

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEMICAL PRODUCT INFORMATION

Product Name : SANURIL® Chlorinating Tablets
 US EPA Registration # : 48482-2
 CAS # : 7778-54-3
 Chemical Name : Calcium Hypochlorite
 Chemical Formula : Ca(ClO)₂
 Synonym : Calcium Hypochlorite Tablets, Cal Hypo Tablets
 Product Use : Disinfecting agent for water and wastewater
 Original Issue Date : April 18, 1990
 Previous Revision Date : December 3, 2014
 Revision Date : September 18, 2015

MANUFACTURER INFORMATION

Company Name : De Nora Water Technologies Corporation
 Street Address : 1110 Industrial Boulevard
 City, State, Zip, Country : Sugar Land, Texas 77478, USA
 Office Phone Number : 1-281-240-6770 Toll Free: 1-800-621-9189

24-HR EMERGENCY TELEPHONE NUMBER

CHEMTREC : US: 1-800-424-9300 International: 1-703-527-3887

HMIS Classification
NFPA Classification

LEGEND – HMIS/NFPA	
Severe Hazards or Risks	4
Serious Hazards or Risks	3
Moderate Hazards or Risks	2
Slight Hazards or Risk	1
Minimal Hazards or Risks	0

Health	/	3
Flammability		0
Physical Hazard		2
Personal Protection		B



Health	3
Flammability	0
Reactivity	2
Specific Hazards	Oxidizer

SECTION 2: HAZARD(S) IDENTIFICATION
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Classification of the Substance or Mixture

UN GHS & Canada WHMIS 2015 : Oxidizing Solids (Category 2)
 Acute Toxicity, Oral (Category 4)
 Skin Corrosion, Corrosive (Category 1B)
 Serious Eye Damage (Category 1)
 Specific Target Organ Toxicity Single Exposure (Category 3):
 Respiratory Tract Irritation
 Hazardous to the aquatic environment: Acute hazard (Category 1)
 Hazardous to the aquatic environment: Chronic hazard (Category 1)

United States: OSHA 29 CFR 1910.1200 HCS : Oxidizing Solids (Category 2)
 Acute Toxicity, Oral (Category 4)
 Skin Corrosion, Corrosive (Category 1B)
 Serious Eye Damage (Category 1)
 Specific Target Organ Toxicity Single Exposure (Category 3):
 Respiratory Tract Irritation

SECTION 2: HAZARD(S) IDENTIFICATION

Label Elements

UN GHS & Canada WHMIS	:	   
		Oxidizing Corrosive Irritant Environmentally Damaging
US OSHA 29 CFR 1910.1200 HCS	:	  
		Oxidizing Corrosive Irritant
Hazard Statements	:	<p>H272 - May intensify fire; oxidizer</p> <p>H302 - Harmful if swallowed</p> <p>H314 - Causes severe skin burns and eye damage</p> <p>H318 - Causes serious eye damage</p> <p>H335 - May cause respiratory irritation</p> <p>H400 - Very toxic to aquatic life</p> <p>H401 - Very toxic to aquatic life with long lasting effects</p>
Precautionary Statements	:	<p>Prevention :</p> <p>P210 - Keep away from heat.</p> <p>P220 - Keep/store away from clothing and other combustible materials.</p> <p>P221 - Take any precaution to avoid mixing with combustibles.</p> <p>P260 - Do not breathe dust.</p> <p>P264 - Wash thoroughly after handling.</p> <p>P270 - Do not eat, drink or smoke when using this product.</p> <p>P271 - Use only outdoors or in a well-ventilated area.</p> <p>P280 - Wear protective gloves/protective clothing/eye protection/face protection.</p> <p>Response :</p> <p>P370 + P378: In case of fire: Use appropriate media for extinction.</p> <p>P304 + P340: In INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</p> <p>P312: Call a POISON CENTER or doctor/physician if you feel unwell.</p> <p>P303 + P361 + P353: If ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.</p> <p>P363: Wash contaminated clothing before reuse.</p> <p>Specific treatment, see supplemental first aid information.</p> <p>P305 + P351 + P338: If IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>P301 + P330 + P331: If SWALLOWED: Rinse mouth. Do NOT induce vomiting.</p> <p>P310: Immediately call a POISON CENTER or doctor/physician.</p>
Storage/Disposal	:	<p>P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.</p> <p>P405 - Store locked up.</p> <p>P501 - Dispose of content and/or container in accordance with local, regional, national, and international regulations.</p>

SECTION 2: HAZARD(S) IDENTIFICATION

Other Hazards

- UN GHS & Canada WHMIS : According to the GHS this product is considered hazardous.
 OSHA HCS 2012 : Under United States Regulations (29 CFR 1910.1200 – Hazard Communication Standard), this product is considered hazardous.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Molecular Formula	Molecular Weight	% of Mixture	Identifiers
Calcium Hypochlorite	Ca(OCl) ₂	142.98 gm/mol	68-72	CAS: 7778-54-3 EC Number: 231-908-7 EU Index: 017-012-00-7
Potassium Bromide	KBr	119.00 gm/mol	0.37	CAS: 7758-02-3 EC Number: 231-830-3

Notes: Available Chlorine: 68-72%, Inert Ingredients 28-32% (includes 5.5-8.5% water)

SECTION 4: FIRST AID MEASURES

If ingestion, irritation, any type of overexposure or symptoms of overexposure occur during or persists after use of this product, contact a POISON CONTROL CENTER, EMERGENCY ROOM OR PHYSICIAN immediately; have Safety Data Sheet information available. Never give anything by mouth to an unconscious or convulsing person.

- Eyes** : Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention if difficulties persist.
- Skin** : Remove contaminated clothing and footwear. Wash with plenty of soap and water. Clothing and footwear should be decontaminated before reuse. Seek medical attention if irritation occurs or persists.
- Inhalation** : Remove victim out of contaminated area to fresh air. If breathing is stopped or irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention immediately.
- Ingestion** : Immediately drink large amounts of water. Do not induce vomiting. If vomiting occurs, lean victim forward to prevent breathing in vomitus. Do not give anything by mouth to an unconscious or convulsing person. Get medical attention immediately.
- Notes to Physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

SECTION 5: FIRE-FIGHTING MEASURES

- Flammability of the Product** : Product is not known to be flammable, combustible, or pyrophoric. Note: Calcium Hypochlorite is a strong oxidizing agent; may form explosive mixtures with combustibles, organic, or other oxidizing materials.
- Flash Point** : Not Applicable
- Auto-ignition Temperature** : Not Applicable
- Upper Flammable Limit** : Not Applicable
- Lower Flammable Limit** : Not Applicable
- Fire Extinguishing Media**
 Suitable : Drench with large quantities water, and cool surrounding products and area with water only.

SECTION 5: FIRE-FIGHTING MEASURES

- Not Suitable** : Do not use dry chemicals or foams. Product supplies own oxygen, therefore attempts to smother fire with a wet blanket, carbon dioxide, dry chemical extinguisher or other means are not effective. Product has the potential to cause a violent reaction if dry chemical fire extinguishers are used.
- Special Explosion Hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any person risk or without suitable training. Emits toxic fumes under fire conditions. Chlorine gas may be generated. This material is very toxic to aquatic organism. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous Combustion Products** : Contamination with organics, acids, alkalis, and strong reducing agents will result in fire or rapid decomposition. In large fires fueled by other materials, the product may smolder for prolonged periods emitting dense black smoke.
- Special Fire Fighting Procedures** : Fire-fighters should wear appropriate personal protective equipment (PPE) and NIOSH-approved self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

SECTION 6: ACCIDENTAL RELEASE MEASURES

- Leak / Spill** : Use extreme caution in handling spilled material. Wear appropriate protective rubber gloves and boots. Use chemical splash goggles and breathing apparatus if necessary. Do not mix with any other chemicals. Contamination with organic or combustible material may start a chemical reaction with generation of heat, liberation of hazardous gases and possible violent reaction leading to fire or explosion. Dilute spill area with large quantities of water; at least 100 gallons of water per pound of material. Avoid contact with resulting solution. Neutralize with sodium sulfite, sodium bisulfite or sodium metabisulfite. Collected neutralized solution should be disposed of through wastewater treatment plant. Prior approval from plant personnel as well as Local, State and Federal environmental agencies should be obtained. File environmental spill notifications if necessary. Prevent entry into sewers, water courses, basement or confined areas.
- Leak / Spill (cont'd)** : Do not dispose of material in dry form in waste container – fire may result. Proceed with spill procedure as outline above.
- Waste Disposal Methods** : Do not attempt to recover solid material. Do not dispose of material in waste container. Do not reuse empty container but place in trash collection.
- Additional Information** : Do not attempt to recover solid material. Do not dispose of material in waste container. Do not reuse empty container but place in trash collection.

SECTION 7: HANDLING AND STORAGE

- Handling Procedures** : Use extreme caution in handling this material. Put on appropriate personal protective equipment (see Section 8). Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored and processed. Do not swallow. Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Remove and wash contaminated clothing before reuse. Add this product only to water. Never add

SECTION 7: HANDLING AND STORAGE

water to this product. Always add the product to large quantities of water.

- Storage Requirements** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Handle container with care – DO NOT drop, roll or skid. Keep container closed. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. If product becomes contaminated or decomposes, then do not reseal container. If possible, isolate container in open air well-ventilated area and flood with large amounts of water to dissolve with material. Follow "Leak and Spill Procedures" outlined in Section 6 of this SDS.
- DO NOT store/transfer/repack this product in any other container without the approval/authorization of De Nora Water Technologies Corporation.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits :

Ingredient Name	TWA/ STEL	ACGIH	OSHA	IPEL
Calcium Hypochlorite	TWA	Not established	Not established	1 mg/m ³
	STEL	Not established	Not established	2 mg/m ³

Protective Equipment

- Eyes and Face** : Chemical splash goggles and face shield.
- Hands** : Chemical-resistant, impervious gloves (nitrile, neoprene, butyl rubber) should be worn at all times.
- Respiratory Protection** : If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators. Use a properly fitted, air-purifying or air-fed respirator complying with NIOSH standard. NIOSH approved dust mask is essential where dusting may occur.
- Other Clothing and Equipment** : Boots, aprons, or chemical suits should be used when necessary to prevent skin contact. Personal protective clothing and use of equipment must be in accordance with 29 CFR 1910.132 (general requirement), .133 (eye and face protection), and .138 (hand protection). Avoid contact with clothing. Fire may result from contact of dry material with cloth or flammables.

Engineering Controls

- Ventilation Requirements** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions should be provided. Supply sufficient replacement air to make up for air removed by exhaust systems.
- Other** : Emergency shower and eyewash should be in close proximity.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State	: Dry Solid Tablet.
Color	: White.
Odor	: Slight chlorine.
Flash point	: Closed cup: Not applicable.
Decomposition temperature	: 170 to 180°C (338 to 356°F).
Material supports combustion	: Yes.
pH of solution	: Alkaline.
Boiling/condensation point	: Decomposes at 170 to 180°C (338 to 356°F).
Vapor pressure	: Not applicable.
Vapor density (air = 1)	: Not applicable.
Percent volatile by volume	: Not applicable.
Viscosity	: Not applicable.
Heat of solution	: Slightly exothermic.
Solubility in water	: 6% by weight.
Bulk density	: 63 – 67 lbs/ft ³ (1-1.07 g/cm ³).
Partition coefficient: n-octanol/water	: Not applicable.

SECTION 10: STABILITY AND REACTIVITY

Stability	: Stable in optimum storage conditions. Heat, sunlight and contamination could cause decomposition. Product decomposes at approximately 170 to 180°C (338 to 356°F) releasing oxygen gas and some chlorine gas. Reaction of product with acid releases chlorine gas.
Incompatibility (materials to avoid)	: Highly reactive or incompatible with the following materials: moistures, combustible materials, organic materials, metals, acids, alkalis, oxidizing materials, reducing materials, ammonia, petroleum products, paint products, wood and paper, pool chemicals, dry power fire extinguishers containing monoammonium phosphate, metals such as iron and copper and their alloys, ammonia, urea, amines.
Hazardous Decomposition or By-products	: Acid or ammonia contamination will release toxic gases. Product slowly releases chlorine gas. Excessive heat will cause decomposition resulting in the release of oxygen and chlorine gas.
Hazardous Polymerization	: This product is not known to polymerize.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity	: (Calcium hypochlorite 68% to 72%) LD50 (oral, rat): 850 mg/kg LD50 (dermal, rabbit): >1000 mg/kg
Target organs	: Contains material which may cause damage to the following organs: lungs, mucous membranes, gastrointestinal tract, upper respiratory tract, skin, eye, lens or cornea, stomach.
Potential Acute Health Effects	
Inhalation	: Mild to moderate exposure to dust causes irritation to the mucous membranes of the respiratory passages (nasal and throat).
Ingestion	: Highly toxic by ingestion. May cause severe inflammation and

SECTION 11: TOXICOLOGICAL INFORMATION

erosion to the lining of the esophagus and stomach. Promptly induces vomiting.

- Eye Contact : Mild to moderate exposure to dust causes irritation of the eyes. Severe exposure can cause permanent (irreversible) damage.
- Skin Contact : Mild to moderate exposure to dust may irritate the skin. Greater exposure can cause severe irritation.

Overexposure Signs/Symptoms

- Inhalation : Adverse symptoms may include the following: Respiratory tract irritation, coughing, breathing difficulty or shortness of breath.
- Ingestion : Adverse symptoms may include the following: Stomach pains, nausea or vomiting, gastric perforation.
- Skin : Adverse symptoms may include the following: Pain or irritation, redness, blistering may occur.
- Eyes : Adverse symptoms may include the following: Pain, watering, redness, cornea opacity. Direct contact with the eyes can cause irreversible damage, including blindness.

Carcinogenicity : Not listed as a carcinogen or suspected carcinogen by IARC, NTP, OSHA and ACGIH.

Mutagenicity : Mutagenic effects – Equivocal evidence.

Ingredient Name	Test	Experiment	Result
Calcium Hypochlorite	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Positive
	-	Experiment: In vitro Subject: Mammalian-animal	Positive
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vitro Subject: Mammalian-animal	Positive

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity effects : Very toxic to aquatic life. LC50: 0.088 mg/L (96 hr, Bluegill Sunfish). Do not allow to enter groundwater, surface water or drains.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste disposal : The generation of waste should be avoided or minimized whenever possible. Follow “Leak and Spill Procedures” outlined in Section 6 of this SDS for neutralizing material before disposal.

Disposal of material and its container must be in accordance with applicable federal, state, and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/ PERSONAL PROTECTION for additional handling and protection of employees.

SECTION 14: TRANSPORT INFORMATION

Regulation	UN #	Description of Goods	Class	Packing Group	Additional Information
UN	2880	Calcium Hypochlorite, Hydrated	5.1 (oxidizer)	II	ERG Code: 140 Packaging Exceptions: 152
IMDG	2880	Calcium Hypochlorite, Hydrated	5.1 (oxidizer)	II	Marine Pollutant: Yes Limited quantity (Max. quantity per inner packaging) : 1 kg
US DOT	2880	Calcium Hypochlorite, Hydrated	5.1 (oxidizer)	II	Reportable Quantity (RQ): 10 lbs / 4.54 kg Package sizes shipped in quantities less than the product RQ are not subject to the RQ transportation requirements.

SECTION 15: REGULATORY INFORMATION

Inventory Status :

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	AICS	Yes
Canada	DSL	Yes
Canada	NDSL	No
China	IECSC	Yes
Europe	EINECS	Yes
Japan	ENCS	Yes
Korea	ECL	Yes
Philippines	PICCS	Yes
United States & Puerto Rico	TSCA 8(b)	Yes

Note: A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).

US Federal Regulations	:	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
EPA ID (Pesticide)	:	48482-2
SARA 302/304 Components	:	This material does not contain any components with a section 304 EHS RQ.
CERCLA (Superfund) RQ	:	Hazardous Substances: Calcium Hypochlorite: 10 lbs (4.54 kg)
SARA 311/312 SDS Distribution	:	Chemical Inventory – Hazard Identification for Calcium hypochlorite Acute (Immediate) Hazard – Yes Chronic (Delayed) Hazard – No Fire Hazard – No Reactivity Hazard – Yes Pressure Hazard- No
Clean Air Act	:	Not available.
Clean Water Act	:	Not available.

SECTION 16: OTHER INFORMATION

Key to Abbreviations

ACGIH	American Conference of Industrial Hygienists
AICS	Australia Inventory of Chemical Substances
CAS	Chemical Abstracts Service Registry Number
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
DSL	Domestic Substance List
EINECS	European Chemical Substances Information System
ENCS	Existing and New Chemical Substances
ERG	Emergency Response Guidebook
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
IARC	International Agency for Research of Cancer
IECSC	Inventory of Existing Chemical Substances in China
IMDG	International Maritime Dangerous Goods
IPEL	Internal Permissible Exposure Limit
LC50	Lethal Concentration. It is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals.
LD50	Lethal Dosage. It is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
NIOSH	National Institute for Occupational Safety and Health
NDSL	Non-Domestic Substance List
NFPA	National Fire Protection Association
NTP	National Toxicological Program
OECD	Organization for Economic Cooperation and Development
OSHA	Occupational Safety and Health Administration
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PPE	Personal Protective Equipment
RQ	Reportable Quantity
SARA	Superfund Amendments and Reauthorization Act
SCBA	Self-contained Breathing Apparatus
SDS	Safety Data Sheet
STEL	Short Term Exposure Limit (15 minutes)
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average (8 hours)
US DOT	United States Department of Transportation
WHMIS	Workplace Hazardous Information System

Disclaimer:

All information, recommendations and suggestions appearing herein concerning our products are based upon tests and data believed to be reliable; however, it is the user's responsibility to determine the safety, toxicity and suitability for his/her own use of the products described herein. Since, the actual use by others is beyond our control, no guarantee, expressed or implied, is made by De Nora Water Technologies Corporation as to the effects of such use, the results to be obtained or the safety and toxicity of the products nor does De Nora Water Technologies Corporation assume any liability arising out of use by others, of the products contained herein. The information herein is not to be construed as absolutely complete since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations. Nothing herein contained is to be construed as a recommendation to infringe any patent.