

## Safety Data Sheet

### 1. Identification

**Product Identifier:** Brine

**Other Means of Identification:** Sea water, salt water, sodium chloride solution, saline, halite

**Product use:** Brine is produced when water is injected into underground salt formation for the construction of storage caverns for NGL (Natural Gas Liquids), condensates and various petroleum products.

Once operational, the petroleum products are pumped into the caverns for storage, displacing the brine to the surface when it is stored in brine ponds. The process is reversed when retrieving the petroleum products from the caverns: when products are withdrawn, the weight of the brine provides the pressure necessary to push the products out of the caverns.

**Restrictions on use:** Do not use for purposes other than that listed above

**Manufacturer:** Keyera and Affiliates


**Address:** Suite 200, The Ampersand, West Tower  
144 – 4<sup>th</sup> Avenue SW  
Calgary, Alberta, Canada T2P 3N4

**Main Phone Number :** 1(403) 205-8300/ 1(888) 699-4853 (Mon. - Fri. 8 AM - 5 PM)

**Transportation Emergencies Only :** CANUTEC (CAN) Ph:1-888-CAN-UTEC(226-8832) Cell\*666 (24 hr)  
CHEMTREC (US) Ph: 1-800-424-9300 (24 hr)

### 2. Hazards Identification

**GHS Hazards**

Pictogram	Classification	Hazard Statements
	Eye Damage/Irritation – Category 2A	Causes serious eye irritation.

**GHS Hazards**

**Other Hazards**

- None.

**Signal Word:** Warning

**Precautionary Statements:**

**Prevention**

- Wash hands thoroughly after handling.
- Wear eye protection/face protection.

**Response**

- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
- If eye irritation persists: Get medical advice/attention.

**Storage**

- None.

**Disposal**

- Dispose of contents/container in accordance with applicable local, provincial/state, and federal regulations.

**3. Composition/Information on Ingredients**

**Chemical Name:** Brine

**Common Name/Synonyms:** Sea water, salt water, sodium chloride solution, saline, halite

Ingredient Name	Weight %	CAS No.
Sodium chloride	10-12	7647-14-5
Methanol	10-15 wt ppm	67-56-1
Benzene	< 0.05 wt ppm	71-42-3
Toluene	< 0.002 wt ppm	108-88-3
C5-C10 hydrocarbons	< 0.1 wt ppm	
Water extractable hydrocarbons C11-C40	< 0.5 wt ppm	
Water	88-90	7732-18-5

**4. First Aid Measures**

**Immediate Medical Attention and Special Treatment:**

Treat symptomatically and supportively. Refer also to Table below.

<b>First Aid:</b>	
Inhalation:	Remove person to fresh air and keep comfortable for breathing. Call a doctor/physician if feeling unwell.
Skin:	Rinse skin with water/shower. If skin irritation occurs: get medical advice/attention.
Eyes:	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: get medical advice/attention.
Ingestion:	Not expected to be a route of exposure.  There is no specific treatment for salt toxicity: fresh water should be given, but in small quantities, to avoid exacerbating neurologic signs due to brain edema. In some cases dialysis may be necessary. Seek medical help immediately.

**Most Important Effects and Symptoms, Acute or Delayed:**

Acute effects include irritation of the mucous membranes.

Long-term over-exposure to sodium chloride through ingestion can result in high blood pressure and heart problems can result.

<b>Exposure Route</b>	<b>Health Effects</b>	<b>Symptoms of Exposure</b>
Inhalation:	Unlikely route of exposure, unless salt solidifies from the solution and becomes airborne dust. Nasal and throat irritation.	Sneezing, burning sensation, coughing, dryness, soar throat.
Skin:	Irritation of epidermal layer of skin. In severe cases: dermatitis.	Redness.
Eyes:	May cause irritation. May alter permeability of the cornea.	Redness, pain, irritation and a stinging sensation on contact.
Ingestion:	Unlikely route of exposure.  Ingestion of large quantities of salt may affect the body electrolyte balance (hypernatremia – elevated sodium in blood, hyperchloremia – elevated chloride in blood), the CNS and the orogastric mucosa.	From mild: irritation of the gastrointestinal tract, vomiting, diarrhea, abdominal discomfort to serious: respiratory distress, convulsions, seizures, and in extreme cases, death.

### 5. Fire Fighting Measures

<b>Flammability:</b> No	<b>Hazardous Combustion Products:</b> None. Product is non-flammable
<b>Explosion:</b> Sensitive to impact: No	<b>Sensitive to static discharge:</b> No
<b>Extinguishing Media:</b> Use appropriate media for extinguishing surrounding fire. This product is non-flammable.	
<b>Unsuitable Extinguishing Media:</b> <ul style="list-style-type: none"> <li>None.</li> </ul>	
<b>Special Protective Equipment for Firefighters:</b> <ul style="list-style-type: none"> <li>Wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face-piece, or any PPE as appropriate for surrounding fire. This product is non-flammable.</li> </ul>	
<b>Precautions for Firefighters:</b> <ul style="list-style-type: none"> <li>Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products.</li> </ul>	
<b>Unusual Fire and Explosion Hazards:</b> <ul style="list-style-type: none"> <li>None.</li> </ul>	

### 6. Accidental Release Measures

<b>Protective Equipment:</b>	
Gloves:	Recommended: neoprene, nitrile, leather. Not recommended: None.
Clothing:	Flame-retardant coverall e.g. Nomex, Proban.
Respirator:	Half or full mask with dust/mist cartridge (for sodium chloride in dry form)..
Eye:	Safety glasses with side shields, safety goggles or face shields.
<b>Precautions:</b> <ul style="list-style-type: none"> <li>Direct addition of water to spill will spread it or create splashes.</li> <li>Avoid contacting material with bare skin.</li> </ul>	
<b>Emergency Procedures:</b> <ul style="list-style-type: none"> <li>Isolate hazard area. Keep unnecessary and unprotected personnel from entering.</li> <li>Evacuate area of all unnecessary personnel. Small spill: remove liquid content or transfer to other containers or vessels. Large spill: isolate spill with booms or other barriers. Recover liquids if possible with pumps or vacuuming equipment.</li> <li>Emergency personnel must wear appropriate personal protective equipment.</li> </ul>	
<b>Containment and Clean-up:</b> <ul style="list-style-type: none"> <li>Contain and recover liquid if it can be done safely: Collect spillage with an inert material (e.g., vermiculite, dry sand, earth)</li> <li>Avoid using metal container unless it has an inner coating, as material is slowly corrosive to metal.</li> <li>Do not direct water at spill or source of leak. Avoid water runoff from spreading to sewers, streams/rivers etc.</li> <li>After liquid recovery the area can be washed/rinsed with water.</li> </ul>	

## 7. Handling and Storage

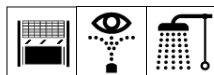
<p><b>Handling Precautions :</b></p> <ul style="list-style-type: none"> <li>Wear protective gloves/ protective clothing/ eye protection/ face protection when handling brine.</li> <li>Wash hands thoroughly after handling.</li> </ul>
<p><b>Storage Precautions:</b></p> <p><u>Locations</u></p> <ul style="list-style-type: none"> <li>Storage area should be clearly identified and have controlled access.</li> </ul> <p><u>Containers</u></p> <ul style="list-style-type: none"> <li>Keep container tightly closed.</li> <li>Avoid using metal containers for long term storage as material is slowly corrosive to metal.</li> </ul> <p><u>Other precautions</u></p> <ul style="list-style-type: none"> <li>Separate from incompatibles like halogenated compounds.</li> </ul>

## 8. Exposure Controls / Personal Protection

**EXPOSURE LIMITS**


	Authority	15 MINS STEL or Ceiling	8-HOURS
Sodium chloride (CAS 7647-14-5)	Alberta Ontario, BC	There are no limits established for exposure to sodium chloride/brine in the workplace in Canada & U.S.	

**ENGINEERING CONTROLS**



- Ventilate area where product is used.
- Exhaust/ventilate to the outside.
- Adequate make-up air must be provided.

**PERSONAL PROTECTIVE EQUIPMENT**

- |             |   |   |
|-------------|---|---|
| Gloves:     | Recommended: neoprene, nitrile, leather;<br>Not recommended: None.            |  |
| Clothing:   | Flame-retardant coverall e.g. Nomex, Proban.                                  |   |
| Respirator: | Half or full mask with dust/mist cartridge (for sodium chloride in dry form). |   |
| Eye:        | Safety glasses with side shields, safety goggles or face shields.             |   |

### 9. Physical and Chemical Properties

<b>Chemical Formula:</b> NaCl (sodium chloride)		<b>Molecular Weight:</b> 58.44 (sodium chloride)		<b>Chemical Family:</b> Halite, salt	
<b>Appearance:</b> Colorless liquid.		<b>Odor:</b> Odorless		<b>Odor Threshold:</b> Not available	
<b>pH:</b> ~6.5-8.5		<b>Melting/Freezing Point:</b> -6.6°C (20.2°F)		<b>Evaporation Rate:</b> Not available	
<b>Flashpoint and Method:</b> > 100°C (Closed Cup)		<b>Flammability:</b> No		<b>Boiling Point:</b> 100-102°C 212-215.6°F)	
<b>Upper-Lower Explosive Limit:</b> None		<b>Vapor Pressure/ Vapor Density:</b> Not available		<b>Boiling Range:</b> Not available	
<b>Soluble in water (@20°C):</b> ~100%		<b>Critical Temp &amp; Pressure</b> Not available		<b>Specific Gravity, Liquid (water = 1)</b> ~1.074 (15.5°C/60°F)	
<b>Partition Coefficient n-octanol/water:</b> Not available		<b>Auto-Ignition Temperature:</b> Not available		<b>Percent Volatile:</b> ~0	
<b>Viscosity:</b> Not available		<b>Solubility:</b> 31.6 g/100 mL @0°C (32 °F): solubility of sodium chloride in water		<b>Isobaric Heat Capacity:</b> Not available	

### 10. Stability and Reactivity

<p><b>Reactivity:</b> Sodium chloride is considered stable and does not partake in violent reactions. Electrolysis of sodium chloride in presence of nitrogenous compounds to produce chlorine may lead to formation of explosive nitrogen trichloride. Releases violently flammable sodium when reacting with burning lithium.</p>
<p><b>Chemical Stability:</b></p> <ul style="list-style-type: none"> <li>Stable under normal temperatures and pressures.</li> </ul>
<p><b>Possibility of Hazardous Reactions:</b> Polymerization has not been reported to occur under normal temperature and pressure conditions.</p>
<p><b>Conditions to Avoid:</b> None.</p>
<p><b>Incompatible Materials:</b></p> <ul style="list-style-type: none"> <li>Metals: sodium chloride may cause corrosion to metals</li> <li>Halogenated compounds: may react violently with bromine trifluoride may form explosive reaction &gt;118C with dichloromaleic anhydride + urea</li> <li>Releases gaseous hydrogen chloride if mixed with a concentrated nonvolatile acid such as sulfuric acid.</li> </ul>
<p><b>Hazardous Decomposition Products:</b></p> <ul style="list-style-type: none"> <li>No decomposition if stored and applied as directed.</li> <li>When heated to decomposition may emit toxic fumes containing chlorinated compounds and sodium monoxide.</li> </ul>

### 11. Toxicological Information

Exposure Route	Acute Health Effects	Symptoms of Exposure
<b>Inhalation:</b>	Unlikely route of exposure, unless salt solidifies from the solution and becomes airborne dust. Nasal and throat irritation.	Sneezing, burning sensation, coughing, dryness, soar throat.
<b>Skin:</b>	Irritation of epidermal layer of skin. In severe case: dermatitis	Redness.
<b>Eye:</b>	May cause irritation. May alter permeability of the cornea.	Stinging sensation on contact with eyes. Redness, pain, irritation and a stinging sensation on contact
<b>Ingestion:</b>	Not expected to be a route of exposure.  Ingestion of large quantities of salt may affect the body electrolyte balance (hypernatremia – elevated sodium in blood, hyperchloremia – elevated chloride in blood), the CNS and the orogastric mucosa.  The estimated fatal dose of sodium chloride for human is ~0.75-3.00 g/kg (of body weight).	From mild: irritation of the gastrointestinal tract, vomiting, diarrhea, abdominal discomfort to serious: respiratory distress, convulsions, seizures, and in extreme cases, death.

Chronic Exposure:		
<b>Inhalation:</b> Not known.	<b>Skin:</b> Not known to be a skin-sensitizer.	<b>Eye:</b> Repeated and prolonged contact with irritants may cause conjunctivitis.
<b>Ingestion:</b> Diets high in sodium chloride may cause elevated blood pressure, especially in predisposed individuals Reproductive effects have been reported in animals.		

<b>Sensitization:</b> No	<b>Reproductive Toxicology:</b> No	<b>Teratogenicity:</b> No	<b>Mutagenicity:</b> No	<b>Irritancy:</b> Yes - eye
<b>Carcinogenicity:</b> No	<b>Target Organs:</b> No data available.	<b>Medical Conditions Aggravated by Exposure:</b> Not known.		

**Lethality Tests:**

Chemical Name	CAS No.	LD50	LC50
Sodium chloride	7647-14-5	Oral, rat: 3g/kg	LC50 96 h Lepomis macrochirus 5560 - 6080 mg/L [flow-through]; LC50 96 h Lepomis macrochirus 12946 mg/L [static]; LC50 96 h Pimephales promelas 6020 - 7070 mg/L [static]; LC50 96 h Pimephales promelas 7050 mg/L [semi-static]; LC50 96 h Pimephales promelas 6420 - 6700 mg/L [static]; LC50 96 h Oncorhynchus mykiss 4747 - 7824 mg/L [flow-through]
			Inhalation, rat: >42g/m3, 1 hr

**12. Ecological Information**

<b>Persistence &amp; Degradability:</b> Not expected to persist in the environment.	<b>Bioaccumulative Potential:</b> No.
<b>Mobility:</b> No data available.	<b>Other Adverse Effects:</b> See below.

**Terrestrial Fate:**

- Not expected to bioaccumulate.
- Brine spilled into soil may gradually enter into the groundwater system with rain and snowfall.
- Soil bacteria and earth worms are sensitive to sodium chloride. High concentrations of sodium chloride in the soil inhibits and is toxic to earth worms.
- Electrolyte-related effects impact on soil structural stability, soil dispersion, soil permeability, soil swelling and crusting, soil electrical conductivity and soil osmotic potential. Surface waters downslope from salt-affected soils are also affected by briny seepage water or briny runoff with salt dispersed sediments. All of this has, in turn, abiotic and biotic impacts on the local environment

**Aquatic Fate:**

- Spills/releases will mix-in with the water.
- Water bodies most sensitive to the releases of road salts are low-dilution environments, such as small urban lakes and ponds with long residence times

**Atmospheric Fate:**

- Not applicable. Brine is not volatile and does not enter into atmospheric reactions.

**Eco Toxicity Tests:**

Not available.

Chemical Name	CAS No.	EC50/LC50
Sodium chloride	7647-14-5	Invertebrate: EC50 48 h Daphnia magna 1000 mg/L IUCLID; EC50 48 h Daphnia magna 340.7 - 469.2 mg/L [Static] EPA  LC50 96 h Lepomis macrochirus: 5560 - 6080 mg/L [flow-through];  LC50 96 h Lepomis macrochirus: 12946 mg/L [static]; 96 Hr LC50 Pimephales promelas: 6020 - 7070 mg/L [static];  LC50 96 h Pimephales promelas: 7050 mg/L [semi-static];  LC50 96 h Pimephales promelas: 6420 - 6700 mg/L [static];  LC50 96 h Oncorhynchus mykiss: 4747 - 7824 mg/L [flow-through]



**13. Disposal Considerations**

**Waste Disposal:**

- Dispose of waste material at an approved waste treatment/disposal facility in accordance with applicable local, provincial, and federal regulations.

**14. Transport Information**

**TDG (CANADA) CLASSIFICATION**

Non-regulated.

**MARINE POLLUTANT:** No.

**15. Regulatory Information**

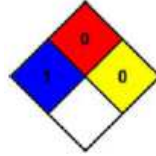
**CANADA**

	DSL*	NPRI*	E2*	Canada CEPA 2009 GHG & Alberta Specified Gas Reporting Reg.
Sodium chloride (CAS# 7647-14-5)	yes	no	no	no

\* Environmental Emergency (see glossary in Section 16).

**16. Other Information**

**NFPA Hazard Rating:**  
Health 1, Flammability 0, Instability 0



Prepared for: Keyera Health and Safety  
Issue Date/ Revision No: August 17, 2021/ Revision #1

<b>Revisions:</b>	<b>Dates:</b>	<b>Main Changes:</b>
• Original:	March 1, 2017	None
• 1 <sup>st</sup> revision	August 17, 2021	Address change & contact numbers

**Glossary**

- ACGIH** – American Conference of Governmental Industrial Hygiene
- DOT** – US Department of Transportation
- DSL** – Domestic Substance List (Canada)
- E2** – Environmental Emergencies (Canada)
- GHS** – Globally Harmonized System
- IARC** – International Agency for Research on Cancer
- IDLH** – Immediately Dangerous to Life and Health
- NIOSH** – National Institute for Occupational Safety & Health
- NPRI** – National Pollutant Release Inventory (Canada)
- NTP** – National Toxicology Program
- OSHA** – Occupational Safety & Health Administration of the US Depart of Labour
- PEL** – Permissible Exposure Limit
- SARA** – Superfund Amendments and Reauthorization Act of 1986
- STEL** – Short Term Exposure Limit
- TRI** – US Toxic Release Inventory
- TSCA** – Toxic Substance Control Act
- TWA** – Time Weighed Average

**Disclaimer of Expressed and Implied Warranties**

The information presented in the Safety Data Sheet is based on data believed to be accurate as of the date this Safety Data Sheet was prepared. However, neither Keyera nor its affiliates assumes any liability whatsoever for the accuracy or completeness of the information contained herein. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use.

~ End of Safety Data Sheet ~