

Material Safety Data Sheet

Material Name: **Brine Solution**

MSDS ID: NOVA-0087

Section 1 - Product and Company Identification

Synonyms: Salt water, Brine recycle stream, Sodium chloride solution**Chemical Name:** Brine solution**Chemical Family:** Mixture**Material Use:** Operation of underground storage caverns and for salt manufacturing**Chemical Formula:** Na⁺ (aq) Cl⁻ (aq); sodium chloride in solution**NOVA Chemicals**

P.O. Box 2518, Station M

Calgary, Alberta, Canada T2P 5C6

Product Information: 1-412-490-4063**MSDS Information Email:**msdsemail@novachem.com**EMERGENCY Telephone Numbers:****North America (Canada and US):**

1-800-561-6682, 1-403-314-8767 (NOVA Chemicals) (24 hours)

1-800-424-9300 (CHEMTREC-USA) (24 hours)

1-613-996-6666 (Canutec-Canada) (24 hours)

Mexico and South America: +44 (0) 1235 239 670 (NCEC) (24 hours)

Section 2 - Hazards Identification

HMIS Ratings: Health: 1 Fire: 0 Physical Hazard: 0*Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard***NFPA Ratings: Health: 0 Fire: 0 Reactivity: 0***Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe***Emergency Overview**

CAUTION! Product is a clear to cloudy white liquid with no odour. This product may be irritating to the eyes, skin, and respiratory system.

Potential Health Effects: Eye

This product may cause eye irritation. Symptoms may include itching, reddening, excess tearing and swelling.

Potential Health Effects: Skin

This product may cause drying, irritation and possible dermatitis.

Potential Health Effects: Ingestion

Ingestion of very large quantities may cause nausea, vomiting, dehydration, diarrhoea, oedema, and possible death. Prolonged over consumption may result in high blood pressure and heart problems.

Potential Health Effects: Inhalation

This product may cause irritation to the respiratory system.

Section 3 - Composition/Information on Ingredients

CAS No.	Component	Percent by Wt.
7732-18-5	Water	74-82
7647-14-5	Sodium chloride	18-26

Additional Information

This product is hazardous under 29 CFR 1910.1200 (Hazard Communication).

This material is a controlled product under Canadian WHMIS regulations.

This material is not regulated as a hazardous material / dangerous goods for transportation.

See Section 8 for applicable exposure limits. See Section 11 for applicable toxicity data.

Section 4 - First Aid Measures

First Aid: Eyes

Remove contact lenses, if it can be done safely. Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical attention if symptoms develop or persist.

First Aid: Skin

Remove contaminated clothing and shoes. Wash immediately with soap and water. Seek medical attention if symptoms develop or persist.

Material Safety Data Sheet

Material Name: **Brine Solution**

MSDS ID: NOVA-0087

First Aid: Inhalation

Move affected individual to non-contaminated air. Loosen tight clothing such as a collar, tie, belt or waistband to facilitate breathing. Seek immediate medical attention if the individual is not breathing, is unconscious or if any other symptoms persist.

First Aid: Ingestion

DO NOT INDUCE VOMITING. Loosen tight clothing such as a collar, tie, belt or waistband. Seek immediate medical attention.

First Aid: Notes to Physician

Treat symptomatically. Treatment for overexposure should be directed at controlling the symptoms and clinical condition of the patient. Unless symptoms reappear, no further treatment is required. For more detailed medical emergency support information call 1-800-561-6682 or 1-403-314-8767 (24 hours, NOVA Chemicals Emergency Response).

Section 5 - Fire Fighting Measures

See Section 9: Physical Properties for flammability limits, flash point and auto-ignition information.

General Fire Hazards

Not a fire hazard. Does not burn.

Explosion Hazards

Not an explosion hazard.

Hazardous Combustion Products

None. Does not burn.

Extinguishing Media

Does not burn. Use extinguishing media suitable to surrounding fire conditions; e.g. dry chemical, foam, carbon dioxide, water fog or water spray.

Fire Fighting Equipment/Instructions

Firefighters should wear personal protective equipment suitable for the fire conditions and the materials burning.

Section 6 - Accidental Release Measures

Evacuation Procedures

Isolate area. Keep unnecessary personnel away.

Small Spills

Stop or reduce discharge if safe to do so. Prevent entry into water intakes and waterways. Remove liquid material with approved pumps or vacuum equipment.

Large Spills

Stop or reduce leak. Isolate, contain, and attempt to recover. Prevent entry into water intakes and waterways. Remove liquid material with approved pumps or vacuum equipment. Spill area may be washed down with water, with wash waters collected for testing and proper disposal.

Special Procedures

Contact local police/emergency services and appropriate emergency telephone numbers provided in Section 1. Ensure that statutory and regulatory reporting requirements in the applicable jurisdiction are met. Wear appropriate protective equipment and clothing during cleanup. Individuals without appropriate protective equipment should be excluded from area of spill until cleanup has been completed.

See Section 8 for recommended Personal Protective Equipment and see Section 13 for waste disposal considerations.

Section 7 - Handling and Storage

Handling Procedures

Material is slowly corrosive to metal. Handle in properly designed and approved equipment systems. Periodically inspect pipelines and other equipment for integrity and corrosion. Do not ingest or inhale. If ingested, seek medical advice immediately. Avoid contact with skin and eyes. Keep away from incompatible materials. After handling, always wash hands thoroughly with soap and water.

Material Safety Data Sheet

Material Name: **Brine Solution**

MSDS ID: NOVA-0087

Storage Procedures

Storage area should be clearly identified, well-illuminated, clear of obstruction and accessible only to trained and authorized personnel. Adequate security must be provided so that unauthorized personnel do not have access to the product. Storage ponds and tank areas should be periodically inspected and kept separate from fresh water supply or outlets.

See Section 8: Exposure Controls/Personal Protection for appropriate Personal Protective Equipment. See Section 10 for information on Incompatibilities.

Section 8 - Exposure Controls / Personal Protection

Exposure Guidelines

A: General Product Information

Keep formation of airborne dusts or mists to a minimum. Ensure that eyewash stations and safety showers are in close proximity to the work locations.

B: Component Exposure Limits

ACGIH, OSHA, NIOSH, EPA, Alberta and Ontario have not developed exposure limits for any of this product's components. Other exposure limits may apply, check with proper authorities.

There are no occupational exposure limits that apply to this product.

ENGINEERING CONTROLS

Provide adequate ventilation to maintain worker exposure below levels that are irritating to the eyes or skin. Administrative (procedure) controls and use of personal protective equipment may also be required.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Chemical goggles are recommended. If splashing is possible use chemical goggles and a full-face shield. Carefully rinse off contaminated goggles before removing.

Personal Protective Equipment: Skin/Hands/Feet

Use chemically resistant gloves when handling product. Wear chemical-resistant safety footwear with good traction to prevent slipping. Work clothing that sufficiently prevents skin contact should be worn, such as coveralls and/or long sleeves and pants. If splashing or contact with liquid material is possible, consider the need for an impervious overcoat.

Personal Protective Equipment: Respiratory

If engineering controls and ventilation are not sufficient to prevent buildup of aerosols or vapours, appropriate NIOSH approved respiratory protection should be used.

Personal Protective Equipment: General

Personal protective equipment (PPE) should not be considered a long-term solution to exposure control. Employer programs to properly select, fit, maintain, and train employees to use equipment must accompany PPE. Consult a competent industrial hygiene resource, the PPE manufacturer's recommendation, and/or applicable regulations to determine hazard potential and ensure adequate protection.

Section 9 - Physical & Chemical Properties

Physical State and Appearance:	Clear/Cloudy Liquid	Colour:	Clear to white
Odour	Odourless	pH:	6.5 to 8.5
Vapour Pressure:	Not applicable	Vapour Density at 0°C (Air=1):	Not applicable
Boiling Point:	>100°C (>212°F)	Freezing Point:	-10°C (14°F)
Solubility (H2O):	Miscible (water-based solution)	Specific Gravity (Water=1):	1.2 at 15°C (60°F)
Auto Ignition:	Not applicable	Flash Point:	Not applicable
Flash Point Method:	Not applicable	Upper Flammable Limit (UFL):	Not applicable
Lower Flammable Limit (LFL):	Not applicable	Flammability Classification:	Non-flammable

Section 10 - Stability & Reactivity Information

Chemical Stability

This product is a stable material.

Chemical Stability: Conditions to Avoid

None identified.

Material Safety Data Sheet

Material Name: **Brine Solution**

MSDS ID: NOVA-0087

Incompatibility

In presence of air, liquid contact or mists will slowly corrode most metals.

Possibility of Hazardous Reactions or Hazardous Polymerization

Hazardous polymerization will not occur.

Corrosivity

Considered to be corrosive to most metals upon prolonged contact.

Hazardous Decomposition

None identified. Does not burn.

Section 11 - Toxicological Information

A: Acute Toxicity - General Product Information

This product has not been tested.

B: Acute Toxicity - LD50/LC50

Water (7732-18-5)

Oral LD50 Rat: >90 mL/kg

Sodium chloride (7647-14-5)

Inhalation LC50 Rat: >42 g/m³/1H; Oral LD50 Rat: 3 g/kg; Dermal LD50 Rabbit: >10 g/kg

C: Chronic Toxicity - General Product Information

This product has not been tested.

D. Chronic Toxicity - Carcinogenic Effects

None of this product's components are listed by ACGIH, EPA, IARC, OSHA, NIOSH, or NTP as a carcinogen.

Section 12 - Ecological Information

Ecotoxicity

A: General Product Information

This product has not been tested. A concentrated brine solution (~26% sodium chloride) will dehydrate animal and vegetative species. Sodium chloride is practically non-toxic to aquatic organisms.

B: Component Analysis - Ecotoxicity – Aquatic/Terrestrial Toxicity

Sodium chloride (7647-14-5)

Test and Species

96 Hr LC50 Lepomis macrochirus
96 Hr LC50 Lepomis macrochirus
96 Hr LC50 Pimephales promelas
96 Hr LC50 Pimephales promelas
96 Hr LC50 Pimephales promelas
96 Hr LC50 Oncorhynchus mykiss
48 Hr EC50 Daphnia magna
48 Hr EC50 Daphnia magna

Results and Conditions

5560-6080 mg/L [flow-through]
12,946 mg/L [static]
6020-7070 mg/L [static]
7050 mg/L [semi-static]
6420-6700 mg/L [static]
4747-7824 mg/L [flow-through]
1000 mg/L
340.7 - 469.2 mg/L [static]

Environmental Fate/Mobility

This product has not been tested. Brine does not partition to air. When spilled into a body of water, the brine will disperse in and mix with the water. A large brine spill into a body of water could result in stratification with the water floating on top of the brine. Eventually the two will mix. When spilled onto soil, brine will behave similar to spilled water. Sodium chloride may leach from soil into groundwater.

Persistence/Degradability

This product has not been tested. Brine (sodium chloride) is not biodegradable.

Bioaccumulation/Accumulation

This product has not been tested.

Material Safety Data Sheet

Material Name: **Brine Solution**

MSDS ID: NOVA-0087

Section 13 - Disposal Considerations

U.S./Canadian Waste Information

A: General Product Information

This product is not expected to be a hazardous waste according to US regulations. This product may meet the definition of a hazardous waste according to Canadian regulations. The use, mixing or processing of this product may alter its properties or hazards. Contact federal, provincial/state and local authorities in order to generate or ship a waste material associated with this product to ensure materials are handled appropriately and meet all criteria for disposal of hazardous waste.

See Section 7: Handling and Storage and Section 8: Exposure Controls/Personal Protection for additional information that may be applicable for safe handling and the protection of employees.

B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

Section 14 - Transportation Information

US DOT Information

Shipping Name: NOT REGULATED as a Hazardous Material for Transportation.

Canadian TDG Information

Shipping Name: NOT REGULATED as a Dangerous Good for Transportation.

International Air Transport Association (IATA) and International Civil Aviation Organization (ICAO) Information

Shipping Name: NOT REGULATED as a Dangerous Good for Transportation.

International Maritime Dangerous Goods (IMDG) Code

Shipping Name: NOT REGULATED as a Dangerous Good for Transportation.

Section 15 - Regulatory Information

A: International Regulations

Component Analysis - International Inventory Status

Component	CAS No.	US - TSCA	EU - EINECS	CANADA - DSL
Water	7732-18-5	Yes	Yes	Yes
Sodium chloride	7647-14-5	Yes	Yes	Yes

B: USA Federal & State Regulations

Ongoing occupational hygiene, medical surveillance programs, site emission or spill reporting may be required by federal or state regulations. Check for applicable regulations.

USA OSHA Hazard Communication Class

This product is hazardous under 29 CFR 1910.1200 (Hazard Communication). HCS Classes:
HCS CLASS: Irritating substance.

USA Right-to-Know - Federal

None of this products components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

USA Right-to-Know - State

None of this product's components are listed on the state lists from NJ or PA. Some components (including those present only in trace quantities, and therefore not listed in this document) may be included on the Right-To-Know lists of other U.S. states. The reader is therefore cautioned to contact his or her NOVA Chemicals' representative or NOVA Chemicals' Product Integrity group for further U.S. State Right-To-Know information.

C: Canadian Regulations - Federal and Provincial

Canadian Environmental Protection Act (CEPA): This product is a mixture of naturally-occurring substances. All components are on the Domestic Substances List (DSL), and are acceptable for use under the provisions of CEPA.

WHMIS Ingredient Disclosure List (IDL)

No components are listed under the Canadian Hazardous Products Act - Ingredient Disclosure List (IDL).

Material Safety Data Sheet

Material Name: **Brine Solution**

MSDS ID: NOVA-0087

WHMIS Classification

Workplace Hazardous Materials Information System (WHMIS): This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and the MSDS contains all the information required by the CPR.

WHMIS CLASS D2B: Toxic (Skin/eye irritant)

Other Regulations

Ongoing occupational hygiene, medical surveillance programs, site emission or spill reporting may be required by federal or provincial regulations. Check for applicable regulations.

Section 16 - Other Information

Label Information

CAUTION! Product is a clear to cloudy white liquid with no odour. This product may be irritating to the eyes, skin, and respiratory system.

FIRST AID:

SKIN: Remove contaminated clothing and shoes. Wash immediately with soap and water. Seek medical attention if symptoms develop or persist.

EYES: Remove contact lenses, if it can be done safely. Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical if symptoms develop or persist.

INHALATION: Move affected individual to non-contaminated air. Loosen tight clothing such as a collar, tie, belt or waistband to facilitate breathing. Seek immediate medical attention if the individual is not breathing, is unconscious or if any other symptoms persist.

INGESTION: DO NOT INDUCE VOMITING. Loosen tight clothing such as a collar, tie, belt or waistband. Seek immediate medical attention.

IN CASE OF LARGE SPILL: Stop or reduce leak. Isolate, contain, and attempt to recover. Prevent entry into water intakes and waterways. Remove liquid material with approved pumps or vacuum equipment. Spill area may be washed down with water, with wash waters collected for testing and proper disposal.

References

Available on request

Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists; CAS = Chemical Abstracts Service; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CPR = Controlled Products Regulations; DOT = Department of Transportation; DSL = Domestic Substances List; EINECS = European Inventory of Existing Commercial Substances; EPA = Environmental Protection Agency; EU = European Union; FDA = Food and Drug Administration; HMIS = Hazardous Materials Information System; IARC = International Agency for Research on Cancer; IDL = Ingredient Disclosure List; IDLH = Immediately Dangerous to Life or Health; Kow = Octanol/water partition coefficient; LEL = Lower Explosive Limit; NFPA = National Fire Protection Association; NIOSH = National Institute for Occupational Safety and Health; NJTSR = New Jersey Trade Secret Registry; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; RCRA = Resource Conservation and Recovery Act; SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit; TDG = Transportation of Dangerous Goods; TSCA = Toxic Substances Control Act; TWA = Time Weighted Average

MSDS Prepared By: NOVA Chemicals

MSDS Information Phone Number: 1-412-490-4063

Other Information

Notice to Reader:

ALTHOUGH THE INFORMATION CONTAINED IN THIS DOCUMENT IS PRESENTED IN GOOD FAITH, BASED ON AVAILABLE INFORMATION BELIEVED TO BE RELIABLE AT THE TIME OF PREPARATION OF THIS DOCUMENT, **NOVA CHEMICALS MAKES NO WARRANTIES OR REPRESENTATIONS WITH RESPECT TO THE INFORMATION OR THE PRODUCT/MATERIALS DESCRIBED HEREIN, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES AND CONDITIONS (INCLUDING ALL WARRANTIES AND CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE). NO FREEDOM FROM INFRINGEMENT OF ANY PATENT OWNED BY NOVA CHEMICALS OR OTHERS IS TO BE INFERRED. THIS INFORMATION IS SUBJECT TO CHANGE WITHOUT NOTICE. PLEASE CONTACT NOVA CHEMICALS FOR THE MOST CURRENT VERSION OF THIS MSDS. NOVA CHEMICALS DOES NOT ASSUME RESPONSIBILITY FOR MSDS OBTAINED FROM THIRD PARTY SOURCES.**

UNLESS SPECIFICALLY AGREED OTHERWISE, NOVA CHEMICALS DOES NOT TAKE RESPONSIBILITY FOR USE, TRANSPORTATION, STORAGE, HANDLING OR DISPOSAL OF THE PRODUCTS DESCRIBED HEREIN.

 **NOVA Chemicals**[®] is a registered trademark of NOVA Brands Ltd.; authorized use/ utilisation autorisée.

This is the end of MSDS # NOVA-0087.