



KENCRO

CHEMICALS

PRODUCT : SODIUM HYDROXIDE SOLUTION (CAUSTIC SODA LIQUID 50%)

SECTION 1 : PRODUCT INFORMATION

T.D.G. CLASSIFICATION	8
UN NUMBER	182
PACKING GROUP	II
PRODUCT NAME	CAUSTIC SODA LIQUID 50%
WHMIS CLASSIFICATION	EXTREMELY CORROSIVE
CHEMICAL FORMULA	NAOH
MOLECULAR WEIGHT	40.01
CHEMICAL FAMILY	ALKALI HYDROXIDE
MATERIAL USE	NEUTRALIZING AGENT IN PETROLEUM REFINING, PULP AND PAPER, SOAPS, INDUSTRIAL CLEANER, PULPING & BLEACHING

SECTION 2: HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	%	T.L.V.	C.A.S. #	LD/50,ROUTE,SPECIE	LC/50,ROUTE,SPECIE
SODIUM HYDROXIDE	49 - 51	2 mg/m ³	1310-73-2	LDLO 500 MG/KG (RABBIT)	N.AV.
SODIUM CHLORIDE	<1.0	--- --	7647-14-5	3000 MG/KG (ORAL,RAT)	N.AV.
SODIUM CARBONATE	<0.2	10 mg/m ³ (TWAEV)	497-19-8	2800 MG/KG (ORAL,RAT)	N.AV.

SECTION 3: PHYSICAL DATA

APPEARANCE	CLEAR TO SLIGHTLY TURBID LIQUID
PHYSICAL STATE	LIQUID
ODOUR	ODOURLESS
ODOUR THRESHOLD	N.AV.
VAPOUR PRESSURE (mmHg)	1.5 mmHg
VAPOUR DENSITY (AIR=1)	N.AP.
EVAPORATION RATE	N.AV.
BOILING POINT	140°C (284°F)
FREEZING POINT	14°C
MELTING POINT	12°C (53.6°F)
PH	14.0 (AQUEOUS SOLUTION: 5%)
SPECIFIC GRAVITY (WATER=1)	1.53
SOLUBILITY IN WATER (% W/W)	100%
COEFFICIENT OF WATER/OIL DIST.	N.AV.

SECTION 4 : FIRE AND EXPLOSION DATA

FLAMMABILITY	NOT FLAMMABLE
IF YES, UNDER WHICH CONDITIONS?	
EXTINGUISHING MEDIA	AS APPROPRIATE FOR SURROUNDING MATERIALS/EQUIPMENT. IF WATER IS USED, CARE SHOULD BE TAKEN, SINCE IT CAN GENERATE HEAT AND CAUSE SPLATTERING IF APPLIED DIRECTLY TO SODIUM HYDROXIDE. WATER CAN BE USED WITH EXTREME CAUTION TO EXTINGUISH A FIRE IN AN AREA WHERE

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SPECIAL PROCEDURES	SODIUM HYDROXIDE IS STORED. THE WATER MUST NOT COME INTO CONTACT WITH THE SODIUM HYDROXIDE. WATER CAN BE USED IN FLOODING QUANTITIES AS A SPRAY OR FOG TO KEEP FIRE-EXPOSED CONTAINER COOL AND ABSORB HEAT. AT HIGH TEMPERATURES, FUMING MAY OCCUR, GIVING OFF STRONG, CORROSIVE GAS. DO NOT ENTER WITHOUT WEARING SPECIALIZED PROTECTIVE EQUIPMENT SUITABLE FOR THE SITUATION. WEAR FULL PROTECTIVE EQUIPMENT INCLUDING A SELF-CONTAINED BREATHING APPARATUS. TAKE CARE NOT TO SPLASH OR SPLATTER THIS MATERIAL. EVACUATE AREA AND FIGHT FIRE FROM A SAFE DISTANCE OR A PROTECTED LOCATION. APPROACH FIRE FROM UPWIND. IF POSSIBLE, ISOLATE MATERIALS NOT INVOLVED IN THE FIRE AND PROTECT PERSONNEL. MOVE CONTAINERS FROM FIRE AREA IF IT CAN BE DONE WITHOUT RISK.
FLASH POINT(C), METHOD	N.AP. NOT COMBUSTIBLE.
AUTO IGNITION TEMPERATURE	N.AP.
DECOMPOSITION TEMPERATURE	N.AV.
T.D.G. FLAM. CLASS	NOT REGULATED
UPPER FLAMMABLE LIMIT (UFL) (% BY VOL)	N.AP.
LOWER FLAMMABLE LIMIT (LFL) (% BY VOL)	N.AP.
UNUSUAL FIRE AND EXPLOSION	SODIUM HYDROXIDE WILL NOT BURN OR SUPPORT COMBUSTION. THE REACTION OF HAZARDS SODIUM HYDROXIDE WITH WATER AND A NUMBER OF COMMONLY ENCOUNTERED MATERIALS CAN GENERATE SUFFICIENT HEAT TO IGNITE NEARBY COMBUSTIBLE MATERIALS. SODIUM HYDROXIDE CAN REACT WITH METALS, SUCH AS ALUMINUM, TIN AND ZINC, TO FORM A FLAMMABLE HYDROGEN GAS.
HAZARDOUS COMBUSTION PRODUCTS	NONE
HAZARDOUS REACTIONS	NONE KNOWN
EXPLOSION DATA	
SENSITIVITY TO STATIC DISCHARGE	NOT EXPECTED TO BE SENSITIVE TO STATIC DISCHARGE
SENSITIVITY TO IMPACT	NOT EXPECTED TO BE SENSITIVE TO MECHANICAL IMPACT.
RATE OF BURNING	N.AP.
EXPLOSIVE POWER	N.AP.

SECTION 5 : REACTIVITY DATA

CHEMICAL STABILITY	
YES	STABLE AT ROOM TEMPERATURE.
NO, WHICH CONDITIONS?	SODIUM HYDROXIDE RAPIDLY ABSORBS CARBON DIOXIDE FROM AIR FORMING SODIUM CARBONATE. SLOWLY ATTACKS GLASS AT ROOM TEMPERATURE.
COMPATIBILITY WITH OTHER SUBSTANCES:	
YES	
NO, WHICH ONES?	SODIUM HYDROXIDE REACTS VIGOROUSLY, VIOLENTLY OR EXPLOSIVELY WITH MANY ORGANIC AND INORGANIC CHEMICALS, SUCH AS STRONG ACIDS, NITROAROMATIC, NITROPARAFFIN, AND ORGANOHALOGEN COMPOUNDS, GLYCOLS AND ORGANIC PEROXIDES. REACTS VIOLENTLY WITH WATER GENERATING SIGNIFICANT HEAT AND DANGEROUSLY SPATTERING CORROSIVE SODIUM HYDROXIDE. VIOLENTLY POLYMERIZES ACETALDEHYDE, ACROLEIN OR ACRYLONITRILE. PRODUCES FLAMMABLE AND EXPLOSIVE HYDROGEN GAS IF IT REACTS WITH SODIUM TETRAHYDROBORATE OR METALS, SUCH AS ALUMINUM, TIN, OR ZINC. CAN FORM SPONTANEOUSLY FLAMMABLE CHEMICALS UPON CONTACT WITH 1,2-DICHLOROETHYLENE, TRICHLOROETHYLENE, OR TETRACHLOROETHANE. CAN PRODUCE CARBON MONOXIDE UPON CONTACT WITH SOLUTIONS OF SUGARS, SUCH AS FRUCTOSE, LACTOSE, AND MALTOSE.
CONDITIONS TO AVOID	WATER. KEEP AWAY FROM INCOMPATIBLES LISTED DIRECTLY ABOVE
HAZARDOUS POLYMERIZATION	WILL NOT OCCUR. HOWEVER, IT CAN INDUCE HAZARDOUS
POLYMERIZATION OF	ACETALDEHYDE, ACROLEIN, AND ACRYLONITRILE.
HAZARDOUS PRODUCTS	THERMAL DECOMPOSITION - SODIUM OXIDE.
OF DECOMPOSITION	

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SECTION 6: TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY	
SKIN CONTACT	SODIUM HYDROXIDE IS EXTREMELY CORROSIVE AND IS CAPABLE OF CAUSING SEVERE BURNS WITH DEEP ULCERATION AND PERMANENT SCARRING. IT CAN PENETRATE TO DEEPER LAYERS OF SKIN AND CORROSION WILL CONTINUE UNTIL REMOVED. THE SEVERITY OF INJURY DEPENDS ON THE CONCENTRATION (SOLUTIONS) AND THE DURATION OF EXPOSURE. BURNS MAY NOT BE IMMEDIATELY PAINFUL; ONSET OF PAIN MAY BE DELAYED MINUTES TO HOURS.
SKIN ABSORPTION	A SINGLE PROLONGED SKIN EXPOSURE IS NOT LIKELY TO RESULT IN THE MATERIAL BEING ABSORBED THROUGH SKIN IN HARMFUL AMOUNTS. THE DERMAL LD50 HAS NOT BEEN DETERMINED.
EYE CONTACT	EXTREMELY CORROSIVE! THE SEVERITY OF INJURY INCREASES WITH THE CONCENTRATION, THE DURATION OF EXPOSURE, AND THE SPEED OF PENETRATION INTO THE EYE. DAMAGE CAN RANGE FROM SEVERE IRRITATION AND MILD SCARRING TO BLISTERING, DISINTEGRATION, ULCERATION, SEVERE SCARRING AND CLOUDING. CONDITIONS, WHICH AFFECT VISION SUCH AS GLAUCOMA AND CATARACTS, ARE POSSIBLE LATE DEVELOPMENTS. IN SEVERE CASES, THERE IS PROGRESSIVE ULCERATION AND CLOUDING OF EYE TISSUE WHICH MAY LEAD TO PERMANENT BLINDNESS.
INHALATION	SODIUM HYDROXIDE DOES NOT READILY FORM A VAPOR AND INHALATION EXPOSURE IS LIKELY TO OCCUR AS AN AEROSOL. DUE TO ITS CORROSIVE NATURE, SODIUM HYDROXIDE AEROSOLS COULD CAUSE PULMONARY EDEMA (SEVERE, LIFE-THREATENING LUNG INJURY). THE DEVELOPMENT OF PULMONARY EDEMA MAY BE DELAYED UP TO 48 HOURS AFTER EXPOSURE. THE EARLY SYMPTOMS OF PULMONARY EDEMA INCLUDE THE SHORTNESS OF BREATH AND TIGHTNESS IN THE CHEST.
INGESTION	SEVERE PAIN; BURNING OF THE MOUTH, THROAT AND ESOPHAGUS; VOMITING; DIARRHEA, COLLAPSE AND POSSIBLE DEATH MAY RESULT. SEE ABOVE
EFFECTS OF ACUTE EXPOSURE	
EFFECTS OF CHRONIC EXPOSURE	
SKIN CONTACT, CHRONIC	REPEATED OR PROLONGED SKIN CONTACT WOULD BE EXPECTED TO CAUSE DRYING, CRACKING, AND INFLAMMATION OF THE SKIN (DERMATITIS).
INHALATION, CHRONIC	REPEATED AND/OR PROLONGED EXPOSURES MAY CAUSE PRODUCTIVE COUGH, RUNNING NOSE, BRONCHOPNEUMONIA, PULMONARY EDEMA (FLUID BUILD UP IN LUNGS) AND REDUCTION OF PULMONARY FUNCTION. SEE SECTION II
LD 50 OF MATERIAL, SPECIES & ROUTE	SEE SECTION II
LC 50 OF MATERIAL, SPECIES & ROUTE	SEE SECTION II
EXPOSURE LIMIT OF MATERIAL	SEE SECTION II
IRRITANCY OF MATERIAL	SEE ABOVE
SENSITIZING CAPABILITY OF MATERIAL	N.A.V.
CARCINOGENICITY OF MATERIAL	THE INGREDIENTS OF THIS PRODUCT ARE NOT CLASSIFIED AS CARCINOGENIC BY ACGIH (AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS) OR IARC (INTERNATIONAL AGENCY FOR RESEARCH ON CANCER), NOT REGULATED AS CARCINOGEN BY OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION) AND NOT LISTED AS CARCINOGEN BY NTP (NATIONAL TOXICOLOGY PROGRAM). NO INFORMATION IS AVAILABLE AND NO ADVERSE REPRODUCTIVE
REPRODUCTIVE EFFECTS	
EFFECTS	ARE ANTICIPATED.
TERATOGENICITY AND TERATOGENIC/EMBRYOTOXIC FETOTOXICITY	NO INFORMATION IS AVAILABLE AND NO ADVERSE
MUTAGENICITY	EFFECTS ARE ANTICIPATED
SYNERGISTIC MATERIALS	THERE IS NO EVIDENCE OF MUTAGENIC POTENTIAL NONE KNOWN.

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SECTION 7 : PREVENTATIVE MEASURES

GLOVES/TYPE	GLOVES MADE FROM RUBBER SHOULD BE IMPERVIOUS UNDER CONDITIONS OF USE
RESPIRATORY/TYPE	UP TO 10mg/m ³ : SUPPLIED AIR RESPIRATOR (SAR) OPERATED IN A CONTINUOUS-FLOW MODE, EYE PROTECTION NEEDED; OR FULL-FACEPIECE RESPIRATOR WITH HIGH-EFFICIENCY PARTICULATE FILTER(S); OR POWERED AIR-PURIFYING RESPIRATOR WITH DUST AND MIST FILTER(S), EYE PROTECTION NEEDED; OR FULL FACEPIECE SELF CONTAINED BREATHING APPARATUS (SCBA); OF FULL-FACEPIECE SAR.
EYE/TYPE	USE FULL FACE SHIELD AND CHEMICAL SAFETY GOGGLES WHEN THERE IS POTENTIAL FOR CONTACT.
FOOTWEAR/TYPE CLOTHING /TYPE	RUBBER SAFETY BOOTS PROTECTIVE CLOTHING MADE FROM RUBBER SHOULD BE IMPERVIOUS UNDER CONDITIONS OF USE
OTHER/TYPE ENGINEERING CONTROLS	EYE BATH AND SAFETY SHOWER LOCAL EXHAUST VENTILATION SHOULD BE APPLIED WHEREVER THERE IS AN INCIDENCE OF POINT SOURCE EMISSIONS OR DISPERSION OF REGULATED CONTAMINANTS IN THE WORK AREA. VENTILATION CONTROL OF THE CONTAMINANT AS CLOSE TO ITS POINT OF GENERATION IS BOTH THE MOST ECONOMICAL AND SAFEST METHOD TO MINIMIZE PERSONNEL EXPOSURE OF AIRBORNE CONTAMINANTS. THE MOST EFFECTIVE MEASURES ARE THE TOTAL ENCLOSURE OF PROCESSES AND THE MECHANIZATION OF HANDLING PROCEDURES TO PREVENT ALL PERSONAL CONTACT.
LEAK/SPILL	RESTRICT ACCESS TO AREA UNTIL COMPLETION OF CLEAN UP. ENSURE TRAINED PERSONNEL CONDUCT CLEAN UP. VENTILATE AREA. WEAR ADEQUATE PERSONAL PROTECTION EQUIPMENT. DO NOT TOUCH SPILLED MATERIAL. PREVENT ENTRY INTO SEWERS OR WATERWAYS. COMPLY WITH FEDERAL, PROVINCIAL/STATE AND LOCAL REGULATIONS ON REPORTING RELEASES.
LAND SPILL	SOLUTIONS SHOULD BE CONTAINED BY DIKING WITH INERT MATERIAL, SUCH AS SAND OR EARTH. SOLUTIONS CAN BE RECOVERED OR CAREFULLY DILUTED WITH WATER AND CAUTIOUSLY NEUTRALIZED WITH ACIDS SUCH AS ACETIC ACID OR HYDROCHLORIC ACID.
WATER SPILL DEACTIVATING CHEMICALS WASTE DISPOSAL	NEUTRALIZE WITH DILUTE ACID. WEAK ACIDS SOLUTIONS (VINEGAR, HYDROCHLORIC OR SULFURIC ACID) DISPOSE OF WASTE MATERIAL AT AN APPROVED HAZARDOUS WASTE TREATMENT/DISPOSAL FACILITY IN ACCORDANCE WITH APPLICABLE LOCAL, PROVINCIAL AND FEDERAL REGULATIONS. DO NOT DISPOSE OF WASTE WITH NORMAL GARBAGE OR TO SEWER SYSTEMS.
HANDLING PROCEDURES	USE SMALLEST POSSIBLE AMOUNTS IN DESIGNATED AREAS WITH ADEQUATE VENTILATION. KEEP CONTAINERS CLOSED WHEN NOT IN USE. EMPTY CONTAINERS MAY CONTAIN HAZARDOUS RESIDUES. AVOID GENERATING MISTS. TRANSFER SOLUTIONS USING EQUIPMENT, WHICH IS CORROSION-RESISTANT. CAUTIOUSLY, TRANSFER INTO STURDY CONTAINERS MADE OF COMPATIBLE MATERIALS. NEVER RETURN CONTAMINATED MATERIAL TO ITS ORIGINAL CONTAINER. CONSIDERABLE HEAT IS GENERATED WHEN DILUTED WITH WATER. PROPER HANDLING PROCEDURES MUST BE FOLLOWED TO PREVENT VIGOROUS BOILING, SPLATTERING, OR VIOLENT ERUPTION OF THE DILUTED SOLUTION. <u>NEVER ADD WATER TO CAUSTIC. ALWAYS ADD CAUSTIC TO WATER</u> AND PROVIDE AGITATION. WHEN MIXING WITH WATER, STIR SMALL AMOUNTS IN SLOWLY. USE COLD WATER TO PREVENT EXCESSIVE HEAT GENERATION.
STORAGE NEEDS	STORE IN A COOL, DRY, WELL-VENTILATED AREA. KEEP CONTAINERS TIGHTLY CLOSED WHEN NOT IN USE AND WHEN EMPTY. PROTECT FROM DAMAGE. STORE AWAY FROM INCOMPATIBLE MATERIALS SUCH AS STRONG ACIDS, NITROAROMATIC, NITROPARAFFINIC, OR ORGANOHALOGEN COMPOUNDS. USE CORROSION-RESISTANT STRUCTURAL MATERIALS AND LIGHTING AND VENTILATION SYSTEMS IN THE STORAGE AREA. CONTAINERS MADE OF NICKEL ALLOYS ARE PREFERRED. STEEL CONTAINERS ARE ACCEPTABLE IF TEMPERATURES ARE NOT ELEVATED. NICKEL IS THE PREFERRED METAL FOR HANDLING THIS PRODUCT. PLASTICS OR PLASTIC-LINED STEEL, OR FIBRE REINFORCED PLASTIC (FRP) TANKS OF DERAKANE VINYL ESTER RESIN MAY BE SUITABLE. CONTAINER CONTENTS MAY DEVELOP PRESSURE

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N. AV	NOT AVAILABLE
NIOSH	NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
NTP	NATIONAL TOXICOLOGY PROGRAM
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
SAR	SUPPLIED AIR RESPIRATOR
SCBA	SELF-CONTAINED BREATHING APPARATUS
TDG	TRANSPORTATION OF DANGEROUS GOODS ACT/REGULATIONS
TLV	THRESHOLD LIMIT VALUE
UEL	UPPER EXPOSURE LIMIT
UFL	UPPER FLAMMABLE LIMIT
WHMIS	WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM

THE INFORMATION IS, TO THE BEST OF OUR KNOWLEDGE AND BELIEF, ACCURATE AND RELIABLE AS OF THE DATE COMPILED. HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE TO ITS ACCURACY, RELIABILITY OR COMPLETENESS. IT IS THE USER'S RESPONSIBILITY TO REVIEW THIS INFORMATION, SATISFY THEMSELVES AS TO ITS SUITABILITY AND COMPLETENESS AND PASS ON THE INFORMATION TO ITS EMPLOYEES OR CUSTOMERS. KENCRO CHEMICALS LIMITED DOES NOT ACCEPT RESPONSIBILITY FOR ANY LOSS OR DAMAGE WHICH MAY OCCUR FROM THE USE OF THIS INFORMATION.