILABLE, BUT SODIUM HYDROXIDE IS A STRONG ALKALI THAT EASILY DISSOLVES IN WATER WITH RESULTING ACID/BASE CHEMISTRY.

SARA HAZARD NOTIFICATION

HEALTH HAZARD CATEGORIES UNDER CRITERIA OF SARA

TITLE III RULES (40 CFR PART 370): IMMEDIATE

THIS PRODUCT SOMETIMES CONTAINS EXTREMELY SMALL (TRACE) QUANTITIES OF HEAVY METALS, UP TO 5 PPM (PARTS PER MILLION). BECAUSE OF CALIFORNIA LAW, THE FOLLOWING WARNING IS BEING PROVIDED.

WARNING! THIS PRODUCT CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

WARNING! THIS PRODUCT CONTAINS A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

MSDS PREPARED BY PRODUCT SAFETY DEPT.

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