1. Identification

Product Name: Calcium hypochlorite

Cat No.: C100-250; C100-500

Synonyms: losantin; Hypochlorous acid; Calcium oxychloride

Recommended Use: Laboratory chemicals.

Uses advised against: No Information available

Information on the supplier of the safety data sheet:

Company: Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number:
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

Revision Date: 19-May-2016
Revision Number: 1

Creation Date: 28-May-2010

2. Hazard(s) Identification

Classification:
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

- Oxidizing solids: Category 2
- Corrosive to metals: Category 1
- Acute oral toxicity: Category 4
- Skin Corrosion/Irritation: Category 1 B
- Serious Eye Damage/Eye Irritation: Category 1
- Specific target organ toxicity (single exposure): Category 3
- Target Organs - Respiratory system.

Label Elements:

Signal Word: Danger

Hazard Statements:
- May intensify fire; oxidizer
- May be corrosive to metals
- Harmful if swallowed
- Causes severe skin burns and eye damage
- May cause respiratory irritation
Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep/Store away from clothing/ other combustible materials
Take any precaution to avoid mixing with combustibles
Keep only in original container
Response
Immediately call a POISON CENTER or doctor/physician
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Ingestion
Rinse mouth
Do NOT induce vomiting
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Spills
Absorb spillage to prevent material damage
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Store in corrosive resistant polypropylene container with a resistant inliner
Store in a dry place
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life
Contact with acids liberates toxic gas

3. Composition / information on ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium hypochlorite</td>
<td>7778-54-3</td>
<td>100</td>
</tr>
</tbody>
</table>

4. First-aid measures

Eye Contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact
Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
Inhalation
Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion
Do not induce vomiting. Call a physician or Poison Control Center immediately.

Most important symptoms/effects
Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation.

Notes to Physician
Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media
Substance is nonflammable; use agent most appropriate to extinguish surrounding fire. Use water spray to cool unopened containers.

Unsuitable Extinguishing Media
Carbon dioxide (CO2), Dry chemical

Flash Point
Not applicable
Method -
No information available

Autoignition Temperature
No information available

Explosion Limits
Upper
No data available
Lower
No data available

Sensitivity to Mechanical Impact
No information available

Sensitivity to Static Discharge
No information available

Specific Hazards Arising from the Chemical
Oxidizer: Contact with combustible/organic material may cause fire. Decomposes violently at elevated temperatures. Containers may explode when heated. Thermal decomposition can lead to release of irritating gases and vapors. Corrosive Material. Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous Combustion Products
Hydrogen chloride gas Chlorine oxygen

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Instability</th>
<th>Physical hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>1</td>
<td>OX</td>
</tr>
</tbody>
</table>

6. Accidental release measures

Personal Precautions
Use personal protective equipment. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Avoid dust formation. Do not get in eyes, on skin, or on clothing.

Environmental Precautions
Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained. See Section 12 for additional ecological information. Avoid release to the environment. Collect spillage.

Methods for Containment and Clean Up
Keep combustibles (wood, paper, oil, etc) away from spilled material. Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid dust formation.

7. Handling and storage
Handling
Use only under a chemical fume hood. Wear personal protective equipment. Keep away from clothing and other combustible materials. Ensure adequate ventilation. Avoid dust formation. Do not breathe dust. Do not get in eyes, on skin, or on clothing.

Storage
Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Keep away from direct sunlight. Keep away from heat and sources of ignition. Keep at temperatures below 50°C. Keep refrigerated.

8. Exposure controls / personal protection

Exposure Guidelines
This product does not contain any known or suspected reproductive hazards

Engineering Measures
Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA’s eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection
Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection
Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State
Solid

Appearance
Off-white

Odor
Slight chlorine

Odor Threshold
No information available

pH
11.4

Melting Point/Range
100 °C / 212 °F

Boiling Point/Range
No information available

Flash Point
Not applicable

Evaporation Rate
No information available

Flammability (solid,gas)
No information available

Flammability or explosive limits

Upper
No data available

Lower
No data available

Vapor Pressure
No information available

Vapor Density
No information available

Specific Gravity
2.350

Solubility
Soluble Decomposes in contact with water

Partition coefficient; n-octanol/water
No data available

Autoignition Temperature
No information available

Decomposition Temperature
No information available

Viscosity
No information available

Molecular Formula
Ca Cl2 O2

Molecular Weight
142.98

10. Stability and reactivity

Reactive Hazard
Yes
Stability
Oxidizer: Contact with combustible/organic material may cause fire.

Conditions to Avoid
Combustible material. Incompatible products. Exposure to moist air or water. Temperatures above 50°C.

Incompatible Materials
Organic materials, Acids, Amines, Ammonia, Alcohols, Reducing agents, Metals

Hazardous Decomposition Products
Hydrogen chloride gas, Chlorine, oxygen

Hazardous Polymerization
Hazardous polymerization does not occur.

Hazardous Reactions
Contact with acids liberates toxic gas. Thermal decomposition.

11. Toxicological information

Acute Toxicity

Component Information

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium hypochlorite</td>
<td>LD50 = 850 mg/kg (Rat)</td>
<td>LD50 &gt; 2000 mg/kg (Rabbit)</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Toxicologically Synergistic Products
No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation
Causes burns by all exposure routes

Sensitization
No information available

Carcinogenicity
The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>IARC</th>
<th>NTP</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium hypochlorite</td>
<td>7778-54-3</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Mutagenic Effects
No information available

Reproductive Effects
No information available.

Developmental Effects
No information available.

Teratogenicity
No information available.

STOT - single exposure
Respiratory system

STOT - repeated exposure
None known

Aspiration hazard
No information available

Symptoms / effects, both acute and delayed
Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Endocrine Disruptor Information
No information available

Other Adverse Effects
See actual entry in RTECS for complete information.

12. Ecological information

Ecotoxicity
Very toxic to aquatic organisms. The product contains following substances which are hazardous for the environment.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium hypochlorite</td>
<td>Not listed</td>
<td>LC50 = 0.5 mg/L, 24h static (Morone saxatilis)</td>
<td>Not listed</td>
<td>0.11 mg/l EC50 48h</td>
</tr>
</tbody>
</table>
LC50: 0.561 - 1.41 mg/L, 96h static (Pimephales promelas)
LC50: 0.13 - 0.2 mg/L, 96h static (Oncorhynchus mykiss)
LC50: 0.055 - 0.1 mg/L, 96h semi-static (Oncorhynchus mykiss)
LC50: 0.185 - 0.26 mg/L, 96h semi-static (Cyprinus carpio)
LC50: 0.054 - 0.06 mg/L, 96h semi-static (Lepomis macrochirus)
LC50: 0.185 - 0.26 mg/L, 96h flow-through (Lepomis macrochirus)
LC50: 0.049 - 0.16 mg/L, 96h static (Lepomis macrochirus)

### Persistence and Degradability
Soluble in water. Persistence is unlikely based on information available.

### Bioaccumulation/Accumulation
No information available.

### Mobility
Will likely be mobile in the environment due to its water solubility.

### 13. Disposal considerations

#### Waste Disposal Methods
Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

### 14. Transport information

#### DOT
- **UN-No**: UN3485
- **Proper Shipping Name**: Calcium hypochlorite, dry, corrosive
- **Hazard Class**: 5.1
- **Subsidiary Hazard Class**: 8
- **Packing Group**: II

#### TDG
- **UN-No**: UN3485
- **Proper Shipping Name**: Calcium hypochlorite, dry, corrosive
- **Hazard Class**: 5.1
- **Subsidiary Hazard Class**: 8
- **Packing Group**: II

#### IATA
- **UN-No**: UN3485
- **Proper Shipping Name**: CALCIUM HYPOCHLORITE MIXTURE, DRY, CORROSIVE
- **Hazard Class**: 5.1
- **Subsidiary Hazard Class**: 8
- **Packing Group**: II

#### IMDG/IMO
- **UN-No**: UN3485
- **Proper Shipping Name**: Calcium hypochlorite, dry, corrosive
- **Hazard Class**: 5.1
- **Subsidiary Hazard Class**: 8
- **Packing Group**: II

### 15. Regulatory information

#### International Inventories
Component | TSCA | DSL | NDSL | EINECS | ELINCS | NLP | PICCS | ENCS | AICS | IECSC | KECL
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
Calcium hypochlorite | X | X | - | 231-908-7 | - | X | X | X | X | X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) | Not applicable
SARA 313 | Not applicable

SARA 311/312 Hazard Categories

- Acute Health Hazard: Yes
- Chronic Health Hazard: No
- Fire Hazard: No
- Sudden Release of Pressure Hazard: No
- Reactive Hazard: Yes

CWA (Clean Water Act)

<table>
<thead>
<tr>
<th>Component</th>
<th>CWA - Hazardous Substances</th>
<th>CWA - Reportable Quantities</th>
<th>CWA - Toxic Pollutants</th>
<th>CWA - Priority Pollutants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium hypochlorite</td>
<td>X</td>
<td>10 lb</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Clean Air Act | Not applicable

OSHA Occupational Safety and Health Administration | Not applicable

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

<table>
<thead>
<tr>
<th>Component</th>
<th>Hazardous Substances RQs</th>
<th>CERCLA EHS RQs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium hypochlorite</td>
<td>10 lb</td>
<td>-</td>
</tr>
</tbody>
</table>

California Proposition 65 | This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Component</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium hypochlorite</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
</tbody>
</table>

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant: N
DOT Severe Marine Pollutant: N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.
Other International Regulations

Mexico - Grade
No information available

Canada
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class
- C  Oxidizing materials
- E  Corrosive material
- D1B  Toxic materials
- F  Dangerously reactive material
- D2B  Toxic materials

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 28-May-2010
Revision Date 19-May-2016
Print Date 19-May-2016

Revision Summary
This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS)

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS