

United Nuclear

Scientific Equipment & Supplies

SAFETY DATA SHEET

Preparation Date: 2/21/2017

Revision Date: 2/21/2017

Revision Number: G1

1. IDENTIFICATION

Product identifier

Product code: U1006
Product Name: URANYL ACETATE, DIHYDRATE, REAGENT

Other means of identification

Synonyms: Bis(aceto)dioxouranium dihydrate;
Bis(aceto-O)dioxouranium, dihydrate;
Uranium, bis(aceto-O)dioxo-, dihydrate;
Uranyl (2+) acetate, dihydrate;
Uranium oxyacetate, dihydrate;
Uranium acetate, dihydrate;
Diacetatodioxouranium, dihydrate

CAS #: 6159-44-0
RTECS # YR3675000
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: No information available.
Uses advised against No information available

Supplier: United Nuclear Scientific
125 N. 8th Street
Klamath Falls, OR 97601
(541) 205-6855
www.unitednuclear.com

24 HR Emergency phone number VelocityEHS 1-800-255-3924

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Acute toxicity - Oral	Category 3
Acute toxicity - Inhalation (Dusts/Mists)	Category 3
Specific target organ toxicity (repeated exposure)	Category 2

Label elements

Danger

Hazard statements

Toxic if swallowed

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Toxic if inhaled
May cause damage to organs through prolonged or repeated exposure



Hazards not otherwise classified (HNOC)

Not Applicable

Other hazards

Radioactive

Toxic to aquatic life with long lasting effects

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling

Do not eat, drink or smoke when using this product

Use only outdoors or in a well-ventilated area

Do not breathe dust/fume/gas/mist/vapors/spray

Precautionary Statements - Response

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician.

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

Rinse mouth

Precautionary Statements - Storage

Store locked up

Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
Uranyl Acetate, Dihydrate	6159-44-0	100

4. FIRST AID MEASURES

First aid measures

General Advice:

National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222. First aider needs to protect himself. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Skin Contact:

Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention if irritation develops. Consult a physician if necessary.

Eye Contact:

Flush eyes with water for 15 minutes. Get medical attention if irritation occurs. If symptoms persist, call a physician.

Inhalation:

Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. WARNING! It may be hazardous to the person providing aid to give

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mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required. Call a physician or Poison Control Centre immediately.

Ingestion: Toxic if swallowed. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Immediate medical attention is required. Call a physician or Poison Control Center immediately.

Most important symptoms and effects, both acute and delayed

Symptoms May affect the liver. It may affect the kidneys. It may affect the blood. May affect behavior/central nervous system. It may affect the brain. May cause eye/skin/respiratory tract irritation.

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically.

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: Dry chemical. Carbon dioxide (CO₂). Water spray mist or foam.

Unsuitable Extinguishing Media: No information available.

Specific hazards arising from the chemical

Hazardous Combustion Products: Carbon Dioxide, Carbon Monoxide. Uranium. Uranium oxides.

Specific hazards: May be combustible at high temperatures.

Special Protective Actions for Firefighters

Specific Methods: No information available.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation. Remove all sources of ignition.

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Do not let this chemical enter the environment.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading.

Methods for cleaning up Avoid creating dust. Do not dry sweep dust. Wet dust with water before sweeping or use a vacuum to collect dust. Use appropriate tools to put the spilled solid in a suitable waste disposal container. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:

Provide sufficient air exchange and/or exhaust in work rooms. Avoid dust formation. Keep away from incompatible materials.

Safe Handling Advice

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not breathe dust. Avoid dust formation. Do not ingest. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:

Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials.

Incompatible Materials:

Strong oxidizing agents

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

Components	CAS-No.	OSHA	NIOSH	ACGIH	AIHA WHEEL
Uranyl Acetate, Dihydrate	6159-44-0	0.05 mg/m ³ TWA (as U) for uranium soluble compounds	None	0.6 mg/m ³ STEL; 0.2 mg/m ³ TWA (as U) for uranium soluble and insoluble compounds	None

Canada

Components	CAS-No.	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
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Uranyl Acetate, Dihydrate	6159-44-0	0.6 mg/m ³ STEL; 0.2 mg/m ³ TWA (as U) for uranium soluble compounds	0.05 mg/m ³ TWA (as U) for uranium soluble compounds	0.6 mg/m ³ STEL; 0.2 mg/m ³ TWA (as U) for uranium soluble and insoluble compounds	0.6 mg/m ³ STEV; 0.05 mg/m ³ TWAEV (as U) for uranium soluble compounds
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Australia and Mexico

Components	CAS-No.	Australia	Mexico
Uranyl Acetate, Dihydrate	6159-44-0	None	None

Appropriate engineering controls

Engineering measures to reduce exposure:

Ensure adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Goggles

Skin and body protection:

Boots
Gloves
Periodic changes of gloves are recommended. The greater the potential hazard, the more frequent change of gloves is needed. Gloves should not be used to handle radioactive materials directly. When the gloves are no longer needed, they should be carefully removed, monitored and disposed or stored appropriately. Gloves should be monitored frequently. Don't use contaminated gloves or gloves that may be contaminated. If you are wearing gloves and they are exposed to radionuclides that emit penetrating radiation, remove the gloves as quickly as possible.
Disposable or cloth lab coat. Cloth lab coats may be reused if they are free from contamination and in good condition. Lab coats should be stored in a controlled area and should be monitored both during operations and after removing them. Particular attention should be paid to the sleeves, pockets, and lower front surfaces of the coat

Respiratory protection: Wear respirator with dust filter. Be sure to use an approved/certified respirator or equivalent.

Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:

Solid

Appearance:

Crystalline.

Color:

Yellow.

Odor:

Slight. Acetic acid (vinegar) -like.

Taste

No information available.

Formula:

C₄H₆O₆U.H₂O

Molecular/Formula weight:

424.15 g/mol

Flammability:

No information available

Flashpoint (°C/°F):

No information available.

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Flash Point Tested according to: Not available	Autoignition Temperature (°C/°F): No information available	Lower Explosion Limit (%): No information available
Upper Explosion Limit (%): No information available	Melting point/range(°C/°F): No information available	Decomposition temperature(°C/°F): 275 °C/527 °F
Boiling point/range(°C/°F): No information available	Bulk density: No information available	Density (g/cm3): No information available
Specific gravity: 2.890	pH: No information available	Vapor pressure @ 20°C (kPa): No information available
Evaporation rate: No information available	Vapor density: No information available	VOC content (g/L): No information available
Odor threshold (ppm): No information available	Partition coefficient (n-octanol/water): No information available	Viscosity: No information available
Miscibility: No information available	Solubility: Slightly soluble in alcohol Solubility in Water: 7.694 g/100 ml @ 15 °C Decomposes in hot water Freely soluble in water acidulated with acetic acid	

10. STABILITY AND REACTIVITY

Reactivity

No information available

Chemical stability

Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Avoid dust formation. Incompatible materials.

Incompatible Materials: Strong oxidizing agents

Hazardous decomposition products: carbon oxides. Uranium. Uranium oxides.

Other Information

Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:
Ingestion. Inhalation.

Acute Toxicity

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The following values are calculated based on chapter 3.1 of the GHS document
Component Information

Uranyl Acetate, Dihydrate
CAS-No. 6159-44-0

LD50/oral/rat = 204 mg/kg Oral LD50 Rat
LD50/oral/mouse = No information available
LD50/dermal/rabbit = No information available
LD50/dermal/rat = No information available
LC50/inhalation/rat = No information available
LC50/inhalation/mouse = No information available
Other LD50 or LC50 information = No information available

Product Information

LD50/oral/rat =
VALUE- Acute Tox Oral = 204 mg/kg

LD50/oral/mouse =
Value - Acute Tox Oral = No information available

LD50/dermal/rabbit
VALUE-Acute Tox Dermal = No information available

LD50/dermal/rat
VALUE -Acute Tox Dermal = No information available

LC50/inhalation/rat
VALUE-Vapor = No information available
VALUE-Gas = No information available
VALUE-Dust/Mist = No information available

LC50/Inhalation/mouse
VALUE-Vapor = No information available
VALUE - Gas = No information available
VALUE - Dust/Mist = No information available

Symptoms

Skin Contact: May cause skin irritation.

Eye Contact: May cause eye irritation.

Inhalation Toxic by inhalation. May cause irritation of respiratory tract. Symptoms may include coughing and wheezing, and shortness of breath.

Ingestion Toxic if swallowed. May affect behavior/central nervous system (tremors). May affect urinary system (kidneys). May affect blood (changes in serum composition). May affect the blood (anemia).

Aspiration hazard No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity Prolonged or repeated ingestion may affect the blood (changes in red blood cell count). Chronic exposure may affect the liver and kidneys. Prolonged or repeated inhalation and/or ingestion may cause central nervous system effects (affect

behavior). Chronic exposure may affect the brain.

Sensitization: No information available.

Mutagenic Effects: Contains a radioactive isotope which may produce genetic mutation
DNA damage - hamster ovary

Carcinogenic effects: Contains a radioactive isotope which may produce cancer.

Components	CAS-No.	IARC	ACGIH - Carcinogens	NTP	OSHA HCS - Carcinogens	Australia - Notifiable Carcinogenic Substances	Australia - Prohibited Carcinogenic Substances
Uranyl Acetate, Dihydrate	6159-44-0	Not listed	Group 1 - Confirmed Human Carcinogen (for Uranium soluble and insoluble compounds)	Not listed	Not listed	Not listed	Not listed

ACGIH (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)

NTP (National Toxicology Program)

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

Reproductive toxicity No data is available

Reproductive Effects: No information available

Developmental Effects: No information available

Teratogenic Effects: At doses which are severely toxic to the mother, Uranyl Acetate produces teratogenic effects in the fetus

Specific Target Organ Toxicity

STOT - single exposure No information available.

STOT - repeated exposure May cause damage to organs through prolonged or repeated exposure.

Target Organs: Kidneys. Liver. Blood.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: No data available.

Persistence and degradability: No information available

Bioaccumulative potential: No information available.

Mobility: No information available.

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Product code: U1006

Product name: URANYL ACETATE,
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Waste from residues / unused products:

Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:

Empty containers should be taken for local recycling, recovery or waste disposal

Components	CAS-No.	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Uranyl Acetate, Dihydrate	6159-44-0	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: UN3288
Proper Shipping Name: Toxic solid, inorganic, n.o.s. (uranyl acetate dihydrate)
Hazard Class: 6.1
Subsidiary Class 7 (limited quantity radioactive)
Packing group: II
Emergency Response Guide Number 151
Marine Pollutant No data available
DOT RQ (lbs): No information available
Special Provisions IB8, IP2, IP4, T3, TP33
Symbol(s): No information available
Description: UN3288, Toxic solid, inorganic, n.o.s., 6.1, II

TDG (Canada)

UN-No: UN3288
Proper Shipping Name: Toxic solid, inorganic, n.o.s. (uranyl acetate dihydrate)
Hazard Class: 6.1
Subsidiary Risk: 7 (limited quantity radioactive)
Packing Group: II
Marine Pollutant No Information available
Description: UN3288, Toxic solid, inorganic, n.o.s., 6.1, II

ADR

UN-No: UN3288
Proper Shipping Name: Toxic solid, inorganic, n.o.s. (uranyl acetate dihydrate)
Hazard Class: 6.1
Packing Group: II
Subsidiary Risk: 7 (limited quantity radioactive)
Special Provisions 274
Description: UN3288, Toxic solid, inorganic, n.o.s., 6.1, II

IMO / IMDG

UN-No: UN3288
Proper Shipping Name: Toxic solid, inorganic, n.o.s. (uranyl acetate dihydrate)
Hazard Class: 6.1
Subsidiary Risk: 7 (limited quantity radioactive)
Packing Group: II
Marine Pollutant No information available
EMS: F-A
Special Provisions 274
Description UN3288, Toxic solid, inorganic, n.o.s. (URANYL ACETATE, DIHYDRATE), 6.1, II

RID

UN-No: UN3288

Proper Shipping Name: Toxic solid, inorganic, n.o.s. (uranyl acetate dihydrate)
Hazard Class: 6.1
Subsidiary Risk: 7 (limited quantity radioactive)
Packing Group: II
Special Provisions 274
Description: UN3288, Toxic solid, inorganic, n.o.s., 6.1, II

ICAO

UN-No: UN3288
Proper Shipping Name: Toxic solid, inorganic, n.o.s. (uranyl acetate dihydrate)
Hazard Class: 6.1
Subsidiary Risk: 7 (limited quantity radioactive)
Packing Group: II
Description: UN3288, Toxic solid, inorganic, n.o.s., 6.1, II
Special Provisions A3, A5

IATA

UN-No: UN3288
Proper Shipping Name: Toxic solid, inorganic, n.o.s. (uranyl acetate dihydrate)
Hazard Class: 6.1
Subsidiary Risk: 7 (limited quantity radioactive)
Packing Group: II
ERG Code: 6L
Special Provisions No information available
Description: UN3288, Toxic solid, inorganic, n.o.s., 6.1, II

15. REGULATORY INFORMATION

International Inventories

Components	CAS-No.	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
Uranyl Acetate, Dihydrate	6159-44-0	Not Listed	Not present	Not present	Not present	Present [39242]	Present	Not present

U.S. Regulations

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.

Chemicals Known to the State of California to Cause Cancer:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	CAS-No.	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Uranyl Acetate, Dihydrate	6159-44-0	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CAS-No.	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting de minimis
Uranyl Acetate, Dihydrate	6159-44-0	None	None	None	None	None

U.S. TSCA

Components	CAS-No.	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Uranyl Acetate, Dihydrate	6159-44-0	Not Applicable	Not Applicable

Canada

WHMIS hazard class:

Non-controlled

Canada Controlled Products Regulation:

This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Inventory

Components	CAS-No.	Canada (DSL)	Canada (NDSL)
Uranyl Acetate, Dihydrate	6159-44-0	Not Listed	Not Listed

Components	CAS-No.	CEPA Schedule I - Toxic Substances
Uranyl Acetate, Dihydrate	6159-44-0	Not listed

Components	CAS-No.	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Uranyl Acetate, Dihydrate	6159-44-0	Not listed

EU Classification

R-phrases

R33 - Danger of cumulative effects.

R26/28 - Very toxic by inhalation and if swallowed.

R51/53 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrases

S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S61 - Avoid release to the environment. Refer to special instructions/safety data sheets.

S 1/2 - Keep locked up and out of the reach of children.

S20/21 - When using, do not eat, drink or smoke.

Components	CAS-No.	Classification	Concentration Limits:	Safety Phrases
Uranyl Acetate, Dihydrate	6159-44-0	T+; R26/28 R33 N; 51/53	No information	S: (1/2)-20/21-45-61

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:

T+ - Very toxic.

N - Dangerous for the environment.

T+



N



16. OTHER INFORMATION

Preparation Date:

2/21/2017

Product code: U1006

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Revision Date:
Prepared by:

2/21/2017
United Nuclear Scientific

Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. United Nuclear Scientific assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, United Nuclear Scientific assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet