



**DICYCLOHEXYLPHOSPHINE**

Safety Data Sheet OMPH018

Date of issue: 12/18/2015      Version: 1.0

**SECTION 1: Identification**

**1.1. Identification**

Product name : DICYCLOHEXYLPHOSPHINE  
 Product code : OMPH018  
 Product form : Substance  
 Physical state : Liquid  
 Formula : C<sub>12</sub>H<sub>23</sub>P  
 Chemical family : ORGANOPHOSPHORUS COMPOUND

**1.2. Recommended use and restrictions on use**

Recommended use : Chemical intermediate

**1.3. Supplier**

**GELEST, INC.**  
 11 East Steel Road  
 Morrisville, PA 19067  
**USA**  
 T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST  
[info@gelest.com](mailto:info@gelest.com) - [www.gelest.com](http://www.gelest.com)

**1.4. Emergency telephone number**

Emergency number : CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

**SECTION 2: Hazard(s) identification**

**2.1. Classification of the substance or mixture**

**GHS-US classification**

Pyrophoric liquids Category 1	H250 Catches fire spontaneously if exposed to air
Acute toxicity (oral) Category 3	H301 Toxic if swallowed
Skin corrosion/irritation Category 1B	H314 Causes severe skin burns and eye damage
Serious eye damage/eye irritation Category 1	H318 Causes serious eye damage
Specific target organ toxicity (single exposure) Category 3	H335 May cause respiratory irritation

Full text of H statements : see section 16

**2.2. GHS Label elements, including precautionary statements**

**GHS US labeling**

Hazard pictograms (GHS US) :



Signal word (GHS US) : Danger

Hazard statements (GHS US) : H250 - Catches fire spontaneously if exposed to air  
 H301 - Toxic if swallowed  
 H314 - Causes severe skin burns and eye damage  
 H335 - May cause respiratory irritation

Precautionary statements (GHS US) : P280 - Wear protective gloves/protective clothing/eye protection/face protection.  
 P210 - Keep away from heat, open flames, sparks. - No smoking.  
 P222 - Do not allow contact with air.  
 P260 - Do not breathe vapors.  
 P264 - Wash hands thoroughly after handling.  
 P270 - Do not eat, drink or smoke when using this product.  
 P271 - Use only outdoors or in a well-ventilated area.  
 P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting  
 P301+P310 - If swallowed: Immediately call a POISON CENTER  
 P302+P334 - If on skin: Immerse in cool water/wrap with wet bandages  
 P303+P361+P353 - If on skin (or hair): take off immediately all contaminated clothing. rinse skin with water/shower  
 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  
 P310 - Immediately call a POISON CENTER  
 P321 - Specific treatment (see first aid instructions on this label)  
 P363 - Wash contaminated clothing before reuse.  
 P370+P378 - In case of fire: Use dry chemical powder followed by sand or dolomite to extinguish.

# DICYCLOHEXYLPHOSPHINE

## Safety Data Sheet

P403+P233 - Store in a well-ventilated place. Keep container tightly closed.  
P405 - Store locked up.  
P422 - Store contents under inert atmosphere  
P501 - Dispose of contents/container to licensed waste disposal facility.

### 2.3. Hazards not otherwise classified (HNOC)

No additional information available

### 2.4. Unknown acute toxicity (GHS US)

Not applicable

## SECTION 3: Composition/Information on ingredients

### 3.1. Substances

Substance type : Mono-constituent  
Name : DICYCLOHEXYLPHOSPHINE  
CAS-No. : 829-84-5

Name	Product identifier	%	GHS-US classification
Dicyclohexylphosphine	(CAS-No.) 829-84-5	95 - 100	Pyr. Liq. 1, H250 Acute Tox. 3 (Oral), H301 Skin Corr. 1B, H314 Eye Dam. 1, H318 STOT SE 3, H335

Full text of hazard classes and H-statements : see section 16

### 3.2. Mixtures

Not applicable

## SECTION 4: First-aid measures

### 4.1. Description of first aid measures

First-aid measures general : Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact : Wash with plenty of soap and water. Get immediate medical advice/attention.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.

First-aid measures after ingestion : Never give anything by mouth to an unconscious person. Immediately call a poison center or doctor/physician.

### 4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects : Causes severe skin burns and eye damage.

Symptoms/effects after inhalation : May cause respiratory irritation. Direct respiratory contact is usually not possible, but will cause burns. Inhalation of combustion products can cause irritation.

Symptoms/effects after skin contact : Causes (severe) skin burns.

Symptoms/effects after eye contact : Causes serious eye damage.

Symptoms/effects after ingestion : Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard.

### 4.3. Immediate medical attention and special treatment, if necessary

No additional information available

## SECTION 5: Fire-fighting measures

### 5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Dry chemical powder followed by sand or dolomite.

Unsuitable extinguishing media : Do not use straight streams.

### 5.2. Specific hazards arising from the chemical

Fire hazard : Pyrophoric liquid. Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.

Reactivity : Reacts violently with dimethylsulfoxide.

### 5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Exercise caution when fighting any chemical fire. In contact with combustible materials such as paper and textiles, ignites spontaneously in air.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Avoid all eye and skin contact and do not breathe vapor and mist.

Other information : PYROPHORIC- MAY IGNITE SPONTANEOUSLY ON CONTACT WITH AIR.

# DICYCLOHEXYLPHOSPHINE

## Safety Data Sheet

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

General measures : Laboratory and production areas must be equipped with special fire-extinguishing media for pyrophorics.

##### 6.1.1. For non-emergency personnel

Protective equipment : Wear protective equipment as described in Section 8.

Emergency procedures : Evacuate unnecessary personnel.

##### 6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".

#### 6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

#### 6.3. Methods and material for containment and cleaning up

For containment : Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for cleaning up : Cover with dry chemical extinguishing powder, lime, sand or soda ash. Remove sources of ignition. Remove combustible materials in the vicinity of the spill. Allow time for decomposition or fire to burn out, then sweep material and transfer to a suitable container for disposal.

#### 6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Additional hazards when processed : Keep away from heat/sparks/open flames/hot surfaces. - No smoking. PYROPHORIC- MAY IGNITE SPONTANEOUSLY ON CONTACT WITH AIR. Product will ignite spontaneously if heated.

Precautions for safe handling : Avoid all eye and skin contact and do not breathe vapor and mist. Do not allow contact with air. Use only outdoors or in a well-ventilated area.

Hygiene measures : Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

#### 7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Laboratory and production areas must be equipped with special fire-extinguishing media for pyrophorics.

Storage conditions : Keep container tightly closed. Store locked up. Store in sealed containers under inert atmosphere.

Incompatible materials : Alkalis. Bromine. Chlorine. Metal salts. Oxidizing agent. Precious metals.

Storage area : Store in a well-ventilated place. Store away from heat.

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

No additional information available

#### 8.2. Appropriate engineering controls

Appropriate engineering controls : Provide local exhaust or general room ventilation.

#### 8.3. Individual protection measures/Personal protective equipment

##### Personal protective equipment:

Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

##### Hand protection:

Neoprene or nitrile rubber gloves

##### Eye protection:

Full face shield with chemical workers goggles. Contact lenses should not be worn

##### Skin and body protection:

Wear suitable protective clothing

##### Respiratory protection:

# DICYCLOHEXYLPHOSPHINE

## Safety Data Sheet

Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified organic vapor (black cartridge) respirator.

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Liquid. Fumes and ignites in air.
Molecular mass	: 198.29 g/mol
Color	: Clear to amber.
Odor	: Disagreeable. Pungent.
Odor threshold	: No data available
Refractive index	: 1.516
pH	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: 2 °C
Freezing point	: No data available
Boiling point	: 129 °C @ 8 mm Hg
Flash point	: 110 °C
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: Pyrophoric liquid, Catches fire spontaneously if exposed to air
Vapor pressure	: < 0.1 mm Hg @ 25°C
Relative vapor density at 20 °C	: > 1
Relative density	: 0.98
Solubility	: Insoluble in water. Reacts slowly with water.
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosion limits	: No data available

#### 9.2. Other information

No additional information available

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

Reacts violently with dimethylsulfoxide.

#### 10.2. Chemical stability

Stable in sealed containers under dry inert atmosphere. Oxidizes in air. Will ignite spontaneously in contact with high surface area combustibles such as paper and textiles.

#### 10.3. Possibility of hazardous reactions

No additional information available

#### 10.4. Conditions to avoid

Contact with air and oxygen should be avoided.

#### 10.5. Incompatible materials

Alkalis. Bromine. Chlorine. Metal salts. Oxidizing agent. Precious metals.

#### 10.6. Hazardous decomposition products

Organic phosphine vapors. Phosphorus oxides.

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

Acute toxicity : Not classified

#### DICYCLOHEXYLPHOSPHINE (829-84-5)

ATE US (oral)	215 mg/kg body weight
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# DICYCLOHEXYLPHOSPHINE

## Safety Data Sheet

Dicyclohexylphosphine (829-84-5)	
LD50 oral rat	215 mg/kg
ATE US (oral)	215 mg/kg body weight
Skin corrosion/irritation	: Causes severe skin burns and eye damage.
Serious eye damage/irritation	: Causes serious eye damage.
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity – single exposure	: May cause respiratory irritation.
Specific target organ toxicity – repeated exposure	: Not classified
Aspiration hazard	: Not classified
Symptoms/effects after inhalation	: May cause respiratory irritation. Direct respiratory contact is usually not possible, but will cause burns. Inhalation of combustion products can cause irritation.
Symptoms/effects after skin contact	: Causes (severe) skin burns.
Symptoms/effects after eye contact	: Causes serious eye damage.
Symptoms/effects after ingestion	: Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard.
Reason for classification	: Expert judgment

### SECTION 12: Ecological information

#### 12.1. Toxicity

No additional information available

#### 12.2. Persistence and degradability

No additional information available

#### 12.3. Bioaccumulative potential

No additional information available

#### 12.4. Mobility in soil

No additional information available

#### 12.5. Other adverse effects

Other adverse effects : This substance may be hazardous to the environment.  
Effect on the ozone layer : No additional information available

### SECTION 13: Disposal considerations

#### 13.1. Disposal methods

Sewage disposal recommendations : Do not dispose of waste into sewer.  
Product/Packaging disposal recommendations : Incinerate. Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility. This is a RCRA hazardous waste: 40 CFR 261.21 (i.e. ignitable) 40 CFR 261.23 (i.e. reactive).  
Ecology - waste materials : Avoid release to the environment.

### SECTION 14: Transport information

#### 14.1. UN number

UN-No.(DOT) : 2845  
DOT NA no. : UN2845

#### 14.2. UN proper shipping name

Transport document description : UN2845 Pyrophoric liquids, organic, n.o.s. (DICYCLOHEXYLPHOSPHINE), 4.2, I  
Proper Shipping Name (DOT) : Pyrophoric liquids, organic, n.o.s.  
(DICYCLOHEXYLPHOSPHINE)  
Class (DOT) : 4.2 - Class 4.2 - Spontaneously combustible material 49 CFR 173.124  
Packing group (DOT) : I - Great Danger

# DICYCLOHEXYLPHOSPHINE

## Safety Data Sheet

Hazard labels (DOT) : 4.2 - Spontaneously combustible



DOT Packaging Non Bulk (49 CFR 173.xxx) : 181  
DOT Packaging Bulk (49 CFR 173.xxx) : 244  
DOT Packaging Exceptions (49 CFR 173.xxx) : None  
DOT Symbols : G - Identifies PSN requiring a technical name

### 14.3. Additional information

Emergency Response Guide (ERG) Number : 135  
Other information : No supplementary information available.

### Transport by sea

DOT Vessel Stowage Location : D - The material must be stowed "on deck only" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded.  
DOT Vessel Stowage Other : 13 - Keep as dry as reasonably practicable, 78 - Stow "separated longitudinally by an intervening complete compartment or hold from" explosives, 148 - In addition: from flammable gases and flammable liquids when stowed on deck of a containership a minimum distance of two container spaces athwartship shall be maintained, when stowed on ro-ro ships a distance of 6 m athwartship shall be maintained.

### Air transport

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : Forbidden  
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : Forbidden

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

#### Dicyclohexylphosphine (829-84-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

### 15.2. International regulations

#### CANADA

#### Dicyclohexylphosphine (829-84-5)

Listed on the Canadian NDSL (Non-Domestic Substances List)

#### EU-Regulations

#### Dicyclohexylphosphine (829-84-5)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

#### National regulations

No additional information available

### 15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

## SECTION 16: Other information

Full text of H-phrases::

H250	Catches fire spontaneously if exposed to air
H301	Toxic if swallowed
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H335	May cause respiratory irritation



# DICYCLOHEXYLPHOSPHINE

## Safety Data Sheet

Abbreviations and acronyms : Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor.

### Hazard Rating

Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

Flammability : 4 Severe Hazard - Flammable gases, or very volatile flammable liquids with flash points below 73 F, and boiling points below 100 F. Materials may ignite spontaneously with air. (Class IA)

Physical : 1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

Prepared by safety and environmental affairs.

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SDS US (GHS HazCom 2012) - Custom

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

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