1. Identification of the Substance/Preparation and of the Company/Undertaking

Product identifier
Product Description: Hydrothol® 191 Aquatic algicide and herbicide

Other means of identification
Item#: 12-174
UN-No 2902
Synonyms Not Available
Registration number(s) 70506-175

Recommended use of the chemical and restrictions on use
Recommended use Aquatic herbicide. algicide.
Uses advised against Activities contrary to label recommendation

Details of the Supplier of the Safety Data Sheet
Supplier Address United Phosphorus Inc.
630 Freedom Business Center
Suite 402
King of Prussia, PA 19406

Emergency telephone number
Company Phone Number 1-800-438-6071
Emergency telephone number Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center (866) 673-6671 (24hrs)

2. Hazards Identification

Classification
OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th>Classification</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity - Oral</td>
<td>3</td>
</tr>
<tr>
<td>Acute toxicity - Dermal</td>
<td>3</td>
</tr>
<tr>
<td>Acute toxicity - Inhalation (Vapors)</td>
<td>2</td>
</tr>
<tr>
<td>Skin Corrosion/Irritation</td>
<td>1 Sub-category B</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>1</td>
</tr>
</tbody>
</table>

Label elements

EMERGENCY OVERVIEW

DANGER

hazard statements
Toxic if swallowed
Toxic in contact with skin
Fatal if inhaled
Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves/protective clothing/eye protection/face protection
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
In case of inadequate ventilation wear respiratory protection

IF ON SKIN: Wash with plenty of soap and water
Call a POISON CENTER or doctor if you feel unwell
Remove/Take off immediately all contaminated clothing
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards Not Otherwise Classified (HNOC)
OTHER INFORMATION

3. Composition/information on Ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No</th>
<th>Weight %</th>
<th>Trade secret</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mono(N,N-dimethylalkylamine)salt of endothall</td>
<td>66330-88-9</td>
<td>53</td>
<td></td>
</tr>
</tbody>
</table>

If CAS number is "proprietary", the specific chemical identity and percentage of composition has been withheld as a trade secret.

4. First aid measures

FIRST AID MEASURES

Eye contact
Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Skin contact
Wash off immediately with plenty of water for at least 15 minutes. Call a poison control center or doctor for treatment advice.

Inhalation
Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.
Ingestion

Call a physician or poison control center immediately. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

Protection of First-aiders

Use personal protective equipment.

Most Important Symptoms and Effects, Both Acute and Delayed

No information available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

No information available. Treat symptomatically.

### 5. Fire-fighting measures

**Suitable extinguishing media**

Carbon dioxide (CO2). Aquatic. Foam.

**Unsuitable extinguishing media**

No information available.

**Specific hazards arising from the chemical**

Thermal decomposition can lead to release of irritating gases and vapours.

**Hazardous combustion products**

Extreme temperatures convert Endothall product to endothall anhydride which is a strong vesicant causing blistering of eyes, mucous membranes and skin.

**Explosion data**

Use personal protective equipment. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

### 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**

**Personal Precautions**

Avoid contact with skin and eyes. Use personal protective equipment. Wear protective gloves/protective clothing and eye/face protection.

**Environmental Precautions**

Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

**Methods and material for containment and cleaning up**

**Methods for Clean-Up**

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Sweep up and shovel into suitable containers for disposal.

### 7. Handling and Storage

**Precautions for safe handling**

**Handling**

Keep out of reach of children. Empty containers may contain hazardous residues. Avoid contact with skin, eyes and clothing. Remove and wash contaminated clothing before re-use. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.

**Conditions for safe storage, including any incompatibilities**

**Storage**

Keep in a dry place. Keep containers tightly closed in a cool, well-ventilated place. Keep from freezing.
incompatible materials

Strong oxidizing agents.

8. Exposure Controls/Personal Protection

Exposure guidelines
This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Engineering controls
Investigate engineering techniques to reduce exposures. Local mechanical exhaust ventilation is preferred. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Personal protective equipment

Eye/Face Protection
Use eye protection to avoid eye contact. Where there is potential for eye contact have eye flushing equipment available. Goggles.

Skin protection
Wear protective gloves/clothing. Chemical resistant footwear plus socks.

Respiratory protection
Where airborne exposure is likely, use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. If exposures cannot be kept at a minimum with engineering controls, consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure, use an approved full face positive-pressure, self-contained breathing apparatus. Respiratory protection programs must comply with 29 CFR 1910.134.

General hygiene considerations
Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Wear suitable gloves and eye/face protection. Wash hands before breaks and immediately after handling the product.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>VALUES</th>
<th>Remarks/ Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>100 °C / 212 °F</td>
<td></td>
</tr>
<tr>
<td>Flash Point</td>
<td>&gt; 100 °C</td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Flammability limit in air</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Upper Flammability Limit</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Lower Flammability Limit</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>vapor pressure</td>
<td>9.45 X 10^-6 Torr(Salt)</td>
<td></td>
</tr>
<tr>
<td>Vapor Density</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.044 @25 C</td>
<td></td>
</tr>
<tr>
<td>Water solubility</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Solubility in Other Solvents</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>decomposition temperature</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Dynamic viscosity</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No information available</td>
<td></td>
</tr>
</tbody>
</table>

OTHER INFORMATION
10. Stability and Reactivity

Reactivity
no data available

Chemical stability
Stable under normal conditions.

Possibility of hazardous reactions
None under normal processing.

- Hazardous polymerization: Hazardous polymerisation does not occur.

Conditions to avoid
Not known.

Incompatible materials
Strong oxidizing agents.

Hazardous decomposition products
Carbon oxides.

11. Toxicological Information

Information on Likely Routes of Exposure

Product information
Single exposure studies indicate:
- Oral - Moderately toxic to rats (LD50 233.4 mg/kg)
- Dermal - Moderately toxic to rabbits (LD50 480.9 mg/kg)
- Inhalation - Slightly toxic to rats (4 hr LC 50 0.7 mg/l)

Skin irritation - Severely irritating to rabbits
Eye irritation - Severely irritating to rabbits
No skin allergy was observed in guinea pigs following repeated exposure. Endothall intentional swallowing of 40 ml led to death within 12 hours. Skin allergy was observed in guinea pigs following repeated exposure. Repeated dietary administration (via gelatin capsules) produced vomiting, diarrhea, sluggish movements, and liver, kidney and blood effects in dogs. Long-term dietary administration to rats and mice produced effects in the glandular stomach. High mortality rates and intestinal tumors considered to be secondary to the effects in the stomach were observed in mice. Long-term application to the skin of mice produced no tumors. No birth defects were observed in the offspring of rats exposed orally during pregnancy, even at dosages that produced adverse effects on the mothers. Skeletal abnormalities were observed in the offspring of rabbits and mice exposed during pregnancy, but only at dosages that produced adverse effects in the mothers. No genetic changes were observed in tests using bacteria, animal cells or animals.

- Inhalation: Harmful by inhalation.
- Eye contact: Corrosive. May cause irreversible damage to eyes.
- Skin contact: Causes severe skin burns.
- Ingestion: MAY BE FATAL IF SWALLOWED.
Symptoms

No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

sensitization
No information available.

Mutagenic effects
No information available.

Carcinogenicity
There are no known carcinogenic chemicals in this product.

Reproductive effects
Not Available.

STOT - Single Exposure
No information available.

STOT - repeated exposure
No information available.

Aspiration hazard
No information available.

Numerical Measures of Toxicity - Product information

<table>
<thead>
<tr>
<th>Measure</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 Oral</td>
<td>233 mg/kg (rat)</td>
</tr>
<tr>
<td>LD50 Dermal</td>
<td>480.9 mg/kg (rat)</td>
</tr>
<tr>
<td>LC50 Inhalation:</td>
<td>0.7 mg/l (rat) (4-hr)</td>
</tr>
</tbody>
</table>

12. Ecological Information

etotoxicity

Endothall mono amine salt:
Acute contact toxicity Honey Bee
Practically non toxic
Acute Toxicity Avain
Northern Bobwhite Quail LD50 736 mg/kg
Acute Toxicity Freshwater Fish EC50
Bluegill sunfish 0.94 ppm
Rainbow trout 0.56 ppm
Cutthroat trout 0.18 ppm
Channel catfish 0.49 ppm
Acute Toxicity Freshwater Invertebrates EC50
Daphnia magna 0.36 ppm (48 hr)
Grass shrimp 0.05 ppm (96hr)
Scud 2.0 ppm (48 hr)
Acute Toxicity Marine Invertebrates (flow thru) EC50 Mysid shrimp 2.2 ppm (96 hr)
Acute Toxicity Marine Fish (Flow thru) EC50
Sheepshead minnow 3.5 ppm (96 hr)

Persistence/Degradability
No information available.

Bioaccumulation/ Accumulation
Does not bioaccumulate.

Other Adverse Effects
No information available

13. Disposal Considerations

Waste Treatment Methods
Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide or rinsate is a violation of Federal law. If the wastes cannot be disposed of by use or according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
Contaminated packaging
Refer to product label.

14. Transport Information

DOT
UN-No  2902
Proper shipping name Pesticides, liquid, toxic. n.o.s. (Endothal)
Hazard class 6.1
Packing group PG III
Reportable Quantity (RQ): 1,000 lbs (endothall)

ICAO
UN-No  2902
Proper shipping name Pesticide, liquid, toxic, n.o.s (Endothall)
Hazard class 6.1
Packing group PG III

IATA
UN-No  2902
Proper shipping name Pesticide, liquid, toxic, n.o.s (Endothall)
Hazard class 6.1
Packing group PG III

IMDG/IMO
UN-No  2902
Proper shipping name Pesticide, liquid, toxic, n.o.s (Endothall)
Hazard class 6.1
Packing group PG III
EmS No. F-A, S-A

15. Regulatory Information

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

signal word DANGER

Ventilation Control
PESTICIDE APPLICATORS & WORKERS THESE WORKERS MUST REFER TO PRODUCT LABELING AND DIRECTIONS FOR USE IN ACCORDANCE WITH EPA WORKER PROTECTION STANDARD 40 CFR PART 170.

Keep out of Reach of Children. Causes irreversible eye damage. May be fatal if swallowed. Harmful if inhaled or absorbed through skin.

International Inventories
USINV Not determined
DSL/NDSL Not determined
EINECS/ Does not comply
ELINCS
ENCS Does not comply
China Does not comply
KECL Does not comply
PICCS Does not comply
AICS  Does not comply
TSCA  Does not comply

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU 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

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 and Title 40n of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazardous Categorization
Acute health hazard  yes
Chronic health hazard  NO
Fire hazard  No
Sudden release of pressure hazard  No
Reactive Hazard  yes

CERCLA
SARA Product RQ  0

RCRA
Pesticide Information

State Regulations

State Right-to-Know
International regulations
U.S. EPA Label information
EPA Pesticide registration number  70506-175

16. Other Information

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HEALTH</th>
<th>flammability</th>
<th>Instability</th>
<th>Physical hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Preparation Date  27-Apr-2015
Revision date  12-Sep-2016
Revision Summary
Recurrent confirmation/update of data

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End of MSDS