

## MATERIAL SAFETY DATA SHEET

Date Printed: 08/03/2007

Date Updated: 02/02/2007

Version 1.6

## Section 1 - Product and Company Information

Product Name 5-FLUOROURACIL  
Product Number F6627  
Brand SIGMA

Company Sigma-Aldrich  
Address 3050 Spruce Street  
SAINT LOUIS MO 63103 US

Technical Phone: 800-325-5832  
Fax: 800-325-5052  
Emergency Phone: 314-776-6555

## Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
5'-FLUOROURACIL	51-21-8	Yes

Formula C4H3FN2O2  
Synonyms Adrucil \* Arumel \* Efluderm (free base) \* Efudex  
\* 5-Fluoracil (German) \*  
5-Fluor-2,4-dihydroxypyrimidin (Czech) \*  
Fluoroblastin \* Fluoroplex \*  
5-Fluoropyrimidine-2,4-dione \*  
5-Fluoro-2,4-pyrimidinedione \*  
5-Fluoro-2,4(1H,3H)-pyrimidinedione \*  
5-Fluor-2,4-pyrimidindiol (Czech) \*  
5-Fluor-2,4(1H,3H)-pyrimidindion (Czech) \*  
Fluorouracil \* 5-Fluorouracil \* 5-Fluoruracil  
(German) \* Fluracil \* Fluracilum \* Fluril \* FU \*  
5-FU \* NSC-19893 \* 2,4(1H,3H)-Pyrimidinedione,  
5-fluoro- \* Queroplex \* Ro 2-9757 \* Timazin \*  
U-8953 \* Ulup

RTECS Number: YR0350000

## Section 3 - Hazards Identification

## EMERGENCY OVERVIEW

Toxic (USA) Harmful (EU).

Harmful if swallowed.

Photosensitizer. Target organ(s): Heart. Bone marrow. Calif. Prop.  
65 developmental hazard.

## HMIS RATING

HEALTH: 3\*

FLAMMABILITY: 0

REACTIVITY: 0

## NFPA RATING

HEALTH: 3

FLAMMABILITY: 0

REACTIVITY: 0

\*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

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#### Section 4 - First Aid Measures

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##### ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

##### INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

##### DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

##### EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

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#### Section 5 - Fire Fighting Measures

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##### FLASH POINT

N/A

##### AUTOIGNITION TEMP

N/A

##### FLAMMABILITY

N/A

##### EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

##### FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.  
Specific Hazard(s): Emits toxic fumes under fire conditions.

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#### Section 6 - Accidental Release Measures

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##### PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

##### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

##### METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

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#### Section 7 - Handling and Storage

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##### HANDLING

User Exposure: Do not breathe dust. Avoid contact with eyes,

skin, and clothing. Avoid prolonged or repeated exposure.

#### STORAGE

Suitable: Keep tightly closed.

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### Section 8 - Exposure Controls / PPE

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#### ENGINEERING CONTROLS

Mechanical exhaust required. Safety shower and eye bath.

#### PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

#### GENERAL HYGIENE MEASURES

Wash thoroughly after handling.

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### Section 9 - Physical/Chemical Properties

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Appearance	Physical State: Solid Color: White Form: Fine crystals	
Property	Value	At Temperature or Pressure
Molecular Weight	130.08 AMU	
pH	N/A	
BP/BP Range	N/A	
MP/MP Range	282 °C	
Freezing Point	N/A	
Vapor Pressure	N/A	
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
SG/Density	N/A	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	N/A	
Explosion Limits	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Refractive Index	N/A	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	Solvent: 50 mg/ml NH <sub>4</sub> OH 1 M Other Solvents: DMSO	

N/A = not available

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## Section 10 - Stability and Reactivity

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### STABILITY

Stable: Stable.

Materials to Avoid: Strong oxidizing agents, Strong bases.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide, Nitrogen oxides, Hydrogen fluoride.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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## Section 11 - Toxicological Information

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### ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: May cause eye irritation.

Inhalation: Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.

Ingestion: Harmful if swallowed.

### SENSITIZATION

Sensitization: Causes photosensitivity. Exposure to light can result in allergic reactions resulting in dermatologic lesions, which can vary from sunburnlike responses to edematous, vesiculated lesions, or bullae

### TARGET ORGAN(S) OR SYSTEM(S)

Bone marrow. Heart. Immune system. Blood.

### SIGNS AND SYMPTOMS OF EXPOSURE

May cause nausea, vomiting, anorexia, diarrhea, stomatitis, fever, malaise, weakness, headache, depression, skin rash, erythema, bone marrow depression, bleeding syndrome, and renal impairment. Deaths have occurred.

### TOXICITY DATA

Oral

Rat

230 mg/kg

LD50

Intraperitoneal

Rat

70 MG/KG

LD50

Remarks: Gastrointestinal:Hypermotility, diarrhea.

Gastrointestinal:Nausea or vomiting.

Subcutaneous

Rat

217 MG/KG

LD50

Intravenous

Rat

245 MG/KG

LD50  
Remarks: Gastrointestinal:Hypermotility, diarrhea.  
Gastrointestinal:Nausea or vomiting.

Intramuscular  
Rat  
240 MG/KG  
LD50

Parenteral  
Rat  
500 MG/KG  
LD50

Rectal  
Rat  
884 MG/KG  
LD50  
Remarks: Gastrointestinal:Hypermotility, diarrhea.  
Gastrointestinal:Other changes.

Oral  
Mouse  
115 mg/kg  
LD50

Intraperitoneal Intraperitoneal  
Mouse Mouse  
100 MG/KG 100 MG/KG  
LD50 LD50

Subcutaneous  
Mouse  
169 MG/KG  
LD50

Intravenous  
Mouse  
81 MG/KG  
LD50

Intracerebral  
Mouse  
41600 UG/KG  
LD50  
Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Other. Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Ptosis. Peripheral Nerve and Sensation:Sensory change involving peripheral nerve.

Oral  
Dog  
30 mg/kg  
LD50  
Remarks: Gastrointestinal:Nausea or vomiting.

Oral  
Rabbit  
18.9 mg/kg  
LD50  
Remarks: Nutritional and Gross Metabolic:Weight loss or decreased weight gain. Behavioral:Muscle weakness.

Gastrointestinal:Hypermotility, diarrhea.

Intravenous

Guinea pig

25 MG/KG

LD50

Remarks: Vascular:BP elevation not characterized in autonomic section.

#### IRRITATION DATA

Skin

Human

84 mg

3W

#### CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

Species: Mouse

Route of Application: Intraperitoneal

Dose: 1500 MG/KG

Exposure Time: 50W

Frequency: I

Result: Blood:Tumors. Lungs, Thorax, or Respiration:Tumors.

Tumorigenic:Carcinogenic by RTECS criteria.

#### IARC CARCINOGEN LIST

Rating: Group 3

#### CHRONIC EXPOSURE - TERATOGEN

Species: Woman

Dose: 240 MG/KG

Route of Application: Intravenous

Exposure Time: (11-14W PREG)

Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat

Dose: 35 MG/KG

Route of Application: Oral

Exposure Time: (7-13D PREG)

Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat

Dose: 30 MG/KG

Route of Application: Intraperitoneal

Exposure Time: (12D PREG)

Result: Specific Developmental Abnormalities: Gastrointestinal system. Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Craniofacial (including nose and tongue).

Species: Rat

Dose: 30 MG/KG

Route of Application: Intraperitoneal

Exposure Time: (12D PREG)

Result: Specific Developmental Abnormalities: Homeostasis

Species: Rat  
Dose: 20 MG/KG  
Route of Application: Subcutaneous  
Exposure Time: (14D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Rat  
Dose: 30 MG/KG  
Route of Application: Subcutaneous  
Exposure Time: (14D PREG)  
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat  
Dose: 330 MG/KG  
Route of Application: Intravenous  
Exposure Time: (7-17D PREG)  
Result: Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse  
Dose: 175 MG/KG  
Route of Application: Oral  
Exposure Time: (7-13D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse  
Dose: 50 MG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (13D PREG)  
Result: Effects on Embryo or Fetus: Cytological changes (including somatic cell genetic material).

Species: Mouse  
Dose: 20 MG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (10D PREG)  
Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue). Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse  
Dose: 10 MG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (10D PREG)  
Result: Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Eye, ear.

Species: Hamster  
Dose: 24 MG/KG  
Route of Application: Intramuscular  
Exposure Time: (9D PREG)  
Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Hamster

Dose: 56 MG/KG  
Route of Application: Intramuscular  
Exposure Time: (11D PREG)  
Result: Specific Developmental Abnormalities: Homeostasis

#### CHRONIC EXPOSURE - MUTAGEN

Result: Laboratory experiments have shown mutagenic effects.

Species: Human Human  
Dose: 13 MG/L 13 MG/L  
Cell Type: Other cell types Other cell types  
Mutation test: DNA damage DNA damage

Species: Human Human  
Dose: 1 MMOL/L 1 MMOL/L  
Cell Type: Other cell types Other cell types  
Mutation test: DNA damage DNA damage

Species: Human Human  
Dose: 5 UMOL/L 5 UMOL/L  
Exposure Time: 6H 6H  
Cell Type: Other cell types Other cell types  
Mutation test: Other mutation test systems Other mutation test systems

Species: Human Human  
Dose: 2600 NMOL/L 2600 NMOL/L  
Cell Type: leukocyte leukocyte  
Mutation test: DNA DNA

Species: Human Human  
Dose: 2600 NMOL/L 2600 NMOL/L  
Cell Type: leukocyte leukocyte  
Mutation test: Other mutation test systems Other mutation test systems

Species: Human Human  
Dose: 20 MG/L 20 MG/L  
Cell Type: Other cell types Other cell types  
Mutation test: Unscheduled DNA synthesis Unscheduled DNA synthesis

Species: Human Human  
Dose: 1 MMOL/L 1 MMOL/L  
Cell Type: Other cell types Other cell types  
Mutation test: Unscheduled DNA synthesis Unscheduled DNA synthesis

Species: Human Human  
Dose: 1 MMOL/L 1 MMOL/L  
Cell Type: Other cell types Other cell types  
Mutation test: Other mutation test systems Other mutation test systems

Species: Human Human  
Dose: 200 MG/L 200 MG/L  
Cell Type: Other cell types Other cell types  
Mutation test: DNA inhibition DNA inhibition

Species: Human Human  
Dose: 1 UMOL/L 1 UMOL/L  
Cell Type: Other cell types Other cell types

Mutation test: DNA inhibition DNA inhibition

Species: Human Human

Dose: 1 UMOL/L 1 UMOL/L

Cell Type: Other cell types Other cell types

Mutation test: Other mutation test systems Other mutation test systems

Species: Human Human

Dose: 1 MG/L 1 MG/L

Cell Type: ovary ovary

Mutation test: DNA inhibition DNA inhibition

Species: Human Human

Route: Skin Skin

Dose: 1 PPH 1 PPH

Mutation test: Other mutation test systems Other mutation test systems

Species: Human Human

Dose: 1 MG/L 1 MG/L

Cell Type: Other cell types Other cell types

Mutation test: Other mutation test systems Other mutation test systems

Species: Human Human

Dose: 50 MG/L 50 MG/L

Cell Type: HeLa cell HeLa cell

Mutation test: Other mutation test systems Other mutation test systems

Species: Human Human

Dose: 7 MG/KG 7 MG/KG

Cell Type: S. typhimurium S. typhimurium

Mutation test: Body fluid assay Body fluid assay

Species: Human Human

Dose: 100 PMOL/L 100 PMOL/L

Cell Type: lymphocyte lymphocyte

Mutation test: Sister chromatid exchange Sister chromatid exchange

Species: Rat Rat

Route: Intraperitoneal Intraperitoneal

Dose: 250 MG/KG 250 MG/KG

Mutation test: Micronucleus test Micronucleus test

Species: Rat Rat

Route: Intraperitoneal Intraperitoneal

Dose: 50 MG/KG 50 MG/KG

Mutation test: Cytogenetic analysis Cytogenetic analysis

Species: Mouse Mouse

Route: Intraperitoneal Intraperitoneal

Dose: 12500 UG/KG 12500 UG/KG

Mutation test: Micronucleus test Micronucleus test

Species: Mouse Mouse

Route: Intraperitoneal Intraperitoneal

Dose: 26018 UG/KG 26018 UG/KG

Mutation test: Micronucleus test Micronucleus test

Species: Mouse Mouse  
 Dose: 10 UMOL/L 10 UMOL/L  
 Exposure Time: 24H 24H  
 Cell Type: Embryo Embryo  
 Mutation test: Morphological transformation. Morphological transformation.

Species: Mouse Mouse  
 Dose: 20 UMOL/L 20 UMOL/L  
 Cell Type: Bone marrow Bone marrow  
 Mutation test: DNA damage DNA damage

Species: Mouse Mouse  
 Dose: 19 UMOL/L 19 UMOL/L  
 Cell Type: Bone marrow Bone marrow  
 Mutation test: Other mutation test systems Other mutation test systems

Species: Mouse Mouse  
 Dose: 66 UMOL/L 66 UMOL/L  
 Cell Type: lymphocyte lymphocyte  
 Mutation test: Other mutation test systems Other mutation test systems

Species: Mouse Mouse  
 Route: Intraperitoneal Intraperitoneal  
 Dose: 500 UMOL/KG 500 UMOL/KG  
 Mutation test: Other mutation test systems Other mutation test systems

Species: Mouse Mouse  
 Route: Intravenous Intravenous  
 Dose: 40 MG/KG 40 MG/KG  
 Mutation test: Unscheduled DNA synthesis Unscheduled DNA synthesis

Species: Mouse Mouse  
 Route: Oral Oral  
 Dose: 40 MG/KG 40 MG/KG  
 Mutation test: Unscheduled DNA synthesis Unscheduled DNA synthesis

Species: Mouse Mouse  
 Dose: 40 MG/L 40 MG/L  
 Cell Type: Ascites tumor Ascites tumor  
 Mutation test: Unscheduled DNA synthesis Unscheduled DNA synthesis

Species: Mouse Mouse  
 Dose: 40 MG/L 40 MG/L  
 Cell Type: Ascites tumor Ascites tumor  
 Mutation test: Other mutation test systems Other mutation test systems

Species: Mouse Mouse  
 Route: Intraperitoneal Intraperitoneal  
 Dose: 50 MG/KG 50 MG/KG  
 Mutation test: Unscheduled DNA synthesis Unscheduled DNA synthesis

Species: Mouse Mouse  
 Dose: 3 MG/L 3 MG/L

Cell Type: leukocyte leukocyte  
Mutation test: DNA inhibition DNA inhibition

Species: Mouse Mouse  
Dose: 100 MG/KG 100 MG/KG  
Cell Type: leukocyte leukocyte  
Mutation test: DNA inhibition DNA inhibition

Species: Mouse Mouse  
Dose: 55 UMOL/L 55 UMOL/L  
Cell Type: leukocyte leukocyte  
Mutation test: Other mutation test systems Other mutation test systems

Species: Mouse Mouse  
Dose: 500 UG/L 500 UG/L  
Cell Type: lymphocyte lymphocyte  
Mutation test: DNA inhibition DNA inhibition

Species: Mouse Mouse  
Route: Intraperitoneal Intraperitoneal  
Dose: 50 MG/KG 50 MG/KG  
Mutation test: DNA inhibition DNA inhibition

Species: Mouse Mouse  
Route: Oral Oral  
Dose: 40 MG/KG 40 MG/KG  
Mutation test: Other mutation test systems Other mutation test systems

Species: Mouse Mouse  
Dose: 100 NMOL/L 100 NMOL/L  
Cell Type: Embryo Embryo  
Mutation test: DNA inhibition DNA inhibition

Species: Mouse Mouse  
Dose: 1800 NMOL/L 1800 NMOL/L  
Cell Type: Bone marrow Bone marrow  
Mutation test: DNA inhibition DNA inhibition

Species: Mouse Mouse  
Dose: 7500 UMOL/L 7500 UMOL/L  
Cell Type: Ascites tumor Ascites tumor  
Mutation test: DNA inhibition DNA inhibition

Species: Mouse Mouse  
Dose: 1 UG/L 1 UG/L  
Cell Type: Other cell types Other cell types  
Mutation test: DNA inhibition DNA inhibition

Species: Mouse Mouse  
Route: Oral Oral  
Dose: 50 MG/KG 50 MG/KG  
Mutation test: Cytogenetic analysis Cytogenetic analysis

Species: Mouse Mouse  
Route: Intraperitoneal Intraperitoneal  
Dose: 20 MG/KG 20 MG/KG  
Mutation test: Cytogenetic analysis Cytogenetic analysis

Species: Mouse Mouse  
Dose: 250 MG/KG 250 MG/KG

Cell Type: Ascites tumor Ascites tumor  
Mutation test: Cytogenetic analysis Cytogenetic analysis

Species: Mouse Mouse  
Route: Intraperitoneal Intraperitoneal  
Dose: 50 MG/KG 50 MG/KG  
Mutation test: sperm sperm

Species: Mouse Mouse  
Route: Intravenous Intravenous  
Dose: 50 MG/KG 50 MG/KG  
Mutation test: sperm sperm

Species: Hamster Hamster  
Route: Intraperitoneal Intraperitoneal  
Dose: 41 MG/KG 41 MG/KG  
Mutation test: Micronucleus test Micronucleus test

Species: Hamster Hamster  
Route: Intraperitoneal Intraperitoneal  
Dose: 41 MG/KG 41 MG/KG  
Mutation test: Cytogenetic analysis Cytogenetic analysis

Species: Hamster Hamster  
Dose: 1900 UG/L 1900 UG/L  
Cell Type: lung lung  
Mutation test: Cytogenetic analysis Cytogenetic analysis

Species: Mammal Mammal  
Dose: 100 UMOL/L 100 UMOL/L  
Cell Type: Other cell types Other cell types  
Mutation test: DNA inhibition DNA inhibition

Mutation test: Histidine reversion (Ames)

#### CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Woman Woman  
Dose: 150 MG/KG 150 MG/KG  
Route of Application: Intravenous Intravenous  
Exposure Time: (20-31W PREG) (20-31W PREG)  
Result: Effects on Newborn: Other neonatal measures or effects.  
Effects on Newborn: Other neonatal measures or effects.

Species: Rat Rat  
Dose: 175 MG/KG 175 MG/KG  
Route of Application: Oral Oral  
Exposure Time: (7-13D PREG) (7-13D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Embryo or Fetus: Fetal death.  
Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth). Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).  
Effects on Embryo or Fetus: Fetal death.

Species: Rat Rat  
Dose: 15 MG/KG 13500 UG/KG  
Route of Application: Intraperitoneal Intraperitoneal  
Exposure Time: (9D PREG) (9D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Effects on Embryo or Fetus: Fetal death. Specific Developmental Abnormalities: Other developmental abnormalities. Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Fetal death.

Species: Rat Rat

Dose: 20 MG/KG 15 MG/KG

Route of Application: Intraperitoneal Intraperitoneal

Exposure Time: (9D PREG) (9D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Other developmental abnormalities.

Effects on Fertility:

Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Fetal death. Specific Developmental Abnormalities: Other developmental abnormalities.

Species: Mouse Rat

Dose: 245 MG/KG 20 MG/KG

Route of Application: Oral Intraperitoneal

Exposure Time: (7-13D PREG) (9D PREG)

Result: Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth). Effects on Embryo or Fetus:

Fetal death. Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental

Abnormalities: Other developmental abnormalities.

Species: Mouse Mouse

Dose: 20 MG/KG 245 MG/KG

Route of Application: Intraperitoneal Oral

Exposure Time: (9D PREG) (7-13D PREG)

Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Specific Developmental Abnormalities: Other developmental abnormalities. Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth).

Effects on Embryo or Fetus: Fetal death.

Species: Mouse Mouse

Dose: 30 MG/KG 20 MG/KG

Route of Application: Intraperitoneal Intraperitoneal

Exposure Time: (9D PREG) (9D PREG)

Result: Effects on Fertility: Abortion. Specific Developmental

Abnormalities: Other developmental abnormalities. Effects on Fertility: Post-implantation mortality (e.g., dead and/or

resorbed implants per total number of implants).

Species: Mouse Mouse

Dose: 30 MG/KG 30 MG/KG

Route of Application: Intraperitoneal Intraperitoneal

Exposure Time: (12D PREG) (9D PREG)

Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Viability index (e.g., # alive

at day 4 per # born alive). Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on

Fertility: Abortion.

Species: Mouse Mouse  
Dose: 67 MG/KG 30 MG/KG  
Route of Application: Intravenous Intraperitoneal  
Exposure Time: (1D MALE) (12D PREG)  
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count). Effects on Newborn: Viability index (e.g., # alive at day 4 per # born alive). Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Species: Hamster Mouse  
Dose: 28 MG/KG 67 MG/KG  
Route of Application: Intramuscular Intravenous  
Exposure Time: (9D PREG) (1D MALE)  
Result: Specific Developmental Abnormalities: Musculoskeletal system. Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).

Species: Hamster Hamster  
Dose: 20 MG/KG 28 MG/KG  
Route of Application: Intramuscular Intramuscular  
Exposure Time: (9D PREG) (9D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Specific Developmental Abnormalities: Musculoskeletal system.

Species: Hamster  
Dose: 20 MG/KG  
Route of Application: Intramuscular  
Exposure Time: (9D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

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## Section 12 - Ecological Information

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No data available.

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## Section 13 - Disposal Considerations

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### APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

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## Section 14 - Transport Information

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### DOT

Proper Shipping Name: Toxic solids, organic, n.o.s.  
UN#: 2811  
Class: 6.1  
Packing Group: Packing Group III  
Hazard Label: Toxic substances.  
PIH: Not PIH

#### IATA

Proper Shipping Name: Toxic solid, organic, n.o.s.  
IATA UN Number: 2811  
Hazard Class: 6.1  
Packing Group: III

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#### Section 15 - Regulatory Information

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##### EU ADDITIONAL CLASSIFICATION

Symbol of Danger: Xn  
Indication of Danger: Harmful.  
R: 22  
Risk Statements: Harmful if swallowed.

##### US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Toxic (USA) Harmful (EU).  
Risk Statements: Harmful if swallowed.  
US Statements: Photosensitizer. Target organ(s): Heart. Bone marrow. Calif. Prop. 65 developmental hazard.

##### UNITED STATES REGULATORY INFORMATION

SARA LISTED: Yes  
DEMINIMIS: 1 %  
NOTES: This product is subject to SARA section 313 reporting requirements.  
TSCA INVENTORY ITEM: Yes

##### UNITED STATES - STATE REGULATORY INFORMATION

##### CALIFORNIA PROP - 65

California Prop - 65: This product is or contains chemical(s) known to the state of California to cause developmental toxicity.

##### CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.  
DSL: No  
NDSL: Yes

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#### Section 16 - Other Information

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##### DISCLAIMER

For R&D use only. Not for drug, household or other uses.

##### WARRANTY

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