



Solve 11

Safety Data Sheet

Date Issued: 12/02/2014

Date Revised: 12/02/2014

1. **CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

Product Name: **Solve 11**

Use of Substance/Mixture: NaOH in solution

Company Identification: WaterSolve, LLC
5031 68th Street
Caledonia, Michigan 49316, USA

For Product Information: 616-575-8693

For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident

Call CHEMTREC Day or Night

Within USA and Canada: 1-800-424-9300

Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

2. **HAZARDS IDENTIFICATION**

WARNING! DANGER! POISON!

Emergency Overview: **CORROSIVE, CAUSES SEVERE BURNS TO SKIN, EYES, RESPIRATORY TRACT, AND GASTROINTESTINAL TRACT. MATERIAL IS EXTREMELY DESTRUCTIVE TO ALL BODY TISSUES. CAUSES PERMANENT EYE DAMAGE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED.**

Potential Health Effects

Inhalation: Severe irritant. Effects from inhalation of mist vary from mild irritation to serious damage of the upper respiratory tract, depending on the severity of exposure. Symptoms may include sneezing, sore throat and runny nose. Severe pneumonitis may occur.

Ingestion: Toxic! Corrosive to mucous membranes and may cause perforation of the esophagus and stomach. Abdominal pain, nausea, vomiting, general gastro intestinal upset can be expected.

Skin Contact: Corrosive! Damage may appear days after exposure. Swallowing may cause severe burns of mouth, throat and stomach. Severe scarring of tissue and death may occur. Symptoms may include bleeding, vomiting, diarrhea, fall in blood pressure.

Eye Contact: Corrosive! Irritant possibly corrosive to eye tissue. Causes irritation of eyes with tearing, redness, and impaired vision are symptoms. Greater exposure cause severe burns with possible blindness resulting.

3. **COMPOSITION/INFORMATION ON INGREDIENTS**

CAS #	Chemical Name	Percent by Weight
1310-73-2	Sodium Hydroxide	>50%
7732-18-5	Water	<50%

4. FIRST AID MEASURES

Inhalation: If a person breathes I chemical, remove exposed person promptly to fresh air. If breathing has stopped, clear the victim's airway and perform artificial respiration which may be supplemented by the use of a bag-mask respirator, or a manually-triggered, oxygen supply. Oxygen should be provided for a person having difficulty breathing (but only administered by an authorized individual) until the person is able to breathe easily by themselves. Keep the affected person warm and at rest. Get medical attention as soon as possible.

Ingestion: If swallowed, wash out mouth with water and give large amounts of water to drink. Do not induce vomiting immediately, but only by a qualified person. If vomiting occurs spontaneously, keep airway open. Give more water when vomiting stops. Get medical attention immediately. Never give anything by mouth to an unconscious person.

Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing and shoes before reuse. Get medical attention immediately.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

NOTE TO PHYSICIAN: Perform endoscopy in all cases of suspected sodium hydroxide ingestion. In cases of severe esophageal corrosion, the use of therapeutic doses of steroids should be considered. General supportive measures with continual monitoring of gas exchange, acid-base balance, electrolytes, and fluid intake are also required.

5. FIRE FIGHTING MEASURES

Fire: Not considered to be a fire hazard.

Explosion: May be a fire and explosion hazard when in contact with incompatible materials.

Suitable Extinguishing Media: Use any means suitable for extinguishing surrounding fire. Avoid direct contact of liquid with water because it will generate large amounts of heat and may cause splattering.

Special Protective Equipment:

In the event of fire firefighters, and others exposed, wear self-contained breathing apparatus and protective suit. Wear full firefighting protective clothing. Use NIOSH/MSHA approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode. Move containers out of fire area if you can do so without danger.

Specific methods:

Keep containers cool by spraying with water if exposed to fire. Prevent fire extinguishing water from contaminating surface water or the ground water system. Contain contaminated fire extinguishing water separately and do NOT discharge into drains.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

For personal protection see Section 8. Avoid contact with skin, eyes and clothing. Where exposure level is not known, wear NIOSH approved, positive pressure, self-contained respirator. Where exposure level is known, wear NIOSH approved respirator suitable for level of exposure.

Environmental precautions

Do not allow contact with soil, surface or ground water. Inform the responsible authorities in case of gas leakage, or of entry into waterways, soil or drains. Retain and dispose of contaminated wash water.

Methods For Cleaning Up

Ventilate area of leak or spill. Keep unnecessary and unprotected personnel from entering. Isolate hazard area. Wear appropriate personal protective equipment. Isolate and ventilate the area and prevent entry.

Contain and collect liquid in an appropriate container or absorb with an inert material. Do not flush to a sewer. Residues from spills can be diluted with water, neutralized with dilute acid such as acetic, hydrochloric or sulfuric. Do not use combustible materials, such as saw dust. Do not flush to a sewer. Wear appropriate personal protective equipment. Prevent exposure to the environment. US Regulation (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is 1-800 424-8802.

Additional advice

Contaminated surfaces will be extremely slippery. Sections 7 and 8 for proper handling and protective measures and Section 13 for proper waste disposal measures.

7. HANDLING AND STORAGE

Keep in a tightly closed container. Protect from physical damage. Store in cool, dry ventilated area away from sources of heat, moisture and incompatibilities. Store above 16C (60F) to prevent freezing. Always add the caustic to water while stirring, never the reverse. Do not store in aluminum containers or use aluminum fittings or transfer lines, as flammable gas may be generated. Containers of this material may be hazardous when empty since they retain product residues (dust, solids, vapor, liquid); observe all warnings and precautions listed for the product. Avoid breathing mist or vapors. Do not get on skin, eyes or on clothing. Wash thoroughly after handling. Transfer and fill area should have a safety shower and eye wash.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Limits : NIOSH Recommended Exposure Limit (REL): 2v mg/m³ Ceiling ACGIH Threshold Limit Value (TLV): 2 mg/m³ Ceiling

Ventilation System: A system of local and /or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, Industrial Ventilation, a Manual of Recommended Practices, most recent edition, for details. Personal Respirators (NIOSH Approved): if the exposure limit is exceeded and engineering controls are not feasible, a half face piece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-faced piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentrations specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerin, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin and body protection

Use impermeable gloves (butyl rubber, natural rubber, neoprene, nitrile, polyvinyl chloride (PVC), clothing, boots and equipment to prevent contact with this material. Consult your industrial hygienist.

Eye protection

Splash-proof goggles should be worn when there is danger of material dust or material splash from solution containing chemical. Protection against splash or mist from solution containing chemical with 8-inch minimum face shield is recommended. Eye protection should be worn in presence of solution containing chemical, at all times. Maintain eye wash fountain and quick-drench facilities in work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

General Information

Physical state: liquid
Appearance: clear to opaque solution
Odor: odorless

Important health safety and environmental information

pH: 14.0 (10%, 20%, 35% and 50% solution)
Melting point: For 10% solution= 105C (14F); for 20% solutions=115C (200F), for 35% solution=125C (234F); for 50% solution=140C (248F)
Boiling Point: For 10% solution= 105C (14F); for 35% solution=115C (239F); for 50% solution=140C (230-291F)
Auto-ignition Temperature: No information found
Flash point: Not applicable
Explosive properties:
Lower / upper limits: No applicable
Vapor Pressure: 13 @ 60C (140F) (50@ solution)
Density: For 10% solution=1.11; for 35% solution=1.34; for 50% solution=1.53
Specific Gravity: 1.11 -1.45 @ 15.6C
Evaporation Rate: Not applicable
Solubility in Water: Completely miscible in water 100%
Partition coefficient (n-octanol/water) Not applicable

10. **STABILITY AND REACTIVITY**

Chemical Stability: Stable under normal use, handling and storage.
Conditions to avoid: Heat, moisture, and incompatibles. Carbon monoxide gas may form upon contact with reducing sugars or food and beverage products in enclosed spaces.
Incompatible Materials: Sodium hydroxide in contact with acids and organics halogen compounds, especially trichloroethylene, may cause violent reactions. Contact with nitromethane and other similar nitro compounds cause formation of shock-sensitive salts. Contact with metals such as aluminum, magnesium, tin, and zinc cause formation of flammable hydrogen gas. Sodium hydroxide, even in fairly dilute solutions, react readily with various sugars to produce carbon monoxide. Precautions should be taken including monitoring the tank atmosphere for carbon monoxide to ensure safety of personnel before vessel entry.
Hazardous Decomposition: May emit Sodium oxides. Decomposition by reaction with certain metals releases flammable and explosive hydrogen gas.

11. **TOXICOLOGICAL INFORMATION**

TOXICITY DATA: ACUTE ORAL/DERMAL/INHALATION EFFECTS

Investigated as a mutagen
Skin irritation data (STD Draize, 500 mg/ 24hr.) : Rabbit, severe.
Eye irritation data (rabbit, non-std test, 50 mg 24 hr, rinse): severe

WARNING! DANGER! POISON!

Emergency Overview: CORROSIVE, CAUSES SEVERE BURNS TO SKIN, EYES, RESPIRATORY TRACT, AND GASTROINTESTINAL TRACT. MATERIAL IS EXTREMELY

DESTRUCTIVE TO ALL BODY TISSUES. CAUSES PERMANENT EYE DAMAGE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED.

Potential Health Effects

Inhalation: Severe irritant. Effects from inhalation of mist vary from mild irritation to serious damage of the upper respiratory tract, depending on the severity of exposure. Symptoms may include sneezing, sore throat and runny nose. Severe pneumonitis may occur.

Ingestion: Toxic! Corrosive to mucous membranes and may causes perforation of the esophagus and stomach. Abdominal pain, nausea, vomiting, general gastro intestinal upset can be expected.

Skin Contact: Corrosive! Damage may appear days after exposure. Swallowing may cause severe burns of mouth, throat and stomach. Severe scarring of tissue and death may occur. Symptoms may include bleeding, vomiting, diarrhea, fall in blood pressure.

Eye Contact: Corrosive! Irritant, possibly corrosive to eye tissue. Causes irritation of eyes with tearing, redness, and impaired vision are symptoms. Greater exposure cause severe burns with possible blindness resulting.

12. **ECOLOGICAL INFORMATION**

ENVIRONMENTAL FATE: No information found

ENVIRONMENTAL TOXICITY:

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

FATE AND TRANSPORT: This material is inorganic and not subjected 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 bioaccumulation.

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

13. **DISPOSAL CONSIDERATIONS**

Whatever cannot be saved for recovery or recycling should be managed I an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose container and unused contents in accordance with federal, state and local requirements.

14. **TRANSPORT INFORMATION**

US DOT (ground)

Proper shipping Name: Sodium Hydroxide, 50% Solution
Hazard Class: 8
UN/NA: UN1824
Packing Group: 11
Marine Pollutant: No
RQ Amount: 1000lb.

IMDG (water)

Proper shipping Name: Sodium Hydroxide, 50% Solution
Hazard Class: 8
UN/NA: UN1824
Packing Group: 11
Marine Pollutant: No
RQ Amount: 1000lb.

15. **REGULATORY INFORMATION**

NAME	CAS	TSCA	SARA 302	SARA 304	SARA 313	CERCLA
Sodium Hydroxide	1310-73-2	Yes	No	No	No	1000LBS.

California Proposition 65

Not listed

OTHER INFORMATION

The information provided in this Safety Data Sheet is accurate to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. Both the supplier and manufacturer make no representations and assume no liability for any direct, incidental or consequential damages resulting from its use. Both the supplier and manufacturer make no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This information is for the specific material described only and may not be valid if the material is used in combination with any other materials or in any process. The user is responsible to determine the completeness of the information and suitability for the user's own particular use. Users of any chemical should educate themselves on all aspects of its use by independent investigation of current scientific and medical knowledge that the material can be used safely. The buyer assumes all responsibility for using and handling the product in accordance with applicable federal, state and local regulations.

List of abbreviations and acronyms that could be, but not necessarily are, used in the safety data sheet:

- ACGIH: American Conference of Industrial Hygienists
- BEI: Biological Exposure Index
- CAS Chemical: Abstracts Service (Division of the American Chemical Society)
- CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act
- CMR: Carcinogenic, Mutagenic or Toxic for Reproduction
- DOT: Department of Transportation
- FG: Food grade
- FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act
- GHS: Globally Harmonized System of Classification and Labeling of Chemicals
- H-statement: Hazard Statement
- HMIRC: Hazardous Materials Information Review Commission
- HMIS: Hazardous Materials Identification System
- IATA: International Air Transport Association
- IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization
ICAO-TI (ICAO): Technical Instructions by the “International Civil Aviation Organization”
IMDG: International Maritime Code for Dangerous Goods
ISO: International Organization for Standardization
logPow: octanol-water partition coefficient
LCxx: Lethal Concentration, for xx percent of test population
LDxx: Lethal Dose, for xx percent of test population
ICxx: Inhibitory Concentration for xx of a substance
ECxx: Effective Concentration of xx
N.O.S.: Not otherwise specified
NFPA: National Fire Protection Association
NIOSH: National Institute for Occupational Safety and Health
OECD: Organization for Economic Co-operation and Development
OEL: Occupational Exposure Limit
OSHA: Occupational Safety and Health Administration
P-Statement: Precautionary Statement
PBT: Persistent, Bioaccumulative and Toxic
PMRA: Health Canada Pest Management Regulatory Agency
PPE: Personal Protective Equipment
RTK: Right to Know
SDS: Safety Data Sheet
STEL: Short-term exposure limit
STOT: Specific Target Organ Toxicity
TLV: Threshold Limit Value
TWA: Time-weighted average
VPVB: Very Persistent and Very Bioaccumulative
WEL: Workplace Exposure Level
WHMIS: Workplace Hazardous Materials Information System