



# KENCRO

## CHEMICALS

### PRODUCT: SODIUM HYPOCHLORITE SOLUTION (12%)

#### SECTION 1: PRODUCT INFORMATION

T.D.G. CLASSIFICATION	8
UN NUMBER	1791
PACKING GROUP	II
PRODUCT NAME	SODIUM HYPOCHLORITE
WHMIS CLASSIFICATION	D2B E
CHEMICAL FORMULA	NaOCL
MOLECULAR WEIGHT	74.4
CHEMICAL FAMILY	CHLORITE
MATERIAL USE	WATER PURIFICATION, BLEACHING AGENT AND DISINFECTANT

#### SECTION 2: HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	%	T.L.V.	C.A.S. #	LD/50,ROUTE,SPECIE	LC/50,ROUTE,SPECIE
SODIUM HYPOCHLORITE	12-14	1 PPM	7681-52-9	N.A.V.	293 PPM FOR 1 HR INHALATION,RAT

#### SECTION 3: PHYSICAL DATA

APPEARANCE	GREEN TO YELLOW, WATERY LIQUID
PHYSICAL STATE	LIQUID
ODOUR	PUNGENT CHLORINE-LIKE ODOUR
ODOUR THRESHOLD	NO DATA
VAPOUR PRESSURE (MMHG)	17.5 @ 20 °C
VAPOUR DENSITY (AIR=1)	N.A.V.
EVAPORATION RATE	N.A.V.
BOILING POINT	SLOWLY DECOMPOSES AT 40°C TO NaCl AND NaClO <sub>3</sub>
FREEZING POINT	-25°C FOR 12% SOLUTION
PH	11.0-13.0
SPECIFIC GRAVITY (WATER=1)	ABOUT 1.198 (12.5% W/W SOLUTION) @20°C
SOLUBILITY IN WATER (% W/W)	MISCIBLE IN ALL PROPORTIONS IN WATER
COEFFICIENT OF WATER/OIL DIST.	N.A.V.

#### SECTION 4: FIRE AND EXPLOSION DATA

FLAMMABILITY	<b>NOT FLAMMABLE</b>
IF YES, UNDER WHICH CONDITIONS?	
EXTINGUISHING MEDIA	FOR LARGE FIRES USE AN ALL PURPOSE TYPE AFFF ALCOHOL FOAM RESISTANT MEDIUM EXPANSION ACCORDING TO FOAM MANUFACTURER'S RECOMMENDED TECHNIQUES. THE FOAM SUPPLIER SHOULD BE CONSULTED FOR RECOMMENDATIONS REGARDING FOAM TYPES AND DELIVERY RATES FOR SPECIFIC APPLICATIONS. USE CARBON DIOXIDE OR DRY CHEMICAL MEDIUM FOR SMALL FIRES. IF ONLY WATER IS AVAILABLE, USE IT IN THE FORM OF A FOG.
SPECIAL PROCEDURES	FULL PROTECTION EQUIPMENT INCLUDING A SELF-CONTAINED BREATHING APPARATUS SHOULD BE WORN. REMOVE STORAGE VESSELS FROM FIRE ZONE IF POSSIBLE. USE WATER SPRAY TO COOL CONTAINERS.
FLASH POINT(C), METHOD	N.A.P.
AUTO IGNITION TEMPERATURE	N.A.P.
T.D.G. FLAM. CLASS	NOT REGULATED

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UPPER FLAMMABLE LIMIT(UFL) (% BY VOL)	N.AP.
LOWER FLAMMABLE LIMIT(LFL) (% BY VOL)	N.AP.
HAZARDOUS COMBUSTION PRODUCTS	CHLORINE
EXPLOSION DATA	
SENSITIVITY TO STATIC DISCHARGE	N.AP.
SENSITIVITY TO IMPACT	N.AP.
RATE OF BURNING	N.AP.
EXPLOSIVE POWER	N.AP.

**SECTION 5: REACTIVITY DATA**

**CHEMICAL STABILITY**

YES	STABLE AT ROOM TEMPERATURE
NO, WHICH CONDITIONS?	UNSTABLE ABOVE 40°C , SUNLIGHT, CONTACT WITH METALS. UNSTABLE UNDER FIRE CONDITIONS

**COMPATIBILITY WITH OTHER SUBSTANCES:**

YES	
NO, WHICH ONES?	MAY REACT VIOLENTLY WITH STRONG ACIDS PRODUCING CHLORINE GAS, WHICH IS TOXIC. OTHER INCOMPATIBLES INCLUDE ORGANIX MATERIAL, CELLULOSE, OXIDIZABLE MATERIALS, AMMONIA, UREA, AMMONIUM SALTS, ETHYLENEIMINE, CYANIDES, NITROGEN COMPOUNDS, ALCOHOLS, METALS, AND METAL OXIDES. REACTS WITH METALS TO PRODUCE FLAMMABLE HYDROGEN GAS. METAL AND METAL OXIDE CATALYSTS DECOMPOSE HYPOCHLORITES, EVOLVING OXYGEN AND OFTEN CAUSING EXPLOSIONS. MAY REACT EXPLOSIVELY WITH NITROGEN CONTAINING COMPOUNDS OR FORM CHLOROAMINES, WHICH ARE EXPLOSIVE. ALKALINE HYPOCHLORITE SOLUTIONS MAY REACT EXPLOSIVELY WITH SOME CHLOROORGANIC COMPOUNDS.

**CORROSIVITY TO METALS** SOLUTIONS MAY BE CORROSIVE TO MANY METALS.

**REACTIVITY CONDITIONS** N.AP.

**HAZARDOUS POLYMERIZATION** WILL NOT OCCUR

**CONDITIONS TO AVOID** KEEP AWAY FROM HIGH HEAT, AND SUNLIGHT OR ULTRA-VIOLET LIGHT. DO NOT STORE ABOVE 30°C. DO NOT ALLOW SOLUTIONS TO EVAPOURATE DRY. KEEP AWAY FROM INCOMPATIBLES.

**HAZARDOUS PRODUCTS OF DECOMPOSITION** THERMAL DECOMPOSITION: CHLORINE, SODIUM OXIDE, OXYGEN, OXIDES OF CHLORINE, SODIUM CHLORATE, AND HYDROGEN.

**SECTION 6: TOXICOLOGICAL PROPERTIES**

**ROUTE OF ENTRY**

SKIN CONTACT	CAN CAUSE SEVERE LOCAL IRRITATION, BURNS AND BLISTERS. PROLONGED OR REPEATED CONTACT WITH DILUTE SOLUTIONS MAY BLEACH SKIN OR CAUSE DERMATITIS
SKIN ABSORPTION	PROLONGED OR REPEATED SKIN CONTACT WITH SOLUTIONS CONTAINING AS LITTLE AS 4-6% SODIUM HYPOCHLORITE CAN CAUSE ALLERGIC CONTACT DERMATITIS. SYMPTOMS INCLUDE CHRONIC, ITCHY ECZEMA.
EYE CONTACT	CAN CAUSE IRRITATION, SEVERE BURNS AND CORNEAL DAMAGE, WHICH MAY RESULT IN BLINDNESS.
INHALATION	MIST CAN IRRITATE THE NOSE AND THROAT. IF MIXED WITH ACIDS, HYPOCHLORITE SOLUTIONS RELEASE LARGE AMOUNTS OF CHLORINE GAS. THIS GAS CAN CAUSE SEVERE IRRITATION OF THE NOSE AND THROAT. EXPOSURE TO HIGH LEVELS OF CHLORINE GAS MAY RESULT IN SEVERE LUNG DAMAGE.
INHALATION, CHRONIC INGESTION	N.AV. HYPOCHLORITE SOLUTIONS RELEASE HYPOCHLOROUS ACID ON CONTACT WITH GASTRIC JUICES, AND INGESTION CAUSES IRRITATION AND CORROSION OF MUCOUS MEMBRANES, PAIN, VOMITING, AND EDEMA OF THE PHARYNX AND LARYNX; REDUCED BLOOD PRESSURE, DELIRIUM AND COMA MAY OCCUR.

**EFFECTS OF ACUTE EXPOSURE** REFER TO ROUTE OF ENTRY

**EFFECTS OF CHRONIC EXPOSURE** N.AV.

**LD 50 MATERIAL, SPECIES &** SEE SECTION II

**ROUTE**

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LC 50 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	SODIUM HYPOCHLORITE IS NOT CLASSIFIED AS CARCINOGENIC BY ACGIH (AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS) OR IARC (INTERNATIONAL AGENCY FOR RESEARCH ON CANCER), NOT REGULATED AS CARCINOGENS BY OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION), AND NOT LISTED AS CARCINOGENS BY NTP (NATIONAL TOXICOLOGY PROGRAM).
REPRODUCTIVE EFFECTS	N.A.V.
TERATOGENICITY DATA	N.A.V.
SYNERGISTIC MATERIALS	NONE KNOWN
MUTAGENICITY	SODIUM HYPOCHLORITE CAUSED MUTATIONS IN SEVERAL SHORT-TERM STUDIES USING BACTERIA AND CULTURED MAMMALIAN CELLS. THE SIGNIFICANCE OF THESE TESTS IS UNCLEAR. IT WAS NOT MUTAGENIC IN TESTS (CHROMOSOME ABBERRATION AND MICRONUCLEUS) ON LIVE ANIMALS.

**SECTION 7: PREVENTATIVE MEASURES**

GLOVES/TYPE	RUBBER GLOVES
RESPIRATORY/TYPE	NIOSH/MSHA APPROVED AIR-PURIFYING RESPIRATOR EQUIPPED WITH ACID MIST CARTRIDGES FOR CONCENTRATIONS UP TO 10 TIMES THE TLV. USE A SUPPLIED AIR RESPIRATOR IF CONCENTRATIONS ARE HIGHER OR UNKNOWN. WHEN NECESSARY USE CHEMICAL SAFETY GOGGLES WHEN THERE IS POTENTIAL FOR EYE CONTACT
EYE/TYPE.	FULL-FACE SHIELD. MAINTAIN EYE WASH FOUNTAIN AND QUICK-DRENCH
AND	IN WORK AREA.
FACILITIES	
FOOTWEAR/TYPE	RUBBER BOOTS
CLOTHING /TYPE	RUBBER APRON, LAB COAT, RAIN JACKET, PANTS OR COVERALLS AS APPROPRIATE.
OTHER/TYPE	SAFETY SHOWERS AND EYEWASH STATIONS INSTALLED IN HANDLING AND STORAGE AREAS
ENGINEERING CONTROLS	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 TO AIRBORNE
CONTAMINANTS.	THE MOST EFFECTIVE MEASURES ARE THE TOTAL ENCLOSURE OF
PROCESSES AND	THE MECHANIZATION OF HANDLING PROCEDURES TO PREVENT
ALL PERSONAL	CONTACT. SMOKING SHOULD BE PROHIBITED IN AREAS IN WHICH
SODIUM	HYPOCHLORITE SOLUTION IS STORED OR HANDLED.
LEAK/SPILL	VENTILATE AREA. STOP AND CONTAIN LEAK OR SPILL.
SMALL SPILL	COVER WITH DRY EARTH, SAND OR OTHER NON-COMBUSTIBLE MATERIAL. USE CLEAN NON-SPARKING TOOLS TO COLLECT MATERIAL AND PLACE IT INTO LOOSELY COVERED PLASTIC CONTAINERS FOR LATER DISPOSAL. RINSE AREA WITH WATER.
LARGE SPILL	PREVENT ENTRY INTO SEWERS AND CONFINED AREAS. DIKE WITH INERT MATERIAL (SAND, EARTH, ETC.). CONTACT FIRE AND EMERGENCY SERVICES AND SUPPLIER FOR ADVICE. COLLECT PRODUCT FOR RECOVERY OR DISPOSAL BY PUMPING IT INTO POLYETHYLENE CONTAINERS. CONSIDER IN-SITU NEUTRALIZATION AND DISPOSAL. ENSURE ADEQUATE DECONTAMINATION OF TOOLS AND EQUIPMENT FOLLOWING CLEAN UP. COLLECT CONTAMINATED SOIL AND WATER, AND ABSORBENT FOR PROPER DISPOSAL. COMPLY WITH FEDERAL, PROVINCIAL/STATE AND LOCAL REGULATIONS ON REPORTING RELEASES.
DEACTIVATION	FOR SMALL SPILLS, HYPOCHLORITE CAN BE BROKEN DOWN BY COVERING IT WITH A REDUCING AGENT SUCH AS SODIUM SULFITE OR SODIUM THIOSULFATE. USE SODIUM SULFITE OR DILUTED HYDROGEN PEROXIDE TO REDUCE THE MATERIAL. ENSURE THERE IS NO CHLORINE RESIDUE BEFORE NEUTRALIZING WITH A WEAK SOLUTION OF HYDROCHLORIC OR SULPHURIC ACID.
WASTE DISPOSAL	CONSULT FEDERAL, PROVINCIAL, STATE AND LOCAL REGULATIONS OR CHEMICAL WASTE DISPOSAL. MAY BE POSSIBLE TO NEUTRALIZE, FLUSH AND DISPENSE. DO NOT DISPOSE OF WASTE WITH NORMAL GARBAGE OR TO SEWER SYSTEMS.
HANDLING PROCEDURES AND EQUIPMENT	AVOID BREATHING VAPOURS. AVOID CONTACT WITH SKIN EYES AND CLOTHING. KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME. KEEP CONTAINERS CLOSED WHEN NOT IN USE. KEEP AWAY FROM INCOMPATIBLES. AVOID GENERATING MIST. USE SMALLEST POSSIBLE AMOUNTS IN DESIGNATED AREAS WITH ADEQUATE

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STORAGE NEEDS VENTILATION. EMPTY CONTAINERS MAY CONTAIN HAZARDOUS RESIDUES. USE CORROSIVE-RESISTANT TRANSFER EQUIPMENT WHEN DISPENSING. STORE IN COOL, DRY, WELL-VENTILATED AREA OUT OF DIRECT SUNLIGHT. STORE CONTAINERS AT 15-29°C. DO NOT STORE ABOVE 30°C OR BELOW FREEZING POINT. KEEP CONTAINERS TIGHTLY CLOSED WHEN NOT IN USE AND WHEN EMPTY. PROTECT FROM DAMAGE. VENT CAPS SHOULD BE CHECKED WITH FULL PERSONAL PROTECTION. STORE AWAY FROM INCOMPATIBLE MATERIALS SUCH AS REDUCING MATERIALS, STRONG ACIDS, NITROGEN COMPOUNDS, COPPER, NICKEL AND COBALT. USE CORROSION-RESISTANT STRUCTURAL MATERIALS AND LIGHTING AND VENTILATION SYSTEMS IN THE STORAGE AREA. THIS PRODUCT HAS A SHELF LIFE OF UP TO SIX MONTHS AT 60°F OR LOWER.

SPECIAL SHIPPING INSTRUCTIONS SEE SECTION 1 TDG CLASSIFICATION

**SECTION 8: FIRST AID MEASURES**

**INSTRUCTIONS:**

**SKIN CONTACT:** REMOVE CONTAMINATED CLOTHING, JEWELRY, AND SHOES UNDER RUNNING WATER. FLUSH AFFECTED AREA WITH WATER FOR AT LEAST 15-20 MINUTES AND OBTAIN MEDICAL ATTENTION. IF IRRITATION PERSISTS, REPEAT FLUSHING. FOR BURNS, OBTAIN MEDICAL ATTENTION. DISCARD HEAVILY CONTAMINATED CLOTHING AND SHOES IN A MANNER, WHICH LIMITS FURTHER EXPOSURE. OTHERWISE, WASH CLOTHING SEPARATELY BEFORE REUSE.

**EYE CONTACT:** IMMEDIATELY FLUSH EYES WITH RUNNING WATER FOR A MINIMUM OF 15 MINUTES HOLDING EYELIDS OPEN. IF IRRITATION PERSISTS, REPEAT FLUSHING. OBTAIN MEDICAL ATTENTION. DO NOT TRANSPORT VICTIM UNTIL THE RECOMMENDED FLUSHING PERIOD IS COMPLETED UNLESS FLUSHING CAN BE CONTINUED DURING TRANSPORT.

**INHALATION:** MOVE VICTIM TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION ONLY IF BREATHING HAS STOPPED. DO NOT USE MOUTH-TO-MOUTH IF VICTIM INGESTED OR INHALED THE SUBSTANCE: INDUCE ARTIFICIAL RESPIRATION WITH THE AID OF A POCKET MASK EQUIPPED WITH A ONE-WAY VALVE OR OTHER APPROPRIATE RESPIRATORY MEDICAL DEVICE. OBTAIN MEDICAL ATTENTION IMMEDIATELY.

**INGESTION:** IF VICTIM IS ALERT AND NOT CONVULSING, RINSE OUT MOUTH AND GIVE AS MUCH WATER AS POSSIBLE TO DILUTE MATERIAL. DO NOT INDUCE VOMITING. OBTAIN MEDICAL ATTENTION. IF SPONTANEOUS VOMITING OCCURS, HAVE VICTIM LEAN FORWARD WITH HEAD DOWN TO AVOID BREATHING IN OF VOMITUS, RINSE MOUTH AND ADMINISTER MORE WATER. IMMEDIATELY TRANSPORT VICTIM TO AN EMERGENCY FACILITY.

**NOTES TO PHYSICIANS:** SYMPTOMATIC. TREATMENT AND SUPPORTIVE THERAPY AS INDICATED. DO NOT GIVE ACIDIC ANTIDOTES SUCH AS JUICE, SOFT DRINK, VINEGAR, ETC. THIS PRODUCT CONTAINS MATERIALS THAT MAY CAUSE SEVERE PNEUMONITIS IF ASPIRATED. IF INGESTION HAS OCCURRED LESS THAN 2 HOURS EARLIER, CARRY OUT CAREFUL GASTRIC LAVAGE; USE ENDOTRACHEAL CUFF IF AVAILABLE, TO PREVENT ASPIRATION. OBSERVE PATIENT FOR RESPIRATORY DIFFICULTY FROM ASPIRATION PNEUMONITIS. GIVE ARTIFICIAL RESUSCITATION AND APPROPRIATE CHEMOTHERAPY IF RESPIRATION IS DEPRESSED. FOLLOWING EXPOSURE THE PATIENT SHOULD BE KEPT UNDER MEDICAL REVIEW FOR AT LEAST 48 HOURS AS DELAYED PNEUMONITIS MAY OCCUR. PULMONARY EDEMA IS LIKELY AND MAY BE DELAYED. STEROID THERAPY, IF GIVEN EARLY, MAY BE EFFECTIVE IN PREVENTING OR ALLEVIATING EDEMA.

**SECTION 9: PREPARATION INFORMATION**

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PREPARED BY KENCRO CHEMICALS LIMITED  
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DATE JUNE 2008

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**LEGEND:**

ACGIH	AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS
AFFF	AQUEOUS FILM FORMING FOAM
CAS #	CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER
IARC	INTERNATIONAL AGENCY FOR RESEARCH ON CANCER
LFL	LOWER FLAMMABLE LIMIT
MSHA	MINE SAFETY AND HEALTH ADMINISTRATION
N.AP	NOT APPLICABLE
N.AV	NOT AVAILABLE
NIOSH	NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
NTP	NATIONAL TOXICOLOGY PROGRAM
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
TDG	TRANSPORTATION OF DANGEROUS GOODS ACT/REGULATIONS
TLV	THRESHOLD LIMIT VALUE
UFL	UPPER FLAMMABLE LIMIT
WHMIS	WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM