Ciba Specialty Chemicals Corporation

Material Safety Data Sheet
OSHA / ANSI Z400.1-2004 Compliant

MSDS date: 10-Jul-2006

NFPA Rating: Health: 2  Flammability: 1  Instability: 0
HMIS Rating: Health: 2  Flammability: 1  Physical Hazard: 0  Personal Protection: -

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Irgacure 819
Product Number: 1706662

Intended Use: Photoinitiator

Manufacturer/Supplier: Ciba Specialty Chemicals Corporation
540 White Plains Road
Tarrytown, NY 10591
8:30am - 5pm Phone Number: 1-914-785-2000
MSDS Request Line (voicemail): 1-800-431-2360
Customer Service/Product Information 1-800-474-4731

Emergency 24-Hour Health/Environmental Phone: 1-800-873-1138

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Signal Word: CAUTION!
Physical Form: Solid
Color: Light yellow
Health: This product is a skin sensitizer. Avoid skin contact.
Physical Hazards: Refer to MSDS Section 7 for Dust Explosion information.
Environmental: This product has very low water solubility and definitive toxicity tests could not be conducted. The product was not lethal to aquatic organisms at the upper limit of solubility. Releases to the environment are to be avoided.

OSHA Hazardous Substance: This material is classified as hazardous under OSHA regulations.
Primary Route(s) of Entry: Ingestion, Skin, Inhalation, Eyes.
3. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS Number</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphine oxide, phenylbis(2,4,6-trimethyl benzoyl)-</td>
<td>162881-26-7</td>
<td>100</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Eyes: Immediately flush the eye(s) with lukewarm, gently flowing water for 15 minutes or until the chemical is removed. Get immediate medical attention if irritation persists.

Skin: If clothing is contaminated, remove and launder before reuse. Wash off immediately with soap and plenty of water. Get medical attention if irritation occurs.

Inhalation: Remove to fresh air, if not breathing give artificial respiration. If breathing is difficult, give oxygen and get immediate medical attention.

Ingestion: Do not induce vomiting. If vomiting occurs naturally, have casualty lean forward to reduce the risk of aspiration. Seek medical attention immediately.

Notes to physician: May aggravate pre-existing skin conditions, allergies and eczema. Treat symptomatically.

5. FIRE FIGHTING MEASURES

Fire Fighting Measures: Standard procedure for chemical fires.

Suitable Extinguishing Media: Carbon dioxide, dry chemical, foam or water mist.

Fire Fighting Equipment: Wear self-contained breathing apparatus and protective suit.

Unusual hazards: The product can form an explosive dust/air mixture. For further information, see Section 7 Explosion Hazards.

Hazardous Combustion Products: Burning may produce toxic combustion products.

6. ACCIDENTAL RELEASE MEASURES

Cleanup Instructions: Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Wear suitable protective equipment. Should not be released into the environment.

7. HANDLING AND STORAGE

Handling: As with all industrial chemicals, use good industrial practices when handling. Avoid eye, skin, and clothing contact. Do not inhale. Do not taste or swallow. Use only with adequate ventilation.

Storage: Keep containers tightly closed in a cool, well-ventilated place.
**Explosion Hazards:**

- Danger! Explosion Risk
- Combustible powder.
- Risk of explosion if an air-dust mixture forms.
- Avoid creating dusty conditions.
- Empty only into grounded containers.
- If container is larger than 550 gallons (2m³) or if flammable solvents are present, the container must be inerted or the system otherwise designed to prevent or contain an explosion. Seek expert advice.

In addition, for products packaged in fused-lined (coated) fiber drums, fiber drums with conductive liners, steel drums, steel pails, and Type "C" FIBC (bulk bags), the following instructions also apply:

- Always ground this package before emptying.

The user is responsible for designing the system to handle solid and ensuring proper training of employees in the system’s use.

For Industrial Use Only

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Exposure Guidelines:**

There are no OSHA or ACGIH exposure guidelines available for component(s) in this product.

**Personal Protective Equipment**

**Eye/Face Protection:** Wear safety glasses or goggles to protect against dust particles.

**Skin Protection:** Wear chemical resistant gloves and protective clothing.

**Respiratory Protection:** Use NIOSH approved respirator as needed to mitigate exposure.

**Engineering Controls:** Work in well ventilated areas. Do not breathe dust.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical Form:** Solid

**Color:** Light yellow

**Freezing/Melting Point:** 127 - 132 °C (261 - 270 °F)

**Solubility in water:** < 0.0001 g/L @ 20 °C (68 °F)

**Vapor Density:** 119 g/cm³

**Vapor Pressure:** < 2 x 10⁻⁹ mmHg

**Density:** Not determined

**Specific Gravity:** 1.205 @ 25 °C (77 °F)

**pH:** Not determined

**Percent Volatile:** Not determined

**VOC:** Not determined

**Partition Coefficient (Octanol/Water):** log Pow = 5.8

**Decomposition Temperature:** Not determined

**Flammability Limits in Air:**

**Flash point:** Not applicable

**Test Method (for Flash Point):** Not applicable
10. STABILITY AND REACTIVITY

Stability: Stable.
Conditions to Avoid: Avoid static discharge.
Incompatibility: Strong oxidizing agents, strong acids, strong bases.
Hazardous Decomposition Products: No decomposition expected under normal storage conditions.
Possibility of Hazardous Reactions: None expected.

11. TOXICOLOGICAL INFORMATION

Acute Oral Toxicity: LD50: > 2,000 mg/kg (Rats)
Acute Dermal Toxicity: LD50 > 2,000 mg/kg (Rats)
Acute Inhalation Toxicity: Not determined.
Eye Irritation: (Rabbits) Not an irritant.
Skin Irritation: (Rabbits) Not an irritant.
Skin Sensitization: (Guinea Pig) Sensitizer. (3/10 positive)
Carcinogenicity (IARC; NTP; OSHA; ACGIH): None of the components in this product at concentrations greater than 0.1% are listed by IARC; NTP, OSHA or ACGIH as a carcinogen.
Mutagenicity: Ames test: Non-mutagenic (Human lymphocytes): Non-clastogenic
Reproductive Toxicity: Not determined
Teratogenicity: Not determined.
Neurotoxicity: Not determined
Subacute Toxicity: Not determined
Subchronic Toxicity: (Rats): Oral administration of 15, 150 or 1,000 mg/kg/day to rats for 28 days was not found to cause any signs of toxicity. The no observable effect level (NOEL) was 1,000 mg/kg.
Chronic toxicity: Not determined
Absorption / Distribution / Excretion / Metabolism: Not determined
Additional Information: Not determined
12. ECOLOGICAL INFORMATION

Toxicity to Fish: LC50 > 0.09 mg/L 96 hour (Zebra fish) Not toxic at maximum solubility in test medium.

Toxicity to Invertebrates: EC50 > 1.175 mg/L 48 hour (Daphnia magna) Not toxic at maximum solubility in test medium.

Toxicity to Algae: EC50 > 0.26 mg/L 72 hour (Scenedesmus subspicatus) Not toxic at maximum solubility in test medium.

Toxicity to Sewage Bacteria: EC 50 = > 100 mg/L

Activated Sludge Respiration Inhibition Test: Not determined

Biochemical Oxygen Demand (BOD): Not determined

Chemical Oxygen Demand (COD): Not determined

Total Oxygen Demand (TOD): Not determined

Biodegradability: Modified Sturm Test: Degradation negligible after 28 days

Bioaccumulation: Not determined

Additional Environmental Data: Bioconcentration (Cyprinus carpio): < 5

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with local, state, provincial and federal regulations.

14. TRANSPORT INFORMATION

U.S. Department of Transportation (DOT): Not regulated for this mode of transport.

International Maritime Dangerous Goods (IMDG): Not regulated for this mode of transport.

International Air Transportation Authority (IATA): Not regulated for this mode of transport.
15. REGULATORY INFORMATION

Federal Regulations

OSHA Hazardous Substance: This material is classified as hazardous under OSHA regulations

Clean Air Act - Hazardous Air Pollutants (HAP): This product does not contain any Hazardous Air Pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

Clean Air Act - Volatile Organic Compounds (VOC): This product does not contain any SOCMI Intermediate or Final Volatile Organic Compounds (VOC), as defined by the U.S. Clean Air Act Section 111 (40 CFR 60.489).

Clean Air Act - Ozone Depleting Substances (ODS): This product neither contains, nor was manufactured with, a Class I or Class II ozone depleting substance (ODS), as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App. A+B).


SARA Section 302 Extremely Hazardous Substances (EHS): This product does not contain any components regulated under Section 302 (40 CFR 355) as Extremely Hazardous Substances.

SARA Section 304 CERCLA Hazardous Substances: This product does not contain any components regulated under Section 304 (40 CFR 302) as hazardous chemicals for emergency release notification ("CERCLA" List).

SARA Section 311/312 Hazard Communication Standard (HCS): This product is regulated under Section 311/312 HCS (40 CFR 370). Its hazard(s): Acute (immediate) health hazard.

SARA Section 313 Toxic Chemical List (TCL): This product does not contain any component(s) listed on the Section 313 Toxic Chemical List.

TSCA Section 8(b) Inventory Status: All component(s) comprising this product are either exempt or listed on the TSCA inventory.

TSCA Section 5(e) Consent Orders: This product is not subject to a Section 5(e) Consent Order.

TSCA Significant New Use Rule (SNUR): This product is not subject to a Significant New Use Rule (SNUR).

TSCA Section 5(f): This product is not subject to a Section 5(f)/6(a) rule.

TSCA Section 12(b) Export Notification: This product does not contain any component(s) that are subject to a Section 12(b) Export Notification

State Regulations

California Proposition 65: This product does not contain any components currently on the California list of Known Carcinogens and Reproductive Toxins.

International Regulations
**Chemical Weapons Convention (CWC):** This product does not contain any component(s) listed under the Chemical Weapons Convention Schedule of Chemicals.

**Domestic Substance List (DSL) Status:** All components either exempt or listed on the DSL.

### 16. OTHER INFORMATION

**Disclaimer:** The information contained herein is based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to such data or information. The user is responsible for determining whether the product is suitable for its intended conditions of use.