SAFETY DATA SHEET

This SDS adheres to the standards and regulatory requirements of Canada and may not meet the regulatory requirements in other countries.

1. Identification

Product identifier: Sodium Chlorate Process Liquor De-chromed SN
Other means of identification: De-chromed blend of Crystallizer Feed Liquor and Mother Liquor, NaClO₃
Chemical Family: Inorganic compound
Recommended use: For internal transfer between ERCO Worldwide sodium chlorate manufacturing facilities for process purposes
Recommended restrictions: None known
Manufacturer/Importer/Supplier/Distributor information:

Manufacturer
Company name: ERCO Worldwide, A division of Superior Plus LP
Address: 302 The East Mall
Suite 200
Toronto, ON M9B 6C7
Canada
Telephone: (416) 239-7111 (M- F: 8:00 am – 5:00pm EST)
Website: http://www.ercoworldwide.com
E-mail: productinfo@ercoworldwide.com
Emergency phone number: Canada: 613-996-6666 (CANUTEC)
USA: 1-800-424-9300 (CHEMTREC)
Supplier: Refer to Manufacturer

2. Hazard(s) Identification

Physical hazards: Oxidizing liquids Category 2
Health hazards: Acute toxicity, oral Category 4

Environmental hazards: Not currently regulated by the Canadian Hazardous Products Regulation (WHMIS 2015), refer to Section 12 for additional information.

Label elements

Signal word: Danger
Hazard statement: May intensify fire; oxidizer.
Harmful if swallowed.
Precautionary statement

Prevention
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from clothing and other combustible materials. Wear protective gloves, protective clothing, eye protection, face protection.

Response
IF ON SKIN: Wash with plenty of water. Take off contaminated clothing and wash it before reuse.

In case of fire: Use water to extinguish.

Call a POISON CENTER or doctor/physician if you feel unwell.

Storage
Does not apply.

Disposal
Dispose of contents and containers in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)
No OSHA defined hazard classes.

Other hazards which do not result in classification:
May cause mild skin and eye irritation.

Supplemental information
Not applicable

3. Composition/Information on Ingredients

Substances

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>Conc. % By Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Chlorate</td>
<td>De-chromed blend of Crystallizer; Feed Liquor and Mother Liquor</td>
<td>7775-09-9</td>
<td>30-50 w/w%</td>
</tr>
<tr>
<td>Dihydrogen oxide</td>
<td>Water</td>
<td>7732-18-5</td>
<td>Balance</td>
</tr>
</tbody>
</table>

Chemical name of impurities, stabilizing solvents and/or additives: None

4. First-Aid Measures

Inhalation
Remove person to fresh air and keep comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, trained personnel should give oxygen. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin Contact
Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Call a POISON CENTER or doctor/physician if you feel unwell.
Eye Contact
Immediately flush eyes with plenty of water for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion
Rinse mouth. Do not induce vomiting. Never give anything by mouth to a victim who is unconscious or is having convulsions. If the patient is conscious, give one or two glasses of water to dilute stomach contents. Call a POISON CENTER or doctor/physician if you feel unwell.

Most important symptoms/effects, acute and delayed
May cause mild eye irritation. Symptoms may include redness and itching. May cause irritation to the nose, throat and upper respiratory tract. Symptoms may include coughing, choking and wheezing. May be harmful or fatal if swallowed. Symptoms may include cyanosis (bluish discoloration of the skin), nervous system damage, lung inflammation and pulmonary edema (fluid accumulation). Symptoms may include pain, headache, nausea, vomiting, dizziness, drowsiness and other central nervous system effects. Prolonged or repeated exposure may cause blood system effects. Prolonged or repeated overexposure may cause kidney effects.

Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically.

General information
In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-Fighting Measures

Suitable extinguishing media
Water spray, fog (flooding amounts).

Unsuitable extinguishing media
DO NOT use dry chemical fire extinguishing agents containing ammonium compounds (such as some A:B:C agents), since an explosive compound can be formed. DO NOT use carbon dioxide, dry chemical powder or other extinguishing agents that smother flames, since they are not effective in extinguishing fires involving oxidizers.

Specific hazards arising from the chemical
Strong oxidizer - contact with other material may cause fire. May cause fire or explosion; strong oxidizer.

Special protective equipment and precautions for firefighters
Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.
### Firefighting equipment/instructions

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. In the event of fire, cool tanks with water spray. Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure build up. Do not allow run-off from firefighting to enter drains or water courses. Dike for water control.

### Specific methods

Cool containers exposed to flames with water until well after the fire is out.

### General fire hazards

May intensify fire; oxidizer.

### Hazardous combustion products

Pure sodium chlorate decomposes explosively under intense fire conditions. It initially decomposes to sodium perchlorate and begins to liberate oxygen at about 265°C. Besides oxygen, other compounds formed in a fire include chlorine, hydrogen chloride and sodium oxide.

### 6. Accidental Release Measures

#### Personal precautions, protective equipment and emergency procedures

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Immediately evacuate personnel to safe areas. Ensure clean-up is conducted by trained personnel only. Wear appropriate protective equipment and clothing during clean-up. Ventilate the contaminated area. Do not breathe mist or vapor.

#### Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Ventilate the contaminated area. Wear appropriate protective equipment and clothing during clean-up. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Stop leak if you can do it without risk. Dike far ahead of spill for later disposal. Absorb in vermiculite, dry sand or earth and place into containers. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS.

#### Environmental precautions

Avoid release to the environment. Avoid discharge into drains, water courses or onto the ground.

### 7. Handling and Storage

#### Precautions for safe handling

Do not handle or store near an open flame, heat or other sources of ignition. No smoking in the area. Avoid contamination with organic materials. Avoid breathing mist or vapor. Avoid contact with eyes, skin and clothing. Keep away from acids and other incompatibles. Keep containers closed when not in use. Label containers appropriately. Wash hands after handling and before eating. Wear protective gloves and eye/face protection.
### Conditions for safe storage, including any incompatibilities

Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Storage areas should not be constructed of wood or other organic materials. Do not store wood or other organic materials in areas that could come in contact with this material. Keep away from combustible or readily oxidizable materials and acids.

Store in a closed container away from incompatible materials. Keep quantity stored as small as possible. Post "NO SMOKING" signs in area. Stored containers should be periodically checked for general condition and leakage. Protect against physical damage. Keep empty containers in separate storage area. Empty containers may contain hazardous residues. Keep closed. Have appropriate fire extinguishers and spill clean-up equipment in storage area.

### 8. Exposure Controls/Personal Protection

#### Occupational exposure limits

No exposure limits noted for ingredient(s).

#### Biological limit values

No biological exposure limits noted for the ingredient(s).

#### Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. In case of insufficient ventilation, wear suitable respiratory equipment.

#### Individual protection measures, such as personal protective equipment:

- **Eye/face protection**: Wear safety glasses with side shields (or goggles). Eye wash fountain and emergency showers are recommended.

- **Skin protection**
  - **Hand protection**: Wear appropriate chemical-resistant gloves. Advice should be sought from glove suppliers.
  - **Other**: Wear suitable protective clothing. Wear fire/flame resistant/retardant clothing. For exposures with a high potential of contact, wear PVC or rubber rain suit, hard hat, rubber or plastic gloves, rubber boots, and safety glasses or goggles. Do Not Wear Leather Boots or Gloves.

- **Respiratory protection**: In case of insufficient ventilation, wear suitable respiratory equipment. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to fume/mists at levels exceeding the exposure limits. Seek advice from respiratory protection specialists.

- **General hygiene considerations**: When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
9. Physical and Chemical Properties

**Appearance**
Clear to pale yellow mobile liquid.

**Physical state**
Liquid.

**Form**
Liquid.

**Colour**
Clear to light yellow.

**Odor**
None.

**Odor threshold**
Not available.

**pH**
6-9

**Melting point/Freezing point**
-8 °C (17.6 °F) (20% solution)
-18 °C (-0.4 °F) (40% solution)

**Initial boiling point and boiling range**
102 °C - 108 °C (215.6 °F - 226.4 °F)

**Flash point**
Not applicable

**Evaporation rate**
Not available

**Flammability (solid, gas)**
Not applicable

**Upper/lower flammability or explosive limits**
- Flammability limit – lower (%) Not applicable
- Flammability limit – upper (%) Not applicable
- Explosive limit – lower (%) Not Available
- Explosive limit – upper (%) Not Available

**Vapor pressure**
Not available

**Vapor density**
Not available

**Relative density**
Not available

**Solubility (lies)**
- Solubility (water) Soluble
- Partition coefficient (n-octanol/water) Not available

**Auto-ignition temperature**
Not applicable

**Decomposition temperature**
> 265 °C (> 500 °F)

**Viscosity**
Not available

**Other information**
- **Density** 1.15 - 1.45 g/cm³
- **Explosive properties** Oxidizer, may have explosive properties
- **Molecular formula** Cl-Na-O₃
- **Molecular weight** 106.45 g/mol
- **Oxidizing properties** Strong oxidizer - contact with other material may cause fire.
- **Percent volatile** Not available.
- **Specific gravity** 1.38 – 1.46 (varies according to solution composition)

10. Stability and Reactivity

**Reactivity**
The product is stable and non-reactive under normal conditions of use, storage and transport. Can form shock-, heat- or friction-sensitive mixtures with finely divided metals, metal salts, ammonium salts, non-metals, strong reducing agents and sulfides. Low pH (acidic) solutions can decompose to form corrosive and dangerously reactive chlorine dioxide. Decomposes above 265°C releasing oxygen.
**Chemical stability**
Stable at normal temperatures and pressure. At low pH, solutions decompose forming corrosive and dangerously reactive chlorine dioxide. In intense fire situations there have been several cases of violent explosions attributed to sodium chlorate by itself.

**Possibility of hazardous reactions**
Hazardous polymerization does not occur.

**Conditions to Avoid**
Heat, sparks, friction, shock, impact, open flames, contact with combustible materials and acidic pH.

**Incompatible materials**

**Hazardous decomposition products**
No Hazardous decomposition products are known.

**11. Toxicological Information**

**Information on likely routes of exposure**

<table>
<thead>
<tr>
<th>Route</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>May cause irritation to the respiratory system.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>Causes mild skin irritation.</td>
</tr>
<tr>
<td>Eye contact</td>
<td>May cause mild eye irritation.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Harmful if swallowed.</td>
</tr>
</tbody>
</table>

**Most important symptoms/effects, acute and delayed**
May be harmful or fatal if swallowed. Symptoms may include cyanosis (bluish discoloration of the skin), nervous system damage, lung inflammation and pulmonary edema (fluid accumulation). Symptoms may include pain, headache, nausea, vomiting, dizziness, drowsiness and other central nervous system effects. Prolonged or repeated exposure may cause blood system effects. Prolonged or repeated overexposure may cause kidney effects. May cause mild eye irritation. Symptoms may include redness and itching. May cause mild skin irritation. Symptoms may include redness and itching. May cause irritation to the nose, throat and upper respiratory tract. Symptoms may include coughing, choking and wheezing.

**Information on toxicological effects**

**Acute toxicity**
See data for individual ingredient acute toxicity data.

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Chlorate Solution 50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>2400 mg/kg (Calculated ATE)</td>
</tr>
</tbody>
</table>
## Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Chlorate (CAS 7775-09-9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td>No information available.</td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC₅₀</td>
<td>Rat</td>
<td>&gt; 7 mg/l (4 hour)</td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD₅₀</td>
<td>Rat</td>
<td>1200 mg/kg</td>
</tr>
<tr>
<td>LD₅₀</td>
<td>Mouse</td>
<td>8350 mg/kg</td>
</tr>
<tr>
<td>LD₅₀</td>
<td>Rabbit</td>
<td>7200 mg/kg</td>
</tr>
</tbody>
</table>

### Skin corrosion/irritation
Direct contact can cause mild irritation.

### Serious eye damage/eye irritation
May cause mild eye irritation. Symptoms may include redness and itching.

### Respiratory or skin sensitization
- **Respiratory sensitization**: Not expected to be a respiratory sensitizer.
- **Skin sensitizer**: Not expected to be a skin sensitizer.

### Germ cell mutagenicity
Not expected to be mutagenic.

### Carcinogenicity
This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

### Reproductive toxicity
Not classifiable as a reproductive toxin.

### Specific target organ toxicity - single exposure
Hazardous by OSHA criteria. Specific Target Organ Toxicity (STOT), Single Exposure Category 3 May cause respiratory irritation.

### Specific target organ toxicity - repeated exposure
Not classified as a specific target organ toxicity - repeated exposure.

### Aspiration toxicity
Not expected to be an aspiration hazard.

### Chronic effects
Repeated and prolonged exposure of the skin can cause dermatitis and blood system effects. Repeated exposure by inhalation or ingestion may result in toxic effects, which appear gradually over weeks. Initially there may be abdominal pain, followed by internal bleeding, destruction of red blood cells, lung damage, liver damage, and kidney damage. The skin may be bluish.
12. Ecological Information

Ecotoxicity

Not expected to be harmful to aquatic organisms.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Chlorate (CAS 7775-09-9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Water flea (Daphnia magna)</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Rainbow trout, Donaldson trout (Oncorhynchus mykiss)</td>
</tr>
<tr>
<td><strong>Chronic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algae</td>
<td>NOEC</td>
<td>Green algae (Selenastrum capricornutum)</td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Water flea (Daphnia magna)</td>
</tr>
<tr>
<td>Fish</td>
<td>NOEC</td>
<td>Zebra danio (Danio rerio)</td>
</tr>
</tbody>
</table>

Persistence and degradability

Readily biodegradable. Sodium chlorate degrades very slowly in soil under aerobic conditions. May decompose by microbial degradation more rapidly under anaerobic conditions.

Bio accumulative potential

No data available.

Mobility in soil

High water solubility indicates a high mobility in soil. Sodium chlorate can be leached out of soil. Chlorate accumulates in plant cells until toxic concentrations are reached and the plant dies.

Other adverse effects

No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal Considerations

**Disposal instructions**

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Local disposal regulations**

Dispose in accordance with all applicable regulations.

**Hazardous waste code**

The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
**Waste from residues / unused products**
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

**Contaminated packaging**
Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

### 14. Transport Information

**TDG**

<table>
<thead>
<tr>
<th>Shipping Name (TDGR)</th>
<th>UN Number</th>
<th>Hazard Class</th>
<th>Packing Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Chlorate, Aqueous Solution</td>
<td>2428</td>
<td>5.1</td>
<td>II</td>
</tr>
</tbody>
</table>

- UN number: UN 2428
- UN proper shipping name: Sodium Chlorate, Aqueous Solution
- Transport hazard class(es):
  - Class: 5.1
  - Subsidiary risk: -
- Packing group: II
- Environmental hazards: No
- ERG Code: 5L
- Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.

**IMDG**

- UN number: UN 2428
- UN proper shipping name: Sodium Chlorate, Aqueous Solution (Sodium Chlorate)
- Transport hazard class(es):
  - Class: 5.1
  - Subsidiary risk: -
- Packing group: II
- Environmental hazards: No
- Marine pollutant: No
- EmS: F-H, S-Q
- Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**
Not available.
15. Regulatory Information

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information

- **Issue date**: 1/11/2018
- **Revision #**: 4
- **Revision Indicator**: Minor revisions to text
- **List of abbreviations**:
  - ACGIH: American Conference of Governmental Industrial Hygienists
  - CAS: Chemical Abstract Services
Disclaimer

Information presented in this SDS is furnished in accordance with the Workplace Hazardous Materials Information System (WHMIS).

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