

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product/Trade Name:** V-Flash<sup>®</sup> FTI Resin  
**Product Number:** 24034-S02-02  
**Chemical Family:** Organic mixture  
**Product Use:** For use with film transfer imaging (FTI) systems.

### Hazardous Materials Identification System (HMIS):

(Degree of hazard: 0 = low, 4 = extreme):

Health 2  
 Flammability 1  
 Physical Hazards 1

### Personal Protection:

Skin, eye protection

Manufacturer:



Manufacturer Contact	3D Systems Corporation 333 Three D Systems Circle Rock Hill, SC 29730 U.S.A.
For Information	Phone: 803.326.3900
Emergency	800.424.9300 - Chemtrec

## 2. HAZARDS IDENTIFICATION

### Emergency Overview

<b>Signal Word:</b>	Warning!
<b>Physical Form</b>	Liquid
<b>Color:</b>	Milky yellow
<b>Health:</b>	Causes skin irritation. Causes eye irritation. May cause respiratory tract irritation. May cause an allergic skin reaction. Avoid skin and eye contact. Use with adequate ventilation. Wash thoroughly after handling.
<b>Physical Hazards:</b>	Hazardous polymerization may occur upon depletion of inhibitor or exposure to heat or light.
<b>Environmental:</b>	Harmful to aquatic organisms. Do not release into the environment.

OSHA Hazardous Substance: Irritant, Sensitizer

Primary Route(s) of Entry: Inhalation, Skin, Eyes

Potential Health Effects:

Eyes: May cause irritation consisting of redness, swelling and pain.  
 Skin: May cause irritation or other allergic reactions, including redness and/or swelling.  
 Inhalation: May cause respiratory irritation.  
 Ingestion: Ingestion is unlikely but may cause nausea, diarrhea and/or stomach pain.  
 Chronic: Can cause an allergic skin reaction with repeated or prolonged exposure consisting of redness, swelling and/or rash (urticaria).

### Medical Conditions Aggravated by Exposure

Could irritate an existing dermatitis or respiratory condition.



### 3. COMPOSITION INFORMATION

CAS #	Component	Percent
42594-17-2	(Octahydro-4,7-methano-1H-indenediyl)bis(methylene) diacrylate	35-45
162881-26-7	Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	1-5

Note: 29 CFR 1910.1200 compliant. The components disclosed are indicative of the hazard classification for this product. The balance of the formulation is a trade secret and does not affect the OSHA classification (29 CFR 1910.1200 §i).

### 4. FIRST AID MEASURES

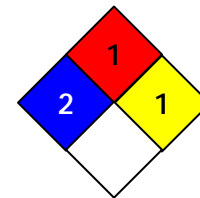
- Skin contact:** Immediately flush skin with plenty of soap and water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse.
- Eye contact:** Immediately flush eyes with plenty of water for at least 15 minutes. Avoid exposure to light sources. Get medical attention if irritation persists.
- Inhalation:** Move affected person to fresh air. In case of asphyxia, initiate artificial respiration immediately. If breathing is difficult, give oxygen. Get medical attention immediately.
- Ingestion:** Ingestion is unlikely. However, if large quantities are swallowed, get medical attention. Do not induce vomiting. Never give anything by mouth to an unconscious person.

#### Notes to Physician

Allergic dermatitis in susceptible individuals may be delayed. It may appear after weeks or even months of frequent and prolonged contact.

### 5. FIRE FIGHTING MEASURES

- Flash Point: > 93 °C, (> 200 °F)      Method Used: estimated
- Upper Flammable Limit (UFL): NA      Lower Flammable Limit (LFL): NA
- Auto Ignition: NA      Rate of Burning: NA



NFPA Ratings  
 0 = Minimal  
 1 = Slight  
 2 = Moderate  
 3 = Serious  
 4 = Severe

- General Fire Hazards:** Inhibitor depletion caused by exposure to heat, radiation or oxidizers can cause spontaneous polymerization generating heat and pressure.
- Hazardous Combustion Products:** Thermal decomposition products can include CO<sub>2</sub>, CO, NO<sub>x</sub> and smoke.
- Extinguishing Media:** Use water mist, dry chemical, carbon dioxide, or chemical foam. Avoid the use of a stream of water to control fire since frothing can occur.
- Fire Fighting Equipment/Instructions:** Wear full protective clothing, including helmet, self-contained positive-pressure or pressure-demand breathing apparatus, protective clothing and facemask. Move container from area if it can be done without risk. Cool containers with water spray. Do not use high-volume water jet. Avoid inhalation of material or combustion by-products.

### 6. ACCIDENTAL RELEASE MEASURES

- Containment Procedures:** Stop the flow of material, if this is without risk. Ventilate contaminated area. Eliminate sources of ignition. Do not release material or contaminated water into drains, soil or surface waters.
- Clean-Up Procedures:** Wear appropriate protective equipment and clothing. Absorb spillage with non-combustible absorbent materials. Place all waste in an appropriate container for disposal.
- Evacuation Procedures:** Keep unnecessary personnel away.
- Special Procedures:** NA

### 7. HANDLING AND STORAGE

- Handling Procedures:** Provide adequate ventilation. Avoid contact with skin and eyes. Do not breathe vapors or mist. Avoid ignition sources.
- Storage Procedures:** Store sealed in the original container at room temperature. Keep this material indoors in a cool, dry, well-ventilated place. Store out of direct sunlight or UV light sources.
- Storage Temperature:** 0 °C – 35 °C / 32 °F – 95 °F



## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure Guidelines

General Product Information: No occupational exposure limits (PEL/TWA) have been established for this product.

Component Analysis:

Component	Manufacturer IEL (Internal Exposure Limit)
Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	1.0 mg/m <sup>3</sup> (8 hour TWA)

### PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face: Wear safety glasses or chemical goggles.

Skin: Use impervious nitrile gloves, an apron, and closed shoes.

Respiratory: If ventilation cannot effectively keep vapor concentrations below established limits, appropriate certified respiratory protection must be provided (NIOSH approved dust mask).

General: An eye wash fountain and a safety shower are recommended.

### Engineering Controls

Ventilation must effectively remove any vapors.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance .....	Milky, yellow	Odor .....	Mild
Physical State.....	Liquid	pH.....	NA
Vapor Pressure .....	NA	Flash Point (estimated) .....	> 93 °C, (> 200 °F)
Boiling Point .....	NA	Viscosity .....	NA
Solubility (H <sub>2</sub> O) .....	Insoluble @ 20 °C (68 °F)	Density .....	NA
Percent Volatile .....	NA	Molecular Weight.....	NA

## 10. CHEMICAL STABILITY AND REACTIVITY

Chemical Stability: Stable under normal conditions of handling, use and transportation.

Conditions to Avoid: Avoid exposure to heat, light.

Incompatibility: Oxidizing materials, strong acids and strong bases.

Hazardous Decomposition: Thermal decomposition products can include CO<sub>2</sub>, CO, NO<sub>x</sub>, and smoke.

Hazardous Polymerization: May occur. See sections 2 and 5.

Thermal Decomposition: NA

## 11. TOXICOLOGICAL INFORMATION

### Acute and Chronic Toxicity

A: General Product Information: No data available.

B: Component Analysis:

Component	Skin Sensitization	LD <sub>50</sub> Oral	LD <sub>50</sub> Dermal
Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	3/10 positive (Guinea pig maximization test)	>2000 mg/Kg (rat)	>2000 mg/Kg (rat)

Skin corrosivity-irritation : some components may be skin irritants

Critical damage and irritation to the eyes : some components may be eye irritants

Respiratory organs sensitization or skin sensitization : some components may be skin sensitizers.

### Carcinogenicity

A: General Product Information: None.

B: Component Carcinogenicity: Neither this product, nor any of its components is listed by ACGIH, IARC, OSHA, NIOSH, or NTP.



**12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

A: General Product Information: The aquatic toxicity of the product is unknown; however based on components, it is predicted that this material may be harmful to aquatic organisms or cause long-term adverse effects in the aquatic environment. Prevent contamination of soil, drains and surface waters.

B: Component Analysis: Ecotoxicity - Aquatic Toxicity:

Component	LC <sub>50</sub> 96 hours	EC <sub>50</sub> 48 hours
Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	>0.09 mg/L* (Brachydanio rerio)	>1.175 mg/L* (Daphnia magna)

\* Not toxic at maximum concentration level for medium.

Environmental Fate: No information available for product.

**13. DISPOSAL CONSIDERATIONS**

**Waste Disposal Instructions**

Do not contaminate drains, soil or surface waters with this material or its container.

Reduce waste by attempting to utilize product completely.

Dispose of in accordance with all local, state, and federal regulations. While this product is not RCRA hazardous waste as sold, prior to disposal of unused material, 3D Systems Inc., recommends consulting an approved waste disposal operative to ensure regulatory compliance.

**14. TRANSPORT INFORMATION**

	US DOT	RID/ADR	IMDG	IATA	IMO	Canada TDG
Shipping Name	Not Regulated					

**15. REGULATORY INFORMATION**

**US FEDERAL**

TSCA:.....All materials are listed on the TSCA Inventory or are not subject to TSCA requirements

TSCA Section 12(b) Export Notification.....This product does not contain any component subject to export notification.

SARA 302 EHS List (40 CFR 355 Appendix A):.....None listed

SARA 313 (40 CFR 372.65):.....None listed

CERCLA (40 CFR 302.4):.....None listed

**STATE REGULATIONS:**

California Proposition 65.....Components of this material may contain trace quantities of (a) substance(s) known by the state of California to cause cancer and/or reproductive hazards.

**16. ADDITIONAL INFORMATION**

MSDS Creation Date: .... August 18, 2008

MSDS Revision #: .....

MSDS Revision Date:....

Reason for Revision: ..... Updated logo, updated contact address and telephone number.

For more information: .... [www.3dsystems.com](http://www.3dsystems.com)

800.793.3669 (Toll-free in the US GMT-07:00; N. America, Mon – Fri, 6:00 a.m. to 6 p.m.)

803.326.3900 (Outside the U.S. GMT-07:00; N. America, Mon – Fri, 6:00 a.m. to 6 p.m.)



# Material Safety Data Sheet

Material Name: V-Flash<sup>®</sup> FTI Resin

Page 5 of 5

9-Apr-09

DISCLAIMER OF LIABILITY: The following supersedes any related provision in your company's forms, letters, and agreements from, by or with 3D Systems Corporation. 3D Systems Corporation makes no warranty, whether expressed or implied, including warranties of merchantability or of fitness for a particular purpose for this product. No statements or recommendations contained in the product literature are to be construed as inducements to infringe any relevant patent now or hereafter in existence. Under no circumstances shall 3D Systems Corporation be liable for incidental, consequential, special, or other damages from alleged negligence, breach of warranty, strict liability or any other theory, arising out of the manufacture, use, sale, or handling of this product. In no event shall the liability of 3D Systems Corporation for any claims arising out of the manufacture, use, handling, or sale of its products exceed an amount equal to the buyer's purchase price.

© Copyright 2008 by 3D Systems, Inc. All rights reserved. Subject to change without notice. V-Flash and the 3D logo are registered trademarks of 3D Systems, Inc.

## Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists

CAS = Chemical Abstracts Service

CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act

CFR = Code of Federal Regulations

CPR = Controlled Products Regulations

DOT = Department of Transportation

DSL = Domestic Substances List

EINECS = European Inventory of Existing Commercial Chemical Substances

EPA = Environmental Protection Agency

IARC = International Agency for Research on Cancer

IATA = International Air Transport Association

IEL = Internal Exposure Limit

mg/Kg = milligrams per Kilogram

mg/L = milligrams per Liter

mg/m<sup>3</sup> = milligrams per Cubic Meter

MSHA = Mine Safety and Health Administration

NA = Not Applicable or Not Available

NIOSH = National Institute for Occupational Safety and Health

NJTSPR = New Jersey Trade Secret Registry

NTP = National Toxicology Program

OSHA = Occupational Safety and Health Administration

SARA = Superfund Amendments and Reauthorization Act

STEL = Short Term Exposure Limit

TDG = Transport Dangerous Goods

TSCA = Toxic Substances Control Act

WHMIS = Workplace Hazardous Materials Information System.