

MATERIAL SAFETY DATA SHEET

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Version 1.2

Section 1 - Product and Company Information

Product Name URANYL ACETATE DIHYDRATE
Product Number 73943
Brand FLUKA

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
URANYL ACETATE DIHYDRATE	6159-44-0	No

Formula C4H6O6U.2H2O
Chemical Family Radioactive material.
Synonyms Bis(aceto)dioxouranium dihydrate *
Bis(aceto-O)dioxouranium dihydrate * Uranium,
bis(aceto-O)dioxo-, dihydrate (9CI) * Uranyl
acetate dihydrate

RTECS Number: YR3600000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Highly Toxic (USA) Very Toxic (EU). Dangerous for the environment.
Very toxic by inhalation and if swallowed. Danger of cumulative
effects. Toxic to aquatic organisms, may cause long-term adverse
effects in the aquatic environment.
Radioactive material. Target organ(s): Liver. Kidneys. Calif.
Prop. 65 carcinogen.

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.

Section 4 - First Aid Measures

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 breathing becomes difficult, call a physician.

DERMAL EXPOSURE

In case of contact, immediately wash skin with soap and copious amounts of water.

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.

Section 5 - Fire Fighting Measures

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.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Handle as a radioactive spill.

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.

Section 7 - Handling and Storage

HANDLING

User Exposure: Avoid inhalation. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

STORAGE

Suitable: Keep tightly closed.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Safety shower and eye bath. Use only in a chemical fume hood.

WORK PRACTICES

Use with adequate ventilation.

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 N100 (US) or type P3 (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.

Section 9 - Physical/Chemical Properties

Appearance	Physical State: Solid Color: Yellow Form: Fine crystals	
Property	Value	At Temperature or Pressure
Molecular Weight	424.15 AMU	
pH	N/A	
BP/BP Range	N/A	
MP/MP Range	110 °C	
Freezing Point	N/A	
Vapor Pressure	N/A	
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
SG/Density	2.89 g/cm ³	
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.	275 °C	
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	Solubility in Water:10% in H ₂ O, 20°C Other Solvents: WATER/ACETIC ACID - SOLUBLE ETHANOL - SLIGHT	

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

Materials to Avoid: Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide, Uranium oxides.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

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 fatal if inhaled.

Ingestion: May be fatal if swallowed.

TARGET ORGAN(S) OR SYSTEM(S)

Kidneys. Lungs. Liver.

SIGNS AND SYMPTOMS OF EXPOSURE

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Symptoms may be delayed. Blood effects. Conjunctivitis. Exposure may cause:

TOXICITY DATA

Oral

Rat

204 mg/kg

LD50

Remarks: Nutritional and Gross Metabolic: Changes in: Body temperature decrease. Behavioral: Tremor. Skin and Appendages: Other: Hair.

Subcutaneous

Rat

8300 UG/KG

LD50

Remarks: Behavioral: Tremor. Nutritional and Gross Metabolic: Changes in: Body temperature decrease. Skin and Appendages: Other: Hair.

Oral

Mouse

242 mg/kg

LD50

Remarks: Behavioral: Tremor. Skin and Appendages: Other: Hair. Nutritional and Gross Metabolic: Changes in: Body temperature decrease.

Subcutaneous

Mouse

20400 UG/KG

LD50

Remarks: Behavioral: Tremor. Skin and Appendages: Other: Hair. Nutritional and Gross Metabolic: Changes in: Body temperature

decrease.

CHRONIC EXPOSURE - CARCINOGEN

Result: Contains a radioactive isotope which may produce cancer and genetic mutation.

CHRONIC EXPOSURE - TERATOGEN

Species: Rat

Dose: 50 MG/KG

Route of Application: Oral

Exposure Time: (6-15D PREG)

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

Species: Rat

Dose: 100 MG/KG

Route of Application: Oral

Exposure Time: (6-15D PREG)

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

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Mouse

Dose: 2 GM/KG

Route of Application: Oral

Exposure Time: (60D MALE/2W PRE/1-13D 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.

Species: Mouse

Dose: 990 MG/KG

Route of Application: Oral

Exposure Time: (60D MALE/14D PRE-4D POST)

Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Other postnatal measures or effects.

Species: Mouse

Dose: 640 MG/KG

Route of Application: Oral

Exposure Time: (64D MALE)

Result: Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females).

Species: Mouse

Dose: 1280 MG/KG

Route of Application: Oral

Exposure Time: (64D MALE)

Result: Paternal Effects: Testes, epididymis, sperm duct.

Species: Mouse

Dose: 1500 MG/KG

Route of Application: Oral

Exposure Time: (13-21D PREG/21D POST)

Result: Effects on Newborn: Weaning or lactation index (e.g., # alive at weaning per # alive at day 4). Maternal Effects: Other effects. Effects on Newborn: Other postnatal measures or effects.

Species: Mouse
Dose: 4 MG/KG
Route of Application: Subcutaneous
Exposure Time: (10D 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: Musculoskeletal system.

Species: Mouse
Dose: 5 MG/KG
Route of Application: Subcutaneous
Exposure Time: (6-15D PREG)
Result: Maternal Effects: Other effects. Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Dispose of spilled material as radioactive waste. Consult local, state, and federal regulations on the disposal of radioactive waste.

Section 14 - Transport Information

DOT

Proper Shipping Name: Radioactive material, excepted package-limited quantity of material
UN#: 2910
Class: 7
Packing Group: None
Hazard Label: None
PIH: Not PIH

IATA

Proper Shipping Name: Radioactive material, excepted package, limited quantity of material
IATA UN Number: 2910
Hazard Class: 7

Section 15 - Regulatory Information

EU ADDITIONAL CLASSIFICATION

Symbol of Danger: R-T+-N
Indication of Danger: Radioactive. Very toxic. Dangerous for the environment.
R: 26/28-33-51/53
Risk Statements: Very toxic by inhalation and if swallowed. Danger of cumulative effects. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S: 20/21-45-61
Safety Statements: When using do not eat, drink, or smoke. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid release to

the environment. Refer to special instructions/safety data sheets.

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Highly Toxic (USA) Very Toxic (EU).

Dangerous for the environment.

Risk Statements: Very toxic by inhalation and if swallowed.

Danger of cumulative effects. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Statements: When using do not eat, drink, or smoke. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid release to the environment. Refer to special instructions/safety data sheets.

US Statements: Radioactive material. Target organ(s): Liver. Kidneys. Calif. Prop. 65 carcinogen.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: No

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 cancer.

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: Yes

NDSL: No

Section 16 - Other Information

DISCLAIMER

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

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2008 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.