Fairfax Water Addendum #1 to IFB 23-068 Removal and Disposal
Of Hazardous and Other Special Waste

Attachment No. 2 – Bases

SDS List

1. Ammonium Hydroxide – Tanner Industries
2. Caustic Soda Liquid (All Grades) – Univar
3. Potassium Permanganate - Carus
4. Sodium Hypochlorite – Kuehne Chemical Company

Tanner Industries, Inc.

SAFETY DATA SHEET

Section 1. Identification

Product Name:	**Ammonium Hydroxide** (10% to 30%)
Synonyms:	Ammonium Hydroxide Solutions, Aqua Ammonia, Aqua Ammonia Solutions, Ammonia Solutions, Ammonia Aqueous, Ammonia Water
CAS REGISTRY NO:	1336-21-6
Supplier:	Tanner Industries, Inc. 735 Davisville Road, Third Floor Southampton, PA 18966
Website:	www.tannerind.com
Telephone (General):	215-322-1238
Corporate Emergency Telephone Number:	**800-643-6226**
Emergency Telephone Number:	**Chemtrec: 800-424-9300**
Recommended Use:	Various Industrial

Section 2. Hazard(s) Identification

Hazard: Acute Toxicity, Corrosive, Acute Aquatic Toxicity

Classification:
Acute Toxicity, Inhalation (Category 4)
Acute Toxicity, Oral (Category 4)
Skin Corrosion / Irritation (Category 1B)
Serious Eye Damage / Irritation (Category 1)
Acute Aquatic Toxicity (Category 1)

Note: (1 - Most Severe / 4 - Least Severe)

Pictogram:

Signal word: **Danger**

Hazard statements:
Harmful if inhaled.
Harmful if swallowed.
Causes severe skin burns and eye damage.
Very toxic to aquatic life.

Precautionary statements:
Avoid breathing mist/vapors/spray.
Use only outdoors or in a well-ventilated area.
Do not eat, drink or smoke when using this product.
Wear protective gloves, protective clothing, eye protection, face protection.

Precautionary statements (continued):

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a doctor/physician and seek medical attention for severe exposure or if symptoms persist. Specific treatment, see supplemental first aid instructions in Section 4 (First Aid Measures).
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Call a poison center/doctor/physician. See supplemental first aid instructions in Section 4 (First Aid Measures).
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower (minimum of 20 minutes). See supplemental first aid instructions in Section 4 (First Aid Measures).
IF IN EYES: Immediately call a doctor/physician and seek medical attention. Rinse continuously with water for several minutes (minimum of 20 minutes). Specific treatment, see supplemental first aid instructions in Section 4 (First Aid Measures).
Wash contaminated clothing before reuse.
Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Dispose of contents/container in accordance with local, regional, national regulations as applicable. See section 13 (Disposal Considerations).

NFPA Rating:

Health (Blue) - 3
Flammability (Red) – 1
Instability (Yellow) – 0
White (Special Hazards) - NA

NFPA Numbering System:
0 = Least Hazardous / 4 = Most Hazardous

HMIS Rating:

AMMONIUM HYDROXIDE		
HEALTH	-	3
FLAMMABILITY		1
PHYSICAL HAZARD		0
PERSONAL PROTECTION		H

See note in Section 16 regarding the Hazardous Materials Identification System (HMIS).

HMIS Hazard Index:
0 = Minimal, 1 = Slight, 2 = Moderate, 3 = Serious, 4 = Severe

Section 3. Composition / Information on Ingredients

CHEMICAL NAME: Ammonium Hydroxide (Ammonium Hydroxide Solutions 10% to 30%)
CAS REGISTRY NO: 1336-21-6
SYNONYMS: Ammonium Hydroxide Solutions, Aqua Ammonia, Aqua Ammonia Solutions, Ammonia Solutions, Ammonia Aqueous, Ammonia Water.
CHEMICAL FAMILY: Inorganic nitrogen compounds.
COMPOSITION: Solutions: Anhydrous Ammonia (10% to 30%); Water (90% to 70%); Density: 16° Baume to 26° Baume.
Ammonia, Anhydrous: CAS # 7664-41-7; Water: CAS# 7732-18-5

Section 4. First Aid Measures

IF INHALED: Immediately remove person to fresh air and keep comfortable for breathing. In case of severe exposure or if irritation persists, breathing difficulties or respiratory symptoms arise, seek medical attention. If not breathing, administer artificial respiration. If trained to do so, administer supplemental oxygen, if required.
IF ON SKIN (or hair): Immediately take off all contaminated clothing. Flush skin with copious amounts of tepid water for a minimum of 20 minutes. Do not rub or apply topical, occlusive compounds, such as ointments, certain creams, etc., on affected area. For severe exposure or if irritation persists, seek medical attention. Wash contaminated clothing before reuse.
IF IN EYES: Immediately rinse continuously with copious amounts of tepid water for a minimum of 20 minutes. Eyelids should be held apart and away from eyeball for thorough rinsing. Seek medical attention.
IF SWALLOWED: Rinse mouth. Do not induce vomiting. If conscious, give large amounts of water to drink. May drink orange juice, citrus juice or diluted vinegar (1:4) to counteract ammonia. If unconscious, do not give anything by mouth. Seek medical attention.

NOTE TO PHYSICIAN: Respiratory injury may appear as a delayed phenomenon. Pulmonary edema may follow chemical bronchitis. Supportive treatment with necessary ventilation actions, including oxygen, may warrant consideration.

Section 5. Fire Fighting Measures

EXTINGUISHING MEDIA:
Water Spray, Water Fog for escaping ammonia gas.

SPECIAL FIRE FIGHTING PROCEDURES:
Must wear protective clothing and a positive pressure SCBA.
Stop flow of liquid if possible.
Use water spray to keep fire-exposed containers cool.
If a portable container (such as a drum, Intermediate Bulk Container [IBC] or trailer) can be moved from the fire area without risk to the individual, do so to prevent the pressure relief valve from discharging or the container from failing.
Stay upwind when containers are threatened.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
When heated, product will give off ammonia vapor, which is a strong irritant to the eye, skin and respiratory tract.
Outdoors, ammonia is not generally a fire hazard. Indoors, in confined areas, ammonia vapors may be a fire hazard, especially if oil or other combustible materials are present.
Combustion may form toxic nitrogen oxides (NOx).

Section 6. Accidental Release Measures

GENERAL:
Only properly trained and equipped persons should respond to an ammonium hydroxide release.
Wear eye, hand and respiratory protection and protective clothing; see Section 8, Exposure Controls / Personal Protection.
Stop source of leak if possible, provided it can be done in a safe manner.
Leave the area of a spill by moving laterally and upwind.
Isolate the affected area. Non-responders should evacuate the area, or shelter in place.

SPECIFIC STEPS TO BE TAKEN:
For a hazardous material release response, Level A and/or Level B ensemble including positive-pressure SCBA should be used. A positive pressure SCBA is required for entry into ammonia atmospheres at or above 300 ppm (IDLH).
Stay upwind and use water spray downwind of container to absorb the evolved gas.
Contain spill and runoff from entering drains, sewers, streams, lakes and water systems by utilizing methods such as diking, containment, and absorption.

Section 7. Handling and Storage

SPECIAL PRECAUTIONS:
Only trained persons should handle ammonium hydroxide.
Store in cool, dry and well-ventilated areas, with containers tightly closed.
Keep out of direct sunlight and away from heat sources.
Do not use any non-ferrous metals such as copper, brass, bronze, aluminum, tin, zinc or galvanized metals.
Protect containers from physical damage.

Closed storage tanks should be provided with safety relief valves and vacuum breakers as necessary.

VENTILATION:
Local exhaust should be sufficient to keep ammonia vapor below applicable exposure standards.

WORKPLACE PROTECTIVE EQUIPMENT:
Protective equipment should be stored near, but outside of ammonium hydroxide area. Water for first aid, such as an eyewash station and safety shower should be kept available in the immediate vicinity.

Section 8. Exposure Controls / Personal Protection

EXPOSURE LIMITS FOR AMMONIA: (Vapor)

Ammonia		
USA ACGIH	ACGIH TWA	25 ppm
USA ACGIH	ACGIH STEL	35 ppm
USA NIOSH IDLH	NIOSH IDLH	300 ppm
USA NIOSH	NIOSH REL (TWA)	18 mg/m^3; 25 ppm
USA NIOSH	NIOSH REL (STEL)	27 mg/m^3; 35 ppm
USA OSHA	OSHA PEL (TWA)	35 mg/m^3 ; 50 ppm
Alberta	TWA / STEL	25 ppm (TWA), 35 ppm (STEL)
British Columbia	TWA / STEL	25 ppm (TWA), 35 ppm (STEL)
Manitoba	TWA / STEL	25 ppm (TWA), 35 ppm (STEL)
New Brunswick	TWA / STEL	25 ppm (TWA), 35 ppm (STEL)
Newfoundland & Labrador	TWA / STEL	25 ppm (TWA), 35 ppm (STEL)
Northwest Territories	TWA / STEL	25 ppm (TWA), 35 ppm (STEL)
Nova Scotia	TWA / STEL	25 ppm (TWA), 35 ppm (STEL)
Nunavut	TWA / STEL	25 ppm (TWA), 35 ppm (STEL)
Ontario	TWA / STEL	25 ppm (TWA), 35 ppm (STEL)
Prince Edward Island	TWA / STEL	25 ppm (TWA), 35 ppm (STEL)
Quebec	TWAEV / STEV	25 ppm (TWAEV), 35 ppm (STEV)
Saskatchewan	TWA / STEL	25 ppm (TWA), 35 ppm (STEL)
Yukon	TWA / STEL	25 ppm (TWA), 40 ppm (STEL)
Mexico	OEL TWA (mg/m3)	18 mg/m3
Mexico	OEL TWA (ppm)	25 ppm
Mexico	OEL STEL (mg/m3)	27 mg/m^3
Mexico	OEL STEL (ppm)	35 ppm

PROTECTIVE EQUIPMENT:
EYE/FACE PROTECTION: Chemical splash goggles should be worn when handling ammonium hydroxide (aqua ammonia). A face shield can be worn over chemical splash goggles as additional protection. Do not wear contact lenses when handling ammonium hydroxide. Refer to 29 CFR 1910.133 for OSHA eye protection requirements.

SKIN PROTECTION: Ammonia impervious gloves and clothing (such as neoprene, butyl and Teflon) should be worn to prevent contact during normal operations, such as loading/unloading, transfers, and handling small spills.
Chemical boots can be worn as additional protection.

RESPIRATORY PROTECTION: Respiratory protection approved by NIOSH for ammonia must be used when applicable safety and health exposure limits are exceeded. For escape in emergencies, NIOSH approved respiratory protection should be used, such as a full-face gas mask and canisters/cartridges approved for ammonia or SCBA. A positive pressure SCBA is required for entry into ammonia atmospheres at or above 300 ppm (IDLH).
Refer to 29 CFR 1910.134 and ANSI: Z88.2 for OSHA respiratory protection requirements.

VENTILATION: Local exhaust should be sufficient to keep ammonia vapor below applicable exposure standards.

FOR A HAZARDOUS MATERIAL RELEASE RESPONSE: Level A and/or Level B ensemble including positive-pressure SCBA should be used. A positive pressure SCBA is required for entry into ammonia atmospheres at or above 300 ppm (IDLH).

Section 9. Physical and Chemical Properties

APPEARANCE AND ODOR:	Colorless liquid with a pungent odor.
ODOR THRESHOLD:	2 - 5 ppm
SOLUBILITY IN WATER:	Miscible
SPECIFIC GRAVITY OF VAPOR (air = 1):	0.596 at 32 °F
WEIGHT (per gallon):	7.46 pounds to 7.99 pounds
EVAPORATION RATE (water = 1):	Similar
PH:	13+
FORMULA:	NH_4OH ($NH_3 + H_2O$)
MOLECULAR WEIGHT:	35.05 (NH_4OH)
VISCOSITY:	1.7 40 °F (26% solution)
PARTITION COEFFIENT:	Not applicable.
DECOMPOSITION TEMPERATURE:	Not applicable.
FLAMMABILITY:	
FLASHPOINT:	Not applicable.
FLAMMABLE LIMITS OF AMMONIA VAPOR IN AIR:	LEL/UEL 16% to 25% (Listed in the *NIOSH Pocket Guide to Chemical Hazards at* 15% to 28%).
AUTO-IGNITION TEMPERATURE (ammonia vapors):	1,204 °F (If catalyzed). 1,570 °F (If un-catalyzed).

SOLUTION-SPECIFIC PHYSICAL DATA:

	20.5° Baume	25° Baume	26° Baume
AMMONIA PERCENTAGE:	18.5% to 19.5%	26.5% to 27.5%	29.4% to 30.0%
WATER PERCENTAGE:	81.5% to 80.5%	73.5% to 72.5%	70.6 % to 70.0%
SPECIFIC GRAVITY (water = 1):	0.9309 to 0.9278 at 60 °F	0.9060 to 0.9030 at 60 °F	0.8974 to 0.8957 at 60 °F
APPROXIMATE BOILING POINT:	120 °F at 14.7 psia	88 °F at 14.7 psia	84.9 °F at 14.7 psia
VAPOR PRESSURE:	3.9 psia at 60 °F	6.9 psia at 60 °F	9.1 psia at 60 °F
APPROXIMATE FREEZING POINT:	-31 °F	-89 °F	-110 °F

Section 10. Stability and Reactivity

REACTIVITY:
Avoid ammonium hydroxide contact with chemicals such as mercury, chlorine, iodine, bromine, silver oxide or hypochlorites; they can form explosive compounds. Ammonia reacts with strong oxidizers, acids, halogens (including chlorine bleach), and salts of silver, zinc, copper, and other heavy metals.

CHEMICAL STABILITY:
Stable under normal ambient conditions of temperature and pressure.
Will not polymerize.

POSSIBILITY OF HAZARDOUS REACTIONS:
Ammonium hydroxide will react exothermically with acids.
Ammonia vapors are released when heated.

CONDITIONS TO AVOID:
Avoid ammonium hydroxide contact with chlorine, which forms a chloramine gas, which is a primary skin irritant and sensitizer.

INCOMPATIBLE MATERIALS:
Ammonium hydroxide has a corrosive reaction with galvanized surfaces, copper, brass, bronze, aluminum alloys, mercury, gold and silver.

HAZARDOUS DECOMPOSITION PRODUCTS:
Ammonia will be liberated if heated. Hydrogen will be released on heating ammonia above 450 °C (842 °F).

Section 11. Toxicological Information

Potential health effects: Ammonia is an irritant and corrosive to the skin, eyes, respiratory tract and mucous membranes. May cause severe chemical burns to the eyes, lungs and skin. Skin and respiratory related diseases could be aggravated by exposure. The extent of injury produced by exposure to ammonia depends on the duration of the exposure, the concentration of the liquid or vapor and the depth of inhalation.

Exposure Routes: Inhalation (vapors), skin and/or eye contact (vapors, liquid), ingestion (liquid).

Symptoms of acute exposure:

Inhalation:	Acute exposure to vapor may result in severe irritation of the respiratory tract. May cause dyspnea (breathing difficulty), wheezing, chest pain, bronchospasm, pink frothy sputum, pulmonary edema or respiratory arrest. Respiratory injury may appear as a delayed phenomenon. Pulmonary edema may follow chemical bronchitis.
Eyes:	Vapors may cause irritation. Effects of direct contact may range from irritation and lacrimation (tearing) to severe corrosive injury and blindness.
Skin:	Irritation, corrosive burns, blister formation (vesiculation) may result. Contact with liquid may produce caustic burns.
Ingestion:	May cause corrosion to the mouth, throat, esophagus and stomach with perforation and peritonitis. Extreme exposure may result in death from spasm, inflammation or edema.

Chronic Exposure: Repeated exposure to ammonia may cause chronic irritation of the eyes and respiratory tract.

Toxicity:
LC_{50} - 5131 mg/m^3 (7338 ppm) to 11,592 mg/m^3 (16,600 ppm), 60 minute exposure, Rat.
LD_{50} - 350 mg / kg (Oral / Rat).

Not listed in the National Toxicology Program (NTP).
Not recognized by OSHA as a carcinogen.
Not listed as a carcinogen by the International Agency for Research on Cancer (IARC monograph).
Germ cell mutagenicity information is not available. Reproductive toxicity information is not available.

Section 12. Ecological Information

Ammonia is harmful to aquatic life at very low concentrations. Notify local health and wildlife officials and operators of any nearby water intakes upon contamination of surface water.

Toxicity:
Terrestrial plants: LOEC = 3-250 ppm NH_3.
Aquatic plants: LOEC = 0.5-500 mg NH_3-N/L.
Acute toxicity to invertebrates: 48 h LC50 = 2.94 mg un-ionized NH3-N/L.
Chronic toxicity to invertebrates: NOEC = 0.163- 0.42 mg un-ionized NH3/L.
Acute toxicity to fish: 96-h: LC50= 0.09 – 3.51 mg un-ionized NH_3/L.
Chronic toxicity to fish: NOEC=0.025-1.2 mg un-ionized NH3/L.

Environmental Fate Information: Ammonia dissipates relatively quickly in ambient air and rapidly returns to the soil via combination with sulfate ions or washout by rainfall. Ammonia strongly adsorbs to soil, sediment particles and colloids in water under aerobic conditions. Biodegradation of ammonia to nitrate occurs in water under aerobic conditions resulting in a biological oxygen demand (BOD).

Persistence/Degradability:
Biodegradable in soil. Ozonation in the air. Soluble in water.
Bioaccumulative Potential:
Not applicable.
Mobility in Soil:
No additional information available.
Other Adverse Effects:
No additional information available.

Section 13. Disposal Considerations

Dispose of unused contents/container in accordance with local/regional/national regulations as applicable.
Listed as hazardous substance under Clean Water Act (CWA) (40 CFR 116.4 and 40 CFR 117.3).
Classified as hazardous waste under Resource Conservation and Recovery Act (RCRA) (40 CFR 261.22 Corrosive #D002) if disposed of in original form.
Suitably diluted product may be utilized as fertilizer on agricultural land.
For hazardous waste regulations information call the RCRA Hotline (800) 424-9346, or visit the US EPA website.

Section 14. Transport Information

14.1
US Department of Transportation (US Domestic)

HAZARD CLASS:	8, Corrosive Material (49 CFR 173.136)
PROPER SHIPPING NAME:	Ammonia Solutions
IDENTIFICATION NUMBER:	UN 2672
PLACARD / LABEL:	Corrosive

(Only as required by 49 CFR 172.322)

PACKAGE MARKINGS:	Refer to 49 CFR 172.302, General marking requirements for bulk packagings. Refer to 49 CFR 172.301, General marking requirements for non-bulk packagings. Refer to 49 CFR 172.328, Cargo Tanks for additional marking requirements.
ADDITIONAL INFORMATION:	Marine Pollutant Requirements: Subject to the requirements of 49 CFR 172.322.

14.2
International:

HAZARD CLASS:	8, Corrosive Material
PROPER SHIPPING NAME:	Ammonia Solutions
IDENTIFICATION NUMBER:	UN 2672
PLACARD / LABEL:	Corrosive

ADDITIONAL INFORMATION: Marine pollutant

ENVIRONMENTAL HAZARDS:
IMDG, Known Marine Pollutant: Yes
United Nations Model Regulations, Environmentally Hazardous: Yes

Section 15. Regulatory Information

The material is subject to the reporting requirements of Section 304, Section 312 and Section 313, Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR 372.
Under Section 313, as of June 30, 1995, this material is reportable with the following qualifications: 10% of total aqueous ammonia is reportable as Ammonia (CAS #: 7664-41-7) under this listing.

Under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), Section 103, any environmental release of this chemical equal to or over the reportable quantity of 1,000 pounds (as NH_4OH) must be reported promptly to the National Response Center, Washington, D.C. (1-800-424-8802).

Listed on the US EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

EPA Hazard Categories – Immediate: Yes; Delayed: No; Fire: No; Sudden Release: No; Reactive: No

Clean Air Act – Section 112(r): Material is listed under EPA's Risk Management Program (RMP), 40 CFR Part 68 at concentrations greater than 20% and storage/process amounts greater than the Threshold Quantity (TQ) of 20,000 pounds of contained ammonia (CAS #: 7664-41-7).

The chemical is listed under Department of Homeland Security(CFATS) regulation 6 CFR Part 27, Chemical Facility Anti-Terrorism Standards at storage / process amounts greater than the threshold quantity of 20,000 pounds (ammonia concentration 20% or greater).

OSHA (Occupational Safety & Health Administration): This material is considered to be hazardous as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200. This material is subject to Process Safety Management requirements of 29 CFR 1910.119 if maintained on-site, including storage and process, in quantities of 15,000 pounds or greater (>44% ammonia by weight).

Section 16. Other Information

Preparation Information: Revision Date November 1, 2018. Revised by: HJS
Replaces Revision Date May 1, 2015.

Revisions to this Safety Data Sheet

Section 2:	Added note regarding the Hazardous Materials Identification System (HMIS).
Section 8:	Reformatted and added information for Canada and Mexico.
Section 11:	Added listing for the US EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
Section 14.1:	Updated information for Package Markings and added "Additional Information."
Section 14.2:	Updated "Additional Information" and "Environmental Hazards."

HMIS Rating: The American Coatings Association's (ACA) *Hazardous Materials Identification System (HMIS®) and corresponding HMIS® Implementation Manual,* aid employers with the development and implementation of a comprehensive Hazard Communication Program. The program and manual address hazard assessment, labeling, Safety Data Sheets (SDS), and employee training. ACA's HMIS® hazard rating scheme is designed to be compatible with workplace labeling requirements of the U.S. Occupational Safety and Health Administration's (OSHA) revised Hazard Communication Standard (HCS). It is constructed to communicate hazard information to employees through training and the use of colors, numbers, letters of the alphabet, and symbols of types of personnel protective equipment (PPE).
HMIS® ratings are to be used with a fully implemented HMIS® program. It is the responsibility of the employer to determine the appropriate hazard classification and personnel protective equipment (PPE) code for this material.
For more information on HMIS® consult the HMIS® Implementation Manual.
HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

Acronyms:
ACGIH: American Conference of Governmental Industrial Hygienists
ANSI: American National Standards Institute
CAS: Chemical Abstracts Service
CFR: Code of Federal Regulations
DHS: Department of Homeland Security
DOT: Department of Transportation
EPA: Environmental Protection Agency

HMIS: Hazardous Materials Identification System
IARC: International Agency for Research on Cancer
IDLH: Immediately Dangerous to Life or Health
IMDG: International Maritime Dangerous Goods
NFPA: National Fire Protection Association
NIOSH: National Institute for Occupational Safety and Health
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PEL: Permissible Exposure Limit
PPM: Parts Per Million
RCRA: Resource Conservation and Recovery Act
REL: Recommended Exposure Limit
SCBA: Self Contained Breathing Apparatus
STEL: Short Term Exposure Limit
TLV: Threshold Limit Value
TWA: Time Weighted Average

Disclaimer:

The information, data, and recommendations in this safety data sheet relate only to the specific material designated herein and do not relate to use in combination with any other material or in any process. To the best of our knowledge, the information, data, and recommendations set forth herein are believed to be accurate. We make no warranties, either expressed or implied, with respect thereto and assume no liability in connection with any use of such information, data, and recommendations. Judgements as to the suitability of the information contained herein for the party's own use or purposes are solely the responsibility of that party. Any party handling, transferring, transporting, storing, applying or otherwise using this product should review thoroughly all applicable laws, rules, regulations, standards and good engineering practices. Such thorough review should occur before the party handles, transfers, transports, stores, applies or otherwise uses this product.

Univar USA Inc.
17425 NE Union Hill Road
Redmond, WA 98052
(425) 889-3400

For Emergency Assistance involving chemicals call - CHEMTREC (800) 424-9300

The Version Date and Number for this MSDS is : 04/04/2008 - #018

PRODUCT NAME: CAUSTIC SODA LIQUID (ALL GRADES)

MSDS NUMBER: OZ32415

DATE ISSUED: 03/10/2006

SUPERSEDES: 12/09/2005

ISSUED BY: 008730

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MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Distributed by:
Univar USA Inc.
17425 NE Union Hill Road
Redmond, WA 98052
425-889-3400

SUBSTANCE: CAUSTIC SODA LIQUID (ALL GRADES)

TRADE NAMES:
Caustic Soda Diaphragm Grade 10%, 15%, 18%, 20%, 25%, 30%, 35%, 40%, 50%; Caustic Soda Rayon Grade 18%, 20%, 25%, 30%, 50%; 50% Caustic Soda Rayon Grade OS; Caustic Soda Membrane 6%, 18%, 20%, 25%, 30%, 48%, 50%; 50% Caustic Soda Membrane OS; 50% Caustic Soda Diaphragm OS; Caustic Soda Low Salt 50%; 25% Caustic Soda Purified; 50% Caustic Soda Purified; 50% Caustic Soda Purified OS; Caustic Soda Liquid 70/30; Membrane Blended; 50% Caustic Soda Membrane (Northeast); 50% Caustic Soda Diaphragm (West Coast); 50% Blended Rayon Grade Blended; Membrane Cell Liquor; Caustic Soda Chemical Grade Caustic Soda Technical Grade: 10%, 15%, 18%, 20%, 25%, 30%, 35%, 40%, 50%;

SYNONYMS:
Sodium hydroxide solution; Liquid caustic; Lye solution; Caustic; Lye; Soda Lye

PRODUCT USE: metal finishing, cleaner, process chemical, petroleum industry

2. HAZARDS IDENTIFICATION

NFPA RATINGS (SCALE 0-4): HEALTH-3 FIRE-0 REACTIVITY-1

EMERGENCY OVERVIEW:

COLOR:	colorless to slightly colored
PHYSICAL FORM:	liquid
ODOR:	odorless
SIGNAL WORD:	DANGER

MAJOR. HEALTH HAZARDS: CORROSIVE. CAUSES BURNS TO THE RESPIRATORY TRACT, SKIN, EYES AND GASTROINTESTINAL TRACT. CAUSES PERMANENT EYE DAMAGE. PHYSICAL HAZARDS: Mixing with water, acid or incompatible materials may cause splattering and release of heat.

ECOLOGICAL HAZARDS: This material has exhibited moderate toxicity to aquatic organisms.

PRECAUTIONARY STATEMENTS: Do not get in eyes, on skin, or on clothing. Do not breathe vapor or mist. Keep container tightly closed. Wash thoroughly after handling. Use only with adequate ventilation.

POTENTIAL HEALTH EFFECTS:

INHALATION:
SHORT TERM EXPOSURE: irritation (possibly severe), burns, pulmonary edema
LONG TERM EXPOSURE: to our knowledge, no effects are known

SKIN CONTACT:
SHORT TERM EXPOSURE: irritation (possibly severe), burns
LONG TERM EXPOSURE: dermatitis

EYE CONTACT:
SHORT TERM EXPOSURE: irritation (possibly severe), burns, eye damage, blindness
LONG TERM EXPOSURE: visual disturbances

INGESTION:
SHORT TERM EXPOSURE: irritation (possibly severe), burns, nausea, vomiting
LONG TERM EXPOSURE: to our knowledge, no effects are known

CARCINOGEN STATUS:
OSHA: No
NTP: No
IARC: No

3. COMPOSITION INFORMATION ON INGREDIENTS

COMPONENT:	WATER
CAS NUMBER:	7732-18-5
PERCENTAGE:	48.5-94.5

COMPONENT:	SODIUM HYDROXIDE
CAS NUMBER:	1310-73-2
PERCENTAGE:	5.5-51.5

COMPONENT:	SODIUM CHLORIDE
CAS NUMBER:	7647-14-5
PERCENTAGE:	0-5.0

4. FIRST AID MEASURES

INHALATION: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen

should be administered by qualified personnel. If respiration or pulse has stopped, have a trained person administer Basic Life Support (Cardio-Pulmonary Resuscitation/Automatic External Defibrillator) and CALL FOR EMERGENCY SERVICES IMMEDIATELY.

SKIN CONTACT: Immediately flush contaminated areas with water. Remove contaminated clothing, jewelry, and shoes immediately. Wash contaminated areas with soap and water. Thoroughly clean and dry contaminated clothing before reuse. Discard contaminated leather goods. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT: Immediately flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissues. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION: Never give anything by mouth to an unconscious or convulsive person. If swallowed, do not induce vomiting. Give large amounts of water. If vomiting occurs spontaneously, keep airway clear. Give more water when vomiting stops. GET MEDICAL ATTENTION IMMEDIATELY.

NOTE TO PHYSICIAN: The absence of visible signs or symptoms of burns does NOT reliably exclude the presence of actual tissue damage. Probable mucosal damage may contraindicate the use of gastric lavage.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS: Negligible fire hazard.

EXTINGUISHING MEDIA: Use extinguishing agents appropriate for surrounding fire.

FIRE FIGHTING: Move container from fire area if it can be done without risk. Cool containers with water. Wear NIOSH approved positive-pressure self-contained breathing apparatus. Avoid contact with skin.

SENSITIVITY TO MECHANICAL IMPACT: Not sensitive
SENSITIVITY TO STATIC DISCHARGE: Not sensitive

FLASH POINT: not flammable

6. ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE:
Wear appropriate personal protective equipment recommended in Section 8 of the MSDS. Completely contain spilled material wit dikes, sandbags, etc. Keep out of water supplies and sewers. Reprocess or reuse if possible. Shovel dry material into suitable container. Liquid material may be removed with a vacuum truck. Remaining, material may be diluted with water and neutralized with dilute acid. Flush spill area with water, if appropriate. This material is alkaline and may raise the pH of surface waters with low buffering capacity. Releases should be reported, if required, to appropriate agencies. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800) 424-8802 (USA) or (202)426-2675 (USA).

7. HANDLING AND STORAGE

STORAGE: Store and handle in accordance with all current regulations and standards. Keep container tightly closed and properly labeled. Do not store

in aluminum container or use aluminum fittings or transfer lines, as flammable hydrogen gas may be generated. Keep separated from incompatible substances (see Section 10 of the MSDS).

HANDLING: Avoid breathing vapor or mist. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. When mixing, slowly add to water to minimize heat generation and spattering.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE LIMITS:
SODIUM HYDROXIDE:
2 mg/m3 OSHA TWA
2 mg/m3 OSHA ceiling (vacated by 58 FR 35338, June 30, 1993)
2 mg/m3 ACGIH ceiling

VENTILATION: Provide local exhaust ventilation where dust or mist may be generated. Ensure compliance with applicable exposure limits.

EYE PROTECTION: Wear safety glasses with side shields. Wear chemical safety goggles with a faceshield to protect against skin contact when appropriate. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

CLOTHING: Wear chemical resistant clothing and rubber boots when potential for contact with the material exists. Contaminated clothing should be removed, then discarded or laundered. Always place pants legs over boots.

GLOVES: Wear appropriate chemical resistant gloves.

PROTECTIVE MATERIAL TYPES: butyl rubber, natural rubber, neoprene, nitrile, polyvinyl chloride (PVC), Tychem

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: 10 mg/m3

RESPIRATOR: Where vapor concentration exceeds or is likely to exceed applicable exposure limits, a NIOSH approved respirator is required. If eye irritation occurs, a full face style mask should be used. When an air-purifying respirator is not adequate or when there are vapor concentrations above 10 ppm or for spills and/or emergencies, a NIOSH approved self-contained breathing apparatus or airline respirator, with full-face piece, is required. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE:	liquid
APPEARANCE:	clear to opaque
COLOR:	colorless to slightly colored
ODOR:	odorless
BOILING POINT:	230-291 F (110-144 C)
FREEZING POINT:	-26 to 59 F (-32 to 15 C)
VAPOR PRESSURE:	13-135 mmHg @ 60 C
VAPOR DENSITY:	Not available
SPECIFIC GRAVITY (water=1):	1.11-1.53 @ 15.6 C
DENSITY:	9.27-12.76 lbs/gal @ 15.6 C
WATER SOLUBILITY:	100%
PH:	14.0 (7.5% solution)
VOLATILITY:	Not available
ODOR THRESHOLD:	Not available
EVAPORATION RATE:	Not available
COEFFICIENT OF WATER/OIL DISTRIBUTION:	Not available

10. STABILITY AND REACTIVITY

REACTIVITY: Stable at normal temperatures and pressure.

CONDITIONS TO AVOID: Mixing with water, acid or incompatible materials may cause splattering and release of large amounts of heat. Will react with some metals forming flammable hydrogen gas. Carbon monoxide gas may form upon contact with reducing sugars or food and beverage products in enclosed spaces.

INCOMPATIBILITIES: acids, halogenated compounds, prolonged contact with aluminum, brass, bronze, copper, lead, tin, zinc or other alkali sensitive metals or alloys

HAZARDOUS DECOMPOSITION:
Thermal decomposition products: None known.

POLYMERIZATION: Will not polymerize.

11. TOXICOLOGICAL INFORMATION

CAUSTIC SODA LIQUID (ALL GRADES):
TOXICITY DATA: Sodium Hydroxide: 1350 mg/kg Dermal-Rabbit LD50. The severity of the tissue damage is a function of its concentration, the length of tissue contact time, and local tissue conditions. After exposure there may he a time delay before irritation and other effects occur. This material is a strong irritant and is corrosive to the skin. eves, and mucous membranes. This material may cause severe burns and permanent damage to any tissue with which it comes into contact. Inhalation will cause severe irritation, possible burns with pulmonary edema, which may lead to pneumonitis. Skin contact with this material may cause severe irritation and corrosion of tissue. Eye contact can cause severe irritation, corrosion with possible corneal damage and blindness. Ingestion may cause irritation, corrosion/ulceration, nausea, and vomiting. In general, chronic effects are due to long-term irritation. This material may cause dermatitis on the skin, or recurrent corneal ulceration and visual disturbances. In rare cases reports have noted longterm inhalation causes bronchial inflammatory reaction or obstructive airway dysfunction.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: respiratory system (including asthma and other breathing disorders)

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA:
FISH TOXICITY: This material has exhibited moderate toxicity to aquatic organisms. For sodium hydroxide: 100 ppm LC50 Daphnia; 25 ppm 24 hours LC50 Brook trout; 48 ppm LC50 King salmon; 33 - 100 ppm 48 hours LC50 Shrimp; 330 - 1000 ppm 48 hours LC50 Cockle

FATE AND TRANSPORT:
BIODEGRADATION: This material is inorganic and not subject to biodegradation.

PERSISTENCE: This material is alkaline and may raise the pH of surface waters with low buffering capacity. This material is believed to exist in the disassociated state in the environment.

BIOCONCENTRATION: This material is believed not to bioaccumulate.

OTHER ECOLOGICAL INFORMATION: This material has exhibited slight toxicity to terrestrial organisms.

13. DISPOSAL CONSIDERATIONS

Reuse or reprocess if possible. Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D002.

14. TRANSPORT INFORMATION

U.S. DOT 49 CFR 172.101:
PROPER SHIPPING NAME: Sodium hydroxide solution
ID NUMBER: UN1824
HAZARD CLASS OR DIVISION: 8 PACKING GROUP: H
LABELING REQUIREMENTS: 8
DOT HAZARDOUS SUBSTANCE(S):
Sodium hydroxide 1000 lb(s) (454 kg(s))

CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
SHIPPING NAME: Sodium hydroxide solution
UN NUMBER: UN 1824
CLASS: 8
PACKING GROUP/RISK GROUP: II

15. REGULATORY INFORMATION

U.S. REGULATIONS:
CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
SODIUM HYDROXIDE: 1000 LBS RQ

SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355.30):
Not regulated.

SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370.21):

ACUTE:	Yes
CHRONIC:	No
FIRE:	No
REACTIVE:	No
SUDDEN RELEASE:	No

SARA TITLE III SECTION 313 (40 CFR 372.65): Not regulated.

OSHA PROCESS SAFETY (29CFR1910.119): Not regulated.

FDA: This material has Generally Recognized as Safe (GRAS) status under specific FDA regulations. Additional information is available from the Code of Federal Register (CFR) which is accessible on the FDA's website.

STATE REGULATIONS:
California Proposition 65: This product is not listed, but it may contain contaminants known to the State of California to cause cancer or reproductive toxicity as listed under Proposition 65 State Drinking Water and Toxic Enforcement Act. For additional information, contact Customer Service.

NEW JERSEY WORKER AND COMMUNITY RIGHT TO KNOW:
REPORTING REQUIREMENT:
WATER 7732-18-5 48.5-94.5%
SODIUM HYDROXIDE 1310-73-2 5.5-51.5%
SODIUM CHLORIDE 7647-14-5 0-5.0%

RIGHT TO KNOW HAZARDOUS SUBSTANCE LIST:
SODIUM HYDROXIDE 1310-73-2 5.5-51.5%

SPECIAL HEALTH HAZARD SUBSTANCE LIST:
SODIUM HYDROXIDE 1310-73-2 5.5-51.5%

PENNSYLVANIA RIGHT TO KNOW:
REPORTING REQUIREMENT:
WATER 7732-18-5 48.5-94.5%
SODIUM HYDROXIDE 1310-73-2 5.5-51.5%
SODIUM CHLORIDE 7647-14-5 0-5.0%

HAZARDOUS SUBSTANCE LIST:
SODIUM HYDROXIDE 1310-73-2 5.5-51.5%

ENVIRONMENTAL HAZARDOUS SUBSTANCE LIST:
SODIUM HYDROXIDE 1310-73-2 5.5-51.5%

SPECIAL HAZARDOUS SUBSTANCE LIST:
Not regulated.

CANADIAN REGULATIONS:
CONTROLLED PRODUCTS REGULATIONS (CPR):
This product has been classified in accordance with the criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

WHMIS CLASSIFICATION: E.

NATIONAL INVENTORY STATUS:
U.S. INVENTORY (TSCA): All the components of this substance are listed on or are exempt from the inventory.

TSCA 12(b) EXPORT NOTIFICATION: Not listed.

CANADA INVENTORY (DSL/NDSL): All components of this product are listed on the DSL.

For Additional Information:
Contact: MSDS Coordinator - Univar USA
During business hours, Pacific Time - (425) 889-3400

NOTICE
Univar USA expressly disclaims all express or implied warranties of merchantibility and fitness for a particular purpose with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to a Product Specification Sheet and/or a Certificate of Analysis. These can be obtained from your local Univar USA Sales Office.

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Univar USA makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Univar USA's control. Therefore, users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes, and they assume all risks of their use, handling, and disposal of the product or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein and does not relate to its use in combination with any other material or in any other process.

SAFETY DATA SHEET

1. Identification

Product identifier	**CARUS® potassium permanganate**
Other means of identification	
SDS number	-
CAS number	7722-64-7
Recommended use	CARUS® potassium permanganate is an oxidant recommended for applications that require a strong oxidant.
Recommended restrictions	Use in accordance with supplier's recommendations.
Manufacturer/Importer/Supplier/Distributor information	
Company name	CARUS LLC
Address	315 Fifth Street, Peru, IL 61354, USA
Telephone	+1 815 223-1500 - All other non-emergency inquiries about the product should be directed to the company
E-mail	salesmkt@carusllc.com
Website	www.carusllc.com
Contact person	Shelley Corban
Emergency Telephone	For Hazardous Materials [or Dangerous Goods] Incidents ONLY (spill, leak, fire, exposure or accident), call CHEMTREC at CHEMTREC®, USA: 001 (800) 424-9300 CHEMTREC®, Mexico (Toll-Free - must be dialed from within country): 01-800-681-9531 CHEMTREC®, Other countries: 001 (703) 527-3887

2. Hazard(s) identification

Physical hazards	Oxidizing solids	Category 2
Health hazards	Acute toxicity, oral	Category 4
	Skin corrosion/irritation	Category 1C
	Serious eye damage/eye irritation	Category 1
	Reproductive toxicity (the unborn child)	Category 2
	Specific target organ toxicity, repeated exposure	Category 2 (Brain)
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 1
OSHA defined hazards	Not classified.	

Label elements

Signal word	Danger
Hazard statement	May intensify fire; oxidizer. Harmful if swallowed. Causes severe skin burns and eye damage. Suspected of damaging the unborn child. May cause damage to organs (Brain) through prolonged or repeated exposure. Very toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep/Store away from clothing//combustible materials. Take any precaution to avoid mixing with combustibles/. Keep away from heat. Do not breathe dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling. Avoid release to the environment.
Response	In case of fire: Use appropriate media for extinction. If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor/. Wash contaminated clothing before reuse. Collect spillage.
Storage	Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
Potassium permanganate		7722-64-7	>97

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. For breathing difficulties, oxygen may be necessary. Get medical attention immediately.

Skin contact Take off immediately all contaminated clothing. Immediately flush with plenty of water for at least 15 minutes. Call a physician or poison control center immediately. Wash contaminated clothing before reuse. Chemical burns must be treated by a physician.

Contact with skin may leave a brown stain of insoluble manganese dioxide. This can be easily removed by washing with a mixture of equal volume of household vinegar and 3% hydrogen peroxide, followed by washing with soap and water.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Ingestion Immediately rinse mouth and drink plenty of water. Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention immediately.

Most important symptoms/effects, acute and delayed Contact with this material will cause burns to the skin, eyes and mucous membranes. Permanent eye damage including blindness could result.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Decomposition products are alkaline. Brown stain is insoluble manganese dioxide.

General information In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. For personal protection, see Section 8 of the SDS. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media Flood with water from a distance, water spray or fog.

Unsuitable extinguishing media The following extinguishing media are ineffective: Dry chemical. Foam. Carbon dioxide (CO2). Halogenated materials.

Specific hazards arising from the chemical May intensify fire; oxidizer. May ignite combustibles (wood, paper, oil, clothing, etc.). Contact with incompatible materials or heat (135 °C / 275 °F) could result in violent exothermic chemical reaction. Oxidizing agent, may cause spontaneous ignition of combustible materials. By heating and fire, corrosive vapors/gases may be formed. During fire, gases hazardous to health may be formed such as: Metal oxides. Carbon oxides (COx).

Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Move container from fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Dike fire control water for later disposal. Water runoff can cause environmental damage.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	The product is not flammable. May intensify fire; oxidizer. May ignite combustibles (wood, paper, oil, clothing, etc.). Contact with incompatible materials or heat (135 °C / 275 °F) could result in violent exothermic chemical reaction.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep upwind. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep away from clothing and other combustible materials. Avoid inhalation of vapors and contact with skin and eyes. Wear appropriate protective equipment and clothing during clean-up. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Keep combustibles (wood, paper, oil, etc.) away from spilled material. This product is miscible in water. Should not be released into the environment. Dike the spilled material, where this is possible. Stop leak if possible without any risk. Clean up spills immediately by sweeping or shoveling up the material. Do not return spilled material to the original container; transfer to a clean metal or plastic drum. To clean up potassium permanganate solutions, follow either of the following two options: Option # 1: Dilute to approximately 6% with water, and then reduce with sodium thiosulfate, a bisulfite or ferrous salt solution. The bisulfite or ferrous salt may require some dilute sulfuric acid (10% w/w) to promote reduction. Neutralize with sodium carbonate to neutral pH, if acid was used. Decant or filter and deposit sludge in approved landfill. Where permitted, the sludge may be drained into sewer with large quantities of water. Option # 2: Absorb with inert media like diatomaceous earth or inert floor dry, collect into a drum and dispose of properly. Do not use saw dust or other incompatible media. Disposal of all materials shall be in full and strict compliance with all federal, state, and local regulations pertaining to permanganates. To clean contaminated floors, flush with abundant quantities of water into sewer, if permitted by federal, state, and local regulations. If not, collect water and treat as described above. Never return spills in original containers for re-use. For waste disposal, see Section 13 of the SDS.
Environmental precautions	Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Avoid discharge into drains, water courses or onto the ground. Do not allow to enter drains, sewers or watercourses.

7. Handling and storage

Precautions for safe handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Take any precaution to avoid mixing with combustibles. Keep away from heat. Provide adequate ventilation. Do not get this material in your eyes, on your skin, or on your clothing. Do not breathe dust or mist or vapor of the solution. When using, do not eat, drink or smoke. Pregnant or breastfeeding women must not handle this product. Avoid prolonged exposure. If clothing becomes contaminated, remove and wash off immediately. Wear appropriate personal protective equipment (See Section 8). Wash hands thoroughly after handling. Good personal hygiene is necessary. Wash hands and contaminated areas with water and soap before leaving the work site. Avoid release to the environment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Do not store near combustible materials. Keep away from heat. Store in a cool, dry place out of direct sunlight. Store in tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Store in accordance with NFPA 430 requirements for Class II oxidizers.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Material	Type	Value
Potassium permanganate (CAS 7722-64-7)	Ceiling	5 mg/m3

US. ACGIH Threshold Limit Values

Material	Type	Value	Form
Potassium permanganate (CAS 7722-64-7)	TWA	0.1 mg/m3	Inhalable fraction.
		0.02 mg/m3	Respirable fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Material	Type	Value	Form
Potassium permanganate (CAS 7722-64-7)	STEL	3 mg/m3	Fume.
	TWA	1 mg/m3	Fume.

Biological limit values No biological exposure limits noted for the ingredient(s).

Exposure guidelines Follow standard monitoring procedures.

Appropriate engineering controls Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles). Wear face shield if there is risk of splashes.

Skin protection

Hand protection Wear chemical-resistant, impervious gloves. Use protective gloves made of: Rubber or plastic. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier.

Skin protection

Other Wear appropriate chemical resistant clothing. Rubber or plastic apron. Use of an impervious apron is recommended.

Respiratory protection In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA 29 CFR 1910.134.

Measurement Element: Manganese (Mn)
10 mg/m3
Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100 or P100. Any supplied-air respirator.

25 mg/m3
Any supplied-air respirator operated in a continuous-flow mode.
Any powered, air-purifying respirator with a high-efficiency particulate filter.

50 mg/m3
Any air-purifying, full-face piece respirator equipped with an N100, R100, or P100 filter.
Any supplied-air respirator with a tight-fitting face piece that is operated in a continuous-flow mode.
Any powered, air-purifying respirator with a tight-fitting face piece and a high-efficiency particulate filter.
Any supplied-air respirator with a full face piece.

500 mg/m3
Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode.

Emergency or planned entry into unknown concentrations or IDLH conditions -
Any self-contained breathing apparatus that has a full face piece and is operated in a pressure-demand or other positive-pressure mode.

Escape
Any air-purifying, full-face piece respirator equipped with an N100, R100, or P100 filter.
Any appropriate escape-type, self-contained breathing apparatus.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations Keep from contact with clothing and other combustible materials. Remove and wash contaminated clothing promptly. When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	Dark purple solid with metallic luster.
Physical state	Solid.
Form	Solid.
Color	Dark purple.
Odor	Odorless.
Odor threshold	Not available.
pH	10 (5% solution)
Melting point/freezing point	Starts to decompose with evolution of oxygen (O2) at temperatures above 150 °C. Once initiated, the decomposition is exothermic and self sustaining.
Initial boiling point and boiling range	Not applicable.
Flash point	Not applicable.
Evaporation rate	Not applicable.
Flammability (solid, gas)	Non flammable.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	Not applicable.
Explosive limit - upper (%)	Not applicable.
Vapor pressure	Not applicable.
Vapor density	Not applicable.
Relative density	2.7 (20 °C) (Water = 1)
Solubility(ies)	
Solubility (water)	6 % (20 °C)
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	464 °F (240 °C)
Viscosity	Not applicable.
Other information	
Bulk density	2.7 g/m³
Explosive properties	Not explosive. Can explode in contact with sulfuric acid, peroxides and metal powders.
Molecular formula	H-Mn-O4.K
Molecular weight	158.03 g/mol
Oxidizing properties	May intensify fire; oxidizer. Strong oxidizing agent.

10. Stability and reactivity

Reactivity	Greatly increases the burning rate of combustible materials.
Chemical stability	Stable at normal conditions.
Possibility of hazardous reactions	Contact with combustible material may cause fire. Can explode in contact with sulfuric acid, peroxides and metal powders. Starts to decompose with evolution of oxygen (O2) at temperatures above 150 °C. Once initiated, the decomposition is exothermic and self sustaining.
Conditions to avoid	Contact with incompatible materials or heat (135 °C / 275 °F) could result in violent exothermic chemical reaction.
Incompatible materials	Acids. Peroxides. Reducing agents. Combustible material. Metal powders. Contact with hydrochloric acid liberates chlorine gas.
Hazardous decomposition products	By heating and fire, corrosive vapors/gases may be formed.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	Causes severe skin burns. May be harmful in contact with skin.
Eye contact	Causes serious eye damage.

Ingestion	Harmful if swallowed. Causes digestive tract burns.
Symptoms related to the physical, chemical and toxicological characteristics	Contact with this material will cause burns to the skin, eyes and mucous membranes. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity Harmful if swallowed.

Product	Species	Test Results
Potassium permanganate (CAS 7722-64-7)		
Acute		
Dermal		
LD50	Rat	2000 mg/kg, 24 Hours
Oral		
LD50	Rat	2000 mg/kg

Skin corrosion/irritation	Causes severe skin burns.
Serious eye damage/eye irritation	Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization	Not classified.
Skin sensitization	Not classified.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

NTP Report on Carcinogens

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Reproductive toxicity	Suspected of damaging the unborn child.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	May cause damage to organs (Brain) through prolonged or repeated exposure.
Aspiration hazard	Not likely, due to the form of the product.
Chronic effects	Prolonged inhalation may be harmful. Prolonged exposure, usually over many years, to manganese oxide fume/dust can lead to chronic manganese poisoning, chiefly affecting the central nervous system.

12. Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Product		Species	Test Results
Potassium permanganate (CAS 7722-64-7)			
Aquatic			
Algae	EbC50	Algae	0.43 mg/l, 72 hours
	NOECb	Algae	0.22 mg/l
Crustacea	EC50	Daphnia magna	0.06 mg/l
Fish	EC50	Poecilia reticulata	0.47 mg/l, hours

Persistence and degradability	Expected to be readily converted by oxidizable materials to insoluble manganese oxide.
Bioaccumulative potential	Potential to bioaccumulate is low.
Mobility in soil	The product is miscible with water. May spread in water systems.
Other adverse effects	None known.

13. Disposal considerations

Disposal instructions	Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose of in accordance with local regulations.
Hazardous waste code	D001: Ignitable waste The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Do not allow this material to drain into sewers/water supplies. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal. Rinse container at least three times to an absence of pink color before disposing.

14. Transport information

DOT

UN number	UN1490
UN proper shipping name	Potassium permanganate
Transport hazard class(es)	
Class	5.1
Subsidiary risk	-
Label(s)	5.1
Packing group	II
Environmental hazards	
Marine pollutant	Yes
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	IB8, IP2, IP4, T3, TP33
Packaging exceptions	152
Packaging non bulk	212
Packaging bulk	240

IATA

UN number	UN1490
UN proper shipping name	Potassium permanganate
Transport hazard class(es)	
Class	5.1
Subsidiary risk	-
Packing group	II
Environmental hazards	Yes
ERG Code	5L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1490
UN proper shipping name	POTASSIUM PERMANGANATE
Transport hazard class(es)	
Class	5.1
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	Yes
EmS	F-H, S-Q
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.
General information	IMDG Regulated Marine Pollutant. DOT Regulated Marine Pollutant.

15. Regulatory information

US federal regulations

All components are on the U.S. EPA TSCA Inventory List.

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. Drug Enforcement Administration (DEA) (21 CFR 1310.02 (b) 8: List II chemical.

Department of Homeland Security (DHS) Chemical Facility Anti-Terrorism Standards (6 CFR 27, Appendix A): Listed.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Potassium permanganate (CAS 7722-64-7) Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Toxic Substances Control Act (TSCA) This substance is on the TSCA 8(b) inventory and is designated "active".

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

Classified hazard categories

Oxidizer (liquid, solid, or gas)
Acute toxicity (any route of exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Potassium permanganate	7722-64-7	>97

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Potassium permanganate (CAS 7722-64-7)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130) Hazardous substance

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Potassium permanganate (CAS 7722-64-7) 6579

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Potassium permanganate (CAS 7722-64-7) 15 %WT

DEA Exempt Chemical Mixtures Code Number

Potassium permanganate (CAS 7722-64-7) 6579

US state regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

California OSH Hazardous Substance List: Listed.

US. Massachusetts RTK - Substance List

Potassium permanganate (CAS 7722-64-7)

US. New Jersey Worker and Community Right-to-Know Act

Potassium permanganate (CAS 7722-64-7)

US. Pennsylvania Worker and Community Right-to-Know Law

Potassium permanganate (CAS 7722-64-7)

US. Rhode Island RTK

Potassium permanganate (CAS 7722-64-7)

California Proposition 65

WARNING: This product can expose you to chemicals including Chromates, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 27-November-2013

Revision date 22-November-2021

Version # 06

HMIS® ratings

Health: 3
Flammability: 0
Physical hazard: 1

NFPA ratings

List of abbreviations

GHS: Globally Harmonized System of Classification and Labeling of hazardous properties of Chemicals.
TWA: Time weighted average.
LD50: Lethal Dose, 50%.
LC50: Lethal Concentration, 50%.
IMDG: International Maritime Dangerous Goods.
IATA: International Air Transport Association.
MARPOL: International Convention for the Prevention of Pollution from Ships.

EC50: Effective Concentration, 50%.
EbC50: EC50 in terms of reduction of biomassNOEC: No Observed Effect Concentration.

References

Chemical safety report. HSDB® - Hazardous Substances Data Bank
Registry of Toxic Effects of Chemical Substances (RTECS)
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

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This SDS contains revisions in the following section(s):	This safety data sheet contains revisions in the following section(s):

86 North Hackensack Avenue,
Kearny, NJ 07032-4675
Tel. 973-589-0700
Fax. 973-589-4866
www.kuehnecompany.com

(This SDS follows the GHS format)

SODIUM HYPOCHLORITE

(15% by volume – 12.5% by weight)

SDS NUMBER: **KCC – HYPO - 001**

SDS DATE: **June 6, 2022**

24 HOUR EMERGENCY PHONE NUMBER: **(973) 589-0700**
Alt. (551) 200-2751
CHEMTREC – (800) 424-9300

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Hypochlorite Solution

Chemical Name: Sodium Hypochlorite

CAS Number: 7681-52-9

Common Names: Chlorine Bleach, Soda Bleach

Chemical Formula: NaOCl

Manufacturer: Kuehne Chemical Company, Inc.
86 North Hackensack Avenue
South Kearny, New Jersey 07032-4673
(973) 589-0700 Fax: (973) 589-4866

Category 1

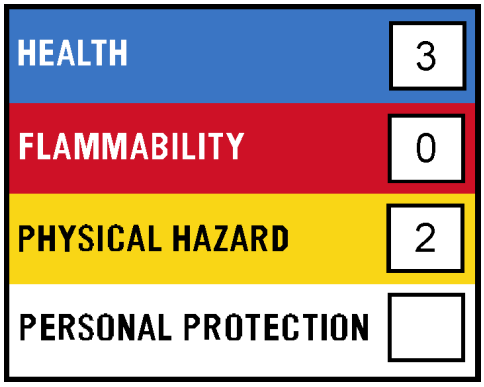
Symbol:

Signal Word: Danger

Corrosive to metals:	Category 1
Skin Corrosion:	Category 1
Serious Eye Damage:	Category 1
Target Organ Toxicity:	Category 1 – Causes damage to respiratory system

Hazard Statements:
H290 – May be corrosive to metals
H314 - Causes severe skin burns and eye damage
H400 – Very toxic to aquatic life

HMIS HAZARD RATINGS



Based on Nat'l Paint & Coatings Association HMIS system

NFPA HAZARD RATINGS

Chemical not listed. Ratings based on NFPA guidelines

Effects of Overexposure

Acute: Inhalation – Inhalation of mists, vapors or spray is irritating to the respiratory system, may cause throat pain and cough, severe respiratory tract irritation and pulmonary edema.

Eyes – May cause severe irritation, burns, and/or corrosion.
May cause vision impairment, corneal damage and blurred vision.

Skin – May cause severe irritation and burns or dermatitis. Prolonged skin exposure may cause destruction of the dermis with impairment of the skin to regenerate at site of contact.

Ingestion – Ingestion may cause gastrointestinal tract pain and inflammation, burns and perforation of the esophagus or stomach or injury to liver, kidneys or central nervous system.

Chronic: Repeated inhalation exposure may cause impairment of lung function and permanent lung damage. Effects from chronic skin exposure would be similar to those from single exposure except for effects secondary to tissue destruction.

Note: Corrosive and strongly irritating to the eyes, skin, and respiratory tract. Inhalation of fumes may cause pulmonary edema. Ingestion may cause burns to the mouth and digestive tract, and abdominal distress.

Appearance: Colorless to light yellow-green liquid.

Routes of Entry: Inhalation, Eye Contact, Skin, Ingestion

Cancer Information: This product has not been listed as carcinogenic by the following agencies: IARC, NTP, and OSHA

Mutagenicity: Sodium hypochlorite has tested positive in in-vitro test systems and negative in in-vivo test systems. These results are consistent with other germicides.

Medical Conditions Aggravated by Exposure: Asthma, Heart disease, Respiratory disorder

SECTION 3 – COMPOSITION, INFORMATION OR INGREDIENTS

CAS Number	Name	Common Names
7732-18-5	Water	Water

Percentage	Exposure Limits
VOL. 85.75 – 81.25	PEL: Not Established
WT. 84.37 – 88.13	TLV: Not Established
	STEL: Not Established
	IDLH: Not Established

CAS Number	Name	Common Names
7681-52-9	Hypochlorous Acid, Sodium Salt	Sodium Hypochlorite

Percentage	Exposure Limits
VOL. 14.25 – 18.75	PEL: N/A
WT: 11.87 – 15.63	TLV: N/A
	STEL: 2 mg/m^3 (US WEEL)
	IDLH: Not Established

Listed on: - The EINECS inventory, or in compliance with the inventory.
- The TSCA inventory.
- The AICS inventory, or in compliance with the inventory.
- The DSL list.
- The ENCS inventory, or in compliance with the inventory.
- The KECI inventory, or in compliance with the inventory.
- The PICCS inventory, or in compliance with the inventory.
- The IECSC inventory, or in compliance with the inventory.
- The NZIoC inventory, or in compliance with the inventory.

CAS Number	Name	Common Names
1310-73-2	Sodium Hydroxide (NaOH)	Caustic Soda, Lye

Percentage	Exposure Limits
VOL. 1	PEL: 2 mg/m^3
WT. 1	TLV: 2 mg/m^3
	STEL: 2 mg/m^3
	IDLH: 10 mg/m^3

Listed on: - The TSCA Inventory, or in compliance with the inventory.
- PA Requirement - 3% or greater.
- NJ Requirement - 1% or greater
- This product has not been listed as carcinogenic by the following agencies: IARC, NTP, and OSHA

CAS Number	Name	Common Names
7647-14-5	Sodium Chloride (NaCl)	Salt

Percentage	Exposure Limits
VOL. >1	PEL: Not Established
WT. >1	TLV: Not Established
	STEL: Not Established
	IDLH: Not Established

CAS Number	Name	Common Names
497-19-8	Carbonic Acid Disodium Salt	

Percentage	Exposure Limits
VOL. >1	PEL: Not Established
WT. >1	TLV: Not Established
	STEL: Not Established
	IDLH: Not Established

SECTION 4 – FIRST AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have qualified person administer oxygen. If respiration stops, give mouth-to-mouth resuscitation. **SEEK MEDICAL ATTENTION IMMEDIATELY**.

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes. **SEEK MEDICAL ATTENTION IMMEDIATELY**.

Skin: Flush thoroughly with cool water under shower for at least 15 minutes while removing contaminated clothing and shoes. Discard non-rubber shoes. Wash clothing before reuse. Continue to flush until medical attention arrives. **SEEK MEDICAL ATTENTION IMMEDIATELY.**

Ingestion: Do not induce vomiting. Rinse mouth and give water or milk if the person is conscious. If vomiting occurs, keep airway clear and give more milk or water. **SEEK MEDICAL ATTENTION IMMEDIATELY**.

SECTION 5 – FIRE-FIGHTING MEASURES

Flash Point:	N/A
Auto-ignition Temperature:	N/A
Flammable Limits in Air - % by Volume - Upper:	N/A
Lower:	N/A
Sensitivity to Mechanical Impact:	Not Sensitive
Sensitivity to Static Discharge:	Not Sensitive

Extinguishing Media
Use water spray, foam, dry powder, or carbon dioxide or agents suitable for materials in surrounding fire. Do not use Mono Ammonium Phosphate (MAP) type extinguishers directly on this product.

Fire Fighting Procedures
Use self-contained breathing apparatus and full protective equipment. Acid contamination will produce very irritating fumes similar to chlorine.

Fire and Explosion Hazard
Sodium Hypochlorite or its solutions decompose when heated. Decomposition products may cause containers to rupture or explode. Vigorous reaction is possible with organic materials or oxidizing agents and may result in fire. May release toxic gases.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Steps to be Taken if Material is Released or Spilled
Do not allow spilled material to enter sewers or streams. Flush with water to dilute as much as possible and pump into polyethylene containers for disposal. Avoid heat and contamination with acid materials. Do not use combustible materials such as sawdust to absorb Sodium Hypochlorite Solution.

Ventilation Requirements
Provide good general room ventilation plus local exhaust at points of emission.

SECTION 7 – HANDLING AND STORAGE

Handling Precautions

Do not store adjacent to chemicals that may react if spillage occurs. Comply with DOT regulations when shipped. If closed containers become heated, vent to release decomposition products (mainly oxygen under normal decomposition). Do not mix or contaminate with ammonia, hydrocarbons, acids, alcohols or ethers.

Do Not Reuse Containers: Product residues may remain in containers. All labeled precautions must be observed. Dispose of container in a manner meeting government regulations.

SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

Specific Personal Protective Equipment

Respiratory: NIOSH/MSHA approved respirator with N95 (dust, fume, mist) cartridges may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Acid gas cartridges may be required if decomposition products are present. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

Eye: Wear chemical safety goggles plus full face shield to protect against splashing when appropriate.

Gloves: Wear impervious gloves such as rubber, neoprene or vinyl.

Other: Wear impervious protective clothing including rubber safety shoes. Eye wash facility and emergency shower should be in close proximity.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colorless to light yellow-green.

Odor: Pungent chlorine like odor.

Physical State: Liquid.

pH: 12 @ 100 g/L

Vapor Pressure:

Temperature ºF	mm Hg	PSIA
48.2	3.7	0.071
60.8	8.0	0.15
68.0	12.1	0.23
89.6	31.1	0.60
118.4	100.0	1.93

Boiling Point: (@760 mm Hg) Decomposes above 110 ºC (230 ºF)

Freezing/Melting Point:

Weight %	Freezing Point ºF
10	7 ºF
12	- 3 ºF
14	- 14 ºF

Solubility in Water: 100% (by weight)

Specific Gravity: 1.117 - 1.215 (H_2O = 1)

Odor Threshold (ppm): 0.9 ppm approximate

SECTION 10 – STABILITY AND REACTIVITY

Conditions Contributing to Instability
Strong Oxidizer, stability decreases with concentration, heat, light, decrease in pH and contamination by metals.

Incompatibility
Avoid contamination with heavy metals, reducing agents, organics, ether, ammonia, and acids.

Reacts With: Organics, ammonia and acids.

Hazardous Decomposition Products: Acid fumes, Hydrogen chloride and Chlorine.

Hazardous Polymerization: Material is not known to polymerize.

SECTION 11 – TOXICOLOGICAL INFORMATION

CAS Number	Name	Common Names
7681-52-9	Sodium Hypochlorite	Bleach

Acute Oral LD_{50}: (rat) 8,200 mg/kg
Primary Skin Irritation LD_{50}: (rabbit) >10,000 mg/kg

The toxicity and corrosivity of Sodium Hypochlorite is a function of concentration. Industrial grades of higher concentrations than household bleach are more toxic and corrosive.

SECTION 12 – ECOLOGICAL INFORMATION

Aquatic Ecotox Data

Fish:	LC_{50} (96 hr.)	Pimephales promelas (Fathead minnow)	1.40 mg/L
	EC_{50} (48 hr.)	Daphnia magna (water flea)	0.035 mg/L

Biodegradation: This material is inorganic and not subject to biodegradation.

Persistence: This material is believed not to persist in the environment.

Bioconcentration: This material is not expected to bioconcentrate in organisms.

This material is harmful to fish, invertebrates, amphibians, and plants.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Method

Reduce with agents such as bisulfites or ferrous salt solutions. Some heat will be produced. Keep on alkaline side and dilute with copious amounts of water. Main end product is salt water. Comply with all applicable government regulations.

Product Disposal

Product should be completely removed from containers. Material that cannot be used or chemically reprocessed should be disposed of in a manner meeting government regulations.
applicable governmental regulations.

SECTION 14 – TRANSPORT INFORMATION

DOT Proper Shipping Name:	Hypochlorite Solutions
DOT Hazard Class:	8
DOT ID Number:	UN1791
DOT Packing Group:	II
DOT Hazardous Substance:	RQ 100# (Sodium Hypochlorite)
DOT Marine Pollutant:	N/A
Additional Description:	N/A

SECTION 15 – REGULATORY INFORMATION

U.S. Federal Regulations

Section 311 of The Clean Water Act lists this product as a hazardous substance, which If discharged to water, may require immediate response to mitigate danger to public health and welfare. Spills of 100 pounds or more must be reported to the National Response Center at the following number: 1-800-424-8802

Material is contained on a composite list as required under 101 (14) of CERCLA.

Sodium Hypochlorite Solution is regulated by the USEPA under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) as a pesticide product.

Sodium Hypochlorite Solution produced by Kuehne Chemical Company Inc. is registered with the USEPA under Registration Number 35317-20001 and 35317-13.

OSHA: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200) (US).

TSCA (Toxic Substances Control Act): This product is not subject to export notification.

CERCLA and SARA/Title III:

Hazard Categories:
- Corrosive to Metal
- Oxidizer
- Acute Toxicity
- Respiratory or skin sensitization
- Serious eye damage or irritation
- Skin corrosion or irritation

This product is registered with the USEPA as a pesticide as required under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

Other Standards

NSF Certification: This product has been classified as an approved drinking water treatment chemical under ANSI/NSF Standard 60.

USDA Approvals: B-1, D-2, L-1, Q-4 & Fruit and Vegetable washing compounds.

SECTION 16 – OTHER INFORMATION

Prepared By: Kuehne Company's Health, Safety, Environmental & Security Department, Revision F – 6 June 2022
For additional non-emergency health, safety or environmental information, telephone: (973) 589 - 0700 or write to:

Kuehne Chemical Company, Inc.
86 N. Hackensack Avenue
South Kearny, New Jersey 07032-4673

SDS Legend:

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service Registry Number
CEILING	Ceiling Limit (15 Minutes)
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit (OSHA)
STEL	Short Term Exposure Limit (15 Minutes)
TLV	Threshold Limit Value (ACGIH)
TWA	Time Weighted Average (8 Hours)

IMPORTANT: The information contained herein is offered only as a guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations.

The information presented herein, while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge.
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This information is not intended to be all-inclusive as to the manner and conditions of handling and storage. Other factors may involve other or use additional safety or performance considerations. While our technical personnel will be happy to respond to questions regarding safe handling and use procedures, safe handling and use remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as a recommendation to infringe any existing patents or violate any federal, state or local laws, rules, regulations or ordinances.

No warranty of any kind is given or implied and Kuehne Chemical Company, Inc. will not be liable for any damages, losses, injuries or consequential damages that may result from the use of or reliance on any information contained herein.

This Safety Data Sheet (SDS) covers the following materials:

Sodium Hypochlorite - Liquid: 15% by volume – 12.5% by weight

REFERENCES:

American National Standard, Z400.1-1993
Chlorine Institute Pamphlet 96 (Sodium Hypochlorite Manual), Edition 5, September 2017
National Institute for Occupational Safety and Health, US Dept. of Health & Human Services, Cincinnati, June, 1994.
Supplier's Safety Data Sheets.
Windholz, Martha, Ed, The Merck Index, 11th ed., Merck and Co, Inc., Rahway, New Jersey, 1989.

WARNING LABEL INFORMATION

Active Ingredient: Sodium Hypochlorite (NaOCl) 11.87 – 15.63 % (by weight)
Other Ingredients 84.37 – 84.37 %

Total 100.0 %

KEEP OUT OF REACH OF CHILDREN

DANGER

Category 1

Symbol:

Signal Word: Danger

Hazard Statements: May be corrosive to metals
Causes severe skin burns and eye damage
Causes severe eye damage

FIRST AID

IF INHALED: Move to fresh air. If person is not breathing, call 911 or an ambulance then give artificial respiration, preferably month-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15 – 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue to rinse eye. Call a poison control center or doctor for treatment advice.

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 – 20 minutes. Call a poison control center or doctor for treatment advice.

IF SWALLOWED: Call a poison control center or doctor for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

HOT LINE NUMBER: 1-800-POISON-1

Have product container or label with you when calling a poison control center or doctor or going for treatment.

PRECAUTIONARY STATEMENTS
HAZARDOUS TO HUMANS AND DOMESTIC ANIMALS

DANGER: Corrosive. Causes irreversible eye and skin damage. Do not get in eyes, on skin or on clothing. Harmful if absorbed through the skin. Applicators or other handlers must wear coveralls over long sleeve shirt and long pants, socks and rubber boots, face shield or goggles and rubber gloves when handling this product. Wash thoroughly with soap and water after handling dad before eating, drinking, chewing gum, using tobacco or using the toilet. Avoid breathing vapors. Vacate poorly ventilated areas as soon as possible. Do not return until strong odors have dissipated. Remove and wash contaminated clothing before reuse.

Environmental Hazards: This pesticide is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or public waters unless this product is specifically identified and addressed in an NPDES permit. Do not discharge effluent containing this product to sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

Physical and Chemical Hazards: STRONG OXIDIZING AGENT. Mix only with water according to label directions. Mixing this product with chemicals (e.g. ammonia, acids, detergents, etc.) or organic matter (e.g. urine, feces, etc.) will release chlorine gas, which is irritating to eyes, lungs and mucous membranes.

DIRECTION FOR USE

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING.

Re-formulators and Re-packagers of this product must obtain their own registrations from the United States Environmental Protection Agency (USEPA).

For manufacturing use in the formation of end-use Products
NOTE: This product degrades with age. Use a Chlorine test kit and increase dosage as necessary, to obtain the required level of available Chlorine.

For specific use directions, see KUEHNE Circular for each particular application.

CIRCULAR NUMBER K586A: Sanitizers of hard non-porous surfaces (stainless steel tops)

CIRCULAR NUMBER K586B: Commercial laundry sanitizers

CIRCULAR NUMBER K586C: Agricultural uses

CIRCULAR NUMBER K586D: Disinfection of human drinking water

CIRCULAR NUMBER K586E: Disinfection of hard non-porous surfaces (sealed tile and fiberglass, glass, stainless steel)

CIRCULAR NUMBER K586F: Sewage, wastewater and effluent control

CIRCULAR NUMBER K586G: Cooling tower & evaporative condenser water systems

CIRCULAR NUMBER K586H: Sanitizer of porous food contact surfaces (wooden butcher blocks)

CIRCULAR NUMBER K586I: Sanitizer of porous non-food contact surfaces (tile walls, concrete floors)

CIRCULAR NUMBER K586J: Disinfectant of swimming pool water, spa/hot tubs, hydrotherapy pools)

STORAGE AND DISPOSAL

Store this product in a cool dry area away from direct sunlight and heat to prevent deterioration. In case of a spill, flood areas with large quantities of water. Product or rinsates that cannot be used should be diluted with water before disposal in a sanitary sewer. Do not contaminate food or feed by storage, disposal or cleaning of equipment.

Large storage containers should be rinsed thoroughly with water and returned to manufacturer for reconditioning. Large storage containers should be thoroughly rinsed with water before reuse.

IN CASE OF

FIRE: Use self-contained breathing apparatus and full protective equipment. Use water spray, foam, dry chemical or C02. Fire may liberate toxic gases.

SPILL OR LEAKAGE: Get protective equipment. Contain spill and pump into marked container for reclamation for disposal. Avoid discharges to sewers and streams. Spills of 100 pounds or more must be reported to the National Response Center at the following number:

1-800-424-8802

State and local regulations may have additional reporting requirements, check with the proper state and local authorities. Wear neoprene or rubber gloves.

IN CASE OF CHEMICAL EMERGENCIES CALL:
24 HOUR EMERGENCY PHONE (973) 589-0700