


# SAFETY DATA SHEET (SDS)

## TerraStart®

Form #:	SDS-133
Revision Date:	01/08/2021
Revision #:	03
Supersedes Date:	10/09/2019

Section 1: Identification			
Product Name:	TerraStart®	Product Type / Description:	Fungicide / Bactericide / Microbiocide
Recommended Use:	Pre-plant soil treatment	Other Means of Identification:	Peracetic Acid Solution, Peroxyacetic Acid Solution, PAA
Use Restrictions:	It is a violation of federal law to use this product in a manner inconsistent with its labeling.	Chemical Formula:	CH <sub>3</sub> CO <sub>3</sub> H
Manufacturer:	BioSafe Systems, LLC 22 Meadow Street   East Hartford, CT 06108	EPA Registration #:	70299-18
Telephone Number:	1-888-273-3088	<b>Emergency Number: 1-800-424-9300 (CHEMTREC)</b>	

Section 2: Hazard Identification	
<b>GHS Classification</b>	<b>Hazard Statements</b>
Organic Peroxide: Type F Corrosive to Metals: Category 1 Acute Toxicity Oral: Category 4 Dermal: Category 4 Inhalation: Category 4 Skin Corrosion/Irritation: Category 1A Serious Eye Damage/Eye Irritation: Category 1 Specific Target Organ Toxicity (Single Exposure): Category 3 Hazardous to the Aquatic Environment – Acute Hazard: Category 3	H242: Heating may cause fire. H290: May be corrosive to metals. H302: Harmful if swallowed. H314: Causes severe skin burns and eye damage. H332: Harmful if inhaled. H335: May cause respiratory irritation. H411: Harmful to aquatic life.
<b>Pictograms</b>	<b>Signal Word</b>
	<b>DANGER</b>
Precautionary Statements	
<b>General</b>	<b>Response</b>
P101: If medical advice is needed, have product container or label at hand. P102: Keep out of reach of children. P103: Read label before use.	P301+P330+P331: IF SWALLOWED: Rinse mouth. Do not induce vomiting. P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P304+P340: IF INHALED: Move person to fresh air and keep comfortable for breathing. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310: Immediately call a POISON CENTER/doctor. P321: For specific treatments see FIRST AID section on SDS or label. P363: Wash contaminated clothing before reuse. P370+P378: In case of fire: Use water or other suitable extinguishing media. P390: Absorb spillage to prevent material damage.
<b>Prevention</b>	<b>Storage / Disposal</b>
P210: Keep away from heat, sparks or open flames, no smoking. P220: Keep away from combustible materials. P221: Take any precautions to avoid mixing with combustibles. P234: Keep only in original container. P260: Do not breathe fumes, mist or vapors. P262: Do not get in eyes, on skin or on clothing. P264: Wash thoroughly after handling. P270: Do not eat, drink, or smoke when using this product. P271: Use only outdoors or in a well-ventilated area. P273: Avoid release to the environment. P280: Wear protective gloves, clothing, eye protection, face protection.	P403+P235: Store in a well-ventilated place. Keep cool. P404: Store in a closed container. P405: Store locked up. P406: Store in corrosive resistant container, never use metal containers. P410: Protect from sunlight. P411: Store at temperatures not exceeding 55°C (131°F). P420: Store away from incompatible materials.  P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

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### Section 3: Composition / Information on Ingredients

Components	CAS-No	% Composition (w/w)
Hydrogen Peroxide	7722-84-1	16.65 – 20.35%
Peroxyacetic Acid	79-21-0	10.8 – 13.2%
Acetic Acid	64-19-7	18.0 – 22.0%

### Section 4: First-Aid Measures

<b>Eye Contact:</b>	In case of eye contact, remove contact lenses and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. See a medical doctor immediately.
<b>Skin Contact:</b>	Wash off immediately with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Seek immediate medical attention/advice.
<b>Ingestion:</b>	Rinse mouth with water. Never give anything by mouth to an unconscious person. Call a physician immediately. If swallowed, do not induce vomiting - seek medical advice.
<b>Inhalation:</b>	Remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. Consult a physician if necessary.
<b>Notes to Physician:</b>	This product can be corrosive to skin, eyes, and mucous membranes. Careful gastric lavage should be considered. Observations may be warranted. Treatment is controlled removal of exposure followed by supportive care.

### Section 5: Fire-Fighting Measures

<b>Suitable Extinguishing Media:</b>	Water spray.
<b>Unsuitable Extinguishing Media:</b>	Carbon dioxide, alcohol foam, dry chemical. Heavy water stream can spread fire.
<b>Combustion Products:</b>	Corrosive vapors, acetic acid, carbon oxides.
<b>Unusual Fire and Explosion Hazards:</b>	Product is not flammable but during a fire, product can decompose and generate oxygen which can initiate or promote combustion.
<b>Protective Equipment for Firefighters:</b>	Full chemical protection suits and boots (rubber or PVC) and self-contained breathing apparatus. Cordon the area to keep out all unnecessary personnel. Keep upwind. Use large quantities of water spray to fight fire. Cool containers / tanks with water spray. If safe to do, move product away from fire to secure area. Eliminate all possible sources of ignition and remove flammable material.

### Section 6: Accidental Release Measures

<b>Personal Precautions:</b>	Ensure adequate ventilation. Avoid inhalation, ingestion and contact with skin and eyes.
<b>Emergency Procedures:</b>	Ensure clean-up is conducted by trained personnel. Personnel should wear appropriate protective equipment. Remove all sources of ignition. Keep people away from and upwind of spill/leak. If facing concentrations above exposure limits personnel shall wear certified respirators.
<b>Environmental Precautions:</b>	Prevent undiluted spillage from entering sewers, basements or watercourses.
<b>Methods and Material for Containment and Clean-Up:</b>	Dike to collect large liquid spills. Contain spills with earth or sand or inert absorbent. Stop leak and contain spill if this can be done safely. Dilute with large quantities of water. If safe to do so, move product to secure area. Control runoff and isolate discharged material for proper disposal. Do not seal waste material, do not use textiles, tissues, saw dust or combustible materials to clean the spill. Do not return product to the original storage container/tank due to risk of decomposition.

### Section 7: Handling and Storage

<b>Handling:</b>	Wear protective gloves/eye protection/face protection/body, skin protection. Do not eat, drink, or smoke when using this product. Wash thoroughly after handling. Avoid breathing fumes/mist/vapors. Use only outdoors or in a well-ventilated area.
<b>Storage:</b>	Store in cool, ventilated area. Keep away from heat. Keep only in original container. Protect from sunlight. Store at temperatures not exceeding 30°C (86°F) for product quality. Do not store near combustible materials.
<b>Incompatible Materials:</b>	Oxidizing agents, strong reducing agents, combustible materials, heavy metals.
<b>Compatible Materials:</b>	304L Stainless Steel, 316L Stainless Steel, Passivated Aluminum; High Density Polyethylene (HDPE), Polyvinyl Chloride (PVC)

### Section 8: Exposure Controls / Personal Protection

Components with Workplace Control Parameters			
Component	ACGIH	NIOSH	OSHA
Acetic Acid	TWA: 10 ppm STEL: 15 ppm	TWA: 25 mg/m <sup>3</sup> - 8 hours. TWA: 10 ppm - 8 hours. IDLH: 50 ppm	TWA: 25 mg/m <sup>3</sup> - 8 hours. TWA: 10 ppm - 8 hours.
Hydrogen Peroxide	TWA: 1 ppm	TWA: 1.4 mg/m <sup>3</sup> - 8 hours. TWA: 1 ppm - 8 hours. IDLH: 75 ppm	TWA: 1.4 mg/m <sup>3</sup> - 8 hours. TWA: 1 ppm - 8 hours.
Peracetic Acid	STEL: 0.4 ppm		

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<b>Engineering Controls:</b>	Ensure adequate ventilation. Emergency eye wash stations / emergency showers should be available in the immediate vicinity of any potential exposure.
<b>General Hygienic Practices:</b>	Do not eat, drink or smoke during use. Wash hands immediately after handling the product.
<b>Personal Protective Equipment</b>	
<b>Respiratory Protection:</b>	Use NIOSH-approved air-purifying or supplied air respirator where airborne concentrations of vapor or mist are expected to exceed exposure limits. Recommended respirators are those with an organic vapor / acid gas cartridge.
<b>Eye / Face Protection:</b>	Chemical resistant goggles or face shield if splashes are expected to occur.
<b>Hand Protection:</b>	Rubber/latex/neoprene or other suitable chemical resistant gloves. Do not use leather or cotton gloves.
<b>Skin / Body Protection:</b>	Wear non-combustible clothing and footwear (PVC, neoprene, nitrile or natural rubber).

Section 9: Physical and Chemical Properties					
<b>Appearance:</b>	Clear, colorless liquid.	<b>Odor:</b>	Pungent, vinegar-like.	<b>Odor Threshold:</b>	NA
<b>Physical State:</b>	Liquid.	<b>pH:</b>	<1.5	<b>Specific Gravity:</b>	1.11 – 1.13 g/cm <sup>3</sup>
<b>Melting Point:</b>	NA	<b>Freezing Point:</b>	-30°C (-22°F)	<b>Boiling Point:</b>	NA
<b>Flash Point:</b>	NA	<b>Flammability:</b>	NA	<b>Flammability Limits:</b>	NA
<b>Vapor Pressure:</b>	22 mm Hg (30°C)	<b>Vapor Density:</b>	NA	<b>Solubility:</b>	Complete.
<b>Evaporation Rate:</b>	NA	<b>Auto-ignition Temperature:</b>	NA	<b>Decomposition Temperature:</b>	SADT > 55°C (131°F)
<b>Relative Density:</b>	NA	<b>Partition Coefficient n-octanol / water:</b>	NA	<b>Viscosity:</b>	NA

Section 10: Stability and Reactivity	
<b>Reactivity:</b>	Reactive and oxidizing agent, organic peroxide.
<b>Stability:</b>	Stable under recommended storage conditions.
<b>Conditions to Avoid:</b>	Open flames/heat sources, temperatures above 55°C (131°F), direct sunlight, combustible materials.
<b>Incompatible Materials:</b>	Acids, bases, reducing agents, organic materials, heavy metals, salts of metals.
<b>Hazardous Decomposition Products:</b>	Thermal decomposition generates corrosive vapors, acetic acid and oxygen which supports combustion.

Section 11: Toxicological Information			
Acute Toxicological Data			
<b>Oral LD50 Rat:</b>	330 mg/kg (7% solution)	<b>Dermal LD50 Rabbit:</b>	1410 mg/kg (10% solution)
<b>Inhalation LC50 Rat:</b>	1 hr – 590 mg/m <sup>3</sup>		
Symptoms and Effects			
Condition	Acute Effects	Chronic (Delayed) Effects	
<b>Eye Contact:</b>	Causes serious eye damage.	None.	
<b>Skin Contact:</b>	Causes severe skin burns.	None.	
<b>Inhalation:</b>	May cause respiratory tract irritation.	None.	
<b>Ingestion:</b>	Probable mucosal damage.	None.	

Section 12: Ecological Information			
Ecotoxicity:	Duration	Species	Value
		96 hr LC50	<i>Salmo gairdneri</i>
	96 hr LC50	<i>Pleuronectes platessa</i>	89.1 mg/L (NOEC 56 mg/L) (12% solution)
	48 hr EC50	<i>Daphnia magna</i>	3.3 mg/L (NOEC 1 mg/L)
	96 hr EC50	<i>Crangon crangon</i>	126.8 mg/L (NOEC 56 mg/L) (12% solution)
	5 min EC100	<i>Pseudomonas aeruginosa</i>	5 mg/L
<b>Persistence and Degradability:</b>	Abiotic degradation: Air - can be degraded by abiotic (e.g. chemical or photolytic) processes; Water, t 1/2 (Hydrolysis) ca. 120 h Chemical degradation; Soil, 99 %, < 0.5 h (1 % solution) Chemical degradation. Biodegradation: Aerobic – non-biodegradable closed bottle, readily biodegradable 2 mg/L, > 70 %, 28 d; anaerobic- no data available, Effects on waste water treatment plants inhibitory action at 90 mg/L, BOD increase of treated effluent by acetic acid formation.		
<b>Bioaccumulative Potential:</b>	Does not bioaccumulate.		
<b>Mobility in Soil:</b>	Non-significant adsorption soil degradation, >99% in 20 minutes.		
<b>Results of PBT &amp; vPvB:</b>	This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT).		
<b>Other Adverse Effects:</b>	None known.		


Section 13: Disposal Considerations	
<b>Waste from Residues and Unused Product:</b>	Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.
<b>Contaminated Container Disposal:</b>	Do not reuse or refill containers. Triple rinse empty containers with clean water. Clean and empty containers should be taken to an approved waste handling site for recycling or disposal.

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### Section 14: Transport Information

UN Number	UN Proper Shipping Name	Hazard Class (Subsidiary)	Packing Group	IATA	Marine Pollutant
DOT 3109	Organic peroxide type F, liquid (Peroxyacetic Acid, Type F, Stabilized, <43%)	5.2	NA	Not permitted for shipment by air.	No
TDG 3109	Organic peroxide type F, liquid (Peroxyacetic Acid, Type F, Stabilized, <43%)	5.2	NA		
IMDG 3109	Organic peroxide type F, liquid (Peroxyacetic Acid, Type F, Stabilized, <43%)	5.2			
<b>Special Precautions:</b>		Shipping container: UN certified vented polyethylene			
<b>Shipping Placards:</b>					

### Section 15: Regulatory Information

TSCA Inventory List		US EPA CERCLA Hazardous Substances		Clean Water Act
Acetic Acid	Yes	Acetic Acid	5000 lbs.	5000 lbs.
Hydrogen Peroxide	Yes	Hydrogen Peroxide	NA	NA
Peracetic Acid	Yes	Peracetic Acid	NA	NA

#### SARA Title III

	Sec. 302 TPQ.	Sec 304 RQ.	Sec 311 / Sec 312 Hazard Category	Sec 313	Clean Air Act Threshold Qty.
Acetic Acid	NA	NA	NA	NA	NA
Hydrogen Peroxide	1000 lbs.	1000 lbs.*	<b>Physical:</b> Oxidizer <b>Health:</b> Acute Toxicity; Skin Corrosion or Irritation; Serious Eye Damage or Eye Irritation; Specific target organ toxicity	NA	NA
Peracetic Acid	500 lbs.	500 lbs.	<b>Physical:</b> Organic Peroxide; Corrosive to Metals <b>Health:</b> Acute Toxicity; Skin Corrosion or Irritation; Serious Eye Damage or Eye Irritation; Specific target organ toxicity	Yes	10000 lbs.

\*Hydrogen Peroxide Reportable Quantity only applies to concentrations > 52%

<b>NFPA 704 Rating</b>	<b>Health:</b> 3	<b>Flammability:</b> 1	<b>Reactivity:</b> 2	<b>Special:</b> OX (Oxidizer)
<b>HMIS Rating</b>	<b>Health:</b> 3	<b>Flammability:</b> 1	<b>Physical:</b> 2	<b>PPE:</b> Recommended. (B)
<b>Uniform Fire Code (NFPA 400)</b>	Organic Peroxide: Class IV, Liquid			

<b>California Prop 65</b>	This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm.
<b>FIFRA</b>	This product is a registered sanitizer / disinfectant with the United States Environmental Protection Agency and is subject to EPA labeling requirements under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). These requirements may differ from the classification criteria and hazard information required for a safety data sheet under the Global Harmonized Systems (GHS), and for workplace labels of non-pesticide chemicals. It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Always refer to product label for further precautionary information and use directions.

### Section 16: Other Information

#### According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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