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**Safety Data Sheet**
**1. Chemical product and company identification**

**Product name** : Diethyl phosphate

**SDS code** : T1-18

**Company/undertaking identification** :

HAYASHI PURE CHEMICAL IND.,LTD.

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**Emergency number** : 06-6910-7305

**Recommended use** : For research and experimental use only.

**Restrictions on use** : Do not use for any purpose other than research and experiment. Do not use on a human body or for animal medicines, foods, household products, cosmetics, etc. Do not use in the environment.

**2. Hazards identification**
**GHS classification**

|                  |                                                                          |                                            |
|------------------|--------------------------------------------------------------------------|--------------------------------------------|
| Physical hazards | Explosives                                                               | classification not possible                |
|                  | Flammable gases                                                          | No classification                          |
|                  | Aerosol                                                                  | classification not possible                |
|                  | Oxidizing gases                                                          | No classification                          |
|                  | Gases under pressure                                                     | No classification                          |
|                  | Flammable liquids                                                        | Category 4                                 |
|                  | Flammable solids                                                         | No classification                          |
|                  | Self-reactive substances and mixtures                                    | classification not possible                |
|                  | Pyrophoric liquids                                                       | classification not possible                |
|                  | Pyrophoric solids                                                        | No classification                          |
|                  | Self-heating substances and mixtures                                     | classification not possible                |
|                  | Substances and mixtures which in contact with water emit flammable gases | classification not possible                |
|                  | Oxidizing liquids                                                        | classification not possible                |
|                  | Oxidizing solids                                                         | No classification                          |
|                  | Organic peroxides                                                        | classification not possible                |
|                  | Corrosive to metals                                                      | classification not possible                |
|                  | Desensitized explosives                                                  | classification not possible                |
| Health hazards   | Acute toxicity (oral)                                                    | classification not possible                |
|                  | Acute toxicity (dermal)                                                  | classification not possible                |
|                  | Acute toxicity (inhalation:gas)                                          | classification not possible                |
|                  | Acute toxicity (inhalation:vapors)                                       | classification not possible                |
|                  | Acute toxicity (inhalation:dust/mist)                                    | classification not possible                |
|                  | Skin corrosion/irritation                                                | Category 2                                 |
|                  | Serious eye damage/eye irritation                                        | Category 2                                 |
|                  | Respiratory sensitization                                                | classification not possible                |
|                  | Skin sensitization                                                       | classification not possible                |
|                  | Germ cell mutagenicity                                                   | classification not possible                |
|                  | Carcinogenicity                                                          | classification not possible                |
|                  | Reproductive toxicity                                                    | classification not possible                |
|                  | Specific target organ toxicity (single exposure)                         | Category 3 (Respiratory tract irritation.) |

|                       |                                                           |                             |
|-----------------------|-----------------------------------------------------------|-----------------------------|
| Environmental hazards | Specific target organ toxicity (repeated exposure)        | classification not possible |
|                       | Aspiration hazard                                         | classification not possible |
|                       | Hazardous to the aquatic environment, short-term (acute)  | classification not possible |
|                       | Hazardous to the aquatic environment, long-term (chronic) | classification not possible |
|                       | Hazardous to the ozone layer                              | classification not possible |

Hazard pictograms (GHS JP)



GHS07

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Signal word (GHS JP)              | : Warning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Hazard statements (GHS JP)        | : Combustible liquid (H227)<br>Causes skin irritation (H315)<br>Causes serious eye irritation (H319)<br>May cause respiratory irritation (H335)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Precautionary statements (GHS JP) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Prevention                        | : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. (P210)<br>Avoid breathing dust/fume/gas/mist/vapors/spray. (P261)<br>Wash hands, forearms and face thoroughly after handling. (P264)<br>Use only outdoors or in a well-ventilated area. (P271)<br>Wear protective gloves/protective clothing/eye protection/face protection. (P280)                                                                                                                                                                                                                                                                                  |
| Response                          | : IF ON SKIN: Wash with plenty of water. (P302+P352)<br>IF INHALED: Remove person to fresh air and keep comfortable for breathing (P304+P340)<br>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305+P351+P338)<br>Call a POISON CENTER or doctor if you feel unwell. (P312)<br>If skin irritation occurs: Get medical advice/attention. (P332+P313)<br>If eye irritation persists: Get medical advice/attention. (P337+P313)<br>Take off contaminated clothing and wash it before reuse. (P362+P364)<br>In case of fire: Use specify appropriate media to extinguish. (P370+P378) |
| Storage                           | : Store in a well-ventilated place. Keep container tightly closed. (P403+P233)<br>Store locked up. (P405)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Disposal                          | : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. (P501)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

### 3. Composition/information on ingredients

Distinction of substance or mixture : Substance

| Name              | Concentration or Concentration range | Formula                                         | Kanpo number      |         | CAS RN   |
|-------------------|--------------------------------------|-------------------------------------------------|-------------------|---------|----------|
|                   |                                      |                                                 | CSCL no           | ISHL no |          |
| Diethyl phosphate | ≥95%、≤100%                           | C <sub>4</sub> H <sub>11</sub> O <sub>4</sub> P | (2)-1986,(2)-2014 | -       | 598-02-7 |

The above concentration or concentration range are not product specification.

All percentages listed in the above concentration or concentration range are wt%, unless otherwise specified.

### 4. First aid measures

#### First aid measures

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.  
Get immediate medical advice/attention.

- First-aid measures after skin contact : Remove/Take off immediately all contaminated clothing.  
Gently wash with plenty of soap and water.  
Get immediate medical advice/attention.
- First-aid measures after eye contact : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
Get immediate medical advice/attention.
- First-aid measures after ingestion : Do NOT induce vomiting.  
Rinse mouth.  
Get immediate medical advice/attention.

## 5. Fire fighting measures

- Suitable extinguishing media : Use proper extinguishing media depending on peripheral fire, Water spray, Foam, Carbon dioxide, Dry powder, Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.
- Hazardous decomposition products in case of fire : In case of fire, product may produce irritative or toxic fumes/gases.
- Firefighting instructions : If ignited, for the initial fire-fighting, cut off combustion sources, extinguish fire at a stroke using appropriate fire-extinguishers.  
In the case of peripheral fire, quickly remove movable containers to safe places.  
If unable to be moved containers, sprinkle water to containers and surrounding equipment, etc. to cool.
- Protection during firefighting : Wear appropriate fire-resistant clothing including self contained-compressed air breathing apparatus.

## 6. Accidental release measures

### Personal Precautions, Protective Equipment and Emergency Procedures

- General measures : Before entering, ventilate the area.  
Do not let unauthorized persons come close to the area.  
Immediately place the leakage area in isolation, with taking proper distances for all directions.  
Wear appropriate personal protective devices to prevent inhalation and contact with eye, skin, and clothing, and never attempt to work on the lee.

### Environmental precautions

- Environmental precautions : Avoid release to the environment.  
Prevent entry to sewers and public waters.

### Methods and Equipment for Containment and Cleaning up

- Methods for cleaning up : Clean up any spills as soon as possible, using an absorbent material to collect it.  
Collect leaking and spilled liquid in sealable containers as far as possible.  
Wash out the spilled area with large amounts of water.

## 7. Handling and storage

### Handling

- Technical measures : Work with appropriate personal protective equipment to prevent inhalation or contact to eyes, skin, and clothing.  
Handle with care to prevent leakage, overflowing, or scattering, minimize generation of mist or vapor, and thoroughly ventilate.
- Precautions for safe handling : Do not eat, drink or smoke when using this product.  
Thoroughly wash your hands and gargle after handling.  
Ensure good ventilation of the work station.  
Do not contact, breathe or swallow.
- Prevents handling of incompatible substances or mixtures : Avoid prolonged or repeated exposure.

**Storage**

|                                       |                                                                                                                                                                           |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Storage conditions                    | : Store locked up.<br>Store in a well-ventilated place, away from direct sunlight. Keep container tightly closed and keep away from fire and heat sources.<br>Ar filling. |
| Material used in packaging/containers | : Light shielding airtight container.                                                                                                                                     |
| Technical measures                    | : Comply with applicable regulations.                                                                                                                                     |
| Storage temperature                   | : Refrigerate: 2-10°C                                                                                                                                                     |

**8. Exposure controls / Personal protection equipment**

|                                  |                                                                                                                                                                                                                                    |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Appropriate engineering controls | : Cover up tightly the generation source at the handling place or install local exhaust equipment or overall ventilation equipment. Install safety showers and eye-fountains near a handling place. Clearly indicate the location. |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Protective equipment**

|                          |                                                                            |
|--------------------------|----------------------------------------------------------------------------|
| Respiratory protection   | : Gas mask for organic gases                                               |
| Hand protection          | : Impervious protective gloves                                             |
| Eye protection           | : Protective glasses (general glasses, glasses with side-shields, goggles) |
| Skin and body protection | : Impervious aprons, Impervious work clothing, Impervious long boots       |

**9. Physical and chemical properties**

|                                                 |                     |
|-------------------------------------------------|---------------------|
| Physical state                                  | : Liquid            |
| Appearance                                      | : Liquid            |
| Color                                           | : No data available |
| Odor                                            | : No data available |
| pH                                              | : No data available |
| Melting point                                   | : No data available |
| Freezing point                                  | : No data available |
| Boiling point                                   | : No data available |
| Flash point                                     | : No data available |
| Auto-ignition temperature                       | : No data available |
| Decomposition temperature                       | : No data available |
| Flammability                                    | : No data available |
| Vapor pressure                                  | : No data available |
| Relative density                                | : No data available |
| Density                                         | : No data available |
| Relative gas density                            | : No data available |
| Solubility                                      | : No data available |
| Partition coefficient n-octanol/water (Log Pow) | : No data available |
| Explosive limits (vol %)                        | : No data available |
| Viscosity, kinematic                            | : No data available |
| Particle characteristics                        | : No data available |

**10. Stability and reactivity**

|                                    |                                                                                   |
|------------------------------------|-----------------------------------------------------------------------------------|
| Reactivity                         | : No data available                                                               |
| Chemical stability                 | : Stable under normal handling conditions. Shows hygroscopicity.                  |
| Possibility of hazardous reactions | : No data available                                                               |
| Conditions to avoid                | : Sunlight, heat. Ignition sources such as sparks, flames and static electricity. |
| Incompatible materials             | : No data available                                                               |
| Hazardous decomposition products   | : No data available                                                               |

## 11. Toxicological information

| Diethyl phosphate                     |                                            |
|---------------------------------------|--------------------------------------------|
| Acute toxicity (oral)                 | classification not possible                |
| Acute toxicity (dermal)               | classification not possible                |
| Acute toxicity (gas)                  | classification not possible                |
| Acute toxicity (vapour)               | classification not possible                |
| Acute toxicity (inhalation:dust/mist) | classification not possible                |
| Skin corrosion/irritation             | Category 2                                 |
| Serious eye damage/irritation         | Category 2                                 |
| Respiratory sensitization             | classification not possible                |
| Skin sensitization                    | classification not possible                |
| Germ cell mutagenicity                | classification not possible                |
| Carcinogenicity                       | classification not possible                |
| Reproductive toxicity                 | classification not possible                |
| STOT-single exposure                  | Category 3 (Respiratory tract irritation.) |
| STOT-repeated exposure                | classification not possible                |
| Aspiration hazard                     | classification not possible                |

## 12. Ecological information

| Diethyl phosphate                                 |                             |
|---------------------------------------------------|-----------------------------|
| Hazardous to Aquatic Environment - Acute Hazard   | classification not possible |
| Hazardous to Aquatic Environment - Chronic Hazard | classification not possible |
| Persistence and degradability                     | No data available           |
| Bioaccumulative potential                         | No data available           |
| Mobility in soil                                  | No data available           |
| Hazardous to the ozone layer                      | classification not possible |

## 13. Disposal considerations

- Ecology - waste materials : With the detail information of the waste, subcontract its disposal to a waste disposer authorized by a Prefectural Governor.
- Contaminated container and packaging : Empty the packaging completely prior to disposal.  
Empty containers should be taken for recycle, recovery or waste in accordance with local regulation.

## 14. Transport information

### International Regulations

#### Transport by sea(IMDG)

- UN-No. (IMDG) : Not applicable
- Proper Shipping Name (IMDG) : Not applicable
- Packing group (IMDG) : Not applicable
- Transport hazard class(es) (IMDG) : Not applicable

#### Air transport(IATA)

- UN-No. (IATA) : Not applicable
- Proper Shipping Name (IATA) : Not applicable
- Packing group (IATA) : Not applicable
- Transport hazard class(es) (IATA) : Not applicable

- Marine pollutant : Not applicable

#### Regulations in Japan

- Regulatory information by sea : Not applicable
- Regulatory information by air : Not applicable

- Special transport precautions : When transporting, load containers so that they do not tip over, damage, drop or collapse. Make sure there is no leak in containers.

## 15. Regulatory information

### National law

|                                                                 |                                                                                                                          |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Industrial Safety and Health Law                                | : Not applicable                                                                                                         |
| Japanese Poisonous and Deleterious Substances Control Law       | : Not applicable                                                                                                         |
| Fire Service Law                                                | : Group 4, Flammable Liquids, Class 3 petroleum, Water-insoluble liquids (Act, Art.2, Para.7, Appended Table 1, Group 4) |
| Foreign Exchange and Foreign Trade Control Act                  | : Export Trade Control Ordinance appendix 1-16                                                                           |
| Japanese Pollutant Release and Transfer Register Law (PRTR Law) | : Not applicable                                                                                                         |

## 16. Other information

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data sources      | : Handbook of 17524 Chemical Products, The Chemical Daily Co, Ltd.<br>International Chemical Safety Cards.<br>National Institute of Technology and Evaluation (NITE).<br>2020 Emergency Response Guidebook (ERG 2020).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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