

SAFETY DATA SHEET

TersOx™ Modulator



Revision date: 2019-06-10
Version 1.0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name: TersOx™ Modulator

Synonyms: None

Product Form: Mixture (Proprietary Blend)

Recommended use of the chemical and restrictions on use

Recommended Use: For use in stimulating biological activity in soils and sludges
Remediation of contaminated groundwater and soils

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

Contact Person: David F. Alden
Phone: +1-919-453-5577 x2002
Email: david.alden@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)
- +1-703-527-3887 (Chemtrec Outside United States 24 Hour Service – Emergency Only)
- +1-919-638-7892 Gary M. Birk (Outside office hours)

2. HAZARD IDENTIFICATION

Classification of the substance or mixture

White or transparent crystalline powder. Noncombustible. At very high temperatures, Sulfur dioxide, sulfur trioxide and ammonia may be generated. No known chronic hazards. None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Label elements

Hazard Pictograms

**Signal word**

Danger

Hazard Statement(s):

H290 May be corrosive to metals.

H314 Causes severe skin burns and eye damage.

H335 May cause respiratory irritation.

Eye contact may cause eye corrosion with corneal or conjunctival ulceration. Skin contact may cause skin irritation with discomfort or rash. Higher or prolonged skin irritation may cause burns or ulceration. Inhalation may cause irritation of the respiratory passages with cough, difficulty in breathing and bronchial irritation. Ingestion may cause irritation of the gastrointestinal tract with abdominal pain, nausea, vomiting, diarrhea, and abnormal kidney function. Ingestion may also cause corrosion of mucous membranes with stomach discomfort, nausea, and prostration. Individuals with preexisting diseases of the skin, kidneys, or reproductive system may have increased susceptibility to the toxicity of excessive exposure.

Precautionary statements - Prevention

P234 Keep only in original container.

P260 Do not breathe mist / vapors / spray.

P264 Wash hands thoroughly after handling.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves / protective clothing / eye protection / face protection.

Acute Toxicity

Inhalation 4-hour LC50: 7.7 mg/L in rats

Oral LD50: 4,240 mg/kg in rats

Hazard(s) not otherwise classified (HNOC) None known.**Supplemental information**

The mixture is a skin and eye corrosive but is not a skin sensitizer in animals. Toxic effects described in animals from a single exposure by inhalation include body weight losses, ocular and nasal discharges and other nonspecific effects. Repeated inhalation exposures produced liver, spleen, and thymus changes and gastrointestinal tract alterations. By ingestion, the administration of single high oral doses produced severe gastrointestinal tract irritation, liver damage, increased kidney weights, and the formation of dosing in cats produced weight and appetite loss, depression, vomiting, coma, convulsions, kidney failure due to calcium oxalate deposition, and death. Dogs given similar and higher doses exhibited no toxic effects. Long-term dosing in male and female rats exhibited no toxic effects.

At a high dietary level, a reduced number of off-spring were observed in rats, but this effect occurred only at a maternally toxic dose. In a developmental toxicity study, fetal abnormalities were indicated in rats orally dosed during gestation with Synergist at levels that also produced maternal toxicity. The mixture does not produce genetic damage in bacteria cell cultures.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Formula Mixture

Hazardous components

| Chemical Name | Concentration (%) | CAS Number |
|---------------|-------------------|-------------|
| Acid | 25 -75 | Proprietary |
| Salt | 25 -75 | Proprietary |

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

4. FIRST AID MEASURES

| | |
|--|---|
| General Information | In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person. |
| Eye Contact | Product is a severe eye irritant. Direct contact with eyes must be avoided. In case of contact with eyes, flush eyes with low pressure water for at least 15 minutes. If irritation persists, seek medical attention. |
| Skin Contact | Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before reuse. |
| Inhalation | Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious place in the recovery position and obtain immediate medical attention. Give nothing by mouth. |
| Ingestion | If large quantities of this material are swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting. |
| Most important symptoms and effects, both acute and delayed | No information available. |
| Indication of any immediate medical attention and special treatment needed | Treat symptomatically. |

5. FIRE-FIGHTING MEASURES

| | |
|--|---|
| Suitable Extinguishing Media | This material is compatible with all extinguishing media. |
| Unsuitable extinguishing media | None |
| Specific Hazards Arising from the chemical or mixture | See Section 2 for information on hazards when this material is present in the area of a fire. |

Special Fire Fighting Procedures

Evacuate all non-essential personnel. Wear protective clothing and self-contained breathing apparatus. Remain upwind of fire to avoid hazardous vapors and decomposition products. Use water spray to cool fire-exposed containers.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Put on appropriate personal protective equipment (see Section 8).

Environmental Precautions

Sinks and mixes with water. No adverse effects known.

Methods for Containment and Clean Up

For large spill cleanup: Keep unnecessary people away; isolate hazard area and deny entry. Do not touch walk through spilled material. Neutralize spills with lime or soda ash. Flush spill area with plenty of water. Observe environmental regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid breathing dust. Promptly clean up spills.

Hygiene measures

Handle in accordance with good industrial hygiene and safety procedures. Use good personal hygiene practices.

Conditions for safe storage, including any incompatibilities

Keep containers closed and protected from extremes of temperature and humidity during storage. Recommended storage conditions 68-110°F and 55-87% relative humidity.

Chemical Stability: Stable

Decomposition: Will not occur

Polymerization: Will not occur

Incompatible materials: Hazardous reaction in aqueous solution may occur with chlorine, hypochlorous acid, hypochlorites, cyanides, nitric acid, or sulfides.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Control parameters

Exposure guidelines, ingredients with workplace control parameters.

Exposure Guidelines (Exposure Limits)

TersOx Modulator PEL (OSHA) None established TLV (ACGIH) None Established

Potential Health Effects

This compound may cause burns and ulceration of the eyes and is a severe skin irritant. Prolonged exposure may cause skin burns and ulceration. Inhalation may cause nose, throat, and lung irritation. Ingestion may cause burns and/or perforation of the gastrointestinal tract. Gross overexposure may result in death.

Human Health Effects

Eye contact may cause eye corrosion with corneal or conjunctival ulceration. Skin contact may cause skin irritation with discomfort or rash. Higher or prolonged skin irritation may cause burns or ulceration. Inhalation may cause irritation of the respiratory passages with cough, difficulty in breathing and bronchial irritation. Ingestion may cause irritation of the gastrointestinal tract with abdominal pain, nausea, vomiting, diarrhea, and abnormal kidney function. Ingestion may also cause corrosion of mucous membranes with

stomach discomfort, nausea, and prostration. Individuals with preexisting diseases of the skin, kidneys, or reproductive system may have increased susceptibility to the toxicity of excessive exposure.

Carcinogenicity Information

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA, or ACGIH as a carcinogen.

Exposure Control

Protective equipment



Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Observe any occupational exposure limits for the product or ingredients. Do not allow uncontrolled discharge of product into the environment.

Eye/face protection

The following protection should be worn: Safety glasses with shields, chemical splash goggles or face shield.

Respiratory protection

Provide workers with NIOSH approved respirators in accordance with requirements of 29 CFR 1910.134 for level of exposure incurred.

Hand protection

Neoprene. Vinyl, Rubber (natural, latex), Butyl rubber. Wear protective gloves made of the following material: Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. Polyvinyl chloride (PVC). Manufactured/tested in accordance with EN 374, Avoid the following conditions: Polyvinyl alcohol (PVA).

Other skin and body protection

Wear appropriate clothing to prevent any possibility of skin contact.

Hygiene measures

Wash promptly if skin becomes contaminated. Wash hands at the end of each work shift and before eating, smoking and using the toilet. When using do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

| | |
|--|--|
| Appearance | White-yellow Solid, granular to fine powder |
| Odor | Slight |
| Odor threshold | Not determined |
| pH | 1.18 @ 25°C (77°F) |
| Melting point / freezing point | Not Measured |
| Initial boiling point and boiling range | 209°C |
| Flash Point | Not Measured |
| Evaporation rate (Ether = 1) | Not Measured |
| Flammability (solid, gas) | Not Applicable |
| Upper/lower flammability or explosive limits | Lower Explosive Limit: Not Measured Upper Explosive Limit: Not Measured |

| | |
|---|-------------------------|
| Vapor pressure (Pa) | Not Measured |
| Vapor Density | Not Measured |
| Specific Gravity | 2.126 g/cm ³ |
| Solubility in Water | Miscible |
| Partition coefficient n-octanol/water (Log K_{ow}) | Not Measured |
| Auto-ignition temperature | Not Measured |
| Decomposition temperature | Not Measured |
| Viscosity (cSt) | Not Measured |
| Bulk Density | Not Measured |

10. STABILITY AND REACTIVITY

| | |
|---|---|
| Reactivity | Information not available |
| Chemical stability | Stable under normal circumstances. |
| Possibility of hazardous reactions | Information not available |
| Conditions to avoid | Extreme temperature and direct sunlight. |
| Incompatible materials | Hazardous reaction in aqueous solution may occur with chlorine, hypochlorous acid, hypochlorites, cyanides, nitric acid, or sulfides. |
| Hazardous decomposition products | At very high temperatures, magnesium oxide, sulfur dioxide and sulfur trioxide may be generated. |
| Hazardous Polymerization | Information not available |

11. TOXICOLOGICAL INFORMATION

Acute toxicity

| Ingredient | Oral LD50, mg/kg | Skin LD50, mg/kg | Inhalation Vapor LC50, mg/L/4hr | Inhalation Dust/Mist LC50, mg/L/4hr | Inhalation Gas LC50, ppm |
|-------------------|------------------|-------------------|---------------------------------|-------------------------------------|--------------------------|
| TersOx™ Modulator | 4,240 | No data available | 7.7 mg/l | No data available | No data available |

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

| Classification | Category | Hazard Description |
|-------------------------------|----------|--------------------|
| Acute toxicity (oral) | --- | Not Applicable |
| Acute toxicity (dermal) | --- | Not Applicable |
| Acute toxicity (inhalation) | --- | Not Applicable |
| Skin corrosion/irritation | --- | Not Applicable |
| Serious eye damage/irritation | --- | Not Applicable |
| Respiratory sensitization | --- | Not Applicable |
| Skin sensitization | --- | Not Applicable |
| Germ cell mutagenicity | --- | Not Applicable |
| Carcinogenicity | --- | Not Applicable |

| | | |
|------------------------|-----|----------------|
| Reproductive toxicity | --- | Not Applicable |
| STOT-single exposure | --- | Not Applicable |
| STOT-repeated exposure | --- | Not Applicable |
| Aspiration hazard | --- | Not Applicable |

12. ECOLOGICAL INFORMATION

Toxicity

No additional information provided for this product. See Section 3 for chemical specific data.

Aquatic Ecotoxicity

Aquatic Toxicity - Slight

24-48-hour LC50, bluegill sunfish: 93mg/L

96-hour LC50, fathead minnows: 164 mg/L

These data indicate that TersOx™ Modulator has slight aquatic toxicity.

Persistence and degradability

Readily biodegradable. After 7 days, 89.6% is biodegraded (closed bottle test).

Bioaccumulative potential

Material does not bioaccumulate.

Mobility in soil

No available information

Results of PBT and vPvB assessment

No available information

Other adverse effects

No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods

This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261). Dispose of in accordance with local regulations.

US EPA Waste Number

The waste code should be assigned in discussion between the user and the waste disposal company.

Contaminated Packaging

Empty remaining contents. Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not reuse container

14. TRANSPORTATION INFORMATION

Transport information

NFPA, NPCA-HMIS: NPCA - Rating: Health 1; Flammability 0; Reactivity 1; Personal Protection F

DOT

Hazardous materials descriptions and proper shipping names: Corrosive solid, acidic, inorganic, n.o.s.

UN/NA ID: UN3260

PG: III

Symbol: G

Class: 8

15. REGULATORY INFORMATION

International Inventories

TSCA

DSL/NDSL

EINECS/ELINCS

ENCS

IENSC

KECL Does not comply

PICCS

AICS

Legend:

TSCA

United States Toxic Substance Control Act Section 8(b) Inventory

DSL/NDSL

Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS

European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS

Japan Existing and New Chemical substances

IECSC

China Inventory of existing Chemical Substances

KECL

Korean Existing and Evaluated Chemical Substances

PICCS

Philippines Inventory of Chemicals and chemical Substances

AICS

Australian Inventory of chemical Substances

US 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 | No |
| Chronic health Hazard | No |
| Fire Hazard | No |
| Sudden release of pressure hazard | No |
| Reactive Hazard | No |

CWA (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) of 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.

US State Right-to-know regulations

None

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

- | | |
|------------------------------------|---|
| • Health | 1 |
| • Flammability | 0 |
| • Instability or Reactivity | 0 |
| • Physical and Chemical Properties | - |

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

- | | |
|--------------------|---|
| • Health | 1 slight |
| • Flammability | 0 minimal |
| • Physical Hazards | 0 minimal |
| • PPE | Determined by User; dependent on local conditions |

Key or legend to abbreviations and acronyms used in the safety data sheet

- | | |
|---------|---|
| • PEL | Permissible exposure limit |
| • TWA | 8-hour, time-weighted average |
| • ACGIH | American Conference of Governmental Industrial Hygienists |
| • OSHA | Occupational Safety and Health Administration |
| • NTP | National Toxicology Program |
| • IARC | International Agency for Research on Cancer |
| • NIOSH | National Institute for Occupational Safety and Health |

Disclaimer: This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. All recommendations for the use of our products, whether given by us, orally or to be implied from data or lab tests results by us, are based on the current state of our knowledge at the time those recommendations are made. When additional information is obtained, these recommendations may be updated. They may also be influenced by circumstances outside our control. Notwithstanding, such recommendation the user is responsible that the product as supplied by us is suitable to the process or purpose he intends to use it. The user of the product is solely responsible for compliance with all laws and regulations applying to the use of this product. Since we cannot control the application, use or processing of the product, we do not accept responsibility. Therefore, the user should assure that the intended use of the product will not infringe on any party's intellectual property right.

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End of Safety Data Sheet