

SAFETY DATA SHEET
TersOx™ Buffer - Sodium Bicarbonate



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Version 1.1
SDS # 07A

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Trade Name: TersOx™ Buffer - Sodium Bicarbonate
Chemical Name: Sodium Bicarbonate
CAS No: 144-55-8
Formula: NaHCO₃

Synonyms: Baking soda, Sodium Hydrogen Carbonate, bicarb (laboratory slang), bicarbonate of soda, nahcolite

Product Form: Substance

Recommended use of the chemical and restrictions on use

Recommended Use: For use in buffering acid buildup in soil, sludge, and groundwater bioremediation
Restrictions on Use: Use as recommended by the label

Details of the supplier and of the safety data sheet

Supplier: Tersus Environmental, LLC
1116 Colonial Club Rd
Wake Forest, NC 27587
Phone: +1-919-453-5577
Email: info@tersusenv.com

Emergency telephone number

For leak, fire, spill or accident emergencies, call:

+1-919-453-5577 (Tersus Office Hours, 8:00 AM to 5:00 PM Eastern)
+1-800-424-9300 (Chemtrec 24 Hour Service – Emergency Only)

2. HAZARD IDENTIFICATION

Classification

Physical hazards	Not classified.
Health hazards	Not classified.
Environmental hazard	Not classified.
OSHA defined hazard	Not classified.

GHS Label elements, including precautionary statements

Label elements: Not required

Signal word Not classified

Hazard statement Not classified in accordance with international standards for workplace safety.

Hazard Statements H320 Causes eye irritation.

Precautionary statements

Prevention If medical advice is needed, have product container or label at hand. Keep out of children reach. Read label before use.

Response
 P264 - Wash exposed skin thoroughly after handling.
 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.

Storage Store away from incompatible materials.

Disposal Dispose of waste and residues in accordance with local authority requirements.

Other Hazards

Inhalation: Breathing dusts may cause coughing or difficulty breathing.
Eye Contact: Direct eye contact may cause irritation, reddening or tearing.
Skin Contact: Direct contact may cause irritation.

Unknown Acute Toxicity

None known.

Supplemental Information

NFPA Ratings (scale 0-4)



WHMIS NFPA/HMIS Rating System

Health	2
Flammability	0
Physical Hazard	1
Personal Protection	X

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Formula NaHCO₃

Hazardous components

Chemical Name	CAS Number	Concentration (wt. %)
Sodium Hydrogen Carbonate	144-55-8	>99

Synonyms are provided in Section 1.

Occupational exposure limits, if available, are listed in Section 8.

4. FIRST AID MEASURES

General Information	Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
Eye Contact	IF IN EYES: Immediately rinse eyes with water. Remove any contact lenses, and continue flushing eyes with running water for at least 15 minutes. Get immediate medical attention.
Skin Contact	Wash affected areas with plenty of water, and soap if available, for several minutes. Seek medical attention if irritation develops or persists.
Inhalation	Remove from area to fresh air. Seek medical attention if respiratory irritation develops or if breathing becomes difficult.
Ingestion	Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.
Most important Symptoms and Effects, both Acute and Delayed	Causes eye irritation.
Indication of any Immediate Medical Attention and Special Treatment Needed	If seeking medical attention provide SDS document to physician. Physician should treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable Extinguishing Media	None
Explosion Data	
General Fire Hazards	
Special Protective	Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
Equipment and Precautions for Firefighters	
Specific Methods	Do not enter fire area without proper protective equipment, including respiratory protection.
Specific Hazards Arising from the Chemical or Mixture	Thermal decomposition can lead to release of irritating gases and vapors. CO ₂ (displacement of breathable atmosphere).
Special Fire Fighting Procedures	Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	For dry spills, sweep or shovel and place in containers for disposal in accordance with applicable regulations (see Disposal Considerations section). Handle in accordance with good industrial hygiene and safety practice. Avoid formation of dust. Avoid excess skin and eye contact. Avoid contamination of bodies of water during cleanup. Equip cleanup crew with proper protection. Ventilate area.
Environmental Precautions	Avoid any mixture with an acid into sewer or drain (CO ₂ gas formation)
Methods for Containment and Clean Up	Do not flush into surface water or sanitary sewer system. Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Keep in properly labelled containers. Keep in suitable, closed containers for disposal. Treat recovered material as described in the section "Disposal considerations".

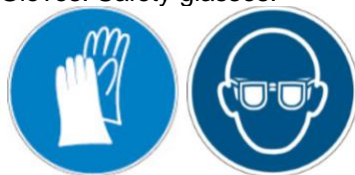
7. HANDLING AND STORAGE

Precautions for Safe Handling	Avoid contact with eyes, skin and clothing. Wash hands thoroughly with soap and water after handling and before eating, drinking or smoking.
Hygiene Measures Conditions for Safe Storage, including any Incompatibilities	Store in a cool, dry and well-ventilated location. Good housekeeping should be maintained to minimize dust accumulation and generation. Keep away from acids, water.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Personal Protective Equipment

Gloves. Safety glasses.



Exposure Control

Control Parameters (Particles not otherwise classified)

US ACGIH (TWA) :

3 mg/m³ Respirable Dust

10 mg/m³ Total Dust

US OSHA PEL (TWA):

5 mg/m³ Respirable Dust

15 mg/m³ Total Dust

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.
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	If exposure limits have not been established, maintain airborne levels to an acceptable level.
Eye/face Protection	Wear chemical safety goggles with side shields.
Occupational Exposure limits	No exposure limits noted for ingredient(s).
Biological Limit Values	No biological exposure limits noted for the ingredient(s).

Individual Protection Measures, such as Personal Protective Equipment

The following are recommendations for Personnel Protective Equipment (PPE). The employer/user of this product must perform a Hazard Assessment of the workplace according to OSHA regulations 29 CFR 1910.132 to determine the appropriate PPE for use while performing any task involving potential exposure to this product.

Respiratory Protection	None required where adequate ventilation is provided. If airborne concentrations are high, use a NIOSH/MSHA approved respirator that has been selected by a technically qualified person for the specific work conditions.
Skin Protection	Not required under normal conditions. Use gloves and protective clothing if excessively dusty, or if skin is damaged
Hand Protection	Wear suitable chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.
General Hygiene	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.
Other Work Practices	Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Appearance	White granular solid
Auto-ignition Temperature	Not Measured
Decomposition Temperature	>50 °C
Evaporation Rate (Ether = 1)	Not Measured
Flammability (solid, gas)	Not Applicable
Flash Point	Not Measured
Initial Boiling Point and Boiling Range	Decomposes on heating
Lower Explosive Limit:	Not Measured
Melting Point / Freezing Point	Not Measured
Odor threshold	Not determined
Odor	ODORLESS
Partition Coefficient n-octanol/water (Log Kow)	Not Measured
pH	8.0-8.5 (1% solution)
Relative Density/ Density	Not Measured
Molecular Weight	84.01 g/cc
Bulk Density	60 lbs/ft ³
Solubility in Water	8.8% (20 °C)
Specific Gravity	Not Measured
Upper Explosive Limit:	Not Measured
<u>Upper/lower Flammability or Explosive Limits</u>	

Vapor Density	Not Measured
Vapor Pressure (Pa)	Not Measured
Viscosity (cSt)	Not Measured

10. STABILITY AND REACTIVITY

Reactivity	<ul style="list-style-type: none"> The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical Stability	<ul style="list-style-type: none"> Stable in dry air, in moist air forms sodium carbonate, an irritant.
Conditions to Avoid	<ul style="list-style-type: none"> Keep at temperature not exceeding: 65 °C (150 °F)
Incompatible Materials	<ul style="list-style-type: none"> Acids. Aluminum (tarnishes).
Hazardous Decomposition Products	<ul style="list-style-type: none"> When heated to decomposition, sodium bicarbonate produces carbon dioxide.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Not classified

Classification	Hazard Description
Acute toxicity (oral)	LD50- Rat > 4220 mg/kg
Acute toxicity (dermal)	LD50 - Remarks: no data available.
Acute toxicity (inhalation)	LC50-Rat > 4.74 mg/L
Skin corrosion/irritation	Rabbit, mild skin irritation
Serious eye damage/irritation	Rabbit, Mild eye irritation
Respiratory sensitization	Not classified
Skin sensitization	Not classified
Germ cell mutagenicity	Not classified.
Reproductive toxicity	Not classified
STOT-single exposure	Not Classified
STOT-repeated exposure	Not Classified
Aspiration hazard	Not classified

EYES: Mid (rabbit) 100 mg/ 30 sec

SKIN: Mid (human) 30 mg/ 3 days-intermittent

INGESTION:

Oral LD60 (rat) 4220 mg/kg

Oral LD60 (mouse) 3360 mg/kg

Oral LDL5 (man) 20 mg/kg/ 5 days-intermittent

Oral LDL5 (infant) 1260 mg/kg

Symptoms after Inhalation: Prolonged inhalation of dust may cause respiratory irritation.

Symptoms after Skin Contact: Large amounts of dust may cause mechanical irritation.

Symptoms after Eye Contact: Contact may cause irritation due to mechanical abrasion.

Symptoms after Ingestion: Large doses may produce symptomatic alkalosis and expansion in extracellular fluid volume with edema.

Chronic Symptoms: None expected under normal conditions of use

Carcinogenicity: Sodium Bicarbonate is not listed as a carcinogen by the Environmental Protection Agency (EPA), the State of California, the National Toxicology Program, or the International Agency for Research on Cancer. See Regulatory Information Section for additional information.

12. ECOLOGICAL INFORMATION

Aquatic Ecotoxicity

Fishes, *Oncorhynchus mykiss*, LC50, 96 h, 7,700 mg/l
 Fishes, *Oncorhynchus mykiss*, NOEC, 96 h, 2,300 mg/l
 Fishes, *Lepomis macrochirus*, LC50, 96 h, 7,100 mg/l
 Fishes, *Lepomis macrochirus*, NOEC, 96 h, 5,200 mg/l
 Crustaceans, *Daphnia magna*, EC50, 48 h, 4,100 mg/l
 Crustaceans, *Daphnia magna*, NOEC, 48 h, 3,100 mg/l
 LC 50 Fish 1: 7100 mg/l (Bluegill)
 LC 50 Fish 1: 8250-9000 mg/l (Exposure time 96h)
 EC 50 Daphnia 1: 4100 mg/l
 EC 50 Daphnia 1: 2350 mg/l (Exposure time 48h)
 LC 50 Fish 2: 7700 mg/l (Rainbow trout)

Persistence and Degradability

Abiotic degradation - Water, hydrolyses Result: acid/base equilibrium as a function of pH Degradation products: carbonic acid/bicarbonate/carbonate Biodegradation- Remarks: The methods for determining the biological degradability are not applicable to inorganic substances.

Bio-accumulative Potential

No data available.

Mobility in Soil

No data available.

Other Adverse Effects

No data available.

Remarks

Ecological injuries are not known or expected under normal use.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods

If permitted by local and state regulations, place in a hazardous or industrial waste landfill. Tonnage quantities are not, however, recommended for the landfill, and if possible, should be re-used for an appropriate application. Small quantities may be flushed to sewers if permitted by NPDES or POTW permit. Refer to federal, state, provincial and local regulations for applicable site-specific requirements. Keep out of drinking water sources. See Regulatory Information for more details.

Local Disposal Regulations Hazardous Waste Code

Dispose in accordance with all applicable regulations. The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from Residues/ unused Products

Contact waste disposal services. If recycling is not practicable, dispose of in compliance with local regulations. Dilute with plenty of water. Neutralize with acid. In accordance with local and national regulations

Contaminated Packaging

To avoid treatments, as far as possible, use dedicated

containers. Clean container with water. Dispose of rinse water in accordance with local and national regulations. The empty and clean containers are to be reused in conformity with regulations. Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.

14. TRANSPORTATION INFORMATION

DOT

Not regulated as dangerous goods.
DOT information on packaging may be different from that listed.
It is recommended that ERG Guide number 111 be used for all non-regulated material.

International Transportation: Sodium Bicarbonate has no U.N. number, and is not regulated under international rail, highway, water, or air transport regulations.

Transportation of Dangerous Goods (TDG): Not Regulated.

15. REGULATORY INFORMATION

U.S. Federal Regulations

This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A)

Not regulated.

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302)

Not listed.

US State Regulations

US. New Jersey Worker and Community Right-to-Know Act

Not listed.

US. Pennsylvania Worker and Community Right-to-Know Law

Not listed.

US. California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)

This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

TSCA Number: 144-55-8

California Proposition 65: Not listed.

RCRA (40 CFR 261): Not listed under any section.

SARA III: Section 302-No:311-Yes: 312-Yes: 313-No

CERCLA (Superfund): Not listed under any section.

Workplace Hazardous Materials Information System (WHMIS): Not a controlled product.

Clean Water Act (CWA): Not listed.

EU CLASSIFICATION: Not a dangerous substance.

Safe Drinking Water Act (SWDA): Not listed.

OSHA: Treat as particulates not otherwise regulated.

International Agency for Research on Cancer: Not listed.

ACGIH: Treat as particulates not otherwise regulated.

NTP Annual Report on Carcinogens:**OSHA Carcinogen:** Not listed.**CONEG Model Legislation:** Not listed.

Federal Drug Agency (FDA): Sodium bicarbonate is permitted for the following uses: Antibiotic manufacturing; cake, pancake and ready-mixes; catalyst manufacture; chemical; dentifrices; explosives; fire extinguishers; food colors; food conditioner; papermaking; pharmaceuticals; photography; self-rising flour; starches; sugar refining; textiles.

International Listings

- AICS (Australian Inventory of Chemical Substances).
- Canadian DSL (Domestic Substances List).
- IECSC (Inventory of Existing Chemical Substances Produced or Imported in China).
- EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
- Japanese ENCS (Existing & New chemical Substances) inventory
- Korean ECL (Existing Chemicals List)
- NZIoC (New Zealand Inventory of Chemicals)
- PICCS (Philippines Inventory of Chemicals and Chemical Substances)
- United States TSCA (Toxic Substances Control Act) inventory

16. OTHER INFORMATION**NFPA (National Fire Protection Association) - Classification**

- Health 0
- Flammability 0
- Instability or Reactivity 0

HMIS (Hazardous Materials Identification System (Paint & Coating)) - Classification

- Health 0 minimal
- Flammability 0 minimal
- Reactivity 0 minimal

Disclaimer: The information contained in this Safety Data Sheet (SDS), as of the issue date, is believed to be true and correct. However, the accuracy or completeness of this information and any recommendations or suggestions are made without warranty, express or implied, or guarantee. Tersus Environmental, LLC urges each customer or recipient of this SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. Since we cannot control the application, use or processing of the product, we do not accept responsibility. Therefore, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product and ensure that the intended use of the product will not infringe any party's intellectual property right. The information presented here pertains only to the product as shipped.

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End of Safety Data Sheet