

MATERIAL SAFETY DATA SHEET

SODIUM BICARBONATE, SOLID

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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WHMIS#: 00060700
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EMERGENCY TELEPHONE NUMBERS (FOR EMERGENCIES INVOLVING CHEMICAL SPILLS OR RELEASE)

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Vancouver, BC (604) 685-5036

PRODUCT IDENTIFICATION

Product Name: Sodium Bicarbonate, Solid.
Chemical Name: Carbonic Acid, Monosodium Salt.
Synonyms: Baking Soda; Bicarbonate of Soda; Sodium Acid Carbonate; Sodium Hydrogen Carbonate; Monosodium Carbonate; Sodium Bicarbonate Dihydrate; Sodium Bicarbonate Standard; Sodium Bicarbonate EC Gran; Sodium Bicarbonate 99 %; Sodium Bicarbonate Tech; Sodium Bicarbonate USP; Sodium Bicarbonate Extra Coarse; Sodium Bicarbonate FFQ; Sodium Bicarbonate Feed Grade; Sodium Bicarbonate Medium Gran USP; Sodium Bicarbonate USP Coarse; Sodium Bicarbonate Tech Repulp; Sodium Bicarbonate USP No. 1, No. 4, No. 5.
Chemical Family: Sodium salts.
Molecular Formula: NaCHO₃.
Product Use: Fire extinguishing agent. Pharmaceutical. Baking powder. Chemical intermediate. Food additive.

WHMIS Classification / Symbol:

Not regulated.

READ THE ENTIRE MSDS FOR THE COMPLETE HAZARD EVALUATION OF THIS PRODUCT.

2. COMPOSITION, INFORMATION ON INGREDIENTS (Not Intended As Specifications)

<i>Ingredient</i>	<i>CAS#</i>	<i>ACGIH TLV</i>	<i>% Concentration</i>
Sodium Bicarbonate	144-55-8	---	95 - 100

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Low hazard for usual industrial or commercial handling. Dust may cause mechanical irritation to skin, eyes and respiratory tract. See "Other Health Effects" Section. Can decompose at high temperatures forming toxic gases.

POTENTIAL HEALTH EFFECTS

Inhalation: Product may be mildly irritating to the nose, throat and respiratory tract and may cause coughing and sneezing. Excessive contact with powder may cause drying of mucous membranes of nose and throat due to absorption of moisture and oils. See "Other Health Effects" Section.

Skin Contact: This product may cause irritation due to abrasive action. Excessive contact with powder may cause drying of the skin due to absorption of moisture and oils.

Skin Absorption: Not likely to be absorbed through the skin.

Eye Contact:	This product may cause irritation, redness and possible damage due to abrasiveness. Excessive contact with powder may cause drying of mucous membranes of the eyes due to absorption of moisture and oils.
Ingestion:	Ingestion is not a likely route of exposure. This product may cause mild gastrointestinal discomfort.
Other Health Effects:	Low hazard for usual industrial or commercial handling. May cause central nervous system (CNS) depression, metabolic alkalosis, hypernatremia and pneumoconiosis. CNS depression is characterized by headache, dizziness, drowsiness, nausea, vomiting and incoordination. Severe overexposures may lead to coma and possible death due to respiratory failure. Pneumoconiosis is the deposition of dust in the lungs and the tissue's reaction to its presence. When exposure to the dust is severe or prolonged, the lungs' defenses are overwhelmed. In general, long-term exposure to high concentrations of dust may cause increased mucous flow in the nose and respiratory system airways. This condition usually disappears after exposure stops. Controversy exists as to the role exposure to dust has in the development of chronic bronchitis (inflammation of the air passages into the lungs). Other factors such as smoking and general air pollution are more important, but dust exposure may contribute. (4) Sodium salts have a hypothetical risk of hypernatremia. Hypernatraemia is a term that describes an abnormally high plasma concentration of sodium ions. This condition may lead to weakness, restlessness, dizziness, headache, convulsions and coma. (4) Metabolic alkalosis is a condition wherein the concentration of the arterial plasma bicarbonate concentration increases.

4. FIRST AID MEASURES

FIRST AID PROCEDURES

Inhalation:	If respiratory problems arise, move the victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical advice IMMEDIATELY.
Skin Contact:	Start flushing while removing contaminated clothing. Wash affected areas thoroughly with soap and water. If irritation, redness, or a burning sensation develops and persists, obtain medical advice.
Eye Contact:	Immediately flush eyes thoroughly for 5 minutes with running water. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention.
Ingestion:	Do not attempt to give anything by mouth to an unconscious person. If victim is alert and not convulsing, rinse mouth out and give 1/2 to 1 glass of water to dilute material. DO NOT induce vomiting. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. Obtain medical attention IMMEDIATELY.
Note to Physicians:	Treat symptomatically. Sodium salts have a hypothetical risk of hypernatremia. In addition to calcium levels, sodium and phosphate levels should be monitored. Medical conditions that may be aggravated by exposure to this product include diseases of the skin, eyes or respiratory tract.

5. FIRE-FIGHTING MEASURES

<i>Flashpoint (°C)</i>	<i>Autolgnition Temperature (°C)</i>	Flammability Limits in Air (%):	
		<i>LEL</i>	<i>UEL</i>
Not Flammable. (3)	Not available.	Not available.	Not available.
Flammability Class (WHMIS):	Not regulated.		
Hazardous Combustion Products:	Thermal decomposition products are toxic and may include Soda Ash (Sodium Carbonate) oxides of sodium, carbon and irritating gases. It has been reported that Sodium Bicarbonate begins to lose Carbon Dioxide at 50 C. At 100 C it is converted into Sodium Carbonate. Another source has reported that it loses Carbon Dioxide at 270 C. (4)		
Unusual Fire or Explosion Hazards:	Avoid accumulation and dispersion of dust. Spilled material may cause floors and contact surfaces to become slippery. Do not flush with water as aqueous solutions or powders that become wet render surfaces extremely slippery. Enforce NO SMOKING rules.		
Sensitivity to Mechanical Impact:	Not expected to be sensitive to mechanical impact.		

Rate of Burning: Not available.
Explosive Power: Not available.
Sensitivity to Static Discharge: Not expected to be sensitive to static discharge.

EXTINGUISHING MEDIA

Fire Extinguishing Media: Is used as an extinguishing agent for all classes of fires. Use media appropriate for surrounding fire and/or materials.

FIRE FIGHTING INSTRUCTIONS

Instructions to the Fire Fighters: Isolate materials that are not involved in the fire and protect personnel. Do not flush with water as aqueous solutions or powders that become wet render surfaces extremely slippery. Spilled material may cause floors and contact surfaces to become slippery.

Fire Fighting Protective Equipment: Use self-contained breathing apparatus and protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Information in this section is for responding to spills, leaks or releases in order to prevent or minimize the adverse effects on persons, property and the environment. There may be specific reporting requirements associated with spills, leaks or releases, which change from region to region.

Containment and Clean-Up Procedures: In all cases of leak or spill contact vendor at Emergency Number shown on the front page of this MSDS. Minimize air borne spreading of dust. Wear respirator, protective clothing and gloves. Avoid dry sweeping. Do not use compressed air to clean surfaces. Vacuuming or wet sweeping is preferred. Return all material possible to container for proper disposal. Do not allow to enter sewers or watercourses.

Any recovered product can be used for the usual purpose, depending on the extent and kind of contamination. Where a package (drum or bag) is damaged and / or leaking, repair it, or place it into an over-pack drum immediately so as to avoid or minimize material loss and contamination of surrounding environment. Replace damaged containers immediately to avoid loss of material and contamination of surrounding atmosphere. Ventilate enclosed spaces. Notify applicable government authority if release is reportable or could adversely affect the environment.

7. HANDLING AND STORAGE

HANDLING

Handling Practices: Use normal "good" industrial hygiene and housekeeping practices. Avoid accumulation and dispersion of dust. Clean up immediately to eliminate slipping hazard.

Ventilation Requirements: See Section 8, "Engineering Controls".

Other Precautions: Use only with adequate ventilation and avoid breathing dusts. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Wash contaminated clothing thoroughly before re-use.

STORAGE

Storage Temperature (°C): See below.

Ventilation Requirements: General exhaust is acceptable.

Storage Requirements: Store in a cool, dry and well-ventilated area. Keep away from heat, sparks and flames. Keep containers closed. Avoid moisture contamination. Prolonged storage may result in lumping or caking. Protect from direct sunlight. Protect against physical damage.

Special Materials to be Used for Packaging or Containers: Materials of construction for storing the product include: Multi-layer bags or sacks. Confirm suitability of any material before using.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Recommendations listed in this section indicate the type of equipment, which will provide protection against overexposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

ENGINEERING CONTROLS

Engineering Controls:	General exhaust is acceptable. Local exhaust ventilation preferred. Make up air should be supplied to balance air that is removed by local or general exhaust ventilation. Ventilate low lying areas such as sumps or pits where dense dust may collect.
PERSONAL PROTECTIVE EQUIPMENT (PPE)	
Eye Protection:	Safety glasses with side shields are recommended to prevent eye contact. Use chemical safety goggles when there is potential for eye contact. Contact lenses should not be worn when working with this material.
Skin Protection:	Gloves and protective clothing made from cotton, leather, rubber or plastic should be impervious under conditions of use. Prior to use, user should confirm impermeability. Discard contaminated gloves.
Respiratory Protection:	No specific guidelines available. A NIOSH/MSHA approved dust mask for concentrations of nuisance dust up to 100 mg/m ³ particulate. An air-supplied respirator if concentrations are higher or unknown.
Other Personal Protective Equipment:	Wear regular work clothing. The use of coveralls is recommended. Locate safety shower and eyewash station close to chemical handling area. Take all precautions to avoid personal contact.

EXPOSURE GUIDELINES

Particulate Not Otherwise Classified:	
ACGIH	OSHA
10 mg/m ³ - Inhalable particulate	50 mppcf* or 15 mg/m ³ - Total Dust
3 mg/m ³ - Respirable particulate	15 mppcf* or 5 mg/m ³ - Respirable Fraction

* mppcf = million particles per cubic foot

9. PHYSICAL AND CHEMICAL PROPERTIES (Not intended as Specifications)

Physical State:	Solid.
Appearance:	White granular solid.
Odour:	Odourless.
Odour Threshold (ppm):	Not applicable.
Boiling Range (°C):	Not available.
Melting/Freezing Point (°C):	Not applicable.
Vapour Pressure (mm Hg at 20° C):	Not available.
Vapour Density (Air = 1.0):	Not applicable.
Relative Density (g/cc):	2.22. (3)
Bulk Density:	980 - 1 058 kg/m ³ . (3)
Viscosity:	Not applicable.
Evaporation Rate (Butyl Acetate = 1.0):	Not applicable.
Solubility:	Soluble in water. Hygroscopic.
% Volatile by Volume:	Not available.
pH:	8.3 (1 % solution). (3)
Coefficient of Water/Oil Distribution:	Not available.
Volatile Organic Compounds (VOC):	Not applicable.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY

Under Normal Conditions:	Stable.
Under Fire Conditions:	Not flammable.
Hazardous Polymerization:	Will not occur.
Conditions to Avoid:	High temperatures, sparks, open flames and all other sources of ignition. Minimize air borne spreading of dust. Avoid direct sunlight. Avoid moisture contamination. Hygroscopic.
Materials to Avoid:	Strong oxidizers. Lewis or mineral acids. Vigorous effervescence results on mixture with acids. Potassium-Sodium alloys. Monoammonium Phosphate. 2-Furaldehyde.

Decomposition or Combustion Products: Thermal decomposition products are toxic and may include ammonia, oxides of sodium, carbon and irritating gases.

It has been reported that Sodium Bicarbonate begins to lose Carbon Dioxide at 50 C. At 100 C it is converted into Sodium Carbonate. Another source has reported that it loses Carbon Dioxide at 270 C. (4)

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA:

SUBSTANCE	LD50 (Oral, Rat)	LD50 (Dermal, Rabbit)	LC50 (Inhalation, Rat, 4h)
Sodium Bicarbonate	4 220 mg/kg (1)	---	---
Carcinogenicity Data:	The ingredient(s) of this product is (are) not classed as carcinogenic by ACGIH, IARC, OSHA or NTP.		
Reproductive Data:	No adverse reproductive effects are anticipated.		
Mutagenicity Data:	No adverse mutagenic effects are anticipated.		
Teratogenicity Data:	No adverse teratogenic effects are anticipated.		
Respiratory / Skin Sensitization Data:	None known.		
Synergistic Materials:	None known.		
Other Studies Relevant to Material:	Application of 0.2 g of 100 % Sodium Bicarbonate caused moderate eye irritation lasting at least 7 days. In another study, application of 0.86 g caused slight redness. Application to the skin of 0.3 g for 4 hours caused very slight irritation in 1/3 animals tested (graded 0.11 out of 8). (4) An increase in bladder cancer was observed in rats fed a known carcinogen for 4 weeks, then 3 % Sodium Bicarbonate in the diet for 32 weeks, compared to animals receiving only the know carcinogen. An increase in bladder cancer was also observed in rats fed 0.64 % Sodium Bicarbonate and 1.25 % of another known carcinogen for 104 weeks (compared to the non-exposed animals). An increase in DNA synthesis and morphological alterations in the bladder epithelium was observed after feeding rats 3 % Sodium Bicarbonate in their diets for 8 weeks. These studies were conducted to investigate the mechanism by which carbonate salts promote bladder cancer in animals exposed to known carcinogen. (4) No adverse effects were observed after feeding up to 580 mg/Kg to mice, up to 340 mg/Kg to rats and up to 330 mg/Kg to rabbits. Screening tests using both yeast and bacterial cultures were negative with and without metabolic activation. (4)		

12. ECOLOGICAL INFORMATION

Ecotoxicity:	May be harmful to aquatic life. Sodium Bicarbonate: 96-hour LC50 (Lepomis macrochirus) = 8 600 mg/l. (3) 48-hour LC50 (Daphnia sp.) = 2 350 mg/l. (3) 48-hour LC50 (Culex sp. Larvae or mosquito) = 2 000 mg/l. (3)
Environmental Fate:	Product has an unaesthetic appearance and can be a nuisance. Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.

13. DISPOSAL CONSIDERATIONS

Deactivating Chemicals:	None required.
Waste Disposal Methods:	This information applies to the material as manufactured. Reevaluation of the product may be required by the user at the time of disposal since the product uses, transformations, mixtures and processes may influence waste classification. Dispose of waste material at an approved (hazardous) waste treatment/disposal facility in accordance with applicable local, provincial and federal regulations. Do not dispose of waste with normal garbage, or to sewer systems.
Safe Handling of Residues:	Empty containers retain product residue. No special treatment required.

Disposal of Packaging: Recycling is encouraged. Treat package in the same manner as the product. Empty package may be disposed of with normal garbage.

14. TRANSPORTATION INFORMATION

CANADIAN TDG ACT SHIPPING DESCRIPTION:

This product is not regulated by TDG.

Label(s): Not applicable. Placard: Not applicable.

ERAP Index: ----- Exemptions: None known.

US DOT CLASSIFICATION (49CFR 172.101, 172.102):

This product is not regulated by DOT.

Label(s): Not applicable. Placard: Not applicable.

CERCLA-RQ: Not available. Exemptions: Not available.

15. REGULATORY INFORMATION

CANADA

CEPA - NSNR: This material is included on the DSL under the CEPA.

CEPA - NPRI: Not included.

CANADIAN FOOD AND DRUG ACT/REGULATIONS: The use of this material/product as a food additive is regulated by Health and Welfare Canada in the Food and Drug Act and the Food and Drug Regulations. It is incumbent on the user of this material/product to ensure any intended food application is consistent with Health and Welfare Canada guidelines. Food Grade designation in no way implies that the product is safe for consumption by humans. (3)

Controlled Products Regulations Classification (WHMIS):
Not regulated.

USA

Environmental Protection Act: This material is included on the TSCA Inventory.

OSHA HCS (29CFR 1910.1200): Not regulated.

U.S. FOOD AND DRUG ADMINISTRATION: This material/product is regulated for use by the US FDA. It is incumbent on the user of this material/product to ensure any intended food application is consistent with US FDA guidelines. Food Grade designation in no way implies that the product is safe for consumption by humans. (3)

NFPA: 0 Health, 0 Fire, 0 Reactivity (3)

HMIS: 0 Health, 0 Fire, 0 Reactivity (3)

INTERNATIONAL

Sodium Bicarbonate is found on the following inventories: EINECS (European Inventory of Existing Commercial Chemical Substances).

16. OTHER INFORMATION

REFERENCES

1. RTECS-Registry of Toxic Effects of Chemical Substances, Canadian Centre for Occupational Health and Safety RTECS database.
 2. Clayton, G.D. and Clayton, F.E., Eds., Patty's Industrial Hygiene and Toxicology, 3rd ed., Vol. IIA,B,C, John Wiley and Sons, New York, 1981.
 3. Supplier's Material Safety Data Sheet(s).
 4. CHEMINFO, through "CCINFOdisc", Canadian Centre for Occupational Health and Safety, Hamilton, Ontario, Canada.
 5. Guide to Occupational Exposure Values, 2005, American Conference of Governmental Industrial Hygienists, Cincinnati, 2005.
 6. Regulatory Affairs Group, Brenntag Canada Inc.
 7. The British Columbia Drug and Poison Information Centre, Poison Managements Manual, Canadian Pharmaceutical Association, Ottawa, 1981.
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