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MSDS: 0015391  
Date: 07/08/2004  
Supercedes: 06/09/2004

## MATERIAL SAFETY DATA SHEET

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Diethyl allylphosphonate  
**Synonyms:** DEAP Monomer  
**Chemical Family:** Ester  
**Molecular Formula:** C<sub>7</sub>H<sub>15</sub>O<sub>3</sub>P  
**Molecular Weight:** 178.077

CYTEC INDUSTRIES INC., FIVE GARRET MOUNTAIN PLAZA, WEST PATERSON, NEW JERSEY 07424, USA  
For Product Information call 1-800/652-6013. Outside the USA and Canada call 1-973/357-3193.

EMERGENCY PHONE: For emergency involving spill, leak, fire, exposure or accident call CHEMTREC: 1-800/424-9300. Outside the USA and Canada call 1-703/527-3887.

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

#### OSHA REGULATED COMPONENTS

Component / CAS No.	% (w/w)	OSHA (PEL):	ACGIH (TLV)	Carcinogen
Diethyl allylphosphonate 1067-87-4	~ 84 - 95	Not Established	Not Established	-
Triethyl phosphate 78-40-0	~ 2 - 4	Not Established	Not Established	-

### 3. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

#### APPEARANCE AND ODOR:

Color: clear  
Appearance: liquid  
Odor: sweet

#### STATEMENTS OF HAZARD:

WARNING! CAUSES EYE IRRITATION

#### POTENTIAL HEALTH EFFECTS

##### EFFECTS OF EXPOSURE:

The acute oral (rat) LD<sub>50</sub> and acute dermal (rat) LD<sub>50</sub> values are 1,098 mg/kg and > 2,000 mg/kg, respectively. This material produced minimal skin and moderate eye irritation when tested (rabbits). This material was not mutagenic in the Ames Salmonella Assay. Refer to Section 11 for toxicology information on the regulated components of this product.

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## 4. FIRST AID MEASURES

**Ingestion:**

If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

**Skin Contact:**

Wash immediately with plenty of water and soap.

**Eye Contact:**

Rinse immediately with plenty of water for at least 15 minutes. Obtain medical advice if there are persistent symptoms.

**Inhalation:**

Remove to fresh air. If breathing is difficult, give oxygen. Obtain medical advice if there are persistent symptoms.

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## 5. FIRE-FIGHTING MEASURES

**Extinguishing Media:**

Use water spray or fog, carbon dioxide or dry chemical.

**Protective Equipment:**

Firefighters, and others exposed, wear self-contained breathing apparatus. Wear full firefighting protective clothing. See MSDS Section 8 (Exposure Controls/Personal Protection).

**Special Hazards:**

Keep containers cool by spraying with water if exposed to fire.

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## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions:**

Where exposure level is not known, wear approved, positive pressure, self-contained respirator. Where exposure level is known, wear approved respirator suitable for level of exposure. In addition to the protective clothing/equipment in Section 8 (Exposure Controls/Personal Protection), wear impermeable boots.

**Methods For Cleaning Up:**

Cover spills with some inert absorbent material; sweep up and place in a waste disposal container. Flush spill area with water.

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## 7. HANDLING AND STORAGE

**HANDLING**

**Precautionary Measures:** Avoid contact with eyes. Wash thoroughly after handling.

**Handling Statements:** None

**STORAGE**

Areas containing this material should have fire safe practices and electrical equipment in accordance with applicable regulations and/or guidelines. Standards are primarily based on the material's flashpoint, but may also take into account properties such as miscibility with water or toxicity. All local and national regulations should be followed. In the Americas, National Fire Protection Association (NFPA) 30: Flammable and Combustible Liquids Code, is a widely used standard. NFPA 30 establishes storage conditions for the following classes of materials: Class I Flammable Liquids, Flashpoint <37.8 °C. Class II Combustible Liquids, 37.8 °C < Flashpoint <60 °C. Class IIIa Combustible Liquids, 60 °C < Flashpoint < 93 °C. Class IIIb Combustible Liquids, Flashpoint > 93 °C.

**Storage Temperature:** Room temperature

**Reason:** Integrity

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**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Engineering Measures:**

Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure.

**Respiratory Protection:**

For operations where inhalation exposure can occur, use an approved respirator recommended by an industrial hygienist after an evaluation of the operation. Where inhalation exposure can not occur, no respiratory protection is required. A full facepiece respirator also provides eye and face protection.

**Eye Protection:**

Wear eye/face protection such as chemical splash proof goggles or face shield. Eyewash equipment and safety shower should be provided in areas of potential exposure.

**Skin Protection:**

Avoid skin contact. Wear impermeable gloves and suitable protective clothing.

**Additional Advice:**

Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use. Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water.

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**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Color:</b>	clear
<b>Appearance:</b>	liquid
<b>Odor:</b>	sweet
<b>Boiling Point:</b>	~95 - 98 °C      203 - 208.4 °F
<b>Melting Point:</b>	Not applicable
<b>Vapor Pressure:</b>	Not available
<b>Specific Gravity:</b>	~1.04
<b>Vapor Density:</b>	Not available
<b>Percent Volatile (% by wt.):</b>	Not applicable
<b>pH:</b>	~ - 4.50(10% aqueous solution)
<b>Saturation In Air (% By Vol.):</b>	Not applicable
<b>Evaporation Rate:</b>	Not available
<b>Solubility In Water:</b>	Complete
<b>Volatile Organic Content:</b>	Not available
<b>Flash Point:</b>	~108.3 °C      227 °F      Pensky-Martens Closed Cup
<b>Flammable Limits (% By Vol):</b>	Not available
<b>Autoignition Temperature:</b>	Does not self ignite
<b>Decomposition Temperature:</b>	stable
<b>Partition coefficient (n-octanol/water):</b>	Not Known
<b>Odor Threshold:</b>	See Section 2 for exposure limits.

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## 10. STABILITY AND REACTIVITY

<b>Stability:</b>	Stable
<b>Conditions To Avoid:</b>	Avoid contact with oxidizing agents.
<b>Polymerization:</b>	Will not occur
<b>Conditions To Avoid:</b>	Avoid contact with oxidizing agents, free radical initiators, sunlight or ultraviolet light, bases or amines.
<b>Hazardous Decomposition Products:</b>	carbon monoxide carbon dioxide oxides of nitrogen phosphoric acid

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## 11. TOXICOLOGICAL INFORMATION

Toxicological information for the product is found under Section 3. HAZARDS IDENTIFICATION. Toxicological information on the regulated components of this product is as follows:

Allylphosphonic acid diethyl ester has an acute oral (rat) LD50 and acute dermal (rat) LD50 values of 1098 mg/kg and > 2000 mg/kg, respectively. This material produced minimal skin and moderate eye irritation when tested (rabbits). This material was not mutagenic in the Ames Salmonella Assay.

Triethyl phosphate has an acute oral (rat) LD50 value of 1311 mg/kg. The 6-hour inhalation LC50 (rat) is >2.05 g/L (3075 mg/L/4hr). Triethyl phosphate causes mild skin and mild to moderate eye irritation. Inhalation overexposure to high concentrations may cause drowsiness. Triethyl phosphate was negative in the Ames test.

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## 12. ECOLOGICAL INFORMATION

This material is not classified as dangerous for the environment.  
Predicted to be readily biodegradable.  
Predicted to be toxic to aquatic organisms (LC50 >1-10 mg/L).  
Not expected to bioaccumulate.

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## 13. DISPOSAL CONSIDERATIONS

The information on RCRA waste classification and disposal methodology provided below applies only to the Cytec product, as supplied. If the material has been altered or contaminated, or it has exceeded its recommended shelf life, the guidance may be inapplicable. Hazardous waste classification under federal regulations (40 CFR Part 261 et seq) is dependent upon whether a material is a RCRA 'listed hazardous waste' or has any of the four RCRA 'hazardous waste characteristics.' Refer to 40 CFR Part 261.33 to determine if a given material to be disposed of is a RCRA 'listed hazardous waste'; information contained in Section 15 of this MSDS is not intended to indicate if the product is a 'listed hazardous waste.' RCRA Hazardous Waste Characteristics: There are four characteristics defined in 40 CFR Section 261.21-61.24: Ignitability, Corrosivity, Reactivity, and Toxicity. To determine Ignitability, see Section 9 of this MSDS (flash point). For Corrosivity, see Sections 9 and 14 (pH and DOT corrosivity). For Reactivity, see Section 10 (incompatible materials). For Toxicity, see Section 2 (composition). Federal regulations are subject to change. State and local requirements, which may differ from or be more stringent than the federal regulations, may also apply to the classification of the material if it is to be disposed. Cytec encourages the recycle, recovery and reuse of materials, where permitted, as an alternate to disposal as a waste. Cytec recommends that organic materials classified as RCRA hazardous wastes be disposed of by thermal treatment or incineration at EPA approved facilities. Cytec has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

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## 14. TRANSPORT INFORMATION

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

### US DOT

Proper Shipping Name: Not applicable/Not regulated  
Hazardous Substances:  
Not applicable

### TRANSPORT CANADA

Proper Shipping Name: Not applicable/Not regulated

### ICAO / IATA

Proper Shipping Name: Not applicable/Not regulated  
Packing Instructions/Maximum Net Quantity Per Package:  
Passenger Aircraft: -  
Cargo Aircraft: -

### IMO

Proper Shipping Name: Not applicable/Not regulated

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## 15. REGULATORY INFORMATION

### INVENTORY INFORMATION

**United States (USA):** All components of this product are NOT included on the Toxic Substance Control Act (TSCA) Inventory. The chemical, physical, and toxicological properties of this material have not been fully investigated. Its handling or use may be hazardous, and it must be used under the supervision of technically qualified individuals. Materials not included on the TSCA Inventory may only be used for research and development (R&D) purposes or in other TSCA exempt activities.  
This product is manufactured for export only in compliance with Section 12(a) of the Toxic Substances Control Act, 15 U. S. C. 2601 et. seq.

**Canada:** This product contains components not on the Domestic Substances List.

**European Union (EU):** One or more components of this product are NOT included in the European Inventory of Existing Chemical Substances (EINECS). These components can be supplied in quantities of less than 100 kg/yr for research and analysis purposes.

**Australia:** All components of this product have NOT yet been included in the Australian Inventory of Chemical Substances (AICS) or assessed by Worksafe Australia.

**China:** All components of this product are NOT included on the Chinese inventory.

**Japan:** All components of this product are NOT included on the Japanese (ENCS) inventory.

**Korea:** All components of this product are NOT included on the Korean (ECL) inventory.

**Philippines:** All components of this product are NOT included on the Philippine (PICCS) inventory.

#### **OTHER ENVIRONMENTAL INFORMATION**

The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12(b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc.) See Section 13 for information on waste classification and waste disposal of this product.

This product does not contain any components regulated under these sections of the EPA

#### **PRODUCT HAZARD CLASSIFICATION UNDER SECTION 311 OF SARA**

- Acute

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## **16. OTHER INFORMATION**

#### **NFPA Hazard Rating (National Fire Protection Association)**

Health: 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

Fire: 1 - Materials that must be preheated before ignition can occur.

Reactivity: 0 - Materials that in themselves are normally stable, even under fire exposure conditions.

**Reasons For Issue:** Revised Section 2

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Randy Deskin, Ph.D., DABT +1-973-357-3100

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