1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name: Soda Ash

Other means of identification

Product Code(s): 497-19-8

Synonyms: Sodium carbonate, anhydrous; Carbonic acid, disodium salt; Disodium carbonate

Chemical Family: Alkali salt

Recommended use of the chemical and restrictions on use

Recommended Use: Glass manufacture, Personal care, Detergent, Water treatment chemical, Chemical processing

Restrictions on Use: See section 16 for more information

Manufacturer Address

Tronox Alkali Wyoming Corporation
1735 Market Street
Philadelphia, PA 19103
Tel: +1 877-362-2248 or +1 215-299-6904
www.tronox.com

Emergency telephone number

1 307 / 872 2452 (Plant - Green River, WY)
1 303/ 389-1409 (Medical - U.S. - Call Collect)

For leak, fire, spill or accident emergencies, call:
1 800 / 424 9300 (CHEMTREC - U.S.A.)
1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Serious eye damage/eye irritation: Category 2
GHS Label elements, including precautionary statements

EMERGENCY OVERVIEW

Warning

Hazard Statements
H319 - Causes serious eye irritation

Precautionary Statements - Prevention
P264 - Wash face, hands and any exposed skin thoroughly after handling
P280 - Wear eye protection/ face protection

Precautionary Statements - Response
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P313 - If eye irritation persists: Get medical advice/ attention

Hazards not otherwise classified (HNOC)
No hazards not otherwise classified were identified.

Other Information
May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Family</th>
<th>Alkali salt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula</td>
<td>Na₂CO₃</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium carbonate</td>
<td>497-19-8</td>
<td>100</td>
</tr>
</tbody>
</table>

Synonyms are provided in Section 1.

4. FIRST AID MEASURES

Eye Contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If symptoms persist, call a physician.

Skin Contact
Wash off with warm water and soap. Get medical attention if irritation develops and persists. Remove and wash contaminated clothing before re-use.

Inhalation
Remove person to fresh air. If signs/symptoms continue, get medical attention.
Ingestion

Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Most important symptoms and effects, both acute and delayed

Causes serious eye damage / eye irritation.

Indication of immediate medical attention and special treatment needed, if necessary

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Use extinguishing agent suitable for type of surrounding fire.

Specific Hazards Arising from the Chemical

Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.

Hazardous Combustion Products

Fumes of sodium oxide. Carbon oxides (COx).

Explosion data

Sensitivity to Mechanical Impact

Not sensitive.

Sensitivity to Static Discharge

Not sensitive.

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.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Avoid dust formation. Sweep up to prevent slipping hazard.

Other

For further clean-up instructions, call Emergency Hotline number listed in Section 1 "Product and Company Identification" above.

Environmental Precautions

Do not flush into surface water or sanitary sewer system.

Methods for Containment

Prevent large quantities of this product from contacting vegetation or waterways. Cover with plastic sheet to prevent spreading. Pick up and transfer to properly labeled containers. Keep in suitable and closed containers for disposal.

Methods for cleaning up

Pick up and transfer to properly labeled containers. Keep in suitable and closed containers for disposal. Dispose of waste as indicated in Section 13.

7. HANDLING AND STORAGE

Handling

Use air conveying/mechanical systems for bulk transfer to storage. Provide appropriate exhaust ventilation at places where dust is formed. In case of insufficient ventilation, wear suitable respiratory equipment if release of airborne dust is expected.

Storage

Store in original container. Keep in properly labeled containers. Keep container tightly closed.

Incompatible products

Aluminium. Powdered aluminum. Acids

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies. Local nuisance dust standards apply.
Appropriate engineering controls

Engineering measures
Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction.

Individual protection measures, such as personal protective equipment

Eye/Face Protection
Tightly fitting safety goggles.

Skin and Body Protection
Wear suitable protective clothing. Protective shoes or boots.

Hand Protection
Nitrile rubber, Neoprene gloves

Respiratory Protection
In case of inadequate ventilation wear respiratory protection.

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

General information
These recommendations apply to the product as supplied

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Granules</td>
</tr>
<tr>
<td>Physical State</td>
<td>Solid</td>
</tr>
<tr>
<td>Color</td>
<td>White</td>
</tr>
<tr>
<td>Odor</td>
<td>odorless</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>Not applicable</td>
</tr>
<tr>
<td>pH</td>
<td>11.4 (1% solution in water)</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>851 °C</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>No information available</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No information available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes</td>
</tr>
<tr>
<td>Flammability Limit in Air</td>
<td></td>
</tr>
<tr>
<td>Upper flammability limit</td>
<td>No information available</td>
</tr>
<tr>
<td>Lower flammability limit</td>
<td>No information available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No information available</td>
</tr>
<tr>
<td>Vapor density</td>
<td>No information available</td>
</tr>
<tr>
<td>Density</td>
<td>No information available</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>2.52</td>
</tr>
<tr>
<td>Water solubility</td>
<td>212.5 g/L @ 20 °C</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>No information available</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>No information available</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>No information available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>400 °C</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No information available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No information available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not explosive</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Non-oxidizing</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>105.99</td>
</tr>
<tr>
<td>Bulk density</td>
<td>0.86 - 1.12 g/cm³ (Dense grades) 0.70 - 0.90 g/cm³ (Light Grades)</td>
</tr>
<tr>
<td>Kst</td>
<td>0 bar m/s</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity
None under normal use conditions.

Chemical Stability
Stable. Decomposes by reaction with strong acid.

Possibility of Hazardous Reactions
None under normal processing.
Hazardous polymerization: Hazardous polymerization does not occur.

Conditions to avoid: Exposure to air or moisture over prolonged periods.


Hazardous Decomposition Products: Sodium oxides. Carbon oxides (COx).

11. TOXICOLOGICAL INFORMATION

Product Information

LD50 Oral: 2,800 mg/kg (rat)
LD50 Dermal: > 2,000 mg/kg (rabbit)
LC50 Inhalation: 2.3 mg/L (rat)

Eye Contact: Irritating to eyes.
Skin Contact: Non-irritating
Sensitization: Patch test on human volunteers did not demonstrate sensitization properties.

Information on toxicological effects

Symptoms: No information available.

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

Chronic toxicity: No known effect.
Mutagenicity: No information available
Carcinogenicity: Not recognized as carcinogenic by Research Agencies (IARC, NTP, OSHA, ACGIH).
Reproductive toxicity: No information available.
STOT - single exposure: No information available.
STOT - repeated exposure: No information available.
Aspiration hazard: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

<table>
<thead>
<tr>
<th>Sodium carbonate (497-19-8)</th>
<th>Duration</th>
<th>Species</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium Carbonate</td>
<td>96 h LC50</td>
<td>Bluegill sunfish</td>
<td>300</td>
<td>mg/L</td>
</tr>
<tr>
<td>Sodium Carbonate</td>
<td>48 h EC50</td>
<td>Ceriodaphnia</td>
<td>200-227</td>
<td>mg/L</td>
</tr>
</tbody>
</table>

Persistence and degradability: Biodegradability does not pertain to inorganic substances.

Bioaccumulation: Does not bioaccumulate.

Mobility: Dissociates into ions.

Other Adverse Effects: None known.

13. DISPOSAL CONSIDERATIONS

Waste disposal methods: This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). Dispose of in accordance with local regulations.
14. TRANSPORT INFORMATION

- **DOT**: NOT REGULATED
- **TDG**: NOT REGULATED
- **ICAO/IATA**: NOT REGULATED
- **IMDG/IMO**: NOT REGULATED

15. REGULATORY INFORMATION

**U.S. Federal Regulations**

**SARA 313**
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

**SARA 311/312 Hazard Categories**
- Acute health hazard: Yes
- Chronic health hazard: No
- Fire hazard: No
- Sudden release of pressure hazard: No
- Reactive Hazard: No

**Clean Water Act**
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

**CERCLA**
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

**US State Regulations**

**California Proposition 65**
This product does not contain any Proposition 65 chemicals.

**U.S. State Right-to-Know Regulations**
This product does not contain any substances regulated by state right-to-know regulations

**International Inventories**

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA (United States)</th>
<th>DSL (Canada)</th>
<th>EINECS/ELINCS (Europe)</th>
<th>ENCS (Japan)</th>
<th>China (IECSC)</th>
<th>KECL (Korea)</th>
<th>PICCS (Philippines)</th>
<th>AICS (Australia)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium carbonate 497-19-8 (100)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**Mexico - Grade**
Moderate risk, Grade 2
WHMIS Hazard Class

D2B - Toxic materials, Eye irritation
Class E : Corrosive to aluminum. Not corrosive to animal skin or carbon steel.

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health Hazards</th>
<th>Flammability</th>
<th>Instability</th>
<th>Special Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>HMIS</td>
<td>Health Hazards</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Physical hazard</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Personal Protection</td>
<td>X</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

NFPA/HMIS Ratings Legend
Severe = 4; Serious = 3; Moderate = 2; Slight = 1; Minimal = 0

Product Certifications
This product meets the chemical testing specifications defined in the Food Chemicals Codex (FCC), 8th Edition.

This product is certified to NSF/ANSI Standard 60 for use in drinking water treatment at the specified maximum use limit. The MUL (maximum use level) for sodium carbonate, anhydrous is 150 mg/L under NSF/ANSI Standard 60.

Certified to NSF/ANSI 60
American Water Works Association

Revision date: 2015-04-30
Revision note: Minor change

Disclaimer
Tronox Limited believes that the information and recommendations contained herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specified product designated and may not be applicable where such product is used in combination with any other materials or in any process. Further, since the conditions and methods of use are beyond the control of Tronox Limited, Tronox Limited expressly disclaims any and all liability as to any results obtained or arising from any use of the products or reliance on such information.

Prepared By:
Tronox Limited

© 2015 Tronox Limited. All Rights Reserved.
End of Safety Data Sheet