SPI Supplies Division
Structure Probe, Inc.
206 Garfield Ave., West Chester, PA 19380-4512 USA
Phone: 1-(610)-436-5400 **Fax:** 1-(610)-436-5755
sales@2spi.com
http://www.2spi.com
Manufacturer's CAGE: 1P573

Safety Data Sheet

Date Effective: September 13, 2017

SPI Catalog #'s 02412-AB, 02413-AB

SPI-Chem™ Uranyl Chloride

Section 1.1: Identification

Chemical Name/Synonyms ..... Uranyl Chloride Hydrated

Product or Trade Name …….. SPI-Chem™ Uranyl Chloride

CAS #'s 13867-67-9

Chemical Formula..... $UO_2Cl_2 \cdot 3H_2O$

Section 1.2: Relevant Uses/Restrictions

Laboratory chemical. Electron dense stain for electron microscopy.

Section 1.3: Supplier of the Safety Data Sheet

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Section 1.4: Emergency telephone number

Emergencies
Contacting CHEMTREC:

24 Hour Emergency Use Only #'s...
Worldwide phone: 1-(703)-741-5970
Toll-free phone: 1-(800)-424-9300 USA + Canada only

Section 2: Hazard Identification

2.1 Classification of the substance

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Acute toxicity, Oral (Category 2)
Acute toxicity, Inhalation (Category 2)

Specific target organ toxicity – repeated exposure (Category 2)
Acute aquatic toxicity (Category 2)
Chronic aquatic toxicity (Category 2)

2.2 Label elements

Pictogram

Signal Word: Danger

Hazard statements:

H300 & H330	Fatal if swallowed or inhaled.
H373	May cause damage to organs through prolonged or repeated exposure.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements:

P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P284	Wear respiratory protection
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P310	Immediately call a POISON CENTER or doctor/ physician.
P320	Specific treatment is urgent (see supplemental first aid instructions on this label).
P330	Rinse mouth.
P391	Collect spillage.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Other Hazards not otherwise classified (HNOC) or not covered by GHS:
Radioactive

Hazardous Material Information System USA
Health 3
Fire Hazard 0
Reactivity 0
Personal Protection .....

NFPA Rating (estimated)
Health 4
Flammability..... 0
Reactivity 0

Section 3: Composition

3.1 Substance:

Uranyl Chloride Trihydrate CAS# 13867-67-9 $UO_2Cl_2 \cdot 3H_20$ Molecular Weight: 394.979

Section 4: First Aid Measures

4.1 Description of first aid measures:

General advice:
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Move out of dangerous area.

If inhaled:
If breathed in, move person into fresh air.
If not breathing, give artificial respiration.
Consult a physician.

In case of skin contact:
Wash off with soap and plenty of water.
Take victim immediately to hospital.
Consult a physician.

In case of eye contact:
Flush eyes with water as a precaution.

If swallowed:
Never give anything by mouth to an unconscious person.
Rinse mouth with water.
Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see Section 2.2) and/or in Section 11.

4.3 Indication of any immediate medical attention and special treatment needed
No data available.

Section 5: Fire Fighting Measures

5.1 Extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Chlorides, Uranium oxides

5.3 Advice for firefighters

Wear self-contained breathing apparatus for fire-fighting if necessary.

5.4 Further information

No data available.

Section 6: Accidental Release Measures

6.1 Personal precautions

Wear respiratory protection.
Avoid dust formation.
Avoid breathing vapors, mist, or gas.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Avoid breathing dust.
For personal protection see Section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so.
Do not let product enter drains.
Discharge into the environment must be avoided.

6.3 Methods and material for containment and cleaning up

Pick up and arrange disposal without creating dust.
Sweep up and shovel.
Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal, see Section 13.

Section 7: Handling and Storage

7.1 Precautions for safe handling

Avoid contact with skin and eyes.
Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.
For precautions, see Section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end uses

Laboratory chemical. Electron dense stain for electron microscopy.
This material is not being offered for clinical or diagnostic applications, agricultural uses or for human or animal consumption.

Section 8: Exposure Controls and Personal Protection

8.1 Control parameter and Personal Protection

Workplace exposure limits:

Uranyl chloride:

TWA 0.2 mg/m^3 USA.ACGIH Threshold Limit Values (TLV)
Remarks: Confirmed human carcinogen.

TWA 0.05 mg/m^3 USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants – 1910.1000

TWA 0.05 mg/m^3 USA. NIOSH Recommended Exposure Limits.

Potential Occupational Carcinogen. See Appendix A.

Biological limit values: No data available.

8.2 Exposure controls

8.2.1 Appropriate engineering controls:

Avoid contact with skin, eyes, and clothing.
Wash hands before breaks and immediately after handling the product.

8.2.2 Individual protection measures:

Eye/face protection:

Face shield and safety glasses.
Use equipment for eye protection tested and approved under appropriate government standards, such as NIOSH (US) or EN 166 (EU).

Skin protection:

Handle with gloves. EN374
Gloves must be inspected prior to use.
Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product.
Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices.
Wash and dry hands.

Gloves for full contact:
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 minutes

Gloves for splash contact:
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 minutes

If used in solution, or mixed with other substances, and under conditions which differ from EN374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. I should not be construed as offering an approval for any specific use scenario.

Body Protection:

Complete suit protecting against chemicals.
The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection:

Where risk assessment shows air-purifying respirators are appropriate, use a full-face particle respirator type N100 (US) or type P3 (EN143) respirator cartridges as a backup to engineering controls.
If the respirator is the sole means of protection, use a full-face supplied air respirator.
Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

8.2.3 Environmental exposure controls

Prevent further leakage or spillage if safe to do so.
Do not let product enter drains. Discharge into the environment must be avoided.

Section 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance: Yellow crystalline solid

Odor: No data available

Odor threshold: No data available

pH: No data available

Melting point/Freezing point: No data available

Boiling point/Boiling point range: No data available

Flash Point: No data available

Evaporation rate: No data available

Flammability (solid, gas): No data available

Upper/lower flammability or explosive limits: No data available

Vapor Pressure: No data available

Vapor density: No data available

Relative density: No data available

Solubility: No data available

Partition coefficient (n-octanol/water): No data available

Auto-ignition temperature: No data available

Decomposition temperature: No data available

Viscosity: No data available

Explosive properties: No data available

Oxidizing Properties: No data available

9.2 Other information

No data available.

Section 10: Stability and Reactivity

10.1 Reactivity: No data available.

10.2 Chemical Stability: Stable under recommended storage conditions.

10.3 Possibility of Hazardous Reactions: No data available.

10.4 Conditions to avoid: No data available.

10.5 Incompatible materials: Strong oxidizing agents.

10.6 Hazardous decomposition products: Other decomposition products – no data available.

In case of fire: See Section 5.

Section 11: Toxicological Information

Information on the likely routes of exposure

11.1 Information on toxicological effects:

A. Acute toxicity:

LD50 Oral, rat 204 mg/kg

Remarks:

Behavioral: Tremor
Skin and Appendages: Other: Hair
Nutritional and Gross Metabolic: Changes in: Body temperature decrease
Dermal: No data available

LD50 Subcutaneous, rat 8,300 mg/kg

Remarks:

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

B. Skin corrosion/irritation: No data available.

C. Serious eye damage/irritation: No data available.

D. Respiratory or skin sensitization: No data available.

E. Germ cell mutagenicity: No data available.

F. Carcinogenicity:

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

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

G. Reproductive toxicity: No data available.

H. STOT-single exposure: No data available.

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

J. Aspiration hazard: No data available.

K. Additional information:

RTECS: Not available.

Conjunctivitis. Blood disorders. Symptoms may be delayed.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Section 12: Ecological Information

12.1 Toxicity: No data available.

12.2 Persistence and degradability: No data available.

12.3 Bio-accumulative potential: No data available.

12.4 Mobility in soil: No data available.

12.5 Results of PBT and vPvB assessment: PBT/vPvB assessment not available as chemical safety assessment not required/ not conducted.

12.6 Other adverse effects:

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life with long lasting effects.
No further relevant data available.

Section 13: Disposal Considerations

13.1 Waste treatment methods

Product: Offer surplus and non-recyclable solutions to a licensed disposal company. 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.

Contaminated packaging: Dispose of as unused product.

Section 14: Transport Information

DOT(US)

UN Number:	UN2910
Proper shipping name:	Toxic solid, inorganic, n.o.s. (uranyl chloride)
Reportable Quantity (RQ):	100 lbs
Marine pollutant:	No
Poison Inhalation Hazard:	No

IATA

UN Number:	UN2910
Proper shipping name:	Toxic solid, inorganic, n.o.s. (uranyl chloride)
Further information:	Radioactive material, excepted package – limited quantity of material

IMDG

UN Number:	UN2910
EMS-No.:	F-A, S-A
Proper shipping name:	TOXIC SOLID, INORGANIC, N.O.S. (uranyl chloride)
Marine pollutant:	Marine pollutant

Section 15: Regulatory Information

15.1 Safety, health and environmental regulations/ legislation specific for the substance or mixture

SARA 302 Components:
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components:
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Massachusetts Right-To-Know Components:
Uranyl Chloride Hydrated CAS# 13867-67-9 Revision date: 1993-04-24

Pennsylvania Right-To-Know Components:
Uranyl Chloride Hydrated CAS# 13867-67-9

New Jersey Right-To-Know Components:
Uranyl Chloride Hydrated CAS# 13867-67-9 Revision date: 1993-04-24

California Prop. 65 Components:
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

15.2 Chemical Safety Assessment: Has not been carried out.

Date of Preparation: 13 September 2017

Abbreviations and acronyms
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
CMRG: Chemical Manufacturer's Recommended Guidelines
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
AIHA: American Industrial Hygiene Association
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bio-accumulative and Toxicological
vPvB: very Persistent and very Bio-accumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
STEL: Short Term Exposure Limit
CEIL: Ceiling

Section 16: Other Information

Disclaimer of Liability:

Caution! Do not use SPI Supplies products or materials in applications involving implantation within the body; direct or indirect contact with the blood pathway; contact with bone, tissue, tissue fluid, or blood; or prolonged contact with mucous membranes. Products offered by SPI Supplies are not designed or manufactured for use in

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