

**SAFETY DATA SHEET**  
**TersOx™ Nutrients - DAP**



Revision date: 2019-06-17  
Version 1.0

**1. PRODUCT AND COMPANY IDENTIFICATION**

**Product Identifier**

Trade Name: TersOx™ Nutrients - DAP  
Chemical Name: Diammonium Phosphate (DAP)  
CAS No: 7783-28-0  
Formula:  $(\text{NH}_4)_2\text{HPO}_4$   
Synonyms: Ammonium phosphate, dibasic / Diammonium hydrogenorthophosphate / Phosphoric acid, diammonium salt / Diammonium hydrogenphosphate / Ammonium phosphate dibasic / Diammonium hydrogen phosphate / Diammonium hydrogen orthophosphate / Phosphoric acid, ammonium salt (1:2)  
Product Form: Substance

**Recommended use of the chemical and restrictions on use**

Recommended Use: 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](mailto:info@tersusenv.com)  
Contact Person: David F. Alden  
Phone: +1-919-453-5577 x2002  
Email: [david.alden@tersusenv.com](mailto: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**

This product is not classified as dangerous according to OSHA Hazard Communication Standard (29 CFR 1910.1200).

**GHS-US classification**

Skin Irrit. 2 H315

Eye Irrit. 2B	H320
STOT SE 3	H335
Aquatic, Acute 2	H401

**GHS Label elements, including precautionary statements****Label elements****Signal word** Warning**Hazard statement**

H315 - Causes skin irritation  
H320 - Causes eye irritation  
H335 - May cause respiratory irritation  
H401 - Toxic to aquatic life

**Precautionary statement**

P261 - Avoid breathing dust  
P264 - Wash hands thoroughly after handling  
P271 - Use only outdoors or in a well-ventilated area  
P273 - Avoid release to the environment.  
P280 - Wear eye protection, face protection, protective clothing  
protective gloves  
P302+P352 - IF ON SKIN: Wash with plenty of water  
P304+P340 - IF INHALED: Remove 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  
P312 - Call a POISON CENTER/doctor if you feel unwell  
P332+P313 - If skin irritation occurs: Get medical advice/attention P337+P313 - If  
eye irritation persists: Get medical advice/attention  
P362 - Take off contaminated clothing  
P403+P233 - Store in a well-ventilated place. Keep container tightly closed  
P405 - Store locked up  
P501 - Dispose of contents/container according to local, regional, national, and  
international regulations

**Special Provisions**

Hazardous to the aquatic environment.

**Hazards not otherwise Classified Identified during the Classification Process:**

No additional information available

**Supplemental information**

NFPA Ratings (scale 0-4)

Health = 1  
Fire = 0  
Reactivity = 0

HMIS Rating System

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD (BLUE)			1
FLAMMABILITY HAZARD (RED)			0
PHYSICAL HAZARD (YELLOW)			0
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Sect 8		See Sect 8
For Routine Industrial Use and Handling Applications			

Health = 1 Flammability = 0 Reactivity = 0

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Chemical Formula

 $(\text{NH}_4)_2\text{HPO}_4$ 

Hazardous components

Chemical Name	CAS Number	Concentration (wt. %)	GHS-US classification
(DAP) Diammonium phosphate (as P <sub>2</sub> O <sub>5</sub> ) (Main constituent)	7783-28-0	46	Skin Irrit. 2, H315 Eye Irrit. 2B, H320 STOT SE 3, H335
Total Nitrogen, as N**		18	
Fluorides, as F		1	

\*\*Product contains diammonium phosphate as essential ingredient with small amounts of monoammonium phosphate, ammonium sulfate, urea, and aluminum/calcium/iron/magnesium compounds.

Synonyms are provided in Section 1.

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

**4. FIRST AID MEASURES**

First-aid measures general	If medical advice is needed, have product container or label at hand.
Eye Contact	Immediately rinse with water for a prolonged period while holding the eyelids wide open. Obtain medical attention if irritation develops or persists.
Skin Contact	Wash skin thoroughly with mild soap and water. Obtain medical attention if irritation develops or persists
Inhalation	If inhaled, remove to fresh air and keep at rest in a position comfortable for breathing. Give oxygen or artificial respiration if necessary. Obtain medical attention if breathing difficulty persists.
Ingestion	Do not induce vomiting. Seek medical attention if a large amount is swallowed. Get medical advice and attention if you feel unwell. Drink large amounts of water (or milk if available) to dilute stomach contents. Ingestion

Most important Symptoms and Effects, both Acute and Delayed	of small quantities in unlikely to cause toxic effect. Large quantities may give rise to gastro-intestinal disorders Symptoms/injuries: Irritation to eyes, skin and respiratory tract. Symptoms/injuries after inhalation: Difficulty in breathing. Dry/sore throat. Symptoms may be delayed. Symptoms/injuries after skin contact: May cause skin irritation. Symptoms/injuries after eye contact: May cause eye irritation. Symptoms/injuries after ingestion: If a large quantity has been ingested: Abdominal pain. Diarrhea. Nausea. Vomiting.
Indication of any Immediate Medical Attention and Special Treatment Needed	No additional information available

## 5. FIRE-FIGHTING MEASURES

### Extinguishing media

<b>Suitable Extinguishing Media</b>	Water. Carbon dioxide (CO <sub>2</sub> )
<b>Unsuitable Extinguishing Media</b>	Not in particular.

### Special hazards arising from the substance or mixture

Fire hazard	Under conditions of fire this material may produce: Ammonia.
Explosion hazard	Product is not explosive.
Reactivity	Stable at ambient temperature and under normal conditions of use.

### Advice for firefighters

<b>Firefighting instructions</b>	Keep upwind. Under conditions of fire this material may produce: Ammonia
<b>Protection during firefighting</b>	Wear full fire-fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).
<b>Other information</b>	Do not allow run-off from firefighting to enter drains or water courses.

## 6. ACCIDENTAL RELEASE MEASURES

<b>Personal Precautions, Protective Equipment, and Emergency Procedures</b>	Wear personal protection equipment. Remove all sources of ignition. Wear breathing apparatus if exposed to vaporous/dusts/aerosols. Provide adequate ventilation. Remove persons to safety. Use appropriate respiratory protection. See protective measures under point 7 and 8.
<b>Environmental Precautions Methods for Containment and Clean Up</b>	Wash with plenty of water

## 7. HANDLING AND STORAGE

<b>Precautions for Safe handling</b>	<ul style="list-style-type: none"> <li>• When heated, material emits irritating fumes.</li> <li>• Handle in accordance with good industrial hygiene and safety procedures. Avoid contact with skin and eyes. Do not eat, drink or smoke when using this product.</li> <li>• Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.</li> </ul>
<b>Conditions for Safe</b>	<ul style="list-style-type: none"> <li>• See also section 8 for recommended protective equipment.</li> <li>• Store tightly closed in a dry, cool and well-ventilated place. Protect</li> </ul>

**Storage, including any Incompatibilities**


- from moisture.
- Incompatible materials: Alkalis and caustic products; strong acids; copper and its alloys.

## 8. EXPOSRE CONTROL / PERSONAL PROTECTION

**Control parameters**

Diammonium Phosphate (7783-28-0) as P <sub>2</sub> O <sub>5</sub>		
USA ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> – inhalable fraction 3 mg/m <sup>3</sup> – respirable fraction
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	15 mg/m <sup>3</sup> – particulate 5 mg/m <sup>3</sup> – respirable
Fluorides		
USA ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	2.5 mg/ m <sup>3</sup>
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	2.5 mg/ m <sup>3</sup>

**Exposure Control**

Appropriate engineering controls	Ensure adequate ventilation, especially in confined areas. Avoid high dust concentration.
Personal protective equipment	Gloves. Safety glasses. Protective clothing.
	
Hand protection	Impermeable protective gloves.
Eye protection	Protective goggles.
Skin and body protection	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Wear suitable protective clothing. Wash contaminated clothing before reuse. Handle in accordance with good industrial hygiene and safety practice.
Respiratory protection	Wear NIOSH approved respiratory protective equipment when exposure exceeds the OSHA nuisance dust standard of 15 mg/m <sup>3</sup> or the ACGIH nuisance dust limit of 10 mg/m <sup>3</sup> for the eight-hour time weighted average. When stored in closed area, a self-contained breathing apparatus is required to protect against ammonia gas.
Environmental exposure controls	Ensure adequate ventilation, especially in confined areas.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Information on basic physical and chemical properties**

Physical state	Solid
Appearance	Granular solid
Molecular mass	132.06 g/mol
Color	Gray to brownish black
Odor	Ammonia
Odor threshold	No data available
pH	8.0 (conc: 1 % at 20 °C (solution))
Relative evaporation rate (butylacetate=1)	No data available
Melting point	155 °C (302°F) (decomposes)

Freezing point	No data available
Boiling point	Decomposes
Flash point	Not applicable
Self-ignition temperature	Not flammable
Decomposition temperature	No data available
Flammability (solid, gas)	Not flammable
Vapour pressure	< 1 mm Hg (at 20 °C)
Relative vapor density at 20 °C	No data available
Relative density	No data available
Density	1.619 g/cm <sup>3</sup> (at 20 °C)
Bulk Density	58-61 lb/ft <sup>3</sup> (loose) 60-67 lb/ft <sup>3</sup> (tamped)
Solubility	Water 588 g/l (at 20 °C)
Log Pow	No data available. Based on water solubility it is expected that the log Pow would be very low.
Log Kow	No data available
Viscosity	No data available
Explosive properties	Not explosive
Oxidizing properties	No oxidizing properties
Explosive limits	No data available

## 10. STABILITY AND REACTIVITY

<b>Reactivity</b>	• Stable under normal conditions
<b>Chemical Stability</b>	• Stable under normal conditions
<b>Possibility of Hazardous Reactions</b>	• None
<b>Conditions to Avoid</b>	• Stable under normal conditions
<b>Incompatible Materials</b>	• Alkalis and caustic products; strong acids; copper and its alloys.
<b>Hazardous Decomposition Products</b>	• Ammonia is released upon reaction with strong bases or from thermal decomposition.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity

Not classified

Ingredient	Oral LD50, mg/L	Skin LD50, mg/kg	Inhalation Vapor LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Diammonium Phosphate (NH <sub>4</sub> ) <sub>2</sub> HPO <sub>4</sub> (7783-28-0)	Oral - Species: Rat = 2000 mg/k	Species: Rat > 5000 mg/kg - Duration: 4h	Species: Rat > 5 mg/l - Duration: 4h	No data available	No data available

Skin corrosion/irritation	Causes skin irritation. pH: 8.0 (conc: 1 % at 20 °C (solution))
Serious eye damage/irritation	Causes eye irritation. pH: 8.0 (conc: 1 % at 20 °C (solution))
Respiratory or skin sensitization	Not classified
Germ cell mutagenicity	OECD 471: Bacterial reverse mutation assay, <i>S. typhimurium</i> : Negative

	OECD 473: Chromosome aberration test, Chinese hamster ovaries: Negative
Carcinogenicity	Not classified
Reproductive toxicity	Not classified. OECD 422: NOAEL, Rat = 1,500 mg/kg/day
Specific target organ toxicity (single exposure)	May cause respiratory irritation.
Specific target organ toxicity (repeated exposure)	Not classified

Additional information: This compound is listed by the FDA as generally recognized as safe (GRAS) and may be used as a food additive.

## 12. ECOLOGICAL INFORMATION

### Aquatic Ecotoxicity

Adopt good working practices, so that the product is not released into the environment.

Ingredient	Endpoint LD50, mg/L
Diammonium Phosphate (NH <sub>4</sub> ) <sub>2</sub> HPO <sub>4</sub> (7783-28-0)	Species: Fish = 1700 mg/L - Duration h: 96 Species: Daphnia = 1790 mg/l - Duration h: 72 Species: Algae > 100 mg/l - Duration h: 72 NOEC - Species: Algae = 100 mg/l - Duration h: 72

Ecotoxicity	EPA Ecological Toxicity rating	Slightly toxic to practically non-toxic to aquatic organisms based on the Federal Insecticide Fungicide and Rodenticide Act (FIFRA) acute toxicity ratings.
	Chronic Toxicity to Fish	No data available
	Acute Toxicity to Aquatic Invertebrates	(Amphipod) 96-hr: LC50 = 40-52 mg/L; (Snails, worm) 96-hr: LC50 = 1,005 - 2,472 mg/L.
	Chronic Toxicity to Aquatic Invertebrates	No data available
	Toxicity to Aquatic Plants	( <i>Selenastrum capricornutum</i> ) 72-hr: NOEC (stimulation) = 3.57 mg DAP/L; NOEC (toxicity) = 97.1 mg DAP/L.
	Toxicity to Bacteria	No data available
	Toxicity to Soil Dwelling Organisms	No data available
	Toxicity to Terrestrial Plants	No data available
Environmental Fate	Stability in Water:	Stable
	Stability in Soil:	Stable
	Transport and Distribution:	Calculated, fugacity level III: 6.5 x 10 <sup>-15</sup> to air, 45.3% to water, 54.6% to soil, 0.0755% to sediment. Phosphates, whether water or citrate soluble, are translocated in the soil only over very short periods and are then immobilized.
Toxicity	Inorganic phosphates have the potential to increase the growth of freshwater algae.	
Degradation Products:	Biodegradation	The Phosphorus cycle is well understood. Phosphates are converted to calcium or iron/aluminum phosphates or are incorporated with the organic soil matter.
	Photodegradation	No data available

**13. DISPOSAL CONSIDERATIONS**

<b>Sewage Disposal</b>	This material is hazardous to the aquatic environment. Keep out of sewers and waterways
<b>Waste Disposal Methods</b>	Recover if possible. In so doing, comply with the local and national regulations currently in force.
<b>Additional information</b>	Dispose of waste material in accordance with all local, regional, national, and international regulations.

**14. TRANSPORTATION INFORMATION**

In accordance with DOT / TDG / ADR / RID / ADNR / IMDG / ICAO / IATA

**UN Number**

Not classified as dangerous in the meaning of transport regulations.

**UN Proper Shipping Name**

Not Applicable.

**Transport Hazard Class(es)**

Not Applicable.

**Packing Group**

Not Applicable.

**Environmental Hazards**

Not Applicable.

**Transport in Bulk (according to Annex II of MARPOL 73/78 and the IBC Code)**

Not Applicable.

**Special Precautions**

Not Applicable.

**15. REGULATORY INFORMATION****U.S. Federal Regulations**

**TSCA - Toxic Substances Control Act** Not regulated.

This substance is listed on the TSCA inventory. TSCA listed substances: None.

**CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act**

No substances listed.

**SARA Superfund Amendments and Reauthorization Act.**

**Superfund Amendments and Reauthorization Act of 1986 (SARA) Hazard Categories**

- Immediate hazard No
- Delayed hazard No
- Fire hazard No
- Pressure hazard No
- Reactive Hazard No

**SARA 302 Extremely hazardous substance**

Not listed

**SARA 311/312 Hazardous**

Not listed

**SARA 313 (TRI reporting)**

Not regulated.



**Other Federal Regulations****Clean Air Act (CAA) Listed Substance**

Not regulated.

**Clean Water Act (CWA) Section 112(r) Accidental Release Prevention (40 CFT 68.130)**

Not regulated.

**US State Regulations****US. Massachusetts RTK – Substance list**

Not regulated.

**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 Proposition 65****California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):**

Not listed.

**16. OTHER INFORMATION****Full Text of H - Phrases:**

Eye Irrit. 2 Serious eye damage/eye irritation Category 2

Skin Irrit. 2 skin corrosion/irritation Category 2

STOT SE 3 H335 – May cause respiratory irritation.

H315 Causes skin irritation

H319 Causes serious eye irritation

**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, weather 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 in any party's intellectual property right.



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**End of Safety Data Sheet**