MATERIAL SAFETY DATA SHEET

SODIUM CARBONATE

Issue Date : May 19, 2009
Revision : 2

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

CHEMICAL NAME : Sodium Carbonate Anhydrous
GENERAL NAME : Dense Soda Ash
CHEMICAL FORMULA : Na₂CO₃
GENERAL USE : Glass manufacture, detergent manufacture, chemicals manufacture, pulp and paper, water and wastewater treatment, flue gas desulfurization

2. HAZARDS IDENTIFICATION

This substance is irritating to eyes when contacted directly. Irritation of mucous membranes, nose and throat are symptomatic of exposure to excessive levels of dust. Skin irritation in forms of red, dry skin can occur when contacted directly.

Substance is
• odorless, non-combustible, non-explosive, non-flammable and stable,
• not expected to be toxic to the environment and to aquatic organisms,
• reacts with acids to release carbon dioxide gas and heat.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CHEMICAL INGREDIENT</th>
<th>% by Weight</th>
<th>EINECS Number</th>
<th>CAS Number</th>
<th>Hazard Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na₂CO₃</td>
<td>99.5 % min</td>
<td>207-838-8</td>
<td>497-19-8</td>
<td>Xi, R36</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

EYES : Immediately flush with water for at least 15 minutes. See a doctor.
SKIN : Wash with plenty of water. See a doctor if irritation occurs.
INGESTION : Rinse mouth with water. Dilute by drinking water. Do not induce vomiting. Never give anything by mouth to an unconscious person. See a doctor immediately.

INHALATION : Remove to fresh air. If breathing is difficult or uncomfortable call a doctor.

NOTES to DOCTOR : Internal toxicity is low. Treatment is symptomatic and supportive. Exposures to high concentrations may result with irritant effects of corneal opacities, and vesicular skin reactions in humans with abraded skin.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA : Water, water fog, carbon dioxide (CO2), dry chemical

HAZARDOUS COMBUSTION PRODUCTS : Fumes of sodium oxide and carbon dioxide gas.

FIRE FIGHTING PROCEDURES : Wear protective clothing and self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS : See Section 8 "Exposure Controls and Personal Protection"

ENVIRONMENTAL PRECAUTIONS : Keep away water sources free from large quantities of the substance. No special precautions to soil spillage.

METHODS FOR CLEANING UP : Clean by sweeping or by vacuum when spilled to soil. See Section 8.

7. HANDLING AND STORAGE

HANDLING : Use pneumatic and/or mechanical systems for bulk transfer of the substance. Use exhaust ventilation and/or dust collecting filters for bulk transfer and storage. Use approved respiratory protection when handling. Keep bulk of materials out of sewer drains.

STORAGE : Store in a cool dry area, away from acids.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE CONTROLS : Use exhaust ventilation to meet dust exposure limits.

RESPIRATORY PROTECTION : Use dust type respirator or mask.

HAND PROTECTION : Use gloves of alkali resistant type.

EYES AND FACE : Use safety glasses with side shields.
SKIN PROTECTION

: Wear long-sleeved and easily washable clothing to minimize skin contact if a long period of exposure is foreseen.

ENVIRONMENTAL EXPOSURE CONTROLS

: This substance's dust has no specific guidelines for exposure since considered as nuisance dust. The following limits shall be applied to particulates not otherwise regulated:
  OSHA (PEL/TWA): 15 mg/m$^3$ (total dust);
  5 mg/m$^3$ (respirable fraction)
  MSHA (PEL/TWA): 10 mg/m$^3$ (total dust)

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>White, granular solid</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>pH</td>
<td>11.4 (1% solution)</td>
</tr>
<tr>
<td>Boiling point</td>
<td>Decomposes</td>
</tr>
<tr>
<td>Flash point</td>
<td>Non-combustible</td>
</tr>
<tr>
<td>Flammability</td>
<td>None</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>2.509</td>
</tr>
<tr>
<td>Relative density</td>
<td>33.2 % maximum</td>
</tr>
<tr>
<td>Solubility in water has</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>851°C (1564°F)</td>
</tr>
<tr>
<td>Melting point</td>
<td></td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conditions to avoid</td>
<td>Contact with acids except under controlled conditions.</td>
</tr>
<tr>
<td>Materials to avoid</td>
<td>Aluminum powder, acids, fluorine, molten lithium.</td>
</tr>
<tr>
<td>Incompatible materials</td>
<td>Reacts with acids releasing of large volumes of carbon dioxide gas and heat.</td>
</tr>
</tbody>
</table>

HAZARDOUS DECOMPOSITION PRODUCTS: When decomposing carbon dioxide and heat are evolved. Sodium oxide occurs on decomposition and can react with water to form caustic soda.

11. TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Effect</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye effects</td>
<td>Irritant</td>
</tr>
<tr>
<td>Skin effects</td>
<td>Non-irritating to intact skin. Minor irritation may occur on abraded skin. (Toxical. Appl. Pharmacol.31.481 (1975))</td>
</tr>
<tr>
<td>Dermal LD50</td>
<td>No data available</td>
</tr>
</tbody>
</table>

3/5
ORAL LD50 : 4,090 mg/kg (rat) (RTECS 1986)

INHALATION LC50 : 2.3 mg/l (2 h) (rat) (Environ. Res. 3:138 (1938))

ACUTE EFFECTS FROM OVEREXPOSURE: Severe irritation of the eyes. Irritating to the skin, mucous membranes and upper respiratory tract. No significant acute toxicological effects expected.

CHRONIC EFFECTS FROM OVEREXPOSURE: No data available for the product.

CARCINOGENICITY :
- NTP : Not listed
- IARC : Not listed
- OSHA : Not listed
- OTHER: (ACGIH) Not listed

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION
- 96-hour LC50 = 265 - 565 mg/L (daphnia magna) (low toxicity)
- 96-hour LC50 = 300 - 320 mg/L (bluegill sunfish) (low toxicity)

PERSISTENCE and DEGRADABILITY : Biodegradability does not apply to inorganic substances. No significant toxicity to aquatic organisms is expected.

13. DISPOSAL CONSIDERATIONS

Disposal of this substance do not presents a danger since it is not classified as hazardous waste. Waste and contaminated packages disposal shall be according to national or regional provisions of the user. If any processing, mixing or blending with others or usage of the substance occur, the resulting substance may alter the disposal requirements.

14. TRANSPORT INFORMATION

UN Number : None

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG) : Not regulated

ADR - EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD : Not regulated

RID - EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY RAIL : Not regulated

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) / INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA) : Not regulated

U.S. DEPARTMENT OF TRANSPORTATION (DOT) : Not regulated
15. REGULATORY INFORMATION

The substance is not dangerous according to Turkish Health Regulations and Dangerous Substance Directive (67/548/EEC) and Dangerous Preparations Directive (1999/45/EC) of European Community.

16. OTHER INFORMATION

RISK PHRASES

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Xi</td>
<td>Irritant</td>
</tr>
<tr>
<td>R36</td>
<td>Irritating to eyes</td>
</tr>
</tbody>
</table>

REVISION SUMMARY

This safety data sheet replaces the one dated June 2004.
Added, deleted or revised information:
Whole document revised according to Directives EC 2001/58/EC and EC 1907/2006 Annex II as Sections 1-13 revised
Section 14-16 added

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